LITE-ON SEMICONDUCTOR

TB0640M thru TB3500M

SURFACE MOUNT
THYRISTOR SURGE PROTECTIVE DEVICE

Bi-Directional

VDRM - **58 to 320** Volts
IPP - **50** Amperes

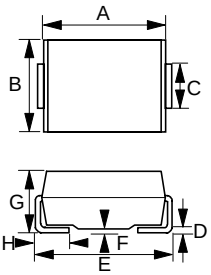
FEATURES

- Oxide Glass Passivated Junction
- Bidirectional protection in a single device
- Surge capabilities up to 50A @10/1000us or 250A @8/20us
- High off state Impedance and low on state voltage
- Plastic material has UL flammability classification 94V-0

MECHANICAL DATA

- Case : Molded plastic
- Polarity : Denotes none cathode band
- Weight : 0.093 grams

SMB



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 millimeter		

MAXIMUM RATINGS

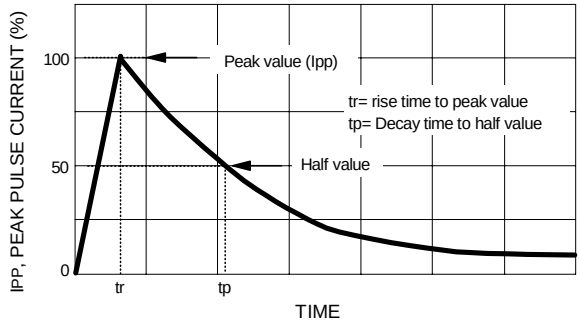
CHARACTERISTICS	SYMBOL	VALUE	UNIT
Non-repetitive peak impulse current @ 10/1000us	I_{PP}	50	A
Non-repetitive peak On-state current @ 8.3ms (one half cycle)	I_{TSM}	25	A
Junction temperature range	T_J	-40 to +150	℃
storage temperature range	T_{STG}	-55 to +150	℃

THERMAL RESISTANCE

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Junction to leads	$R_{th(J-L)}$	20	℃/W
Junction to ambient on print circuit (on recommended pad layout)	$R_{th(J-A)}$	100	℃/W
Typical positive temperature coefficient for brekdown voltage	$\triangle V_{BR}/\triangle T_J$	0.1	%/℃

MAXIMUM RATED SURGE WAVEFORM

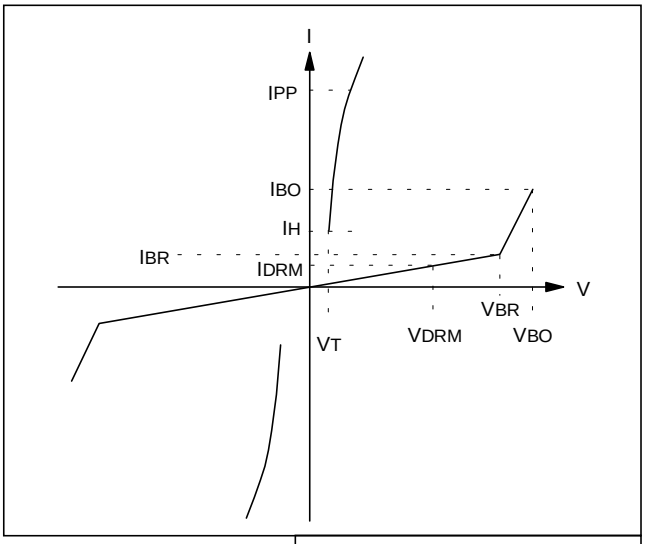
WAVEFORM	STANDARD	I_{PP} (A)
2/10 us	GR-1089-CORE	300
8/20 us	IEC 61000-4-5	250
10/160 us	FCC Part 68	150
10/700 us	ITU-T K20/21	100
10/560 us	FCC Part 68	75
10/1000 us	GR-1089-CORE	50



ELECTRICAL CHARACTERISTICS @ T_A= 25℃ unless otherwise specified
TB0640M thru TB3500M

