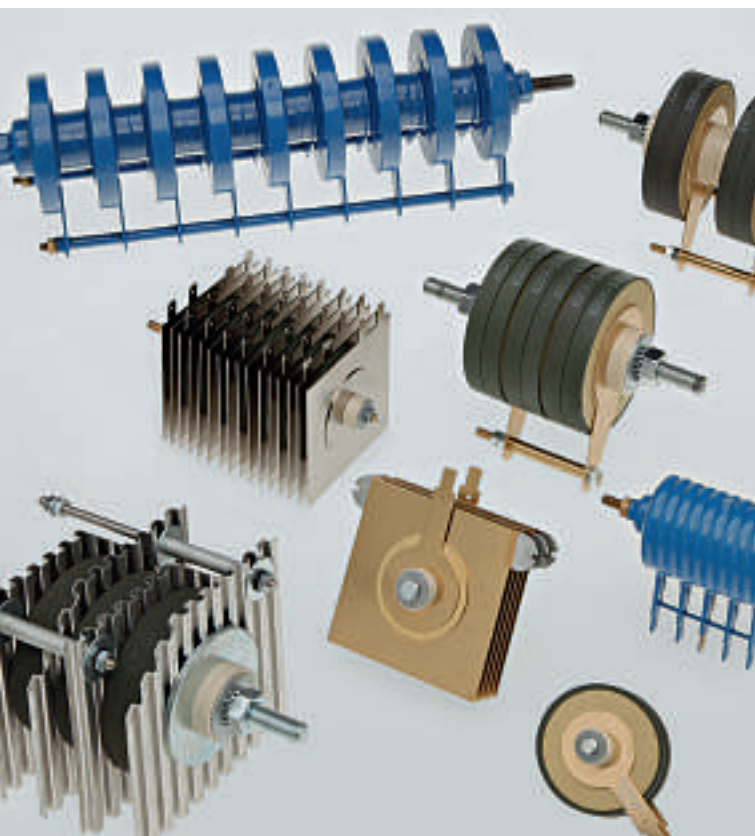


NON-LINEAR - SILICON CARBIDE DISC RESISTORS (VARISTORS)

- High Surge Energy Rating
- 100% Active Material
- Repeatable Non-Linear Characteristic
- High Voltage Withstand
- Self Healing
- Air / Oil / SF6 Environments
- Single Disc or Modular Assemblies
- Advanced Ampacity
- Custom Solutions Readily Available
- Free Design Service



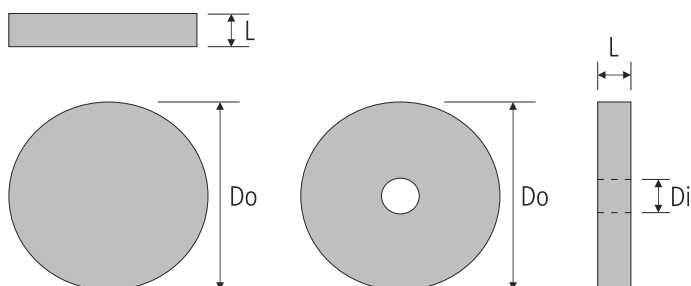
HVR Silicon carbide varistors are composed of approx. 90% silicon carbide of various grains and approx. 10% ceramic binder and additives.

After shaping, the varistors are sintered at high temperatures in specific ambient conditions. The electrical contact is manufactured by spraying on a metal layer. The electrical connection for large discs is by means of clamps.

The HVR SiC varistors have good voltage dependences and high energy absorption. They are manufactured mainly as discs with varying sizes, as the required electric values are most easily obtained with these geometric dimensions.

One of the most advantages of a SiC Varistor is the behaviour in the case of a fault. It has a self-healing characteristic and doesn't shorten the circuit.

The SiC varistors may be connected in series or parallel for various fields of application so that there is sufficient overvoltage protection for high power.



Typical applications are:

- overvoltage in the mains, caused by lightning, inductive or capacitive coupling
- consumption in switch contacts with inductive load
- limit overvoltages in transformers, motor, generator windings and magnet coils

