KANTHAL
GLOBAR

SERIES 100 & 200
AXIAL LEADED RESISTORS

KANTHAL GLOBAR

- Non-inductive "bulk ceramic" resistor
- Uniform distribution of energy throughout resistor body
- Replacement of Carbon Composition Resistors
- Large peak energy in small size
- High power dissipation (Type SP)
- High voltage and energy absorption (Type AS)
- Through-hole or post mountable

Series 100 & 200 Axial Leaded Non-Inductive Bulk Ceramic Resistors provide excellent performance where high peak power or high-energy pulses must be handled in a small size. The advantage of the bulk construction is that it produces an inherently non-inductive resistor; and it allows energy and power to be uniformly distributed through the entire ceramic resistor body — there is no film or wire to fail. We offer a full line of rugged, reliable ceramic resistors — including custom designs.

Two distinctly different ceramic materials are available in each size to afford the designer with unique components to meet the most demanding requirements:

Type SP resistors are composed of materials that withstand high operating temperatures resulting in high power dissipation. Maximum continuous operating temperature is specified at 350°C. This type is suitable for use in oil without an oil-resistant coating.

Type AS resistors are best suited for high energy and voltage pulse applications. Maximum continuous operating temperature is specified at 230°C. The standard dielectric coating is recommended for use in air, and the oil-resistant coating is recommended for use in oil.

Typical Applications

Series 100 & 200 resistors are ideal for applications such as:

- Soft Start/In-rush Limiters
- RC Snubber Circuits
- Spark-Gap Limiters
- Parasitic Suppression
- High Voltage Power Supplies
- Pulse Waveform
- EMI/EFI Test Circuits

As alternatives to hard to find carbon composition resistors, Globar resistors can be used as drop-in replacements for 1 and 2 watt sizes. Much larger sizes, up to 70 watts in a single component, are available for new or re-designs where an array of smaller resistors may have been previously required.

Ordering Information

Part Numbering System

Example Part Number: 102AS101KDS (102AS 101 K DS)

Construction Type

Resistance Value (Ω)
For ≥ 10 Ω: First 2 digits are significant figures, third digit is number of zeros to follow, e.g. 101 = 100 Ω
For < 10 Ω An R replaces the decimal point, e.g. 7R5 = 7.5 Ω

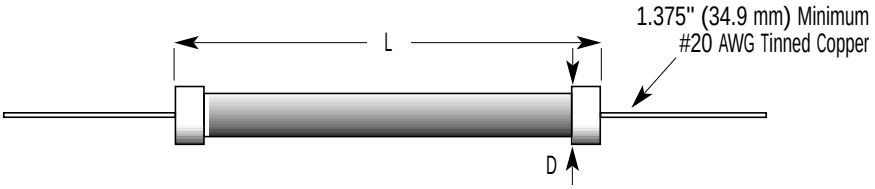
Resistance Tolerance
J = ± 5%
K = ± 10%
L = ± 20%

Terminal End Options

SP	No Suffix = Standard Includes aluminum metalization under caps/leads.
AS	DS = Standard Includes dielectric coating and silver metalization under caps/leads.
	O = Oil resistant coating.

Packaging: Bulk in poly bags is standard.
Tape & Reel is also available.

SPECIFICATIONS



Body Size	Resistance Range, Ohms	Dia. (D) Max. in. (mm)	Length (L) Max. in. (mm)	Average (1) Power Rating, @ 40°C Amb., Watts	Rated (2) Peak Energy, Joules	Rated (2) Peak Voltage	Rated (3) Peak Current, Amps	Typical(4) Resistor Body Weight, Grams
231AS 231SP	25 – 6,350 1 – 1,000	0.2 (5.1) 0.2 (5.1)	0.75 (19.1) 0.75 (19.1)	1.5 2.5	75 15	1,500 V 375 V	90 350	0.44 0.44
233AS 233SP	6 – 1,800 1 – 120	0.31 (7.9) 0.31 (7.9)	0.75 (19.1) 0.75 (19.1)	2 7	170 20	1,100 V 375V	150 550	1.2 1.2
234AS 234SP	12 – 5,000 1 – 330	0.31 (7.9) 0.31 (7.9)	1.125 (28.6) 1.125 (28.6)	3 10	275 30	2500 V 500 V	150 550	1.9 1.9
250AS 250SP	4 – 1,200 1 –150	0.44 (11.1) 0.44 (11.1)	0.75 (19.1) 0.75 (19.1)	2.5 8.5	260 20	1,500 V 375 V	190 700	1.9 1.5
251AS 251SP	8 – 2,300 1 – 330	0.44 (11.1) 0.44 (11.1)	1.125 (28.6) 1.125 (28.6)	3.5 12	400 30	2,500 V 500 V	190 700	3.0 2.4
102AS 102SP	30 – 9,000 1 – 700	0.31 (7.9) 0.31 (7.9)	2.125 (54.0) 2.125 (54.0)	5 15	600 50	3,000 V 1,000 V	150 550	3.8 3.8
252AS 252SP	20 – 5,800 1 – 460	0.44 (11.1) 0.44 (11.1)	2.125 (54.0) 2.125 (54.0)	6 18	900 75	3,000 V 1,000 V	190 700	6.0 4.8
104AS 104SP	55 – 18,000 2 – 1,500	0.31 (7.9) 0.31 (7.9)	4.125 (104.8) 4.125 (104.8)	9 25	1,200 95	9,000 V 3,600 V	150 550	7.6 7.6
254AS 254SP	36 – 12,000 2 – 1,000	0.44 (11.1) 0.44 (11.1)	4.125 (104.8) 4.125 (104.8)	11 31	1,800 150	9,000 V 3,600 V	190 700	12.0 9.6
106AS 106SP	90 – 30,000 3 – 2,400	0.31 (7.9) 0.31 (7.9)	6.125 (155.6) 6.125 (155.6)	13 36	1,900 155	15,000 V 5,000 V	150 550	11.4 11.4
256AS 256SP	60 – 20,000 2 – 1,600	0.44 (11.1) 0.44 (11.1)	6.125 (155.6) 6.125 (155.6)	16 45	2,900 240	15,000 V 5,000 V	190 700	18.0 14.4
109AS 109SP	150 – 48,000 4 – 3,800	0.31 (7.9) 0.31 (7.9)	9.125 (231.8) 9.125 (231.8)	20 55	3,000 250	25,000 V 8,800 V	150 550	17.1 17.1
259AS 259SP	100 – 32,000 3 – 2,500	0.44 (11.1) 0.44 (11.1)	9.125 (231.8) 9.125 (231.8)	25 70	4,600 380	25,000 V 8,800 V	190 700	27.0 21.6

