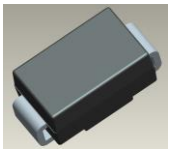
50A BIDIRECTIONAL SURFACE-MOUNT THYRISTOR SURGE PROTECTIVE DEVICE

Features

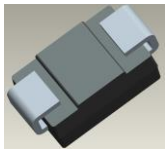
- Oxide Glass Passivated Junction
- Bidirectional Protection in A Single Device
- Surge Capabilities up to 50A @ 10/1000μs or 150A @ 8/20μs
- High Off-State Impedance and Low On-State Voltage
- UL Recognized File # E219635
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony 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 or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

- Package: SMA
- Package Material: Molded Plastic, "Green" Mold Compound. UL Flammability Classification 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Polarity: None; Bidirectional Devices Have No Polarity Indicator
- Weight: 0.064 grams (Approximate)



Top View



Bottom View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
TA0640L-13	SMA	5000	Tape & Reel
TA0720L-13	SMA	5000	Tape & Reel
TA0900L-13	SMA	5000	Tape & Reel
TA1100L-13	SMA	5000	Tape & Reel
TA1300L-13	SMA	5000	Tape & Reel
TA1500L-13	SMA	5000	Tape & Reel
TA1800L-13	SMA	5000	Tape & Reel
TA2300L-13	SMA	5000	Tape & Reel
TA2600L-13	SMA	5000	Tape & Reel
TA3100L-13	SMA	5000	Tape & Reel
TA3500L-13	SMA	5000	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 2)
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 4 for 2024)
WW = Week Code (01 to 53)

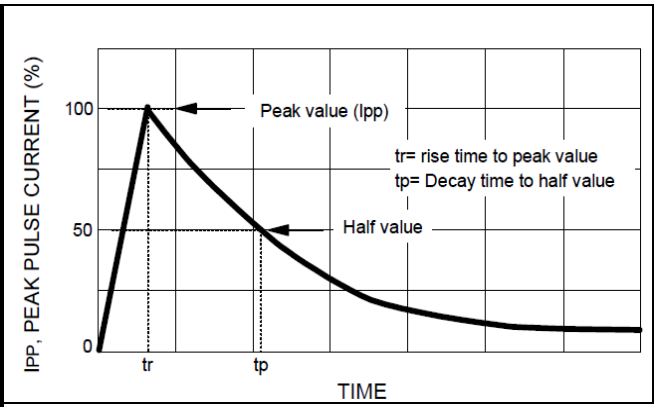
Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

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	@10/1000µs	I_{PP}	50	A
Typical Positive Temperature Coefficient for Breakdown Voltage		$\Delta V_{BR}/\Delta T_J$	0.1	%/°C
Junction Temperature Range		T_J	-40 to +150	°C
Storage Temperature Range		T_{STG}	-55 to +150	°C

Maximum Rated Surge Waveform

Waveform	Standard	I_{PP} (A)
2/10µs	GR-1089-CORE	150
8/20µs	IEC 61000-4-5	150
10/160µs	FCC Part 68	90
10/560µs	FCC Part 68	60
10/700µs	ITU-T K20/K21	55
10/1000µs	GR-1089-CORE	50



Note: 5. Applied 6kV, 10/700µs waveform.

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

Part Number	Maximum Rated Repetitive Off-State Voltage	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 (Note 6)		Typical Off-State Capacitance (Note 7)	Marking Code
	V_{DRM} (V)	I_{DRM} (µA)	V_{BO} (V)	V_T (V)	Min (mA)	Max (mA)	Min (mA)	Max (mA)	C_O (pF)	
TA0640L	58	5	77	3.5	50	800	150	800	100	T064L
TA0720L	65	5	88	3.5	50	800	150	800	100	T072L
TA0900L	75	5	98	3.5	50	800	150	800	100	T090L
TA1100L	90	5	130	3.5	50	800	150	800	60	T110L
TA1300L	120	5	160	3.5	50	800	150	800	60	T130L
TA1500L	140	5	180	3.5	50	800	150	800	60	T150L
TA1800L	170	5	220	3.5	50	800	150	800	60	T180L
TA2300L	190	5	265	3.5	50	800	150	800	40	T230L
TA2600L	220	5	300	3.5	50	800	150	800	40	T260L
TA3100L	275	5	350	3.5	50	800	150	800	40	T310L
TA3500L	320	5	400	3.5	50	800	150	800	40	T350L

