

100A BI-DIRECTIONAL SURFACE-MOUNT THYRISTOR SURGE PROTECTIVE DEVICE

Features

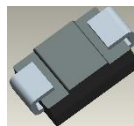
- 100A Peak Pulse Current @ 10/1000µs
- 400A Peak Pulse Current @ 8/20µs
- 58V - 320V Stand-Off Voltage
- Oxide-Glass Passivated Junction
- Bi-directional Protection in a Single Device
- High Off-State Impedance and Low On-State Voltage
- Helps Equipment Meet GR-1089-CORE, IEC 61000-4-5, FCC Part 68, ITU-T K.20/K.21, and UL 497B
- UL Recognized File # E219635
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative.**
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SMB
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 
- Polarity: None; bi-directional devices have no polarity indicator.
- Weight: 0.093 grams (Approximate)



Top View



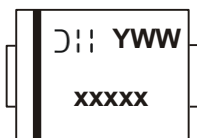
Bottom View

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
TB0640H-13-F	SMB	3,000	Tape & Reel
TB0720H-13-F	SMB	3,000	Tape & Reel
TB0900H-13-F	SMB	3,000	Tape & Reel
TB1100H-13-F	SMB	3,000	Tape & Reel
TB1300H-13-F	SMB	3,000	Tape & Reel
TB1500H-13-F	SMB	3,000	Tape & Reel
TB1800H-13-F	SMB	3,000	Tape & Reel
TB2300H-13-F	SMB	3,000	Tape & Reel
TB2600H-13-F	SMB	3,000	Tape & Reel
TB3100H-13-F	SMB	3,000	Tape & Reel
TB3500H-13-F	SMB	3,000	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



xxxxx = Product Type Marking Code (See Table on Page 3)
 JII = Manufacturer's Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 6 for 2026)
 WW = Week Code (01 to 53)
 A Bar or Underline around the Date Code or Product Type Marking Code
 Denotes Assembly Site if Marked

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

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

Characteristic	Symbol	Value	Unit
Non-Repetitive Peak Impulse Current @10/1000μs	I _{pp}	100	A
Non-Repetitive Peak On-State Current @8.3ms (One-Half Cycle)	I _{TSM}	50	A
Typical Positive Temperature Coefficient for Breakdown Voltage	ΔV _{BR} /ΔT _J	0.1	%/°C

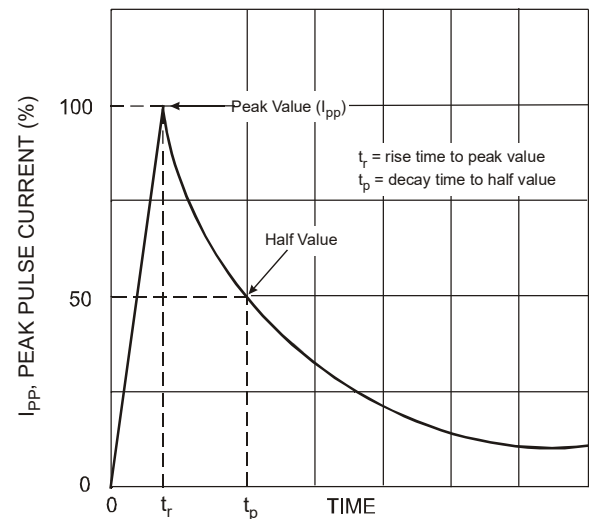
Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Lead	R _{θJL}	20	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	100	°C/W
Junction Temperature Range	T _J	-40 to 150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

Maximum Rated Surge Waveform

Current Waveform	Voltage Waveform	Standard	I _{pp} (A)
2/10μs	2/10μs	GR-1089-CORE	500
8/20μs	1.2/50μs	IEC 61000-4-5	400
10/160μs	10/160μs	FCC Part 68	250
5/310μs	10/700μs (Note 4)	ITU-T K.20/K.21	200
10/560μs	10/560μs	FCC Part 68	160
10/1000μs	10/1000μs	GR-1089-CORE	100

Note: 4. Applied 6kV, 10/700μs waveform.

