

**SURFACE MOUNT  
THYRISTOR SURGE PROTECTIVE DEVICE**

**Bi-Directional**  
VDRM - **58 to 360** Volts  
IPP - **80** Amperes

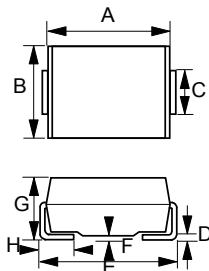
**FEATURES**

- Oxide Glass Passivated Junction
- Bidirectional protection in a single device
- Surge capabilities up to 80A @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 : 0.003 ounces, 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**

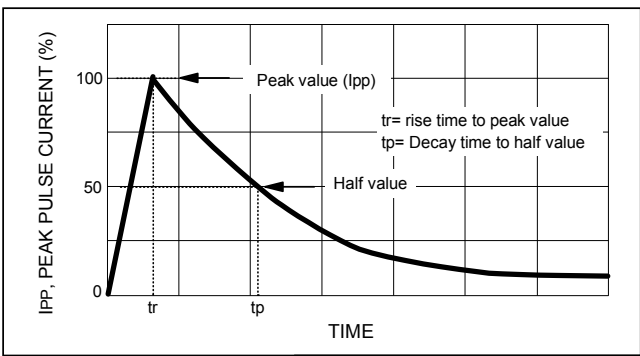
CHARACTERISTICS	SYMBOL	VALUE	UNIT
Non-repetitive peak impulse current @ 10/1000us	IPP	80	A
Non-repetitive peak On-state current @ 8.3ms (one half cycle)	ITSM	40	A
Junction temperature range	TJ	-40 to +150	°C
storage temperature range	TSTG	-55 to +150	°C

**THERMAL RESISTANCE**

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Junction to leads	Rth(J-L)	20	°C/W
Junction to ambient on print circuit (on recommended pad layout)	Rth(J-A)	100	°C/W
Typical positive temperature coefficient for brekdown voltage	$\Delta VBR/\Delta TJ$	0.1	%/°C

**MAXIMUM RATED SURGE WAVEFORM**

WAVEFORM	STANDARD	IPP (A)
2/10 us	GR-1089-CORE	250
8/20 us	IEC 61000-4-5	250
10/160 us	FCC Part 68	150
10/560 us	FCC Part 68	100
10/700 us	ITU-T K20/K21	90
10/1000 us	GR-1089-CORE	80

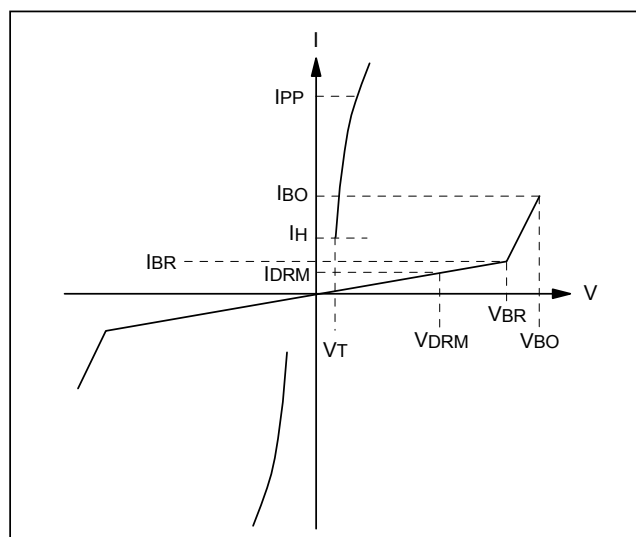


**ELECTRICAL CHARACTERISTICS @ TA= 25°C unless otherwise specified  
TB0640M thru TB4000M**



PARAMETER	RATED REPETITIVE OFF-STATE VOLTAGE	OFF-STATE LEAKAGE CURRENT @ VDRM	BREAKOVER VOLTAGE	ON-STATE VOLTAGE @ IT=1.0A	BREAKOVER CURRENT		HOLDING CURRENT		OFF-STATE CAPACITANCE
					Min	Max	Min	Max	
SYMBOL	VDRM	IDRM	VBO	VT	IBO		IH		Co
UNITS	Volts	uA	Volts	Volts	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	170	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
TB4000M	360	5	450	3.5	50	800	150	800	60

SYMBOL	PARAMETER
VDRM	Stand-off Voltage
IDRM	Leakage current at stand-off voltage
VBR	Breakdown voltage
IBR	Breakdown current
VBO	Breakover voltage
IBO	Breakover current
IH	Holding current <span style="float: right;">Note: 1</span>
VT	On state voltage
IPP	Peak pulse current
CO	Off state capacitance <span style="float: right;">Note: 2</span>



NOTES: 1.  $I_H > (V_L/R_L)$  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.  
2. Off-state capacitance measured at  $f=1.0\text{MHz}$ ;  $1.0\text{VRMS}$  signal;  $V_R=2\text{VDC}$  bias.

