

**SURFACE MOUNT
THYRISTOR SURGE PROTECTIVE DEVICE**

Bi-Directional
VDRM - **58 to 320** Volts
IPP - **100** Amperes

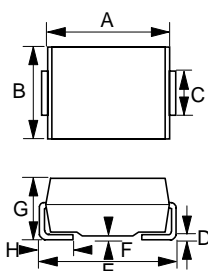
FEATURES

- Oxide Glass Passivated Junction
- Bidirectional protection in a single device
- Surge capabilities up to 100A @ 10/1000us or 400 @ 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

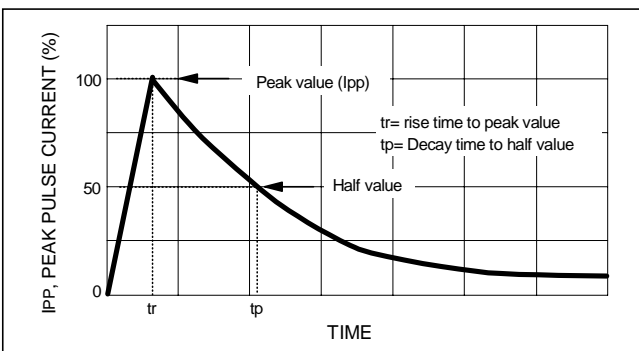
| CHARACTERISTICS | SYMBOL | VALUE | UNIT |
|---|--------|-------------|------|
| Non-repetitive peak impulse current @ 10/1000us | IPP | 100 | A |
| Non-repetitive peak On-state current @ 8.3ms (one half cycle) | ITSM | 50 | A |
| Junction temperature range | TJ | -40 to +150 | °C |
| storage temperature 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 | 500 |
| 8/20 us | IEC 61000-4-5 | 400 |
| 10/160 us | FCC Part 68 | 250 |
| 10/700 us | ITU-T K20/21 | 200 |
| 10/560 us | FCC Part 68 | 160 |
| 10/1000 us | GR-1089-CORE | 100 |

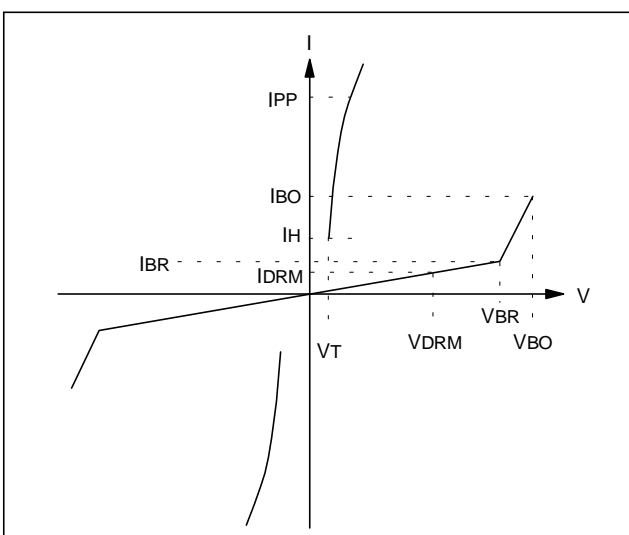


**ELECTRICAL CHARACTERISTICS @ TA= 25°C unless otherwise specified
TB0640H thru TB3500H**



| 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 |
|-----------|------------------------------------|----------------------------------|-------------------|----------------------------|-------------------|------|-----------------|-----|-----------------------|
| | | | | | IBO- | IBO+ | IH- | IH+ | |
| SYMBOL | VDRM | IDRM | VBO | VT | IBO- | IBO+ | IH- | IH+ | Co |
| UNITS | Volts | uA | Volts | Volts | mA | mA | mA | mA | pF |
| LIMIT | Max | Max | Max | Max | Min | Max | Min | Max | Typ |
| TB0640H | 58 | 5 | 77 | 3.5 | 50 | 800 | 150 | 800 | 200 |
| TB0720H | 65 | 5 | 88 | 3.5 | 50 | 800 | 150 | 800 | 200 |
| TB0900H | 75 | 5 | 98 | 3.5 | 50 | 800 | 150 | 800 | 200 |
| TB1100H | 90 | 5 | 130 | 3.5 | 50 | 800 | 150 | 800 | 120 |
| TB1300H | 120 | 5 | 160 | 3.5 | 50 | 800 | 150 | 800 | 120 |
| TB1500H | 140 | 5 | 180 | 3.5 | 50 | 800 | 150 | 800 | 120 |
| TB1800H | 160 | 5 | 220 | 3.5 | 50 | 800 | 150 | 800 | 120 |
| TB2300H | 190 | 5 | 265 | 3.5 | 50 | 800 | 150 | 800 | 80 |
| TB2600H | 220 | 5 | 300 | 3.5 | 50 | 800 | 150 | 800 | 80 |
| TB3100H | 275 | 5 | 350 | 3.5 | 50 | 800 | 150 | 800 | 80 |
| TB3500H | 320 | 5 | 400 | 3.5 | 50 | 800 | 150 | 800 | 80 |

| 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 Note: 1 |
| VT | On state voltage |
| IPP | Peak pulse current |
| CO | Off state capacitance Note: 2 |



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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 $f=1.0\text{MHz}$; $1.0V_{RMS}$ signal; $V_R=2V_{DC}$ bias.

