

Type HA Series

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A cermet film 100 times thicker than conventional films is thermally bonded to the ceramic core at temperatures in excess of 750°C. Because of its thickness and forming temperatures, the cermet film has exceptional electrical properties. Oxygen free plated copper wire is then welded to a silver plated 90-10 copper cap that is press fitted for maximum terminal strength. The final process involves a specially formulated coating which provides maximum mechanical and environmental protection.

Key Features

- 0.25 Watts to 5 Watts
- 20K to 10 Gig ohms Range
- TCR from  $\pm 25$  PPM
- $\pm 0.1\%$  to  $\pm 10\%$  Tolerance
- Flame Proof Coating
- Special Coatings for High Humidity

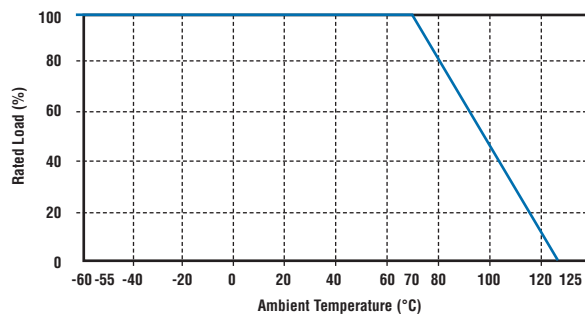
Characteristics - Electrical

	HA-55	HA-60	HA-65	HA-70	HA-80	HA-100	HA-120
Rated Power @ 70 °C (W):	0.25	0.5	1.0	2.0	3.0	4.0	5.0
Voltage Rating (VDC):	500V	750V	1500V	3500V	5000V	7500V	10000V
Resistance Range (Ohms):	20K-1G0	50K-2G0	100K-5G0	300K-7G5	500K-8G5	500K-10G	500K-10G
Resistance Tolerance(%):	All Types 0.1, 0.5, 1, 2, 5, 10						
Temperature Coefficient :	All Types $\pm 25$ ppm from 0°C to +70°C $\pm 50$ ppm from -15°C to +105°C $\pm 100$ ppm from -55°C to +125°C						

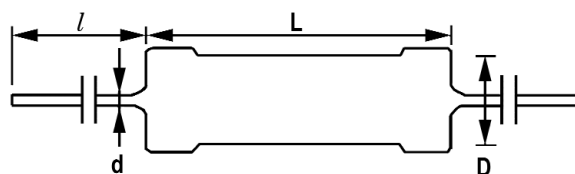
Characteristics - Environmental

Load life (1000 hours rated voltage @70°C):	$\Delta R \pm 0.1\%$ , maximum $\pm 0.25\%$
Overload (1.5 times rated voltage for 10 seconds):	$\Delta R \pm 0.1\%$ , maximum $\pm 0.25\%$
Moisture Resistance (no load or polar):	$\Delta R \pm 0.2\%$ , maximum $\pm 0.5\%$
Thermal Shock:	$\Delta R \pm 0.1\%$ , maximum $\pm 0.25\%$
Solder Effect:	$\Delta R \pm 0.5\%$ , maximum $\pm 0.1\%$
Terminal Strength:	$\Delta R \pm 0.05\%$ , maximum $\pm 0.2\%$
Shelf Life (1 year at 25°C):	$\Delta R \pm 0.03\%$ , maximum $\pm 0.1\%$
Insulation Resistance (@500 VDC):	$10^{11}$ ohms, maximum $\pm 0.25\%$
Low temperature Operation:	$\Delta R \pm 0.1\%$ , maximum $\pm 0.25\%$
High Temperature Exposure - 150°C for 2000 hours:	$\Delta R \pm 0.2\%$ , maximum $\pm 0.5\%$
175°C for 2000 hours:	$\Delta R \pm 0.4\%$ , maximum $\pm 0.75\%$
Dielectric Strength:	$\Delta R \pm 0.1\%$ , maximum $\pm 0.25\%$

Derating Curve



Dimensions



Type	D Max.	L	d	l
HA-55	2.54	7.34	0.64	38
HA-60	3.81	10.29	0.81	38
HA-65	4.34	15.75	0.81	38
HA-70	6.48	21.21	0.81	38
HA-80	8.64	24.51	0.81	38
HA-100	8.64	46.10	0.81	38
HA-120	8.64	54.10	0.81	38

How to Order

HA	100	1M0	J
Common Part	Size	Resistance Value	Tolerance
HA	55 - 0.25 Watts 60 - 0.5 Watts 65 - 1 Watt 70 - 2 Watts 80 - 3 Watts 100 - 4 Watts 120 - 5 Watts	20K Ohm (20000 Ohms) 20K 100K Ohm (100,000 Ohms) 100K 1 Meg Ohm (1,000,000 ohms) 1M0	B - 0.1% C - 0.25% D - 0.5% F - 1% G - 2% J - 5% K - 10%