1. Rated Power: De-rate linearly to 0 Watts at 230°C for Type AS. De-rate linearly to 0 Watts at 350 °C for Type SP.
2. Allowable peak energy/voltage will depend on the resistance value and pulse width. Energy ratings are based on pulse < 10 milliseconds. Type SP rating can be substantially greater for longer pulses. Consult Kanthal Globar.
3. Peak Current Ratings presume energy approaching rated peak energy values. Allowable current can be higher for lower energy values. Consult Kanthal Globar.
4. Excludes caps/leads and coating.

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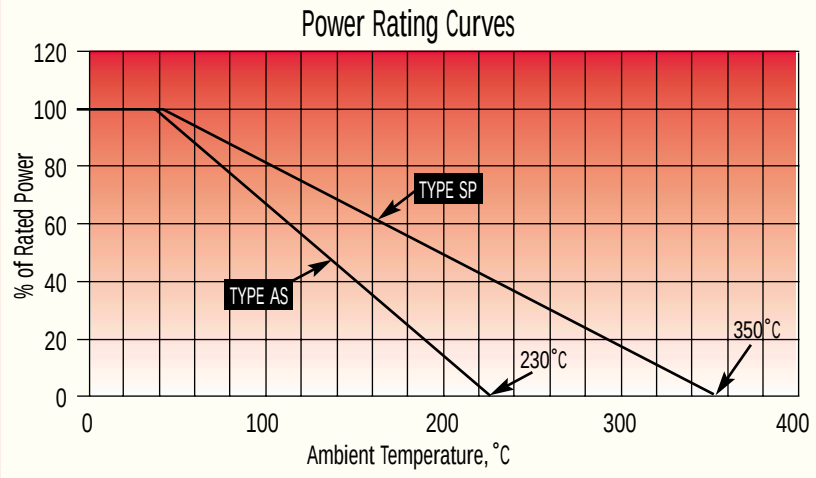
Characteristics	Type SP	Type AS
Operating Temperature (1)	-55˚C to +350˚C	-55°C to +230˚C
Resistance Temperature Coefficient	+ 0.2 to - 0.08 %/˚C	+ 0.0 to - 0.08 %/˚C
Voltage Coefficient Max. % per kilovolt per inch active length	-1.0%	-1.0%
Short Time Overload Max. % change after 10 cycles of 1000% rated power 5 sec. On, 90 sec. Off	± 5%	± 2%
Load Life Max. % change after 1000 hrs. at rated power	± 5%	± 5%
Thermal Shock Max. % change after 10 cycles -55˚C to +125˚C	± 3%	± 3%
Moisture Resistance Max. % change when tested per MIL-STD-202, Method 103	± 5%	± 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:	SP Resistors	AS Resistors
Density	2.2 - 2.4 gm/cc	2.2 - 2.6 gm/cc
Specific Heat	0.24 - 0.26 cal/gm˚C	0.23 - 0.25 cal/gm˚C
Thermal Conductivity	0.14 - 0.16 cal/cm -˚C - sec	0.003 - 0.006 cal/cm -˚C - sec



Power ratings are based on maximum allowable surface temperature in still air at 40˚C ambient temperature.

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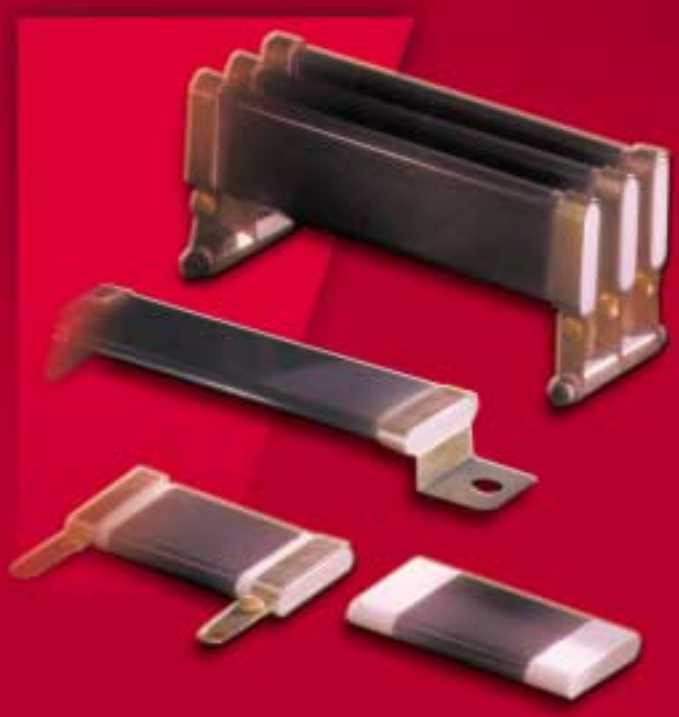

KANTHAL
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SERIES 500SP
NON-INDUCTIVE BULK CERAMIC SLAB RESISTORS

KANTHAL GLOBAR

Series 500SP Non-Inductive Bulk Ceramic Slab Resistors

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 KANTHAL GLOBAR 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 ±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 unequaled 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 Kanthal Globar.