PARAMETER	RATED REPETITIVE OFF-STATE VOLTAGE	OFF-STATE LEAKAGE CURRENT @ V_{DRM}	BREAKOVER VOLTAGE	ON-STATE VOLTAGE @ I_T=1.0A	BREAKOVER CURRENT		HOLDING CURRENT		OFF-STATE CAPACITANCE
SYMBOL	V_{DRM}	I_{DRM}	V_{BO}	V_T	I_{BO-}	I_{BO+}	I_{H-}	I_{H+}	Co
UNITS	Volts	uA	Volts	Volts	mA	mA	mA	mA	pF
LIMIT	Max	Max	Max	Max	Min	Max	Min	Max	Typ
TB0640M	58	5	77	3.5	50	800	150	800	140
TB0720M	65	5	88	3.5	50	800	150	800	140
TB0900M	75	5	98	3.5	50	800	150	800	140
TB1100M	90	5	130	3.5	50	800	150	800	90
TB1300M	120	5	160	3.5	50	800	150	800	90
TB1500M	140	5	180	3.5	50	800	150	800	90
TB1800M	160	5	220	3.5	50	800	150	800	90
TB2300M	190	5	265	3.5	50	800	150	800	60
TB2600M	220	5	300	3.5	50	800	150	800	60
TB3100M	275	5	350	3.5	50	800	150	800	60
TB3500M	320	5	400	3.5	50	800	150	800	60

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	
Co	Off state capacitance	Note: 2



REV. 0, 09-Oct-2001, KSWB06

NOTES: 1. I_H > (V_L/RL) If this criterion is not obeyed, the T_{SPD} 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=1.0MHz; 1.0V_{RMS} signal; VR=2V_{DC} bias.

