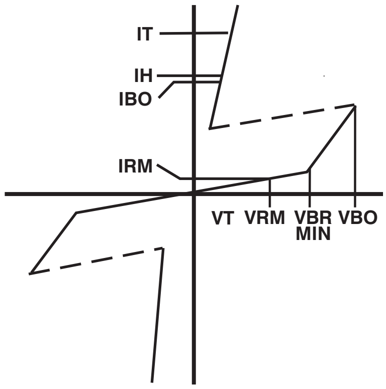
The SiBOD™ series of protectors is a four layer thyristor based protector designed specifically for telecommunications applications. It has greater capacity for diverting surge currents when compared to an avalanche T.V.S. device.

BENEFITS

- One component cost for +ve and -ve protection
- Excellent voltage protection levels
- Can be used for primary or secondary protection
- No replacement required i.e. no maintenance cost
- Highest level of quality and reliability
- Compatible with current surface mount devices
- Low cost auto assembly



V-I Graph Illustrating Symbols and Terms for the Thyristor SiBOD™ Surge Protection Device.

ELECTRICAL CHARACTERISTICS

The electrical characteristics of a SiBOD™ device are similar to that of a self gated Triac, but the SiBOD™ is a two terminal device with no gate. The gate function is achieved by an internal current controlled mechanism.

Like the T.V.S. diodes, the SiBOD™ has a standoff voltage (V_{RM}) which should be equal to or greater than the operating voltage of the system to be protected. At this voltage (V_{RM}) the current consumption of the SiBOD™ is negligible and will not affect the protected system.

When a transient occurs, the voltage across the SiBOD™ will increase until the breakdown voltage (V_{BR}) is reached. At this point the SiBOD™ will operate in a similar way to a T.V.S. device and is in avalanche mode.

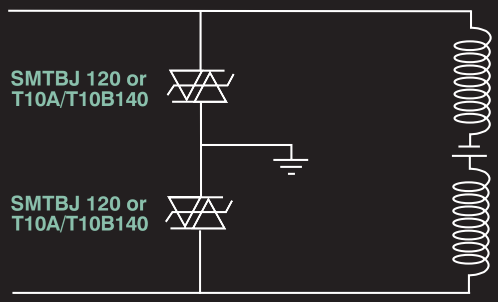
The voltage of the transient will now be limited and will only increase by a few volts as the device diverts more current. As this transient current rises, a level of current through the device is reached (I_{BO}) which causes the device to switch to a fully conductive state such that the voltage across the device is now only a few volts (V_T). The voltage at which the device switches from the avalanche mode to the fully conductive state (V_T) is known as the Breakover Voltage (V_{BO}). When the device is in the V_T state, high currents can be diverted without damage to the SiBOD™ due to the low voltage across the device, since the limiting factor in such devices is dissipated power (V x I).

Resetting the SiBOD™ to the non-conducting state is controlled by the current flowing through the device. When the current falls below a certain value, known as the Holding Current (I_H), the device resets automatically.

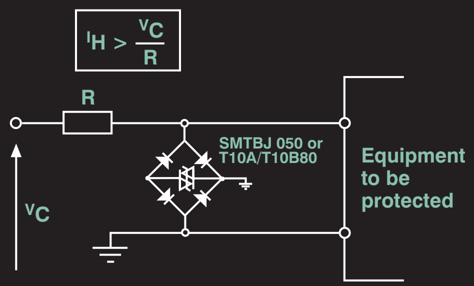
As with the avalanche T.V.S. device, if the SiBOD™ is subjected to a surge current which is beyond its maximum rating, then the device will fail in short circuit mode, this ensures that the equipment is ultimately protected.

