



Series 500SP
Non-inductive bulk Ceramic
Slab Resistors

OHMITE[®]



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Series 500SP Non-Inductive Bulk Ceramic Slab Resistors provide high power and energy dissipation in a compact size. Proprietary bulk ceramic "SP" material is used in a simple, efficient design that permits energy to be uniformly absorbed throughout the resistor body, thereby avoiding failure in a peripheral film or wire.

The advantages of Ohmite bulk Ceramic Slab Resistors include:

- Inherently non-inductive, high reliability due to bulk ceramic construction
- 15 watts per inch of length power dissipation
- Excellent pulse/overload capability
- Slim profile for excellent volumetric power efficiency
- Resistance range from 0.2Ω to 800Ω
- Resistance tolerances 5, 10, 20% standard on individual components, available to $\pm 2\%$ on assemblies
- Rated at 8.5KV for 10" length
- Temperature coefficient from +0.2 to -0.08 %/°C

Typical applications:

- Motor Drive Controls
- Power Supplies
- Power Conditioning Equipment
- Soft Start/Current Limit Circuits
- Dynamic Braking
- Snubber Circuits
- RF Dummy Load Circuits
- Capacitor Dump Circuits

a cost-effective, space-saving solution.

The 500SP Series design enables the designer to minimize resistor package size and cost while providing unequalled performance and reliability. The slim, compact resistors offer a number of termination options allowing easy configuration for specific requirements.

Specifications

Type	Length (L)	Resistance Range (Ohms)		average Power @ 40°C amb. (Watts)	Peak* energy @ 40°C amb. (Joules*)	Peak voltage (volts)	Resistor Weight (grams)
502SP	2"[50.8mm]	0.2	110	30	150	900	15
503SP	3"[76.2mm]	0.3	190	45	290	1900	22.5
504SP	4"[101.6mm]	0.4	280	60	480	2800	30
506SP	6"[152.4mm]	0.8	450	90	800	4700	45
508SP	8"[203.2mm]	1.0	630	120	1100	6700	60
510SP	10"[254.0mm]	1.3	800	150	1400	8500	75

*Based on energy absorption in less than 10 milliseconds. Energy rating can be substantially greater for longer pulses. Contact factory.

- Standard units are 1" wide by 1/4" thick in variable lengths of 2, 3, 4, 6, 8 and 10 inches. Other lengths to 10" maximum are available.
- Rated average power is 15 watts per inch of length based on 350°C maximum operating temperature with 40°C ambient.
- Peak impulse current rating is 1000 amps. For applications requiring higher current ratings contact factory.

STANDARD PRODUCTS

Figure 1. Without Tabs

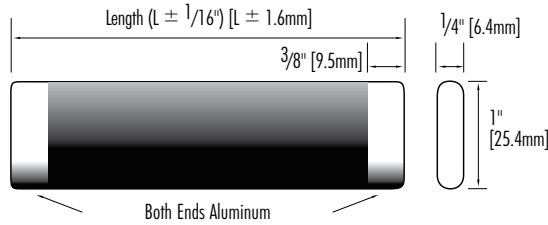


Figure 2. With Straight Radial Tabs (G1)

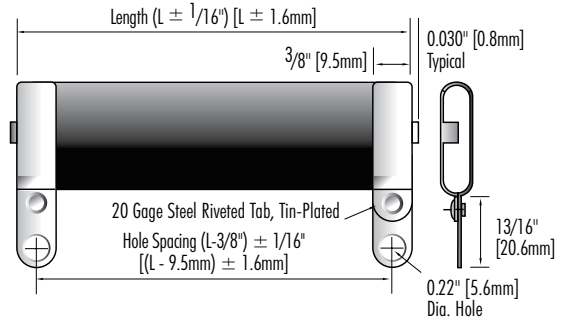


Figure 3. With Right Angle Radial Tabs – same direction – (G2)