- 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 4000 amps. For applications requiring higher current ratings contact Kanthal Globar.

STANDARD PRODUCTS

Figure 1. Without Tabs

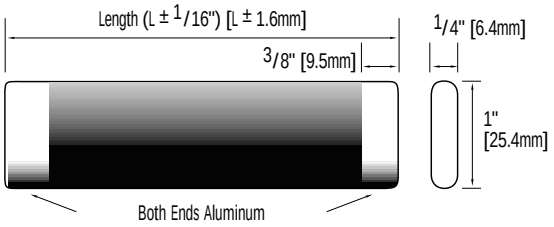


Figure 2. With Straight Radial Tabs **(G1)**

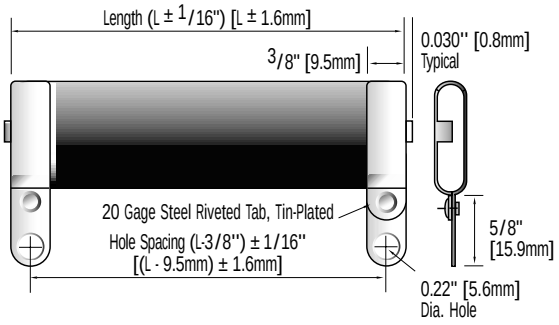


Figure 3. With Right Angle Radial Tabs – same direction – **(G2)**

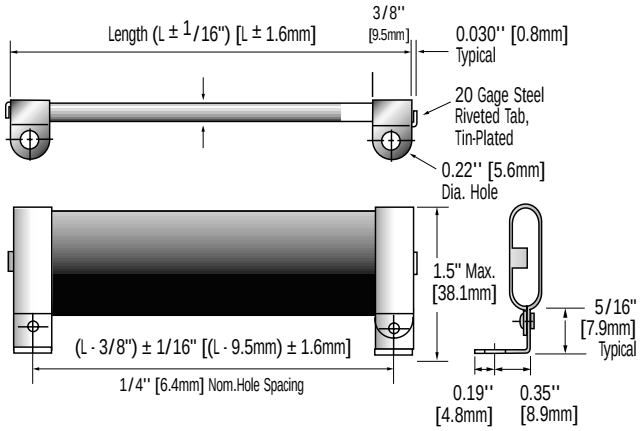


Figure 4. With Right Angle Radial Tabs – opposite direction – **(G3)**

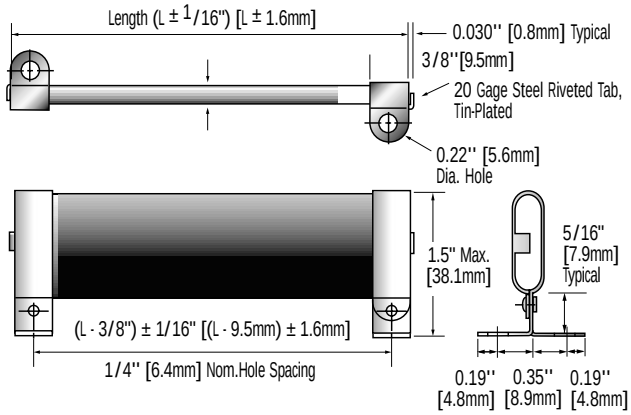


Figure 5. With Low Profile Axial Tabs **(H1)**

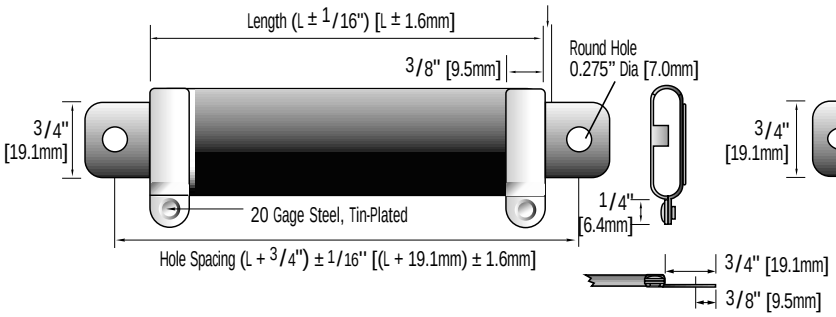
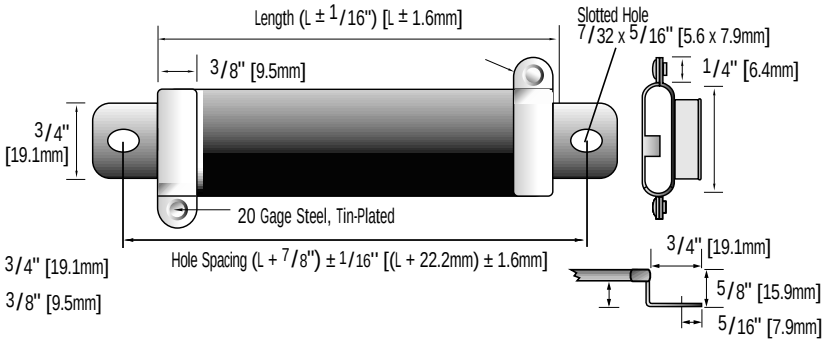


Figure 6. With Standoff Axial Tabs **(H2)**



STANDARD PART NUMBERS

Example Part Number: 504SP101KG1 **504SP** **101** **K** **G1** ← **Terminal End Options**

Construction Type

Resistance Value (Ω)