TECHNICAL SPECIFICATIONS

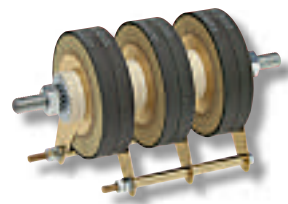
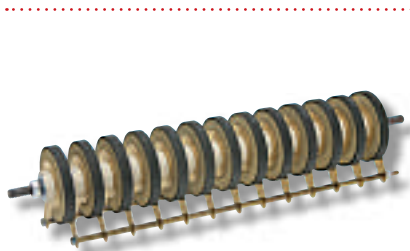
Style SB	Outside Dia. Do (mm)	Inside Dia. Di (mm)	Max. Length (mm)	Max. Volume (cm ³)	Max. Watts @ 20°C	Max. Joules @ 20°C ⁽¹⁾	Working Voltage
40/10	40	10	7	8,0	6,3	2200	8 - 550
45/15	45	15	15	21,0	15,6	6230	8 - 550
45/25	45	25	15	15,9	16,4	4710	11 - 550
60/10	60	10	10	26,9	13,2	7980	11 - 600
60/25	60	25	15	34,3	20,9	10180	11 - 600
76/20	76	20	10	42,0	17,2	12440	18 - 700
80	80	-	10	49,6	16,9	14710	18 - 700
80/20	80	20	20	91,1	36,0	27420	18 - 700
85	85	-	10	56,7	18,0	16820	18 - 700
150/20	150	20	25	440,0	83,7	142870	50 - 1100