Applications

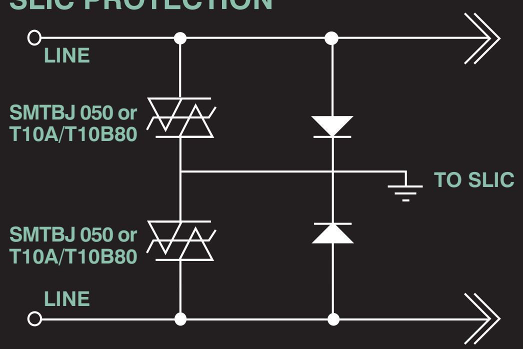
PABX PROTECTION

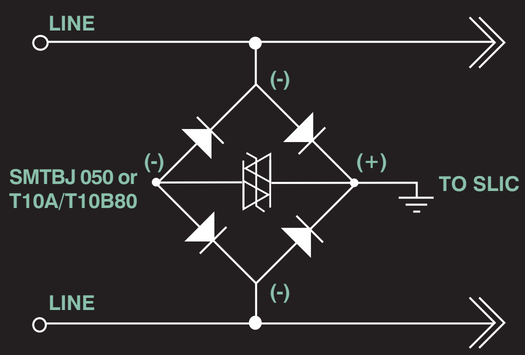


DC SUPPLY

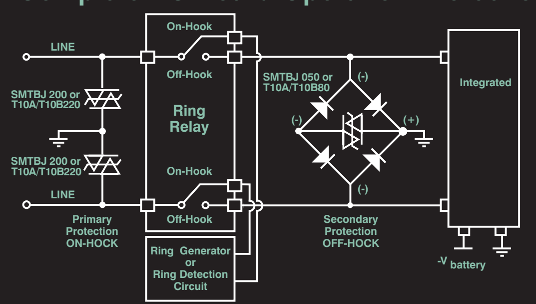


SLIC PROTECTION





Complete PC Board Operation Protection



SELECTING A SiBOD™

(i) When selecting a SiBOD™ device, it is important that the Vrm of the device is equal to or greater than the operating voltage of the system. For example, when protecting the ringing circuit of a telephone handset.

SiBOD™ Vrm > Vdc + RINGING VOLTAGE

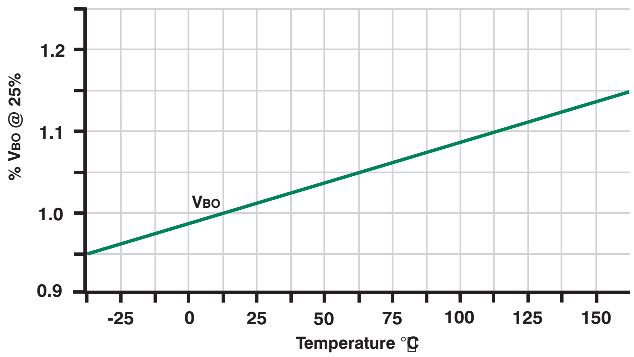
SiBOD™ Vrm > Vdc + V $\sqrt{2}$× RINGING VOLTAGE

(ii) The minimum holding current (Ih) of the device must be carefully selected if the SiBOD™ is to reset after diverting a surge.

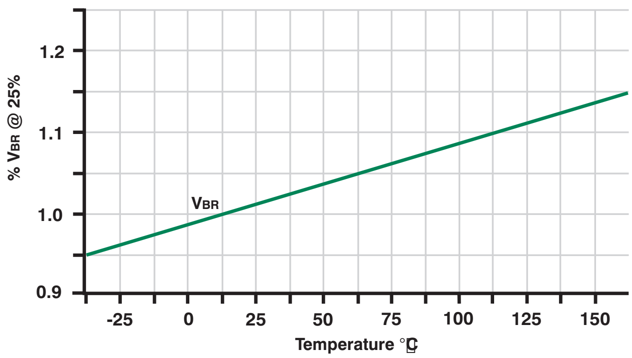
The min Ih value of the SiBOD™ must be greater than the current the system is capable of delivering.

