

## Features

- Formerly a Riedon™ product
- Resistances from 10 Ω to 20K Ω
- Power rating from 3 to 10 watts
- Resistance tolerances as low as ±2 %
- Operating Temperature Range: -55 °C to +350 °C ("V" rating)
- TCR as low as ±20 PPM/°C (standard)

- Superior pulse handling capabilities
- Flame-resistant silicone coated power resistor
- RoHS compliant\*

## HPP Series – Riedon™ High Pulse Power Wirewound Resistors by Bourns

### Specifications

Model	Power Rating (W) <sup>1</sup>		Available Values (Ω) <sup>2</sup>	Pulse Rating (Joules) <sup>3</sup>	Maximum Working Voltage (V)
	U	V			
HPP3	3.0	3.5	10	18	140
			50	5.8	
			500	5.8	
			1000	4.25	
			4500	3	
HPP5	5.0	6.5	7500	2.2	360
			500	5.8	
			1000	11.6	
			4500	19	
			7500	13	
HPP10	10	13	10000	9.4	850
			1000	42	
			4500	52	
			7500	54	
			10000	42	
			20000	34	

Notes:

<sup>1</sup> Additional power ratings may be available upon request, please [contact Bourns](#).

<sup>2</sup> Other resistance values may be available upon request, please [contact Bourns](#).

<sup>3</sup> Higher ratings are available. Please see information regarding pulse rating at the end of this data sheet.

### Environmental Performance (MIL-STD 202)

Specification	ΔR	
	Characteristic U	Characteristic V
Dielectric	±0.2 % + 0.05 Ω	±0.2 % + 0.05 Ω
Load Life	±1 % + 0.05 Ω	±3 % + 0.05 Ω
Storage	±0.2 % + 0.05 Ω	±2 % + 0.05 Ω
Moisture Resistance	±0.2 % + 0.05 Ω	±2 % + 0.05 Ω
Thermal Shock	±0.2 % + 0.05 Ω	±2 % + 0.05 Ω
5X Overload (5 s)	±0.2 % + 0.05 Ω	±2 % + 0.05 Ω
Shock	±0.1 % + 0.05 Ω	±0.2 % + 0.05 Ω
Vibration	±0.1 % + 0.05 Ω	±0.2 % + 0.05 Ω

### Additional Information

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### General Specifications

Tolerances ..... ±2 % to ±10 %  
(±5 % standard)

Temperature Coefficient  
 >10 Ω ..... ±20 PPM/°C  
 1 Ω to 10 Ω ..... ±50 PPM/°C  
 <1 Ω ..... [contact Bourns](#)<sup>4</sup>

Temperature Range  
 Characteristic U ..... -55 °C to +275 °C  
 Characteristic V ..... -55 °C to +350 °C

Dielectric Strength ..... 1000 VAC

Construction ..... Centerless ground  
 ceramic core / matte tin over copper  
 leads / flame resistant / high temperature  
 / trivalent / inorganic silicone coating /  
 all welded terminations

<sup>4</sup> Other TCR values available upon request.

### How to Order

**HPP 5 - 1K J 8 - TR12**

Model \_\_\_\_\_

Power Code \_\_\_\_\_  
(See Specifications table)

Resistance Code \_\_\_\_\_  
 For values <1K Ω,  
 "R" represents decimal point  
 (Example: 5R = 5 Ω)  
 For values ≥1K Ω,  
 "K" represents decimal point  
 (Example 1K = 1K Ω,  
 1K5 = 1.5K Ω)

Tolerance \_\_\_\_\_  
 G = ±2 %  
 H = ±3 %  
 J = ±5 %  
 K = ±10 %

Internal Use \_\_\_\_\_

Packaging Options \_\_\_\_\_  
 Blank = Bulk Packaging  
 -TR12 = Tape and Reel (12-inch Reel)  
 -TR14 = Tape and Reel (14-inch Reel)

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

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"Riedon Logo" is a registered trademark of BE Services Company, Inc., in the United States.

"Riedon" is a trademark of BE Services Company, Inc.

