



TB0640M - TB3500M

50A BI-DIRECTIONAL SURFACE MOUNT THYRISTOR SURGE PROTECTIVE DEVICE

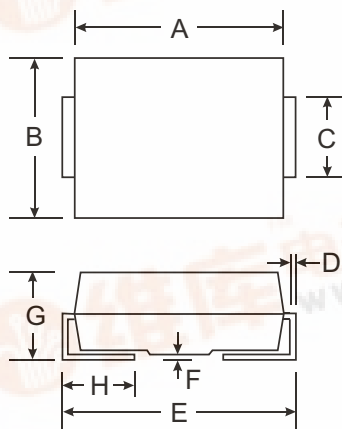
Features

50A Peak Pulse Current @ 10/1000 s
250A Peak Pulse Current @ 8/20 s
58 - 320V Stand-Off Voltages
Oxide-Glass Passivated Junction
Bi-Directional Protection In a Single Device
High Off-State impedance and Low On-State Voltage

Mechanical Data

Case: SMB, Molded Plastic
Plastic Material: UL Flammability
Classification Rating 94V-0
Moisture sensitivity: Level 1 per J-STD-020A
Terminals: Solder Plated Terminal -
Solderable per MIL-STD-202, Method 208
Polarity: None; Bi-Directional Devices Have No
Polarity Indicator
Weight: 0.093 grams (approx.)
Marking: Date Code and Marking Code (See Page 4)
Ordering Information: See Page 4

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SMB		
Dim	Min	Max
A	4.06	4.57
B	3.30	3.94
C	1.96	2.21
D	0.15	0.31
E	5.21	5.59
F	0.05	0.20
G	2.01	2.62
H	0.76	1.52
All Dimensions in mm		

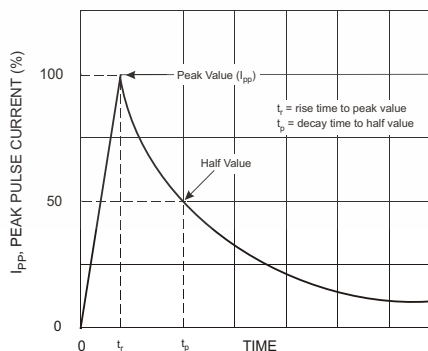
Maximum Ratings @ T_A = 25 °C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Non-Repetitive Peak Impulse Current @ 10/1000us	I _{pp}	50	A
Non-Repetitive Peak On-State Current @ 8.3ms (one-half cycle)	I _{TSM}	30	A
Junction Temperature Range	T _j	-40 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Lead	R _{JL}	20	°C/W
Thermal Resistance, Junction to Ambient	R _{JA}	100	°C/W
Typical Positive Temperature Coefficient for Breakdown Voltage	VBR/ T _j	0.1	%/°C

Maximum Rated Surge Waveform

Waveform	Standard	I _{pp} (A)
2/10 us	GR-1089-CORE	300
8/20 us	IEC 61000-4-5	250
10/160 us	FCC Part 68	150
10/700 us	ITU-T, K20/K21	100
10/560 us	FCC Part 68	75
10/1000 us	GR-1089-CORE	50