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

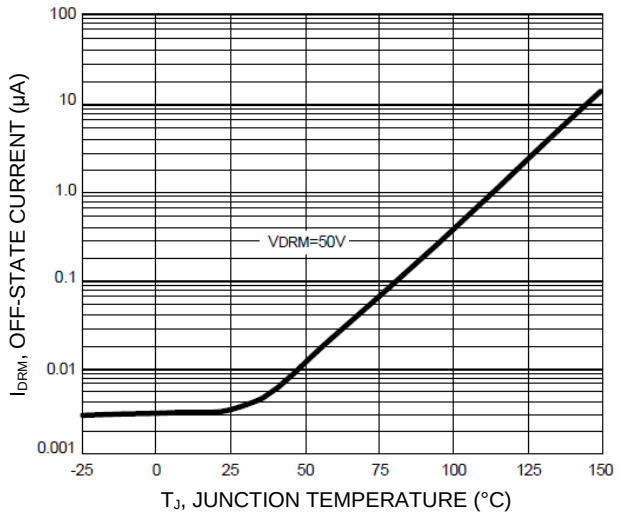


FIG.1 - OFF STATE CURRENT vs JUNCTION TEMPERATURE

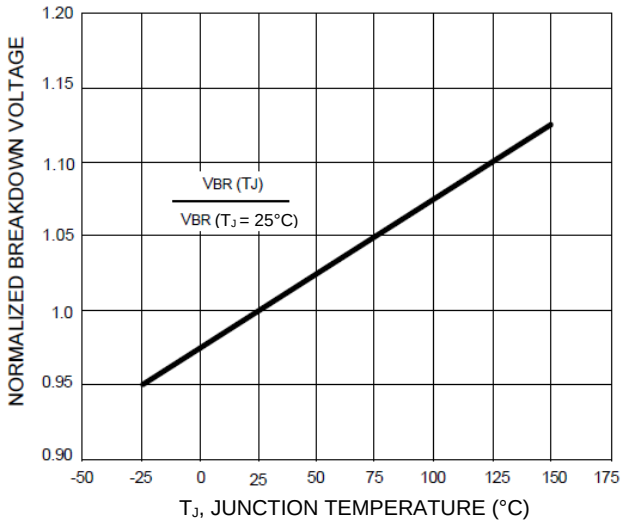


FIG. 2 - RELATIVE VARIATION OF BREAKDOWN VOLTAGE vs JUNCTION TEMPERATURE

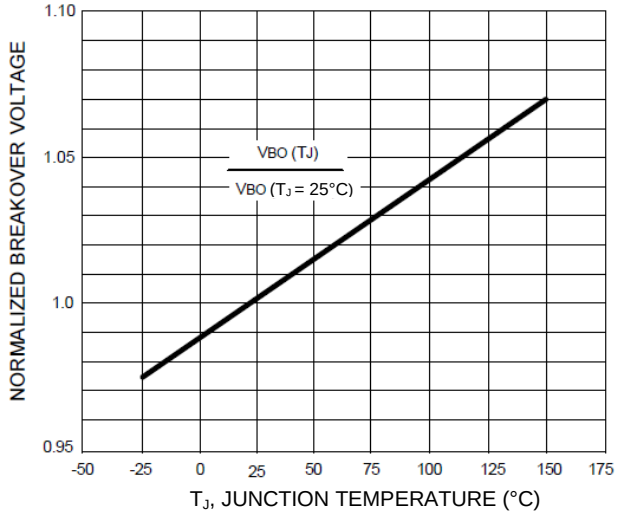


FIG. 3 - RELATIVE VARIATION OF BREAKOVER VOLTAGE vs JUNCTION TEMPERATURE

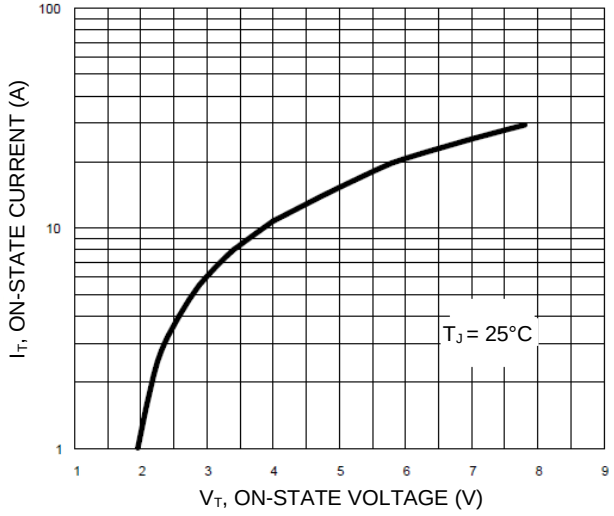


FIG. 4 - ON STATE CURRENT vs ON STATE VOLTAGE

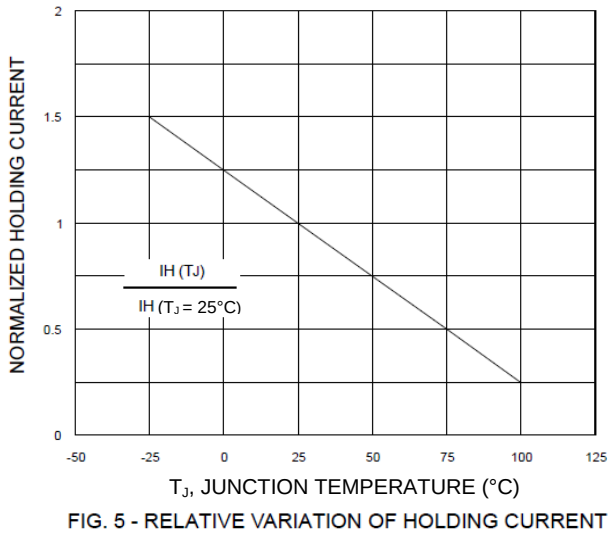


FIG. 5 - RELATIVE VARIATION OF HOLDING CURRENT vs JUNCTION TEMPERATURE