FIG.1 - OFF STATE CURRENT vs JUNCTION TEMPERATURE

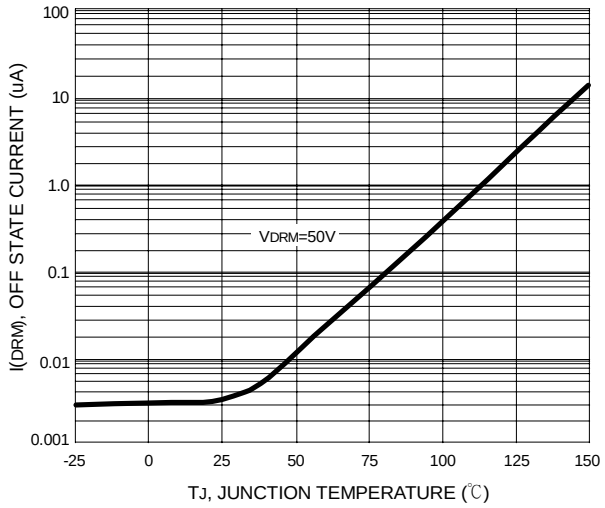


FIG. 2 - RELATIVE VARIATION OF BREAKDOWN VOLTAGE vs JUNCTION TEMPERATURE

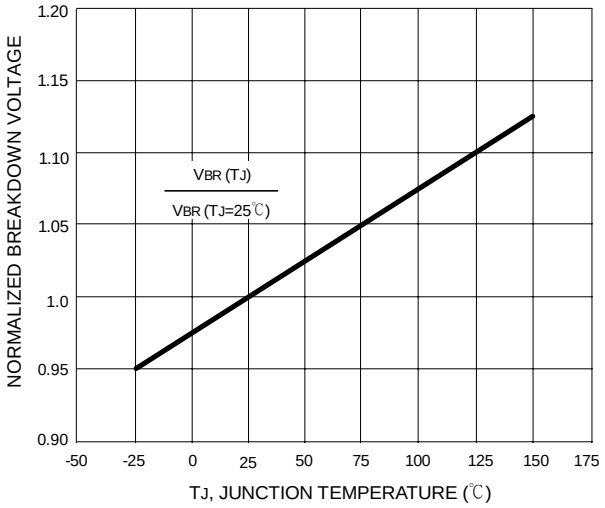


FIG. 3 - RELATIVE VARIATION OF BREAKOVER VOLTAGE vs JUNCTION TEMPERATURE

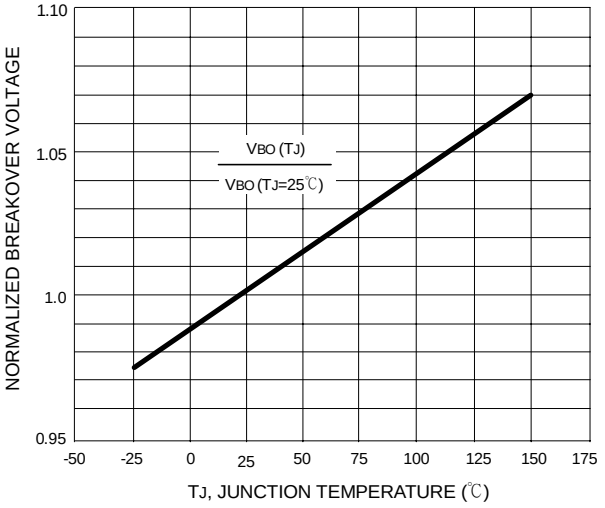


FIG. 4 - ON STATE CURRENT vs ON STATE VOLTAGE

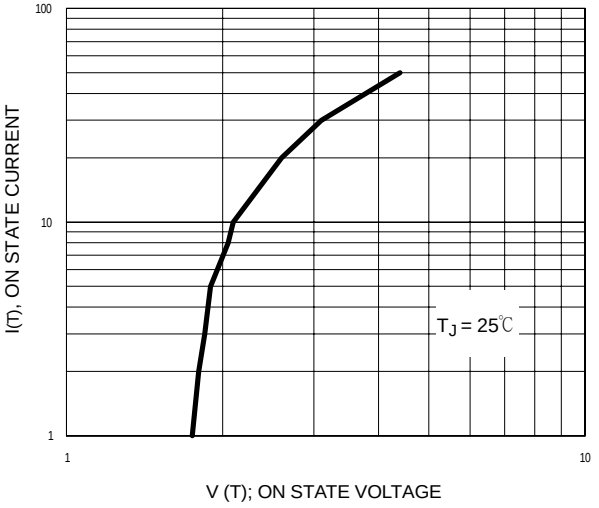