FIG. 1 - OFF STATE CURRENT vs JUNCTION TEMPERATURE

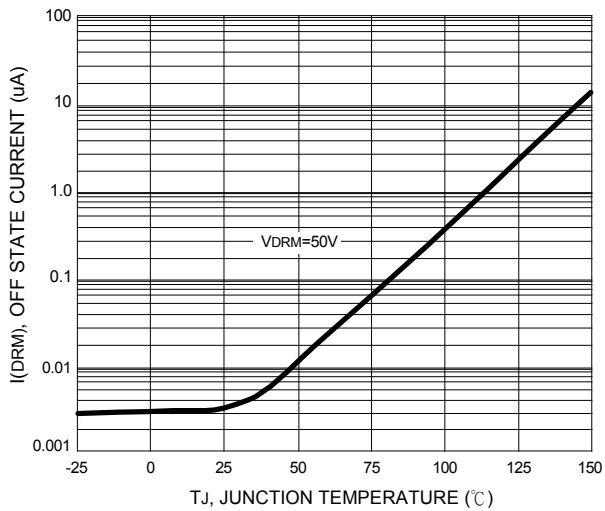


FIG. 2 - RELATIVE VARIATION OF BREAKDOWN VOLTAGE vs JUNCTION TEMPERATURE

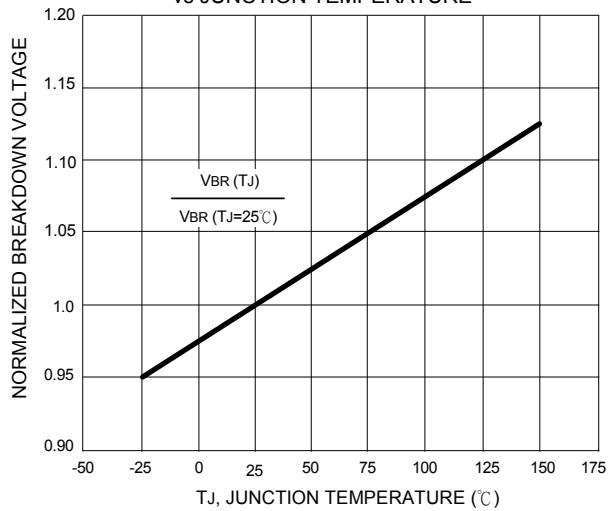


FIG. 3 - RELATIVE VARIATION OF BREAKOVER VOLTAGE vs JUNCTION TEMPERATURE

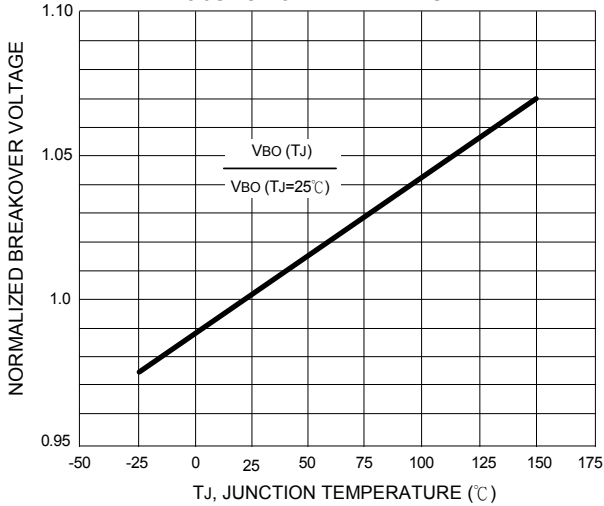


FIG. 4 - ON STATE CURRENT vs ON STATE VOLTAGE

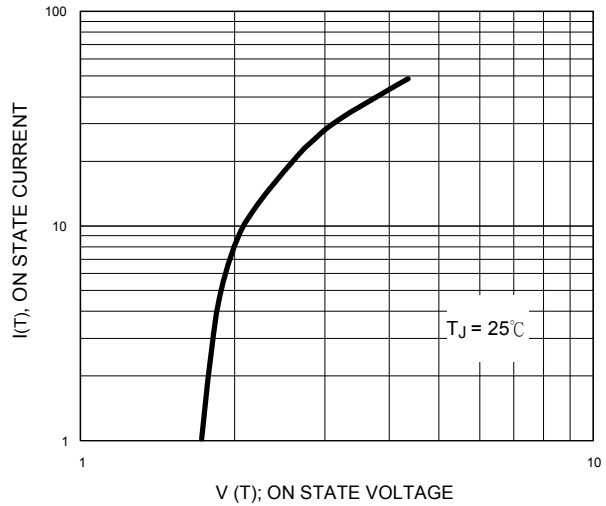