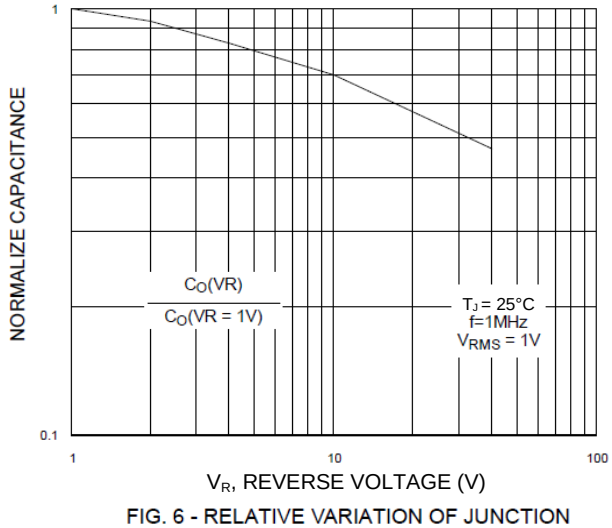
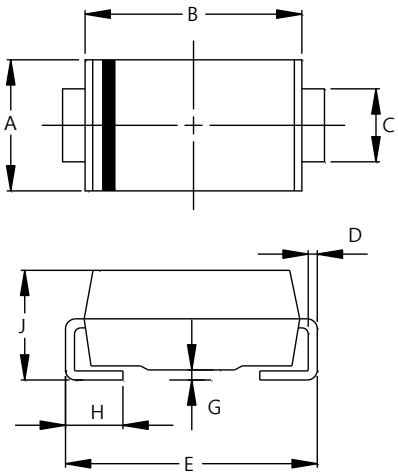


FIG. 6 - RELATIVE VARIATION OF JUNCTION CAPACITANCE vs REVERSE VOLTAGE BIAS

Package Outline Dimensions

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

SMA

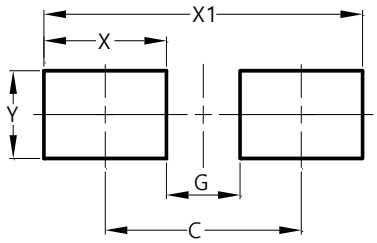


SMA		
Dim	**Min**	**Max**
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

Suggested Pad Layout

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

SMA



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

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