

SiBar Thyristor Surge Protectors TVBxxxNSB-L Series

Raychem 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
- Voltage range: 58V- 320V with improved V_{drm}/V_{bo} range
- 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 μ s 80A surge rating
- Helps equipment comply with TIA-968, Telcordia GR-1089, IEC61000-4-5, ITU K.20/21/45

Applications:

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

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Table SB2 – Surge Current Rating

Part Number	TIA-968		Telcordia GR-1089*	IEC61000-4-5	ITU K.20/21/45*
	Type A	Type B			
	$I_{pp}(A)$				

SiBar Thyristor Surge Protectors

TVBxxxNSB-L Series

Figure SB2 - Dimension Figure

Table SB3 – Dimensions in Millimeters

Dimension	A		B		C		D*	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
TVBxxxNSB-L	4.06	4.57	3.30	3.94	1.90	2.41	1.95	2.20
	(0.160)	(0.180)	(0.130)	(0.155)	(0.075)	(0.095)	(0.077)	(0.087)

Dimension	H		J		K		P	S	
	Min.	Max.	Min.	Max.	Min.	Max.	Ref.	Min.	Max.
TVBxxxNSB-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)	(0.020)	(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)	175
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

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Figures SB3-SB6 - Typical Electrical Characteristics vs. Temperature for SiBar Thyristor Surge Protectors

Figure SB3 - Off-state Voltage vs. Temperature

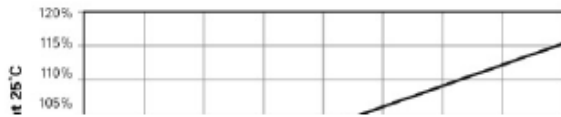
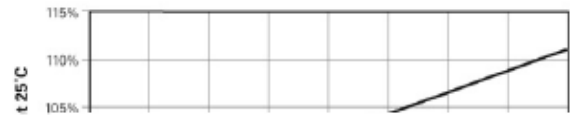


Figure SB4 - Breakover Voltage vs. Temperature



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Figure SB7 - Recommended Pad Layout

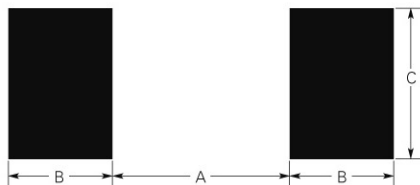


Table SB6 – Packaging and Marking Information

Part Description	Tape and Reel Quantity	Standard Package	Part Marking	Recommended Pad Layout (millimeters/inchs)			Agency Recognition*
				Dimension A (Nom.)	Dimension B (Nom.)	Dimension C (Nom.)	
TVB058NSB-L	2,500	10,000	58NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB065NSB-L	2,500	10,000	65NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB075NSB-L	2,500	10,000	75NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB090NSB-L	2,500	10,000	90NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB120NSB-L	2,500	10,000	12NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB140NSB-L	2,500	10,000	14NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB170NSB-L	2,500	10,000	17NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB180NSB-L	2,500	10,000	18NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB190NSB-L	2,500	10,000	19NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB220NSB-L	2,500	10,000	22NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB275NSB-L	2,500	10,000	27NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL
TVB320NSB-L	2,500	10,000	32NB	2.261 (0.089)	2.159 (0.085)	2.743 (0.108)	UL

*UL497B, File # E179610