High Value / High Voltage Resistors

Type HB Series

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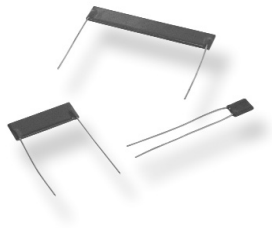


Tyco Electronics is a leading European supplier of standard and custom designed high value/high voltage resistors for high voltage, industrial, control, medical and general-purpose use.
The HB is a tough epoxy coated high voltage resistor, with axial or radial leads, values up to 1G Ohm and an operational voltage to 20kV as standard and 30kV to order.
The resistors are made from quality materials for optimum reliability and stability. Tyco Electronics can test resistors to conform to relevant international, MIL or customer specifications.
Tyco Electronics is happy to advise on the use of resistors for high frequency applications and to supply information for high voltage use.

Key Features

- **Up to 15kV Element Voltage**
  - **Unique specification for the most demanding applications**
- **High Ratio of Size to Power**
  - **The solution to your PCB population problems**
- **1kW to 1GW**
  - **Coupled with 1% tolerance gives ultimate design flexibility**
- **Established Product with Proven Reliability**
- **Low Inductance**
  - **For the fastest switching speeds**

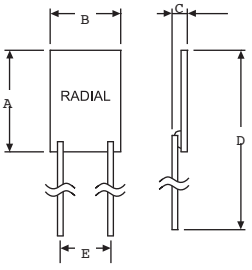
Applications

- **High Voltage**
- **Voltage Divider**
- **Surge**
- **Filter**
- **Balancing**
- **Inrush Limiting**

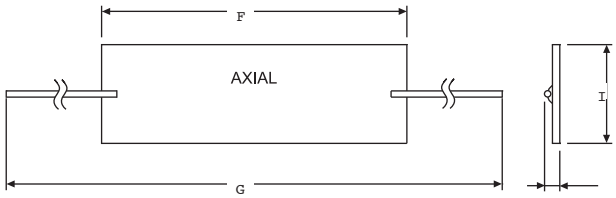
Characteristics - Electrical

	HBA	HB1	HB3
Power Dissipation - Power @ 20°C (W):	0.8	2.0	4.0
@ 70°C:	0.4	1.0	2.0
Ohmic Value - Min (Ohms):	1K	10K	10K
Max:	120M	1G	1G
Resistance Tolerance (%) (Tighter By Request):	1%, 2%, 5%	1%, 2%, 5%	1%, 2%, 5%
Maximum Working Voltage - DC or ACrms (Volts):	1kV	7.5kV	15kV
Insulation Resistance - Epoxy Coated, @500V dc (Ohms):	$>10^6$MΩ	$>10^6$MΩ	$>10^6$MΩ
Load Stability - 1000hr's @ 70°C (%):	±0.5%	±0.5%	±0.5%
Temp. Rapid Change - -55°C to 125°C for 5 cycles (ΔR):	±0.1%	±0.1%	±0.1%
Endurance - 1000 Hours @ 200°C (ΔR):	<=2%	<=2%	<=2%
Resistance to Soldering Heat - 350°C for 3.5seconds (ΔR):	0.05%	0.05%	0.05%
Temperature Coefficient (ppm/°C): (±20ppm/°C available to special order)	±100ppm/°C	±100ppm/°C	±100ppm/°C
Voltage Coefficient:	Negligible up to 100K		Negligible up to 200K
	Increasing to 0.02ppm/Volt at 800K		Increasing to 0.01ppm/Volt at 1M0
	Increasing to 1.0ppm/Volt at 5M0		Increasing to 1.0ppm/Volt at 10M
	Increasing to 2.0ppm/Volt at 50M		Increasing to 2.0ppm/Volt at 100M
	Increasing to 8.0ppm/Volt at 1000M		Increasing to 8.0ppm/Volt at 1000M
Ambient Temperature Range (°C):	-55 to 125	-55 to 125	-55 to 125
Long Term Damp Heat (%): (Steady state 56 Days 95% RH at 40°C)	0.25%	0.25%	0.25%
Noise (Quantech) Dependent on Resistor Type and Value:	-20dB (0.1µ V/V) at lower values +10dB (3.3µ V/V) at higher values		
Encapsulation:	Epoxy coating (Optional)		
Solvent Resistance:	Print will withstand the action of all commonly used industrial solvents.		
Lead Material:	Tinned copper wire		
Lead Length:	Minimum 20mm		
Lead Diameter:	Nominal 0.6 ± 0.05mm		

Dimensions - Type HBA, HB1 & HB3 (Radial)



Type HB1 & HB3 (Axial)



Type		A	B	C	D	E	F	G	H	I
HBA	Uncoated	10.2	7	1.75	60.2	5.0	–	–	–	–
	Epoxy Coated	12.5	8	2.6	60.5	5.0	–	–	–	–
HB1	Uncoated	8.4	26	1.5	33.8	22.9	26	66	1.5	8.4
	Epoxy Coated	10.4	26.5	3.0	35.8	22.9	26.3	66	3	9.2
HB3	Uncoated	8.4	51.1	1.5	33.8	48.3	51.1	91.1	1.5	8.4
	Epoxy Coated	10.4	52	3.0	35.8	48.3	53.5	91.1	3	9.6

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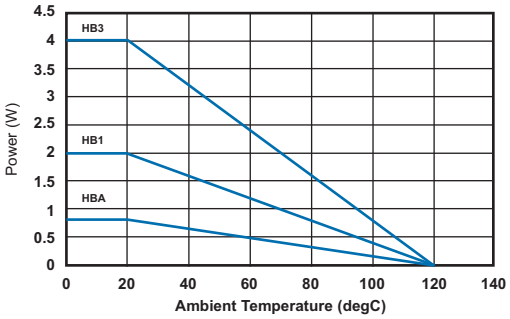
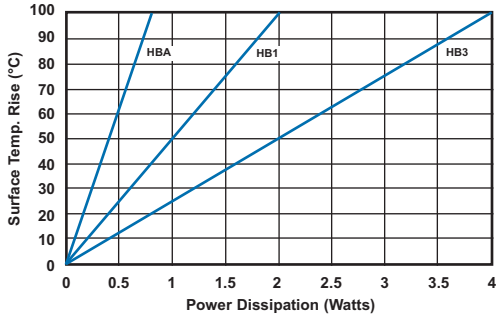
Derating Curve



Surface Temperature Rise



How to Order

HB	3	1K0	J	Z	R	E
Common Part	**Power Rating @ 70°C**	**Resistance Value**	**Tolerance**	**Temp. Coefficient of Resistance**	**Lead Style**	**Coating Styles**
HB- High Value / High Voltage Resistor	A - 0.4W 1 - 1.0W 3 - 2.0W	1Kohm (1000Ω) 1K0 1Mohm (1000000Ω) 1M0	F - 1% G - 2% J - 5%	Z - 100ppm	R - Radial Leads A - Axial Leads (HB1, HB3 only for Axial Leads)	E - Epoxy Blue Coating