For ≥ 10 Ω: First 2 digits are significant figures, third digit is number of zeros to follow,
e.g. 101 = 100 Ω
For < 10 Ω An R replaces the decimal point, e.g. R50 = .50Ω
7R5 = 7.5 Ω

Resistance Tolerance

J = ± 5%
K = ± 10%
L = ± 20%

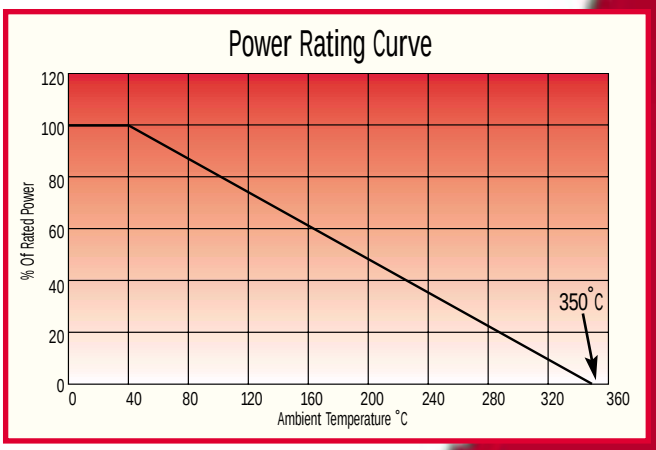
No Suffix	Standard aluminum metalized ends, no tabs, per Fig. 1
G1	Straight radial tab, per Fig. 2
G2	Right angle radial tabs, oriented in same direction, per Fig. 3
G3	Right angle radial tabs, oriented in opposite direction, per Fig. 4
H1	Low profile axial tabs, per Fig. 5
H2	Elevated axial tabs, per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

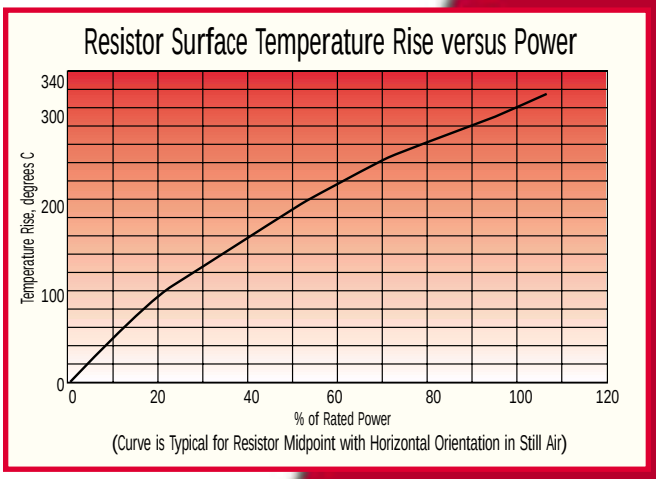
Tin plated steel radial tabs are standard.
Consult factory for other tab materials.

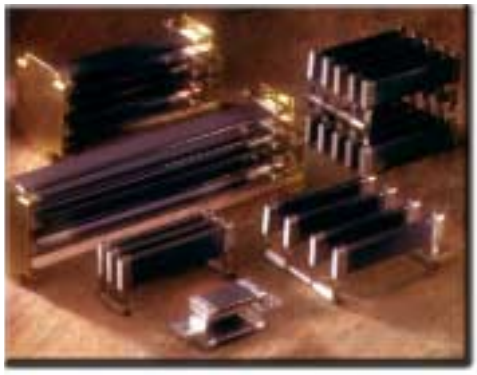
Characteristics	
Operating Temperature (1)	-55°C to +350°C
Temperature Coefficient	+ 0.2 to - 0.08 %/°C
Short Time Overload: Max. % change after 5 cycles – 10 times rated power, 5 seconds on, 90 seconds off	± 2%
Load Life Max. % change after 1000 hrs. rated power 1-1/2 hours on; 1/2 hour off	± 5%
Thermal 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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Form # SLAB-A 09/07

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Series 500AS

KANTHAL GLOBAR

Type	Length (L)	Resistance Range (Ohms)	Average Power @ 40°C Amb. (Watts)	Peak* Energy @ 40°C Amb. (Joules)	Peak* Voltage** (Volts)	Resistor Weight (Grams)
502AS	2" (51 mm)	5–1,200	12	1,500	8,500	16
503AS	3" (76 mm)	9–2,200	18	2,700	16,000	24
504AS	4" (102 mm)	13–3,200	24	4,000	23,000	32
505AS	5" (127 mm)	17–4,200	30	5,200	30,000	40
506AS	6" (152 mm)	21–5,200	36	6,400	36,000	48
507AS	7" (178 mm)	25–6,200	42	7,700	43,000	56
508AS	8" (203 mm)	29–7,200	48	8,900	50,000	64
509AS	9" (229 mm)	33–8,200	54	10,100	57,000	72
510AS	10" (254 mm)	37–9,200	60	11,400	65,000	80

*Based on energy absorption in less than 10 milliseconds.**Allowable peak energy/voltage will depend on the resistance value, consult factory. Peak impulse current rating is 200 amps, consult factory.