FIG. 1 - OFF STATE CURRENT vs JUNCTION TEMPERATURE **FIG. 2 - RELATIVE VARIATION OF BREAKDOWN VOLTAGE vs JUNCTION TEMPERATURE**

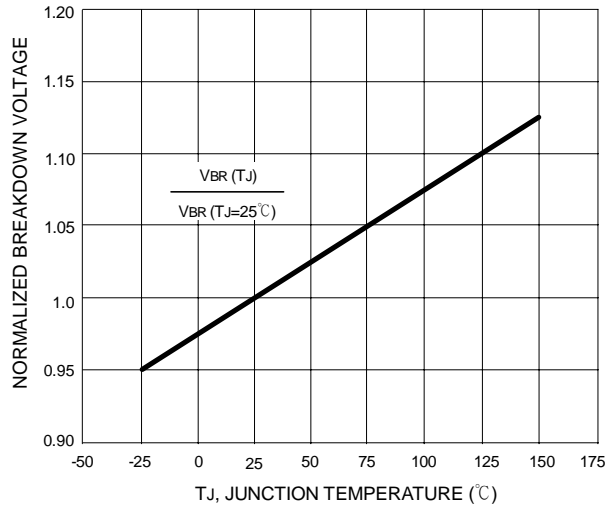
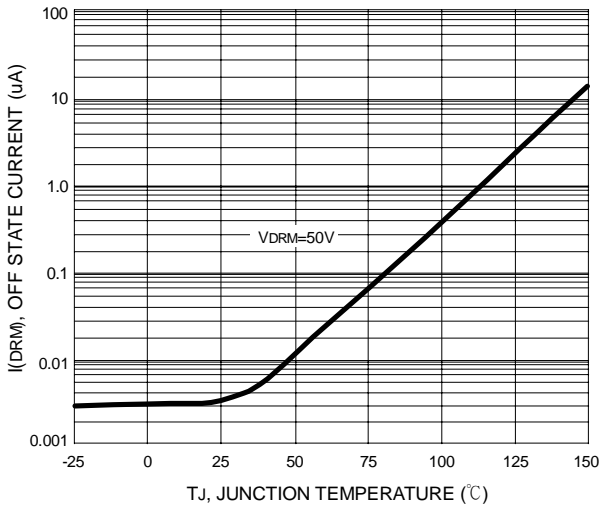


