

Circuit Protection's SiBar thyristor surge protection devices are designed to help protect sensitive telecommunication equipment from the hazards caused by lightning, power contact, and power induction. These devices have a high electrical surge capability to help protect against transient faults and a high off-state impedance, rendering them virtually transparent during normal system operation.

SiBar thyristor surge protectors are designed to assist telecommunication and computer telephony equipment in meeting the applicable requirements and industry specifications.



Benefits:

- · Helps provide protection for sensitive telecom electronic equipment
- · Low leakage current
- · Low power dissipation
- Fast, reliable operation
- No wear-out mechanisms
- · Helps designers meet worldwide telecom standards
- · Helps reduce warranty and service costs
- · Easy installation
- · Helps improve power efficiency of equipment

Features:

- · RoHS compliant
- · Bidirectional crowbar transient voltage protection
- Broad voltage range 200V 300V
- · High off-state impedance
- · Low on-state voltage
- · High surge capability
- · Short-circuit failure mode
- Surface-mount technology
- DO-214AA SMB package
- 10 x 1000 µs 75A and 80A surge rating
- · Helps equipment comply with TIA-968, Telcordia GR-1089, IEC61000-4-5, ITU K.20/21/45

Applications:

- · Modems
- · Set top boxes
- · Fax machines
- · POS systems
- Phones, answering machines Analog and digital linecards (xDSL, T1/E1...)
- · PBX systems
- · Other customer premise and central office network equipment requiring protection

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Table SB1 - Electrical Characteristics								
Part Number	V _{DM} Max. (V)	V _{BO} Max. (V)	l _H Min. (mA)	V _T Max. (V)	C1 (Typ) @50V _{DC} Bias (pF)	C2 (Typ) @2V _{DC} Bias (pF)	Off-State Current @VDM (μΑ)	
TVB200SB-L	200	320	150	4	30	49	5	
TVB270SB-L	275	350	150	4	25	50	5	
TVB300SB-L	300	400	150	4	21	42	5	

Notes: All electrical characteristics are measured at 25°C. V_{DM} measured per UL497B pulse requirements: at max. off-state leakage current (IDM) = 5 μ A. V_{BO} measured at 100V/ μ s.

Table SB2 – Surge Current Rating TIA-968 Telcordia GR-1089* IEC61000-4-5 ITU K.20/21/45* Type A Туре В IPP (A) **I**TSM Ipp(A) Ipp(A) _{pp} (A) Ipp (A) Ipp (A) I_{pp} (A) di/dt dV/dt Part Number 5 x 310 µs Min. 10 x 560 µs 10 x 160 µs 5 x 320 µs 10 x 1000 µs 2 x 10 µs 8 x 20 µs (A/µs) (V/µs) (VOC: 10 x 700µs) (A) TVBxxxSB-L 100 100 150 80 250 250 100 30 500 2000 Notes: *Lightning current wave forms for applicable industry specification. ITEM, peak on-state surge current is measured at 60 Hz, one cycle. This, bear of state states and the state current (pulsed power amplifier Vmax = 600V; C = 30 μ F), dV/dt: critical rate-of-rise of on-state current (pulsed power amplifier Vmax = 600V; C = 30 μ F), dV/dt: critical rate-of-rise of off-stage voltage (linear wave form, V₀ = rated V₈₀, Tj = 25°C)

Figure SB1 - Voltage-Current Characteristics



The voltage current (V-I) is useful in depicting the electrical characteristics of the SiBar thyristor surge protectors in relation to each other.

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Figure SB2 - Dimension Figure







Table SB3 – Dimensions in Millimeters

		Α		В		C	;	D	*
Dimension	Min.	Max.	Min	. M	ax.	Min.	Max.	Min.	Max.
	4.06	4.57	3.3	0 3	.94	1.90	2.41	1.95	2.20
TVBxxxSB-L	(0.160)	(0.180) (0.13	60) (0.	155)	(0.075)	(0.095)	(0.077)	(0.087)
	I	4		J		К	Р		S
Dimension	Min.	Max.	Min.	Max.	Min.	Max.	Ref.	Min.	Max.
TVBxxxSB-L	0.051	0.200	0.150	0.31	0.76	1.27	0.51	5.21	5.59
	(0.002)	(0.008)	(0.006)	(0.012)	(0.030)) (0.050	0) (0.020)	(0.205)	(0.220

Notes: *D dimension is measured within dimension P.

TVB series devices use industry standard SMB package type. All devices are bidirectional and may be oriented in either direction for installation

Table SB4 – Physical Characteristics and Environmental Specifications

Lead material	Matte tin finish (-L devices)
Encapsulating material	Epoxy, meets UL94V-0 requirements
Solderability	per MIL-STD-750, Method 2026
Solder heat withstand	per MIL-STD-750, Method 2031
Solvent resistance	per MIL-STD-750, Method 1022
Mechanical shock	per MIL-STD-750, Method 2016
Vibration	per MIL-STD-750, Method 2056
Storage temperature (°C)	-55 to 150
Operating temperature (°C)	-40 to 125
Junction temperature (°C)	150
Maximum Lead Temperature for Soldering Purpose; for 10s (°C)	260

Table SB5 – Reliability Tests

Test	Conditions	Duration	
High temperature, reverse bias	+100°C, 50VDC bias	1000 hours	
High humidity, high temperature, reverse bias	85% RH, +85°C, 50VDC bias	1000 hours	
High temperature storage life	+150°C	1000 hours	
Temperature cycling	-65°C to +150°C, 15 minute dwell	1000 cycles	
Autoclave	100% RH, +121°C, 15 PSI	96 hours	







Figure SB7 - Recommended Pad Layout



Table SB6 – Packaging and Marking Information

Part Description	Tape and Reel Quantity	Standard Package	Part Marking	Dimension A (Nom.)	Dimension B (Nom.)	Dimension C (Nom.)	Agency Recognition*
TVB200SB-L	2,500	10,000	200B	2.261 (0.089)	2.159(0.085)	2.743(0.108)	UL
TVB270SB-L	2,500	10,000	270B	2.261 (0.089)	2.159(0.085)	2.743(0.108)	UL
TVB300SB-L	2.500	10.000	300B	2.261 (0.089)	2.159(0.085)	2.743(0.108)	UL



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