SPECIFICATIONS

Cost-Effective, Space-Saving Solutions

Kanthal GLOBAR Bulk Ceramic Resistors Advantages

- Inherently non-inductive, high reliability due to bulk ceramic design
- Excellent pulse/overload capability
- Slim profile for excellent volumetric power efficiency
- Resistance tolerances 5%, 10%, 20% standard
- Resistance temperature coefficient of +0.00 to - 0.08%/°C
- 230°C maximum operating temperature

High Energy and Voltage Pulse Typical Applications

- High voltage power supplies
- Capacitor charge/discharge
- Pulse test equipment
- Radar/broadcast transmitters
- Laser/imaging equipment

SERIES 500AS
NON-INDUCTIVE BULK CERAMIC SLAB RESISTORS

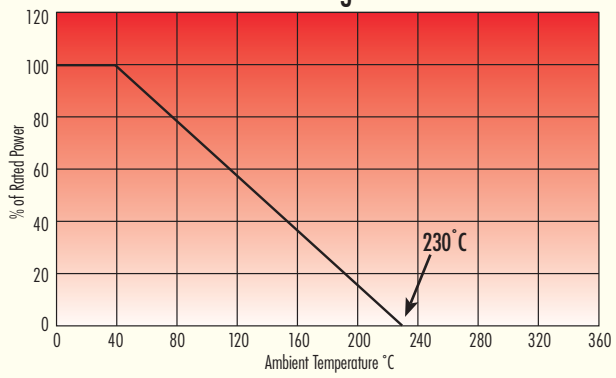
Characteristics	
Operating Temperature	-55˚C to +230˚C
Temperature Coefficient	+0.0 to -0.08%/˚C
Short Time Overload: Max. % change after 5 cycles – 10 times rated power, 5 seconds on, 90 seconds off	± 2%
Load Life: Max. % change after 1000 hrs. rated power 1-½ hours on; ½ hour off	± 5%
Thermal Shock: Max. % change after 10 cycles -55˚C to +125˚C	± 3%
Moisture Resistance: Max. % change when tested per MIL-STD-202, Method 103	± 5%

Typical Physical Properties	
Density	2.2 – 2.4 gm/cc
Specific Heat	0.22 – 0.24 cal/gm˚C
Thermal Conductivity	0.003 – 0.006 cal/cm-˚C-sec

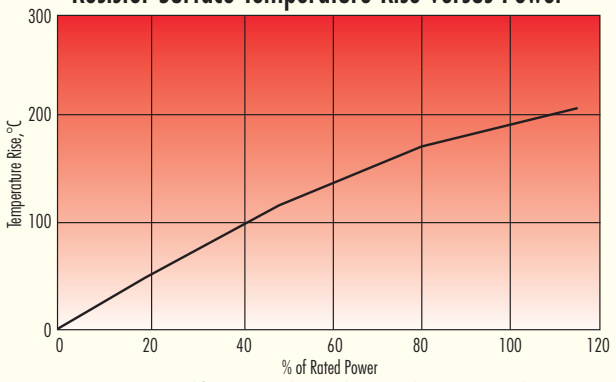
Packaged Assemblies

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

Power Rating Curve



Resistor Surface Temperature Rise versus Power



(Curve is Typical for Resistor Midpoint with Horizontal Orientation in Still Air)

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Form # SLAB-500AS 0.0M 10/08

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KANTHAL

Series 800 and 1000 Tubular Resistors

Product Information

Tubular Resistors – Series 800 and 1000

Series 800 and 1000 Tubular Non-Inductive Bulk Ceramic Resistors provide excellent performance for high peak power or high-energy pulses. Bulk construction advantageously produces an inherently non-inductive resistor; and it allows energy and power to be uniformly distributed through the entire ceramic resistor body – there is no film or wire to fail. We offer a full line of rugged, reliable ceramic resistors.

We offer three distinctly different ceramic materials to afford the designer with unique components to meet the most demanding requirements:

Type SP resistors are composed of materials that withstand high operating temperatures resulting in high power dissipation. Maximum continuous operating temperature is specified at 350°C. This type is suitable for use in oil without an oil-resistant coating.

Type AS resistors are best suited for high energy and voltage pulse applications. Maximum continuous operating temperature is specified at 230°C. The standard dielectric coating is recommended for use in air, and the oil-resistant coating is recommended for use in oil.

Type A is a high-power non-inductive resistor used when high resistance is required.

Globar bulk ceramic resistors are problem solvers for:

Type SP

- Motor drive circuits
- Snubber circuits
- High-frequency circuits
- RF dummy loads
- Dynamic braking
- Transformer protection
- Harmonic filter

Type AS

- Impulse generators
- High-voltage circuits
- X-ray equipment
- High voltage power supplies
- Laser/Imaging equipment
- Capacitor charge/discharge

Type A

- Bleeder
- Capacitor charge/discharge

… just to name a few uses.

Ordering Information

Part Numbering System

Example Part Number: 890AS101KDS **890AS** **101** **K** **DS** ← **Terminal End Options**

Construction Type

Resistance Value (Ω)

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

For < 10 Ω: An R replaces the decimal point,
e.g. R50 = 0.50 Ω,
7R5 = 7.5 Ω

Resistance Tolerance

J = + 5%
K = + 10%
L = + 20%

SP	No Suffix = Standard aluminum metalized ends
	No-arc terminal not available on SP products
	G = Radial tab, riveted and soldered G1 = Radial tab, riveted and no solder
AS	DS = Standard dielectric coating and silver metalized ends
	N = No-arc terminal and dielectric coating NO = No-arc terminal with oil resistant coating
	DG = Radial tab, riveted and soldered with dielectric coating DG1 = Radial tab, riveted and no solder with dielectric coating GO = Radial tab, riveted and soldered with oil resistant coating
	TO = Soldered end and oil resistant coating
A	No Suffix = Standard nickel metalized ends
	D = Dielectric coating DG = Radial tab, riveted and soldered with dielectric coating
	N = No-arc terminal and dielectric coating NO = No-arc terminal with oil resistant coating
	DG = Radial tab, riveted and soldered with dielectric coating DG1 = Radial tab, riveted and no solder with dielectric coating GO = Radial tab with oil resistant coating
	TO = Soldered end and oil resistant coating