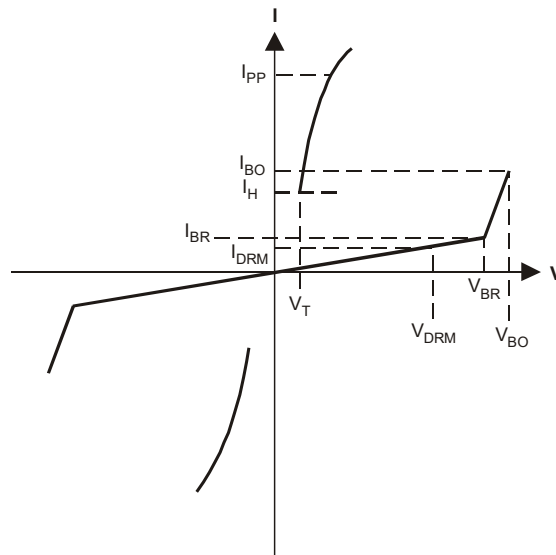


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Part Number	Maximum Off-State Leakage Current @ V _{DRM}		Maximum Breakover Voltage	Maximum On-State Voltage @ I _T = 1A	Breakover Current I _{BO}		Holding Current I _H		Typical Off-State Capacitance	Marking Code
	I _{DRM} (μA)	@ V _{DRM} (V)	V _{BO} (V)	V _T (V)	Min (mA)	Max (mA)	Min (mA)	Max (mA)	C _o (pF)	
TB0640H	5	58	77	3.5	50	800	150	800	200	T064H
TB0720H	5	65	88	3.5	50	800	150	800	200	T072H
TB0900H	5	75	98	3.5	50	800	150	800	200	T090H
TB1100H	5	90	130	3.5	50	800	150	800	120	T110H
TB1300H	5	120	160	3.5	50	800	150	800	120	T130H
TB1500H	5	140	180	3.5	50	800	150	800	120	T150H
TB1800H	5	160	220	3.5	50	800	150	800	120	T180H
TB2300H	5	190	265	3.5	50	800	150	800	80	T230H
TB2600H	5	220	300	3.5	50	800	150	800	80	T260H
TB3100H	5	275	350	3.5	50	800	150	800	80	T310H
TB3500H	5	320	400	3.5	50	800	150	800	80	T350H

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 5)
V _T	On-State Voltage
I _{PP}	Peak Pulse Current
C _o	Off-State Capacitance (Note 6)

Notes: 5. I_H > (V_L/R_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.
6. Off-state capacitance measured at f = 1.0MHz, 1.0V_{RMS} signal, V_R = 2V_{DC} bias.