Other diameters on request available

⁽¹⁾ $\Delta t = 150K @ 25^{\circ}C$ Ambient

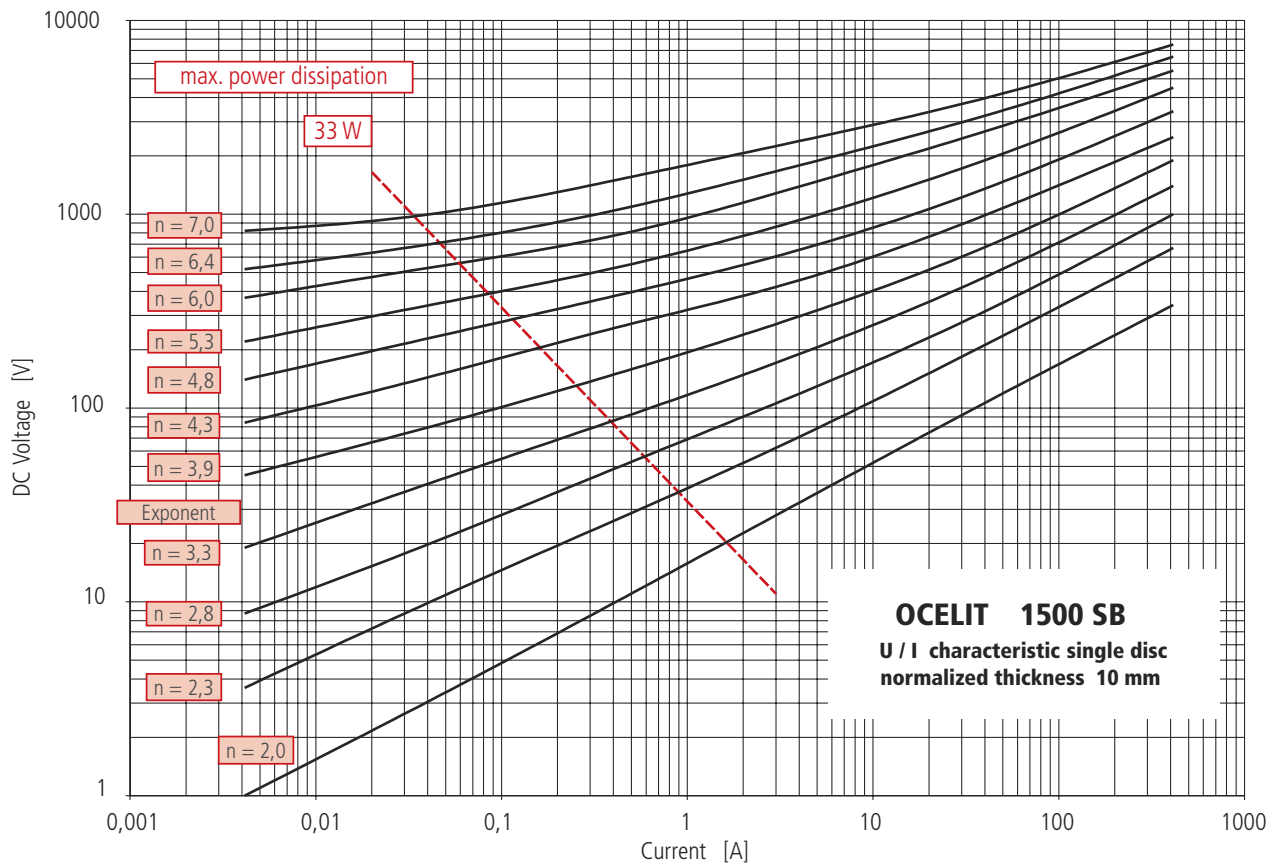
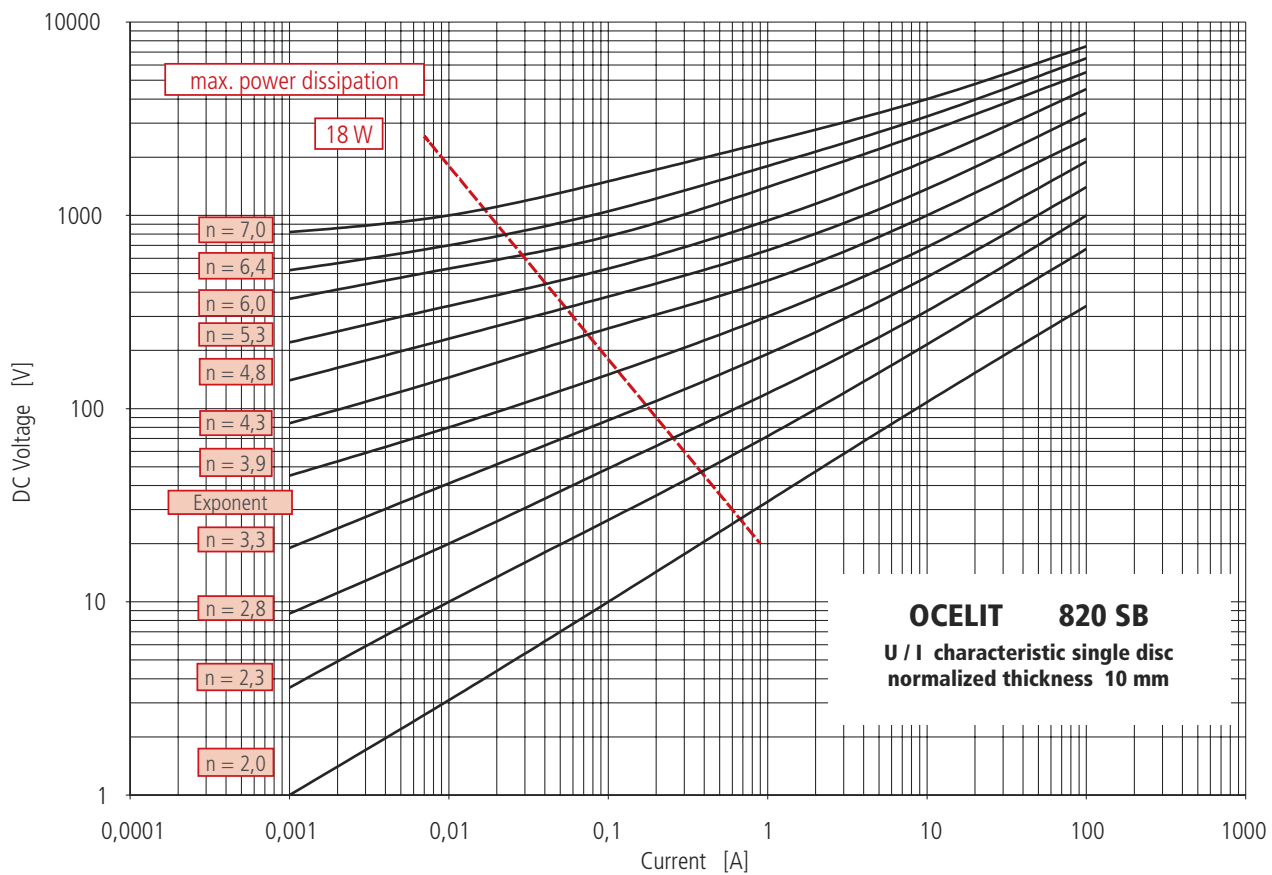
Physical / Mechanical Parameters:

Dimension Range Style SB:	Outside Diameter (Do)	40 to 150 mm
	Inside Diameter (Di)	10 to 30 mm
	Length (L)	2 to 25 mm
Density:	2,1 g / cm ³ to 2,3 g / cm ³	
Assembly Mounting Force:	HVR SiC Varistors type SB are mainly assembled into stacks by mounting on an appropriate tie rod. We recommend a mounting force of 0,4-0,6 N/mm ² Flame sprayed metallisation.	
Disc Terminations:	Standard metallization is brass. Also available is aluminium, chopper and zinc.	