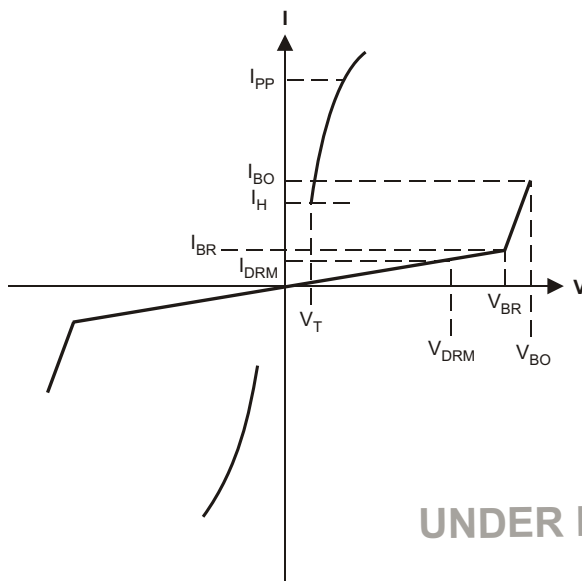
Electrical Characteristics

@ $T_A = 25^\circ\text{C}$ unless otherwise specified

Part Number	Rated Repetitive Off-State Voltage	Off-State Leakage Current @ V_{DRM}	Breakover Voltage	On-State Voltage @ $I_T = 1\text{A}$	Breakover Current I_{BO}		Holding Current I_{H}		Off-State Capacitance	Marking Code
	V_{DRM} (V)	I_{DRM} (uA)	V_{BO} (V)	V_{T} (V)	Min (mA)	Max (mA)	Min (mA)	Max (mA)	C_{O} (pF)	
TB0640M	58	5	77	3.5	50	800	150	800	140	T064M
TB0720M	65	5	88	3.5	50	800	150	800	140	T072M
TB0900M	75	5	98	3.5	50	800	150	800	140	T090M
TB1100M	90	5	130	3.5	50	800	150	800	90	T110M
TB1300M	120	5	160	3.5	50	800	150	800	90	T130M
TB1500M	140	5	180	3.5	50	800	150	800	90	T150M
TB1800M	160	5	220	3.5	50	800	150	800	90	T180M
TB2300M	190	5	265	3.5	50	800	150	800	60	T230M
TB2600M	220	5	300	3.5	50	800	150	800	60	T260M
TB3100M	275	5	350	3.5	50	800	150	800	60	T310M
TB3500M	320	5	400	3.5	50	800	150	800	60	T350M

Symbol	Parameter
V_{DRM}	Stand-off Voltage
I_{DRM}	Leakage current at stand-off voltage
V_{BR}	Breakdown voltage
I_{BR}	Breakdown current
V_{BO}	Breakover voltage
I_{BO}	Breakover current
I_{H}	Holding current NOTE: 1
V_{T}	On state voltage
I_{PP}	Peak pulse current
C_{O}	Off-state capacitance NOTE: 2

- Notes:
1. $I_{\text{H}} > (V_{\text{L}}/R_{\text{L}})$ If this criterion is not obeyed, the TSPD triggers but does not return correctly to high-resistance state. The surge recovery time does not exceed 30ms.
 2. Off-state capacitance measured at $f = 1.0\text{MHz}$, $1.0V_{\text{RMS}}$ signal, $V_{\text{R}} = 2V_{\text{DC}}$ bias.



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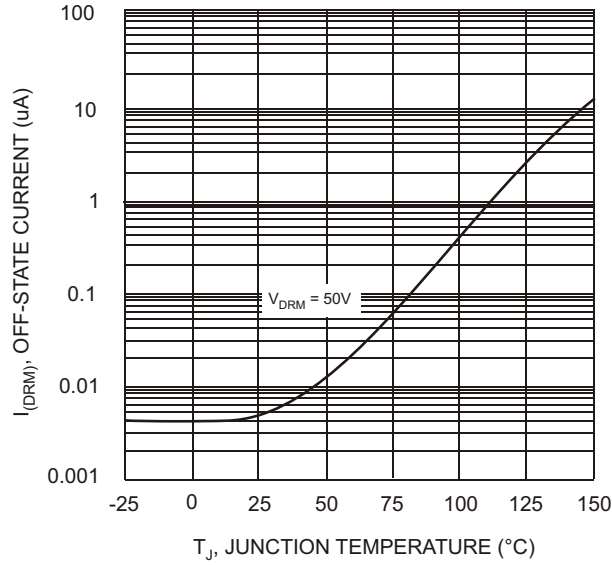