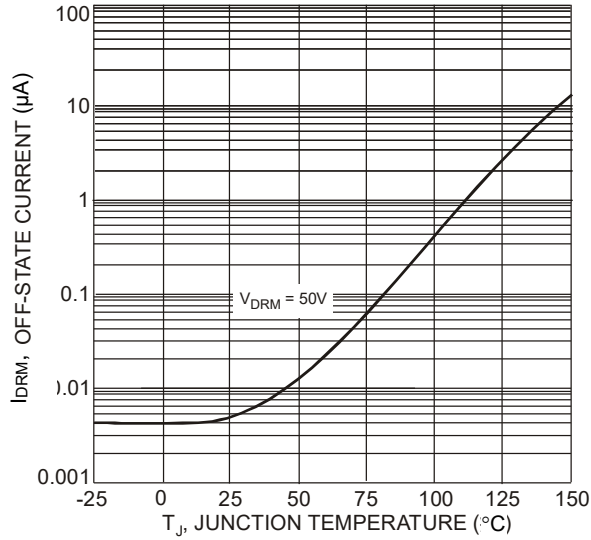


Fig. 1 Off-State Current vs. Junction Temperature

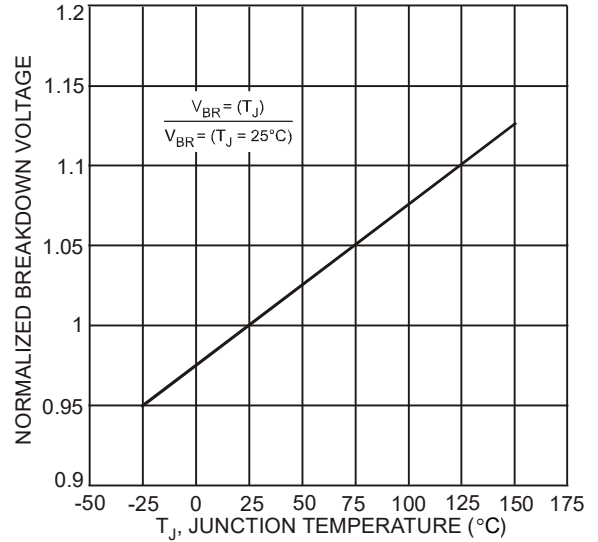


Fig. 2 Relative Variation of Breakdown Voltage vs. Junction Temperature

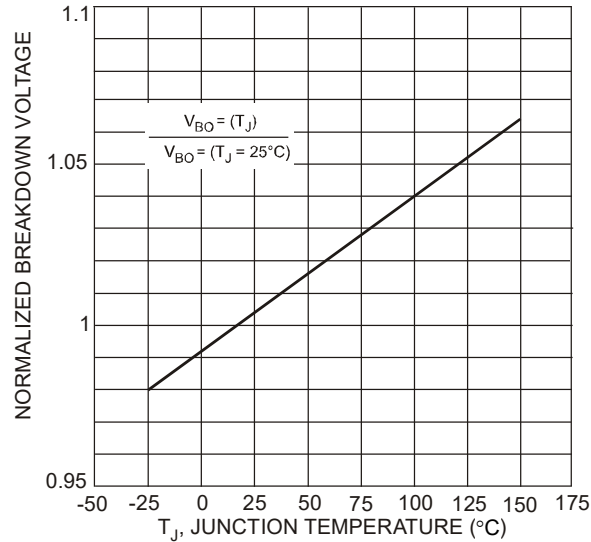


Fig. 3 Relative Variation of Breakover Voltage vs. Junction Temperature

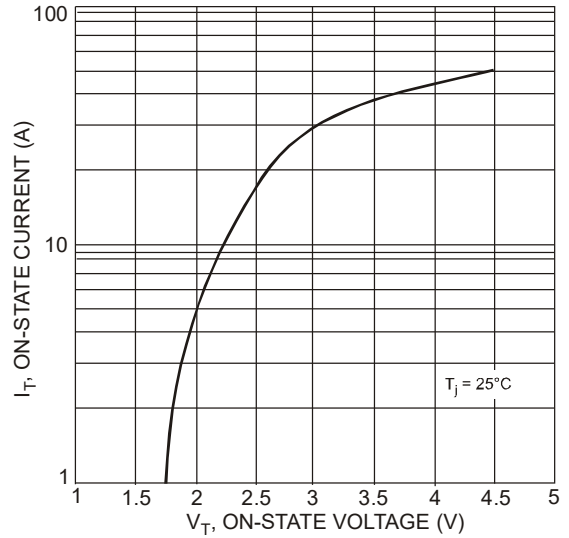


Fig. 4 On-State Current vs. On-State Voltage

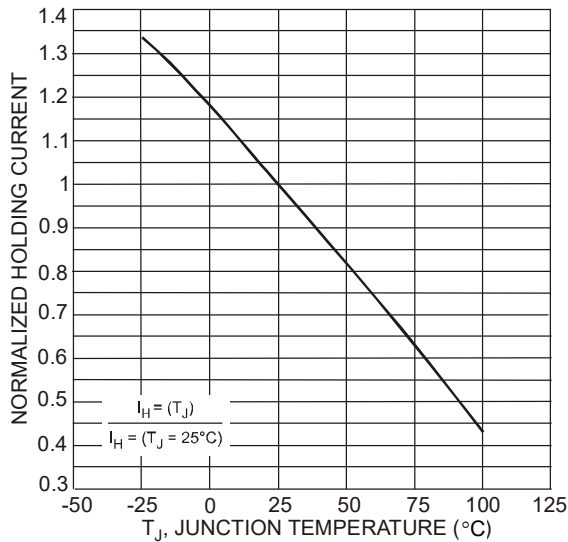


Fig. 5 Relative Variation of Holding Current vs. Junction Temperature

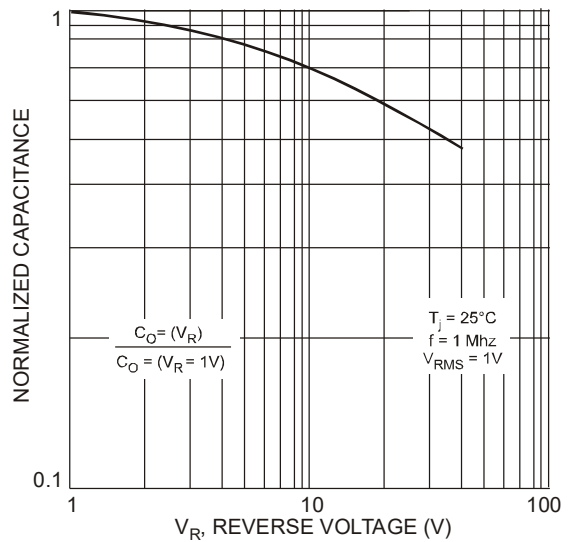