Contact Information

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Website: www.globar.com

High Voltage Resistors – High Power Resistors – High Energy Resistors

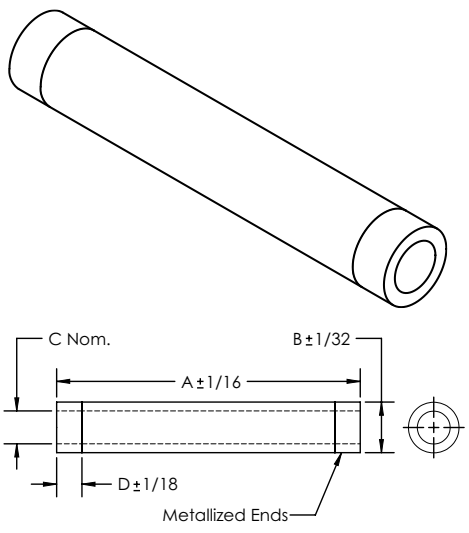
Series 800 and 1000 Tubular Resistors are available in a wide variety of sizes and terminations from 2″ to 24″ in length and ½″ to 2″ in diameter. These resistors can handle up to 1000 watts, 165 kJ and 165 kV in resistance values from 1 ohm to 1 megohm.

Electrical Specifications

Length and Diameter	Type	Resistance Available (ohms) Min.	to Max.	Average Power @ 40°C (watts)	Peak* Energy (joules)	Peak* Voltage** (volts)
2″ x 1/2″	884SP	1.0	200	22.5	250	1,000
2 1/2″ x 3/4″	885SP	1.0	130	45	250	1,000
	885AS	6.0	1200	15	2,800	8,000
	885A	1500	220K	15	750	3,750
5″ x 3/4″	886SP	1.0	330	90	500	4,000
	886AS	15.0	3300	30	7,000	20,000
	886A	3900	390K	30	1,500	10,000
6″ x 1″	887SP	1.0	330	150	1,600	4,000
	887AS	12.0	3300	50	13,000	30,000
	887A	3900	390K	50	6,000	12,000
6″ x 1 1/2″	1026AS	5.0	1200	70	30,000	30,000
8″ x 1”	888SP	1.0	390	190	2,100	6,000
	888AS	15.0	3900	75	16,500	45,000
	888A	4700	470K	60	7,500	15,000
8″ x 1 1/2″	1028AS	6.5	1875	100	46,000	45,000
12″ x 1″	889SP	1.0	680	275	3,200	10,000
	889AS	25.0	6800	100	27,000	75,000
	889A	8200	680K	90	12,500	25,000
12″ x 1 1/2″	1032AS	9.0	2500	150	75,000	75,000
18″ x 1″	890SP	1.0	1000	375	4,200	16,000
	890AS	40.0	10K	150	43,000	120,000
	890A	12K	1M	125	20,000	40,000
18″ x 1 1/2″	1038AS	15.0	3800	225	119,000	120,000
18″ x 2″	891SP	1.0	450	750	15,000	16,000
24″ x 2″	892SP	1.0	600	1000	17,500	22,000
24″ x 1 1/2″	1044AS	20.0	4800	300	164,000	165,000

* Allowable peak energy/voltage will depend on the resistance value. Consult factory.

** Derate by 50% with oil resistant coating on Type AS resistors. Energy ratings are based on pulses <10 milliseconds. Type SP ratings can be substantially greater for longer pulses. Consult factory.



Dimensions — Inches

Type	A	B	C (SP & AS)	C (A)	D
884 SP	2.0	0.50	0.22	–	0.25
885 SP, AS, & A	2.5	0.75	0.50	0	0.50
886 SP, AS, & A	5.0	0.75	0.50	0	0.62
887 SP, AS, & A	6.0	1.00	0.75	0.5	0.50
888 SP, AS, & A	8.0	1.00	0.75	0.5	0.88
889 SP, AS, & A	12.0	1.00	0.75	0.5	0.88
890 SP, AS & A	18.0	1.00	0.75	0.5	0.88
891 SP	18.0	2.00	1.50	–	1.00
892 SP	24.0	2.00	1.50	–	1.00
1026 AS	6.0	1.50	1.00	–	0.50
1028 AS	8.0	1.50	1.00	–	0.88
1032 AS	12.0	1.50	1.00	–	0.88
1038 AS	18.0	1.50	1.00	–	0.88
1044 AS	24.0	1.50	1.00	–	0.88

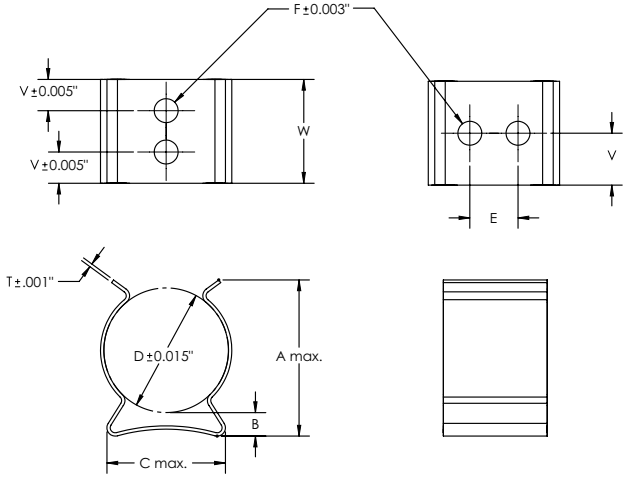
Special sizes are available. Consult factory.

Termination Metals

Electrical connection to the resistive bodies of resistors is made by metal end bands. The standard metal is aluminum for Type SP, silver for Type AS and nickel for Type A. Special terminations of brass, copper or soldered ends are also available.

Mounting Clips

In most cases, connections to the resistors may be made by using these stock clips.