Fig. 1 Off-State Current vs. Junction Temperature

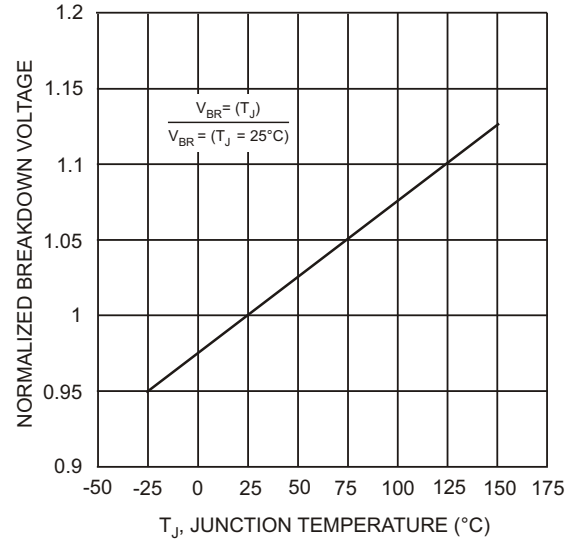


Fig. 2 Relative Variation of Breakdown Voltage vs. Junction Temperature

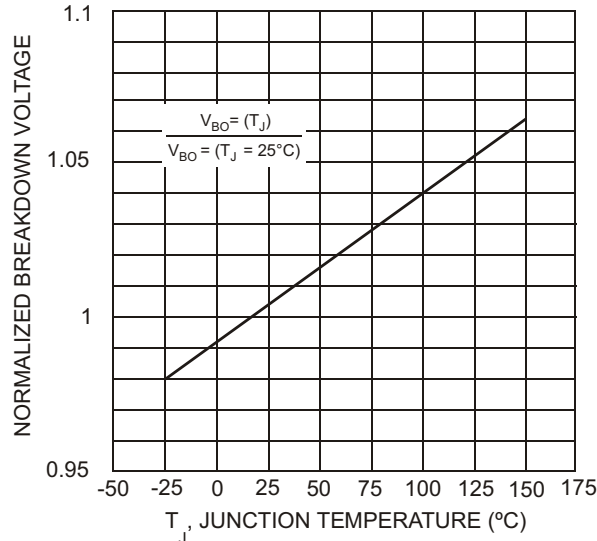


Fig. 3 Relative Variation of Breakover Voltage vs. Junction Temperature

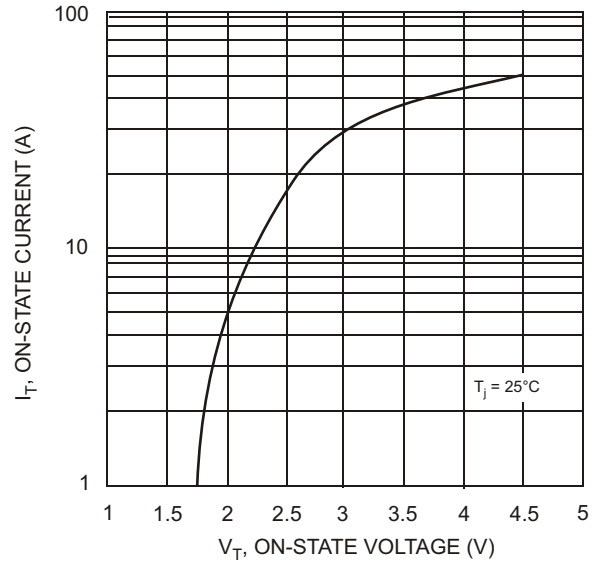


Fig. 4 On-State Current vs. On-State Voltage

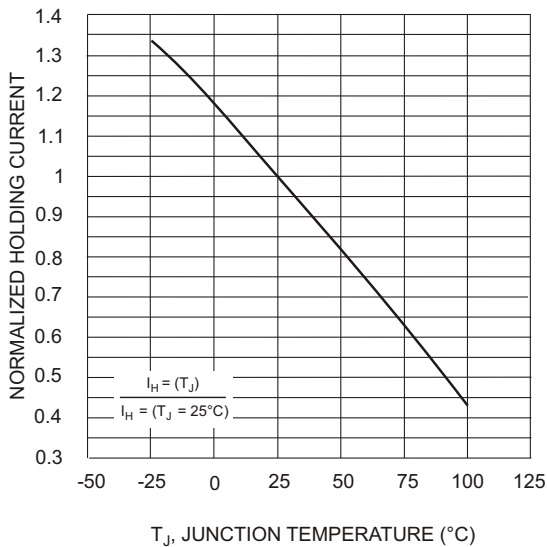


Fig. 5 Relative Variation of Holding Current vs. Junction Temperature

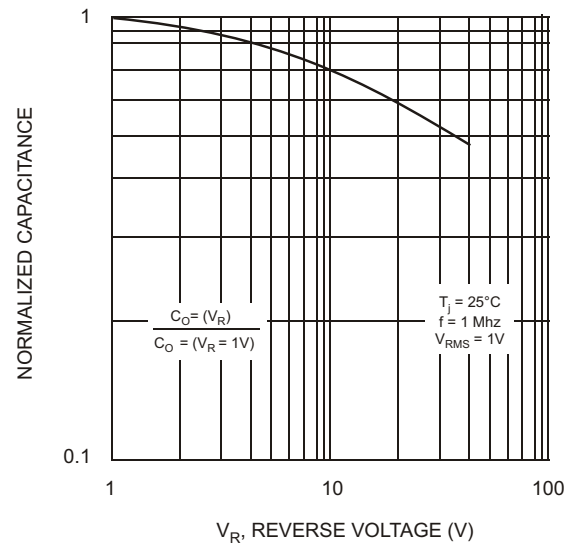
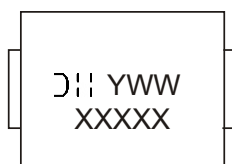


Fig. 6 Relative Variation of Junction Capacitance vs. Reverse Voltage Bias

Ordering Information (Note 3)

Device	Packaging	Shipping
TB0640M-13 TB0720M-13 TB0900M-13 TB1100M-13 TB1300M-13 TB1500M-13 TB1800M-13 TB2300M-13 TB2600M-13 TB3100M-13 TB3500M-13	SMB	3000/Tape & Reel

Notes: 3. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

XXXXX = Product Type Marking Code
YWW = Date Code Marking
Y = Year ex: 2 = 2002
WW = Week

Date Code Key

Year	2002	2003	2004
Code	2	3	4

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