FIG. 5 - RELATIVE VARIATION OF HOLDING CURRENT vs JUNCTION TEMPERATURE

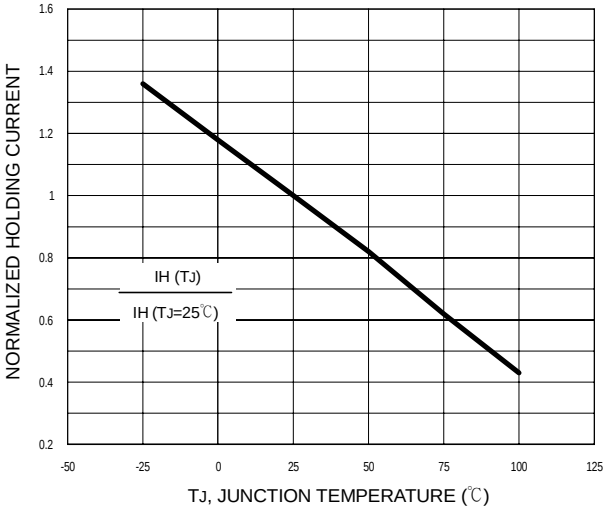
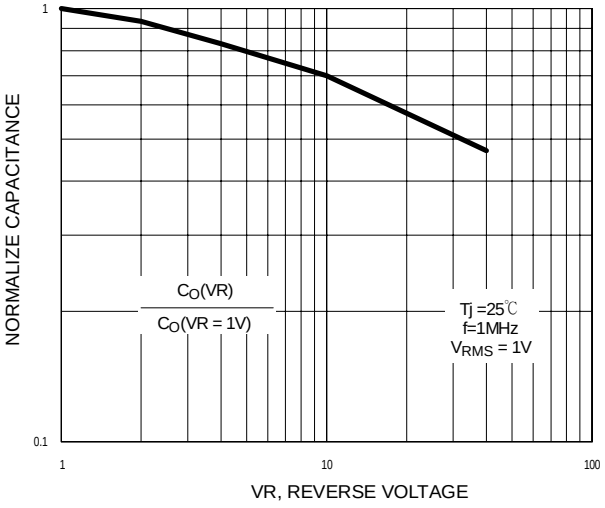
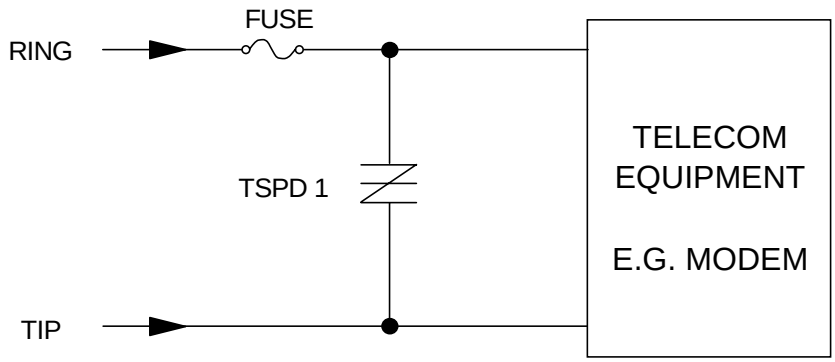
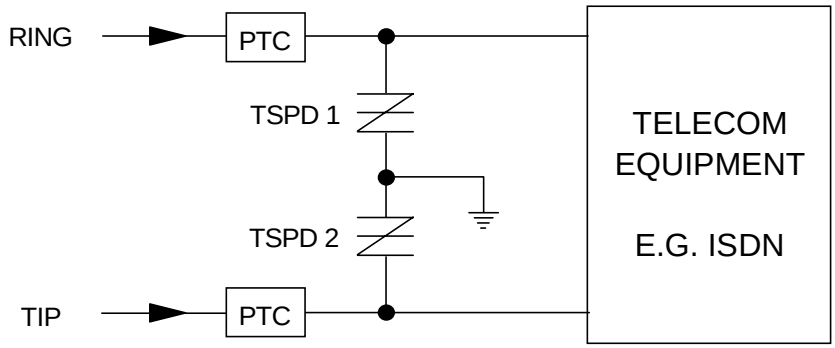
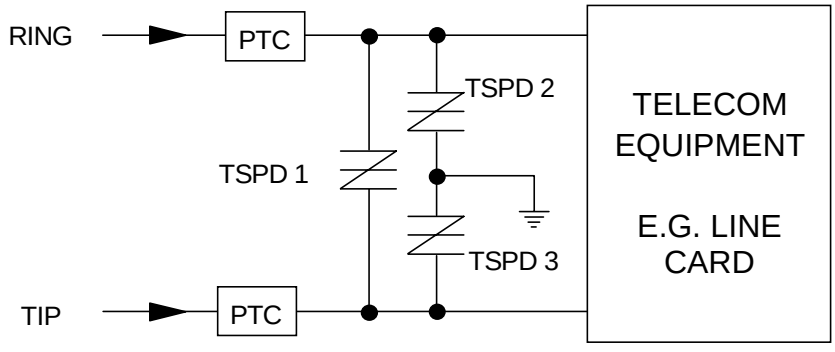


FIG. 6 - RELATIVE VARIATION OF JUNCTION CAPACITANCE vs REVERSE VOLTAGE BIAS









The PTC (Positive Temperature Coefficient) is an overcurrent protection device