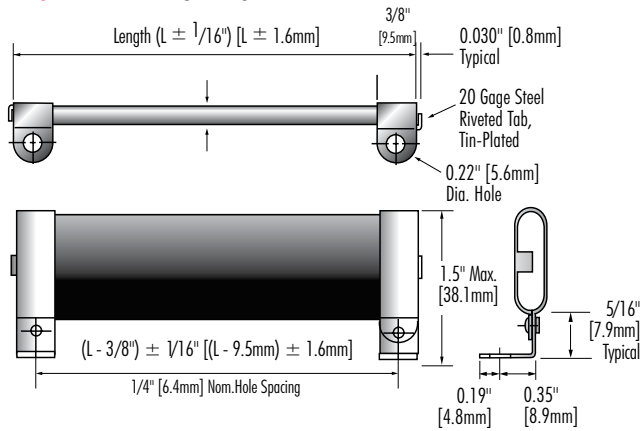


Figure 4. With Right Angle Radial Tabs – opposite direction – (G3)

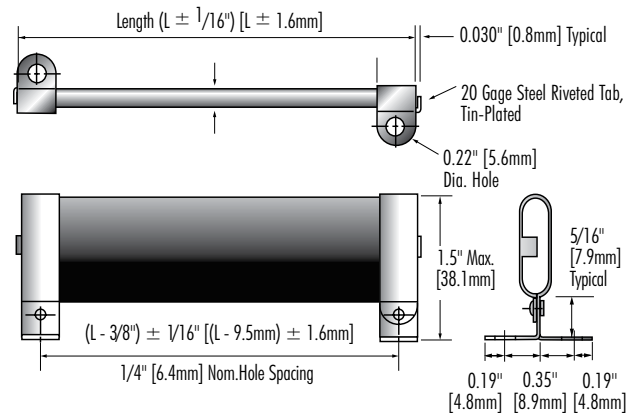


Figure 5. With Low Profile Axial Tabs (H1)

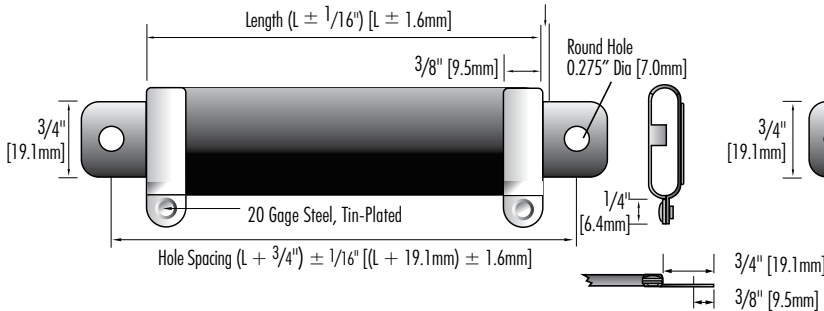
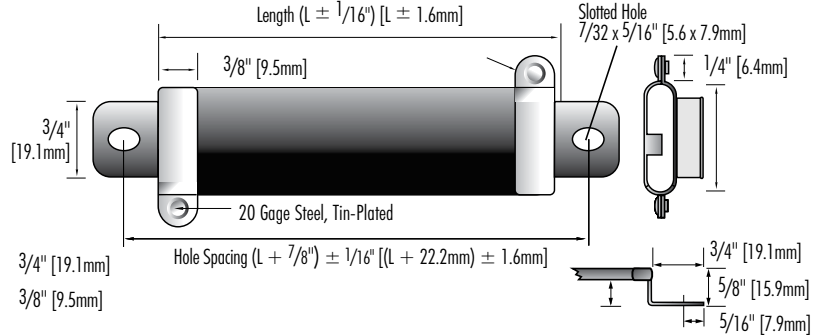


Figure 6. With Standoff Axial Tabs (H2)



STANDARD PART NUMBERS

Example Part Number: 504SP101KG1 504SP 101 K G1

Terminal End Options

Construction Type

Resistance Value (Ω)

For $\geq 10 \Omega$: First 2 digits are significant figures, third digit is number of zeros to follow, e.g. 101 = 100 Ω