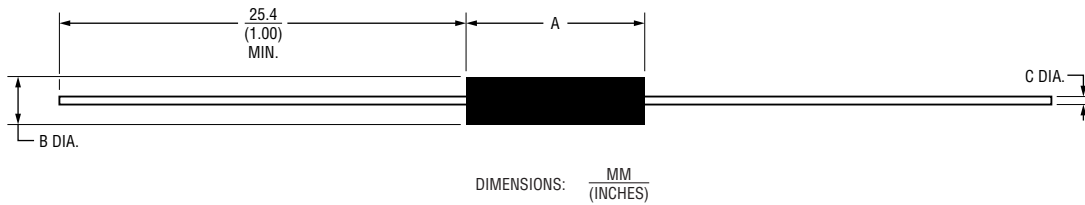


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# HPP Series – Riedon™ High Pulse Power Wirewound Resistors by Bourns

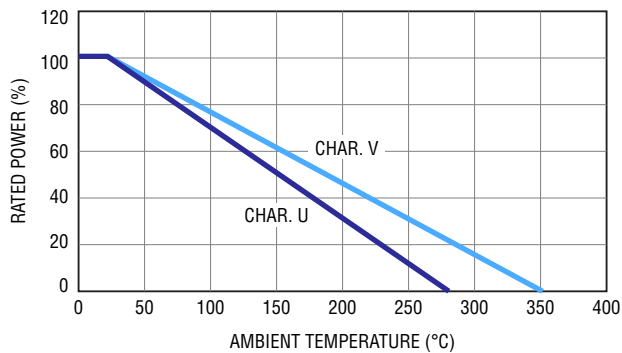
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## Product Dimensions



Model	A	B	C
HPP3	$\frac{12.7 \pm 1.6}{(.500 \pm .062)}$	$\frac{5.1 \pm 0.8}{(.200 \pm .031)}$	$\frac{0.8 \pm 0.05}{(.032 \pm .002)}$
HPP5	$\frac{22.2 \pm 1.6}{(.875 \pm .062)}$	$\frac{7.9 \pm 0.8}{(.312 \pm .031)}$	$\frac{1.0 \pm 0.05}{(.040 \pm .002)}$
HPP10	$\frac{45.2 \pm 1.6}{(1.780 \pm .062)}$	$\frac{9.5 \pm 0.8}{(.375 \pm .031)}$	$\frac{1.0 \pm 0.05}{(.040 \pm .002)}$

## Derating Curve



## Packaging Quantities

Bourns Model Number	Bulk (Standard)	12 ~ Reel	14 ~ Reel
HPP3	500	1000	N/A
HPP5		N/A	1000
HPP10	250		500

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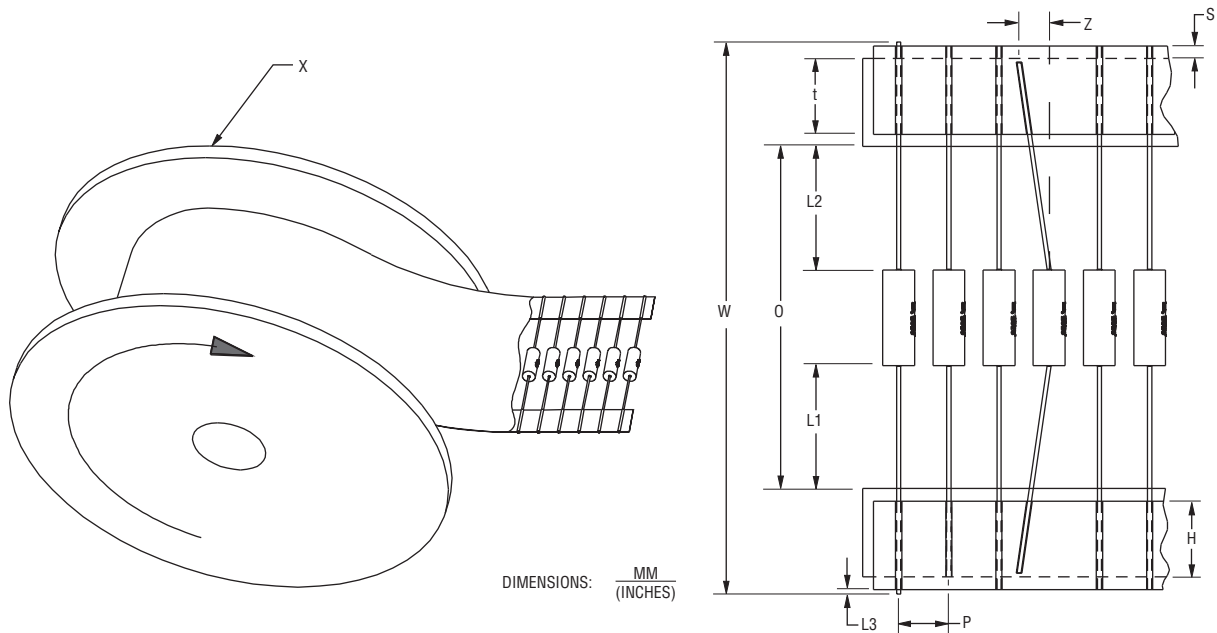
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## Packaging Specifications