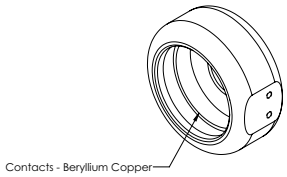


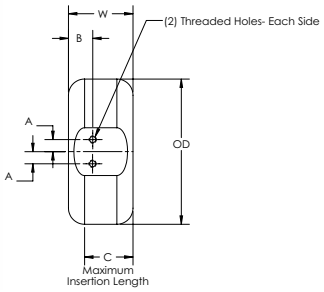
Dimensions — Inches

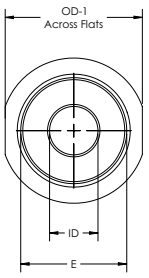
Part No.	Resistor OD	Holes	A	B	C	D	E	F	T	V	W
35370	1/2	1	0.620	0.090	0.560	0.500	N/A	0.093	0.020	0.188	0.375
35267	3/4	1	0.940	0.155	0.830	0.750	N/A	0.144	0.020	0.312	0.625
35268	1	2	1.230	0.170	1.070	1.000	N/A	0.128	0.024	0.156	0.625
35371	1 1/2	2	1.650	0.100	1.650	1.500	0.925	0.103	0.032	0.250	0.500
35269	2	2	2.375	0.544	1.080	2.000	0.375	0.125	0.043	0.375	0.750

Material: Beryllium Copper Finish: Electro Tin Plate

Aluminum Connector Caps







Dimensions — Inches

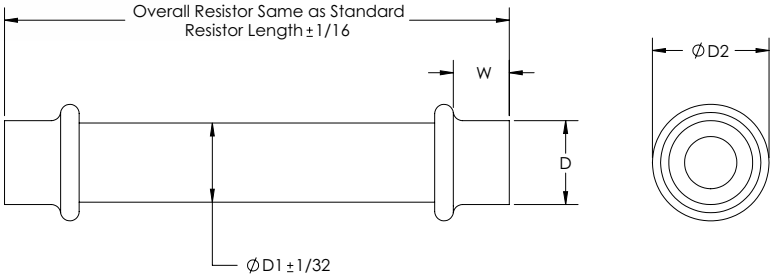
Part No.	Resistor Diameter	OD	OD-1	W	E	ID	A	B	C	Threaded Holes
36075	3/4	1 1/2	1 3/8	3/4	0.830	3/8	3/16	3/16	.50	M3 x .5P x 3/16″ DP
36100	1	1 3/4	1 5/8	1	1.080	1/2	3/16	3/8	.75	M3 x .5P x 3/16″ DP
36150	1 1/2	2 1/4	2 1/8	1	1.580	3/4	3/16	3/8	.75	M4 x .7P x 3/16″ DP
36200	2	3	2 3/4	1 1/8	2.080	1	5/16	7/16	.88	M5 x .8P x 1/4″ DP