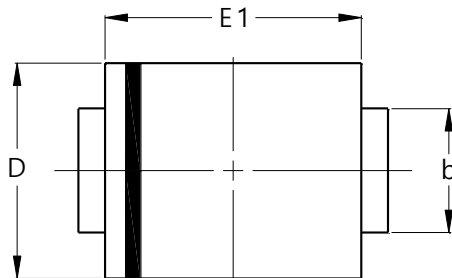


Fig. 6 Relative Variation of Junction Capacitance vs. Reverse Voltage Bias

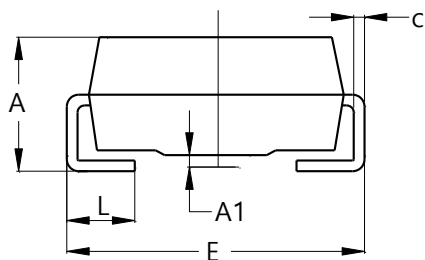
Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMB



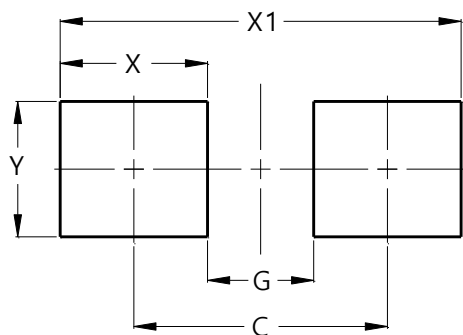
SMB		
Dim	Min	Max
A	2.00	2.50
A1	0.05	0.20
b	1.96	2.21
c	0.15	0.31
D	3.30	3.94
E	5.00	5.59
E1	4.06	4.57
L	0.76	1.52
All Dimensions in mm		



Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMB



Dimensions	Value (in mm)
C	4.30
G	1.80
X	2.50
X1	6.80
Y	2.30

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