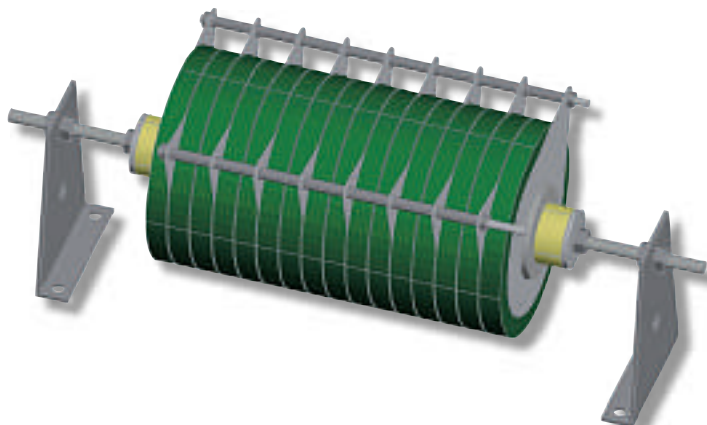


Electrical Parameters:

Voltage range:	8 ... 1100V
Pulse Current:	up to 25kA (Pulse counts not limited)
Operating Temperature Range:	- 40 ... 170°C at full load - 40 ... 200°C at zero load
	Tested in liquid nitrogen in corporation with Georg-Simon-Ohm University
Typ. Temp. Coefficient:	- 0,12 ... - 0,18 %/ K of Voltage
	0,5 ... 0,8 %/ K of Current
Specific Heat Capacity Approx.:	919 J/ (kg x K)
Thermal Conductivity:	0,011 W/ (cm ² x K)
Inductance:	This is negligible (nH) and the varistors may be described as non-inductive

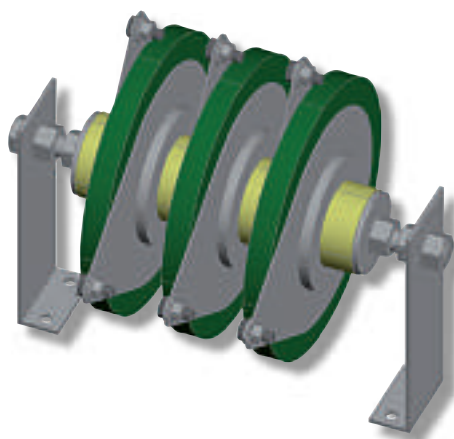


OCELIT-SILICON CARBIDE VARISTOR



Silicon Carbide Varistor for Generator De-Excitation

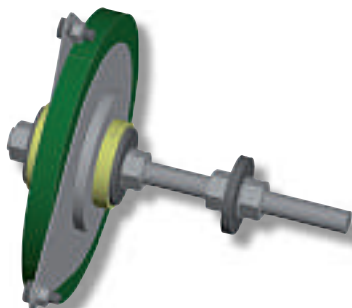
- 1.36 MJ Varistor Assembly at $\Delta T = 150 \text{ K}$
- 4.0 KA at 800 ... 1100 V Limiting Voltage
- 0.4 KA at 320 ... 440 V Limiting Voltage
- 0.8 KW max. Power Dissipation on Air
- 6.0 KA max. Surge Current
- Characteristic of Single Disc
 $C = 100 \pm 15\%$ $\beta = 0,4$
- Disc Diameter 150mm, thickness 15mm
- Assembly Dimensions with Stand-Offs
(L x B x H) 500 x 180 x 190 (mm)



Silicon Carbide Varistor for High Impedance Differential

Relays in Transformer's and Motor's Controlling Units.

- 3 Phases
- 71,4 kJ each Phase at $\Delta T = 150 \text{ K}$
- 41,8 W max. Power Dissipation on Air each Phase
- 50 A max. Surge Current each Phase
- Protection Level lower than 3000 V
- Characteristic of Single Disc
 $C = 1000 \pm 15\%$; $\beta = 0,22 - 0,25$
- Diameter 150 mm, thickness 12,7 mm
- Assembly Dimensions with Stand-Offs
(L x B x H) 500 x 180 x 190 (mm)



Silicon Carbide Varistor for Phase and Earth Fault

Protection Units of Motors and Transformers

- 1 Phase
- 71,4 kJ at $\Delta T = 150 \text{ K}$
- 41,8 W max. Power Dissipation on Air
- 50 A max. Surge Current
- Protection Level lower than 3000 V
- Characteristic of Single Disc
 $C = 900 \pm 15\%$; $\beta = 0,22 - 0,25$
- Disc Diameter 150 mm, Thickness 12,7 mm
- (L x B x H) 240 x 177 x 177 (mm)