Optional No-Arc Termination

"N" Suffix

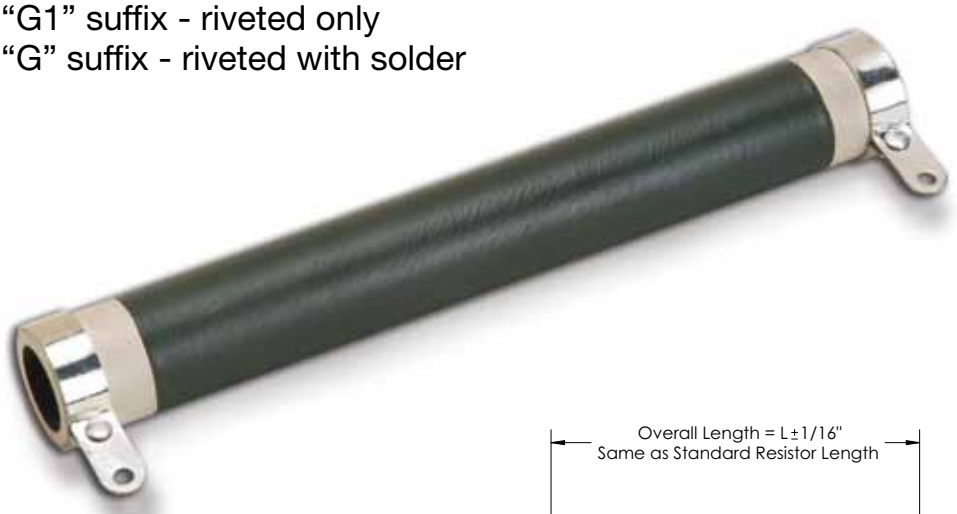
Dimensions — Inches

D1	D2	D	W
1	1.56	1	3/4
1 1/2	1.84	1	3/4



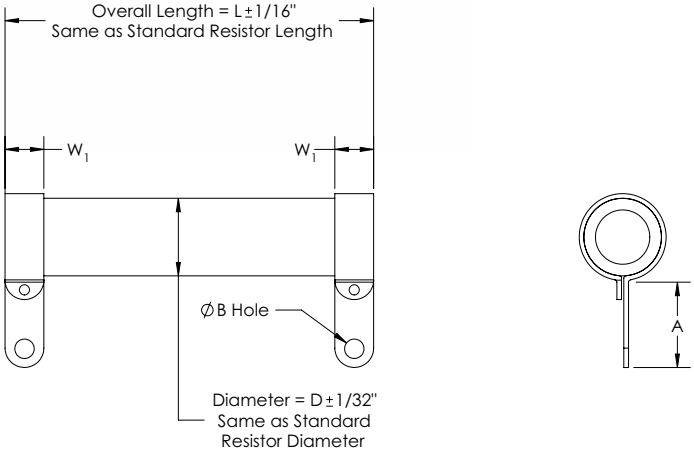
Optional Radial Tab Termination

"G1" suffix - riveted only
"G" suffix - riveted with solder



Dimensions — Inches

D	W1	A	B
1/2	3/16	17/32	0.062
3/4	3/8	25/32	0.156
1	3/8	25/32	0.156
1 1/2	3/8	25/32	0.156
2	5/8	1.25	0.281



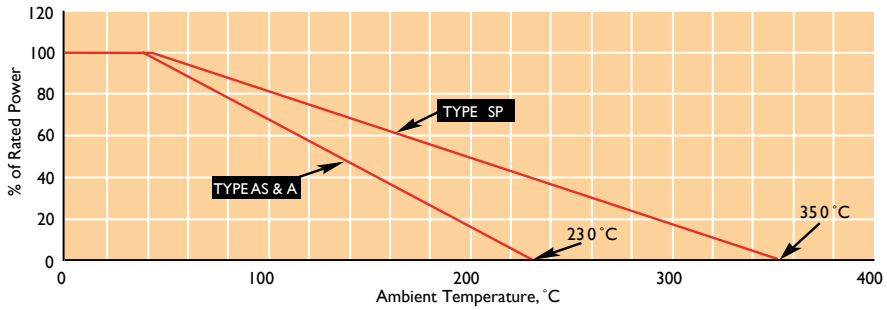
Characteristics	Type SP	Type AS	Type A
Operating Temperature (1)	-55°C to +350°C	-55°C to +230°C	-55°C to +230°C
Resistance Temperature Coefficient	+0.2 to -0.08 %/°C	+0.0 to -0.08 %/°C	+0.0 to -0.02 %/°C
Voltage Coefficient Max. % per kilovolt per inch active length	-1.0%	-1.0%	—
Short Time Overload Max. % change after 10 cycles of 1000% rated power 5 sec. On, 90 sec. Off	± 5%	± 2%	—
Load Life Max. % change after 1,000 hours at rated power	± 5%	± 5%	—
Thermal Shock Max. % change after 10 cycles -55°C to +125°C	± 3%	± 3%	—
Moisture Resistance Max. % change when tested per MIL-STD-202, Method 103	± 5%	± 5%	± 5%

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

Typical Physical Properties	SP Resistors	AS Resistors	A Resistors
Density	2.2 - 2.4 gm/cc	2.2 - 2.6 gm/cc	2.2 - 2.6 gm/cc
Specific Heat	0.24 - 0.26 cal/gm -°C	0.23 - 0.25 cal/gm -°C	0.23 - 0.25 cal/gm -°C
Thermal Conductivity	0.14 - 0.16 cal/cm - °C/sec	0.003 - 0.006 cal/cm - °C/sec	0.003 - 0.006 cal/cm - °C/sec

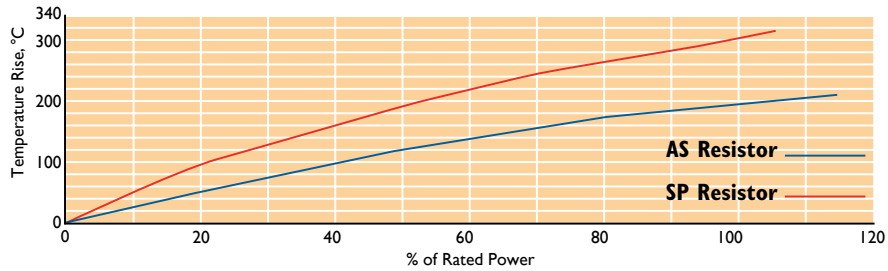
Power Rating Curves

Power ratings are based on maximum allowable surface temperature in still air at 40°C ambient temperature.



Resistor Surface Temperature Rise Versus Power

(Curve is Typical for Resistor Midpoint with Horizontal Orientation in Still Air)



Kanthal – a Member of the Sandvik Group

The Sandvik Group is a global high technology enterprise with 41,700 employees and annual sales of approximately SEK 72 billion. Sandvik spends about 4 percent of its turnover on research and development. As a member of the Sandvik Group, Kanthal has full access to world-class competence within materials and process technology, as well as Sandvik's R&D-center in Sweden, which is one of the most distinguished in the world. Through Sandvik's global sales organization Kanthal is represented in 130 countries.

KANTHAL

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Disk and washer resistors

KANTHAL

High-energy resistors in solid disk and washer styles from 1.60 to 5.90 inches (40.6 to 150 mm) in diameter.

Product characteristics

Maximum temperature	230°C (446°F)
Maximum peak Voltage	5000 Volts
Contacts	Brass metallization on faces
Recommended contact pressure	25 psi minimum; 50-100 psi preferred
Power rating	Dependent upon mounting and exposed surface area. In free air, parts will safely dissipate 2.5 watts per square inch of surface area at 40°C (104°F) ambient.
Resistance temperature coefficient	0.0%/°C to -0.1%/°C

Product specifications

Type	Style	Inside diameter, inches	Outside diameter, inches	Thickness, inches	Peak energy, Joules	Available resistance, Ohms	
						Min.	Max.
911DS	Solid disk	-	1.60±0.06	1.000±0.040	9000	1.6	100
912DS	Solid disk	-	2.37±0.06	1.000±0.040	21000	0.7	90
913DS	Solid disk	-	3.00±0.08	1.000±0.040	33000	0.5	56
914DS	Solid disk	-	3.75±0.08	1.000±0.040	52500	0.3	36
913WS	Washer	1.200±.060	3.00±0.08	1.000±0.040	27600	0.5	78
914WS	Washer	1.300±.060	3.75±0.08	1.000±0.040	47000	0.3	36
915WS	Washer	1.200±.060	4.37±0.08	1.000±0.040	65500	0.2	28
916WS	Washer	1.200±.060	4.75±0.08	1.000±0.040	79500	0.2	24
917WS	Washer	1.300±.060	5.00±0.08	1.000±0.040	80500	0.2	20
918WS	Washer	1.300±.060	5.90±0.08	1.000±0.040	120000	0.1	13