FIG. 3 - RELATIVE VARIATION OF BREAKOVER VOLTAGE vs JUNCTION TEMPERATURE

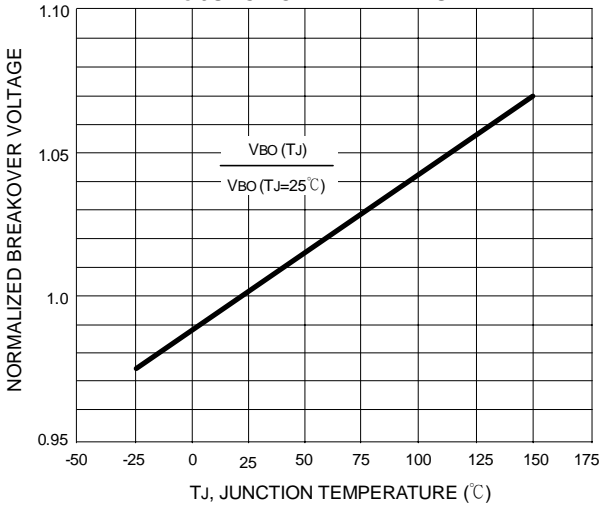


FIG. 4 - ON STATE CURRENT vs ON STATE VOLTAGE

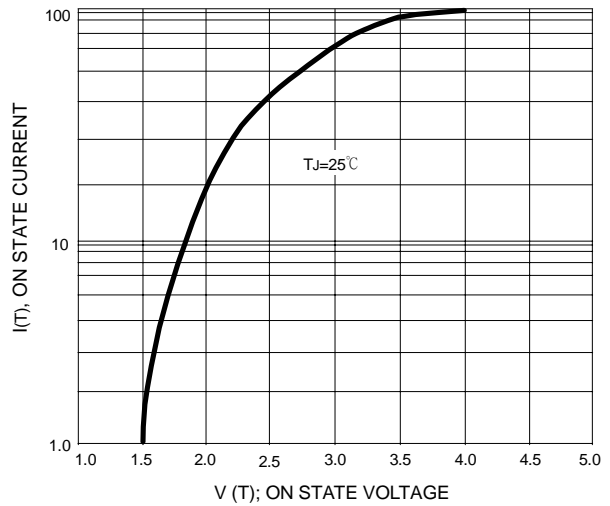


FIG. 5 - RELATIVE VARIATION OF HOLDING CURRENT vs JUNCTION TEMPERATURE

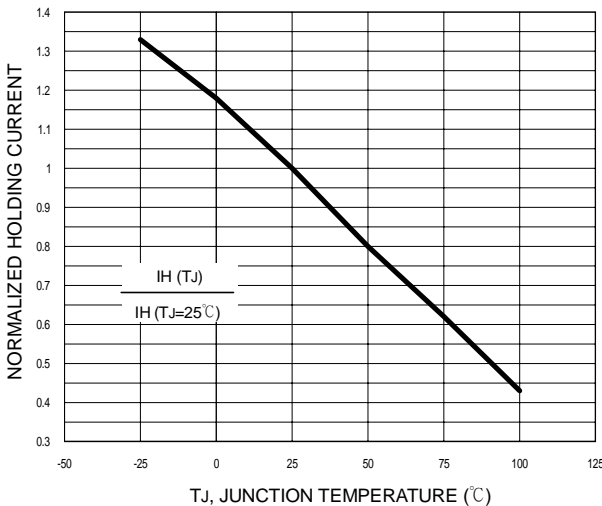
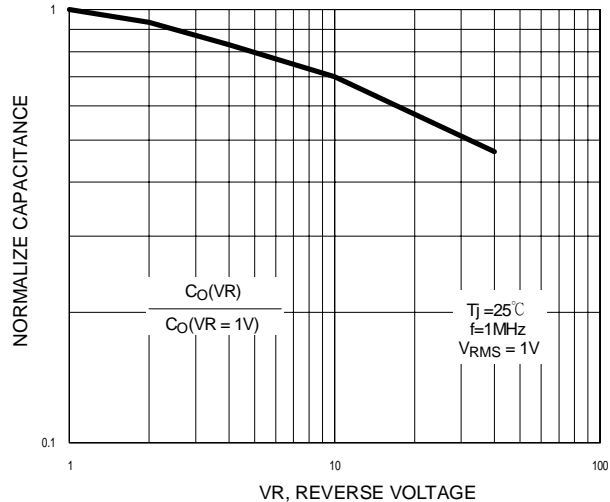
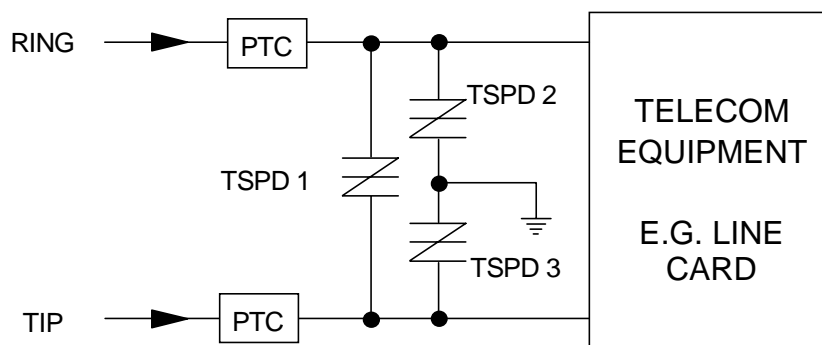
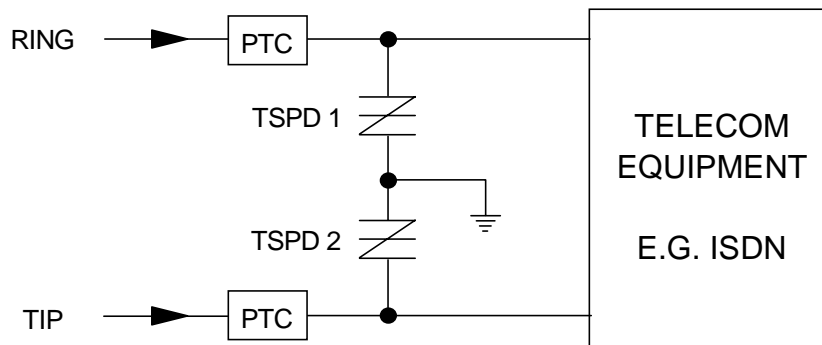
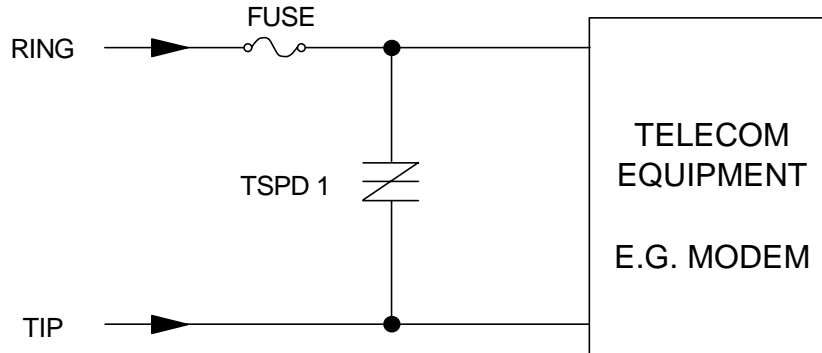


FIG. 6 - RELATIVE VARIATION OF JUNCTION CAPACITANCE vs REVERSE VOLTAGE BIAS





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