For $< 10 \Omega$ An R replaces the decimal point, e.g. R50 = .50 Ω
7R5 = 7.5 Ω

Resistance Tolerance

J = $\pm 5\%$
K = $\pm 10\%$
L = $\pm 20\%$

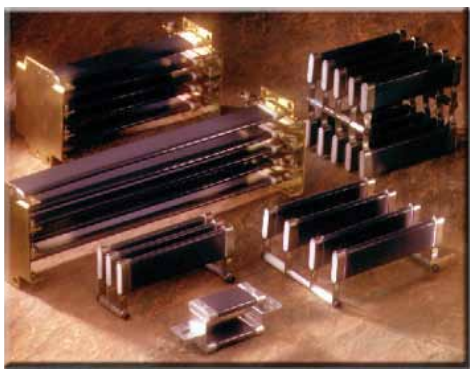
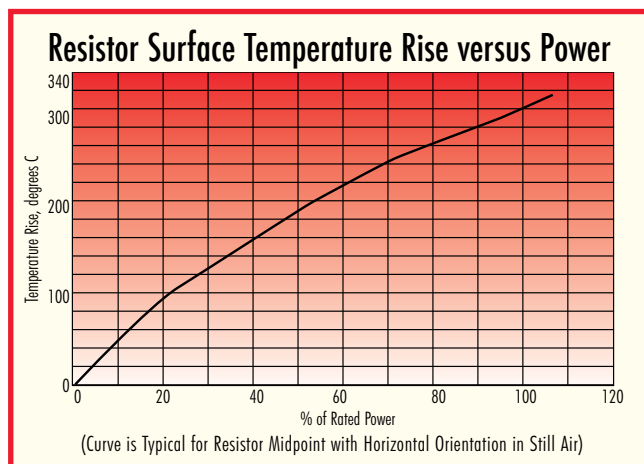
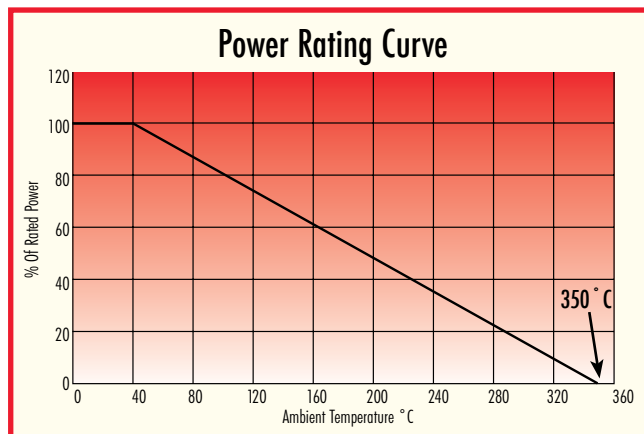
No Suffix	Standard aluminum metalized ends, no tabs, per Fig. 1
G1	Straight radial tab, per Fig. 2
G2	Right angle radial tabs, oriented in same direction, per Fig. 3
G3	Right angle radial tabs, oriented in opposite direction, per Fig. 4
H1	Low profile axial tabs, per Fig. 5
H2	Elevated axial tabs, per Fig. 6

Tin plated steel radial tabs are standard.
Consult factory for other tab materials.

Characteristics	
Operating Temperature (1)	-55°C to +350°C
Temperature Coefficient	+ 0.2 to - 0.08 % /°C
Short Time Overload: Max. % change after 5 cycles — 10 times rated power, 5 seconds on, 90 seconds off	± 2%
Load Life Max. % change after 1000 hrs. rated power 1-1/2 hours on; 1/2 hour off	± 5%
Thermal Shock Max. % change after 10 cycles -55°C to +125°C	± 3%
Moisture Resistance Max. % change when tested per MIL-STD-202, Method 103	± 5%

(1) **Note:** When required, Type SP material can withstand short periods of use at red-heat conditions, i.e. up to 550 to 600°C

Typical Physical Properties:	
Density	2.2 - 2.4 gm/cc
Specific Heat	0.24 - 0.26 cal / gm °C
Thermal Conductivity	0.14 - 0.16 cal/(cm-°C - sec)



PACKAGED ASSEMBLIES

Individual standard components can be packaged in series, parallel, or series/parallel arrays to optimize energy and power dissipation in available space. Custom assembly packages are available.

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