Model	Dimension O (mm)	Reel Size (Inches) Dimension X	Pitch (Inches) Dimension P	Clean Lead to Clean Lead Eccentricity (Max.) Dimension L1-L2	Lead Extension (Max.) - Zero is Preferred Dimension L3	Lead Bending Dimension Z	Exposed Adhesive (Max.) Dimension S	Tape Width (mm) Dimension t	Lead Sandwich (Min.) Dimension H	Overall Width (Max.) Dimension W
HPP3	1.983-2.141	12	0.4	1.4 (.055)	0.8 (.031)	1.0 (.039)	0.8 (.031)	7 (177.8)	t/2	123.5 (4.862)
HPP5	2.421-2.579	14	0.6							
HPP10	3.206-3.364									

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### Pulse Rating

For most applications, wirewound resistors provide the very best pulse handling capabilities, outperforming other resistor technologies. Making the proper component choice is often difficult as resistor manufacturers seldom provide reliable pulse and transient information in their data sheets. In general, Bourns prefers to work directly with you to optimize our standard resistors to meet your requirements.

Our pulse rating for the Model HPP Series assumes the pulse is of short duration and all the energy is going into the resistance wire, and doesn't take into account energy dissipated into the rest of the resistor. For longer pulses, heat is transferred to the surrounding materials, so the energy absorbed can be much higher than the value given. In the case of even longer duration pulses, please use the industry standard of five times rated power for five seconds. For example, a 5  $\Omega$  resistor can handle 25  $\Omega$  for 5 seconds (125 Joules) regardless of package size or resistance value.

The resistance value of a wirewound resistor is determined by three variables: the resistance wire's length, diameter, and resistivity. The pulse rating is directly proportional to the mass of the resistance winding, so it is determined by the same three variables. It is important to emphasize that we can optimize the pulse rating for your specific application by adjusting these three variables.

The following information is needed to determine the required Joule rating:

- Resistance value
- Pulse (determine the energy dissipation required, measured in Joules)
- Duration (ms)
- Shape – square, triangular or irregular
- Single or repetitive
- Peak or steady-state power
- Package type
- Axial or surface mount

Our engineers have access to over 50 years of experience with wirewound resistors - we urge our customers to take advantage of that background. Contact us when your design depends on an accurate determination of the transient or pulse capability of a resistor. We will work with you to optimize the pulse rating you need.

For the Model HPP Series resistors the following assumptions are made when stating the Joule rating:

- Short duration pulse (<10 mSec)
- Energy calculation is for a single pulse, or a repetitive pulse where there is sufficient time for the resistor to return to ambient temperature
- No energy is absorbed by the coating material and core, it is purely adiabatic
- Temperature of the resistance material is 25 °C before pulse, and 450 °C after the pulse. This gives a 50 % safety factor on the pulse rating to account for manufacturing variances.

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