$$I_H > \frac{\text{SYSTEM VOLTAGE}}{\text{SOURCE IMPEDANCE}}$$

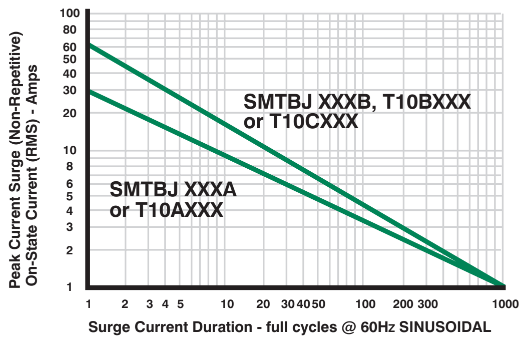
NORMALISED BREAKOVER VOLTAGE vs TEMPERATURE



NORMALISED BREAKDOWN VOLTAGE vs TEMPERATURE



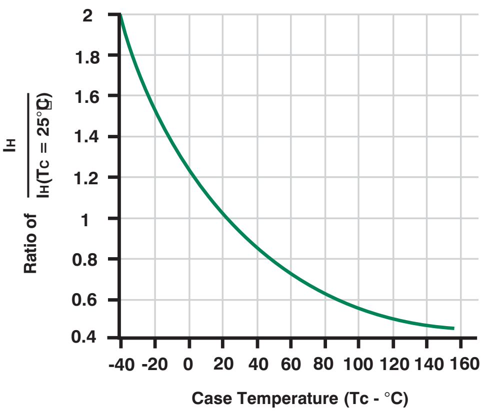
PEAK SURGE ON-STATE CURRENT vs SURGE CURRENT DURATION



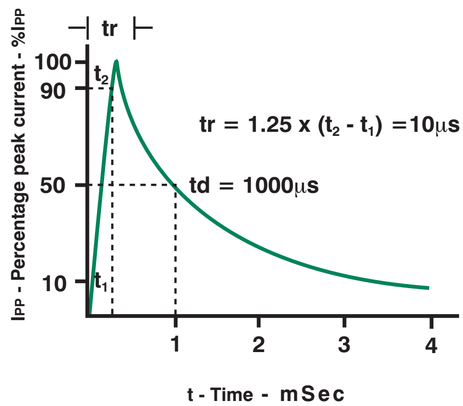
The SiBOD™ range can be used to protect against surges as defined in the following international standards			[1]A	[1]B
FCC Rules Part 68/D	Metallic	10/56µs	50A[2]	100A
	Longitudinal	10/160µs	100A[2]	200A
Bellcore Specification	TR-NWT-001089	10/1000µs	50A[2]	100A
		100v/µs	>1KV	>1KV
ITU-T K 17 - K20 (Formerly CCITT)		10/700µs	1.5K	1.5KV
		5/310µs	38A	38A
VDE 0433		10/700µs	2KV	2KV
		5/200µs	50A	50A
C-NET		0.5/700µs	1.5KV	1.5KV
		0.2/310µs	38A	38A
IEC 1000 -4-5 (Discharge through 2W impedance)		8/20µs	150A	250A
		1-2/50µs	300A	500V

(1) Suffix A or B denotes power rating
(2) Additional line resistance required to limit current to specified value.

TYPICAL DC HOLDING CURRENT vs CASE TEMPERATURE

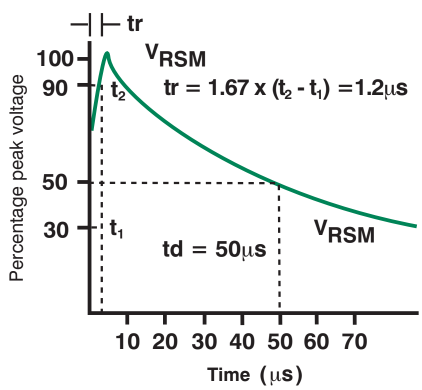


PULSE WAVE FORM (10/10000µS)



INTERNATIONAL EMMISSIONS STANDARD IEC 1000-4-5

1.2/50µS IMPULSE DISCHARGE VOLTAGE WAVE SHAPE



8/20µS IMPULSE DISCHARGE CURRENT WAVE SHAPE