FIG. 5 - RELATIVE VARIATION OF HOLDING CURRENT vs JUNCTION TEMPERATURE

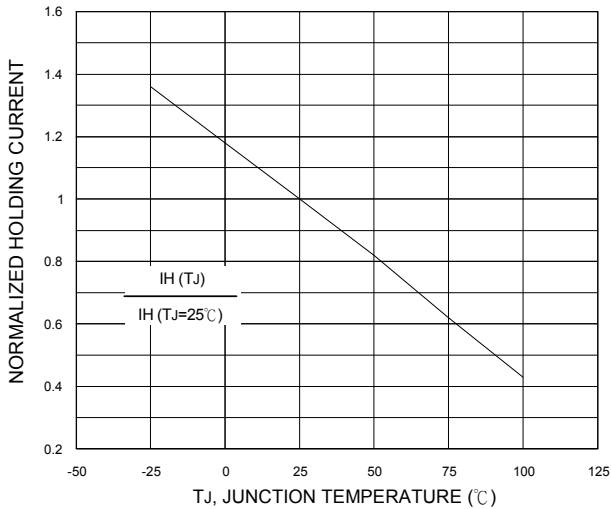
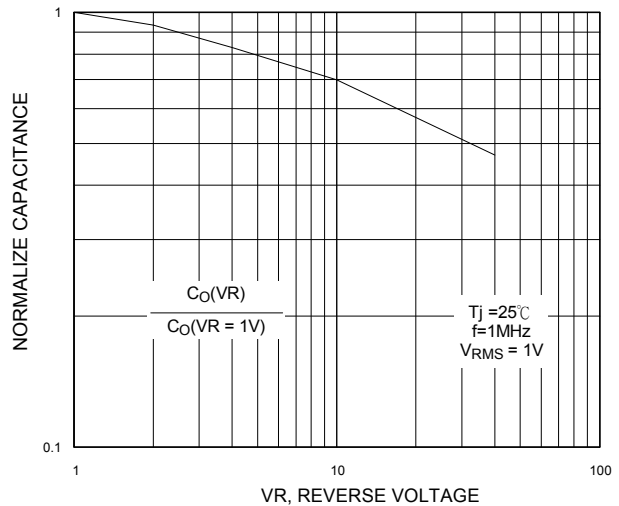
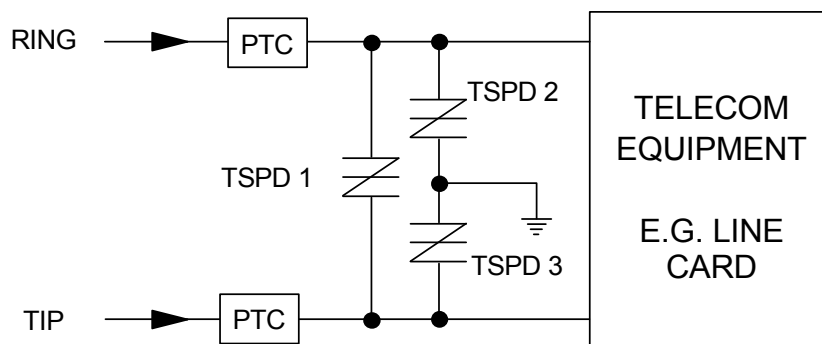
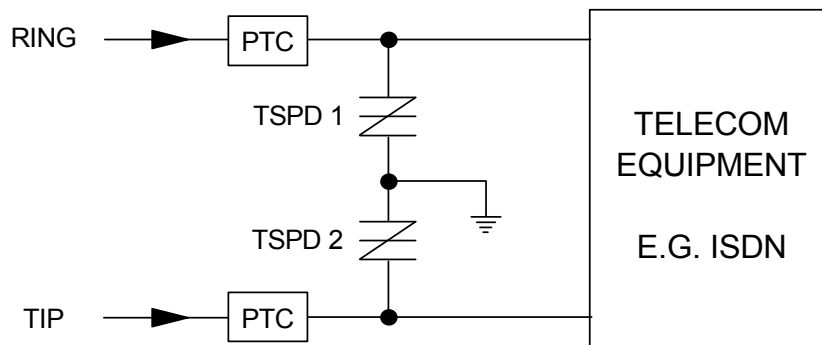
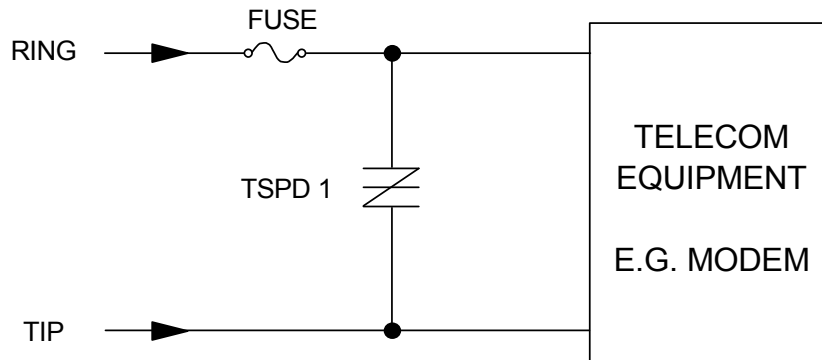


FIG. 6 - RELATIVE VARIATION OF JUNCTION CAPACITANCE vs REVERSE VOLTAGE BIAS





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

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