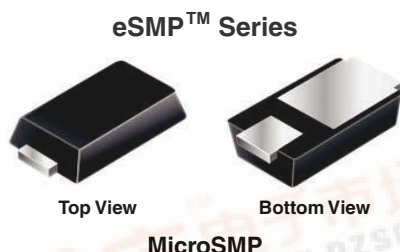


Surface Mount TRANSZORB[®] Transient Voltage Suppressors

| PRIMARY CHARACTERISTICS | |
|-------------------------|--------|
| V_{WM} | 5.0 V |
| P_{PPM} | 100 W |
| I_{FSM} | 25 A |
| $T_J \text{ max.}$ | 150 °C |

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units specifically for protecting 5.0 V supplied sensitive equipment against transient overvoltages.

FEATURES

- Very low profile - typical height of 0.65 mm
- Ideal for automated placement
- Oxide planar chip junction
- Uni-directional polarity only
- Peak pulse power: 100 W (10/1000 μ s)
- ESD capability: 15 kV (air), 8 kV (contact)
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**



RoHS
COMPLIANT
HALOGEN
FREE

MECHANICAL DATA

Case: MicroSMP

Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

| MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | |
|---|--------------------|---------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Peak pulse power dissipation | $P_{PPM}^{(1)(2)}$ | 100 | W |
| Peak pulse current with a 10/1000 μ s waveform (fig. 1) | I_{PPM} | 10.9 | A |
| Non repetitive peak forward surge current 10 ms single half sine-wave | $I_{FSM}^{(2)}$ | 25 | A |
| Power dissipation $T_L = 120\text{ °C}$ | $P_D^{(2)}$ | 1.0 | W |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to + 150 | °C |

Notes

- (1) Non-repetitive current pulse, per fig. 1
- (2) Mounted on 6.0 mm x 6.0 mm copper pads to each terminal

| ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ °C}$ unless otherwise noted) | | | | | | | | | | |
|---|---------------------|---|------|-------------------------|--------------------------------|---|---|------|--|----|
| DEVICE TYPE | DEVICE MARKING CODE | BREAKDOWN VOLTAGE V_{BR} AT IT (V) ⁽¹⁾ | | TEST CURRENT I_T (mA) | STAND-OFF VOLTAGE V_{WM} (V) | MAX. REVERSE LEAKAGE AT V_{WM} I_D (μ A) | MAX. CLAMPING VOLTAGE ⁽²⁾ V_C (V) AT I_{PPM} (A) 10/1000 μ s | | MAX. CLAMPING VOLTAGE ⁽²⁾ V_C (V) AT I_{PPM} (A) 8/20 μ s | |
| | | MIN. | MAX. | | | | | | | |
| MSP5.0A | AE | 6.40 | 7.07 | 10 | 5.0 | 100 | 9.2 | 10.9 | 14.5 | 57 |

Notes

- (1) Pulse test: $t_p \leq 50$ ms
- (2) Surge current waveform per fig. 1 and derate per fig. 2



MSP5.0A



Vishay General Semiconductor

| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|--|---------------------|-------|--------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Typical thermal resistance | $R_{\theta JA}$ (1) | 125 | $^\circ\text{C/W}$ |
| | $R_{\theta JL}$ (1) | 30 | |

Note

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 6.0 mm x 6.0 mm copper pad areas. $R_{\theta JL}$ is measured at the terminal of cathode band.

| IMMUNITY TO STATIC ELECTRICAL DISCHARGE TO THE FOLLOWING STANDARDS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | | | |
|--|---|---|--------|-------|---------|
| STANDARD | TEST TYPE | TEST CONDITIONS | SYMBOL | CLASS | VALUE |
| AEC-Q101-001 | Human body model (contact mode) | $C = 100\text{ pF}$, $R = 1.5\text{ kW}$ | V_C | H3B | > 8 kV |
| IEC-61000-4-2 (2) | Human body model (air discharge mode) (1) | $C = 150\text{ pF}$, $R = 150\text{ W}$ | | 4 | > 15 kV |

Notes

(1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance > 30 kV
 (2) System ESD standard

| ORDERING INFORMATION (Example) | | | | |
|--------------------------------|-----------------|------------------------|---------------|-----------------------------------|
| PREFERRED P/N | UNIT WEIGHT (G) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| MSP5.0A-E3/89A | 0.006 | 89A | 4500 | 7" diameter plastic tape and reel |
| MSP5.0AHE3/89A (1) | 0.006 | 89A | 4500 | 7" diameter plastic tape and reel |
| MSP5.0A-M3/89A | 0.006 | 89A | 4500 | 7" diameter plastic tape and reel |
| MSP5.0AHM3/89A (1) | 0.006 | 89A | 4500 | 7" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

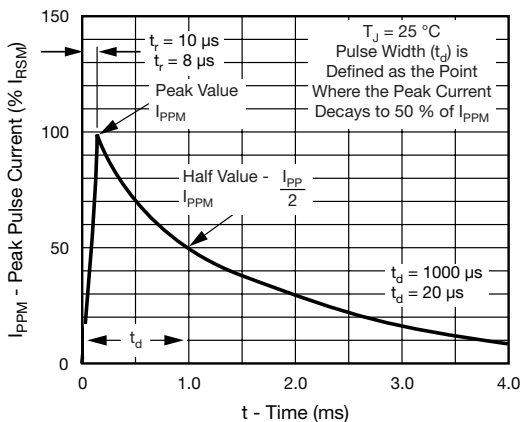


Fig. 1 - Pulse Waveform

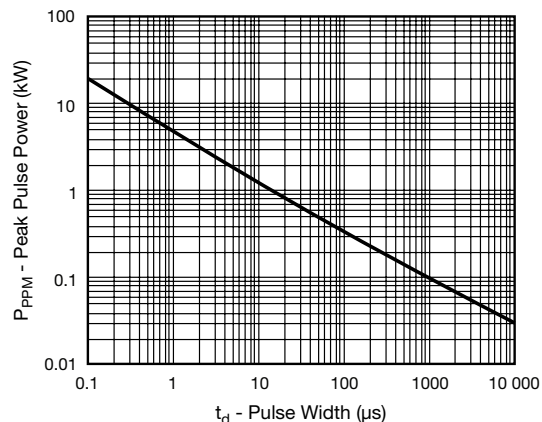


Fig. 2 - Peak Pulse Power Rating Curve

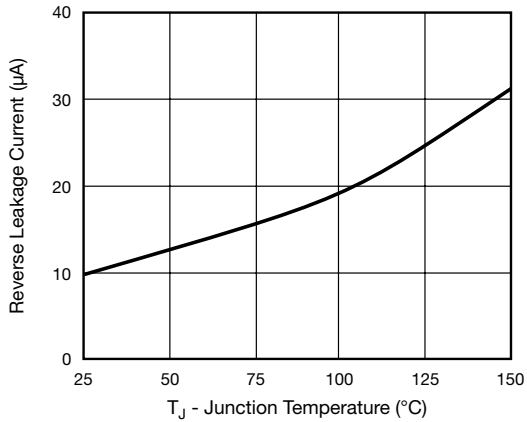


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

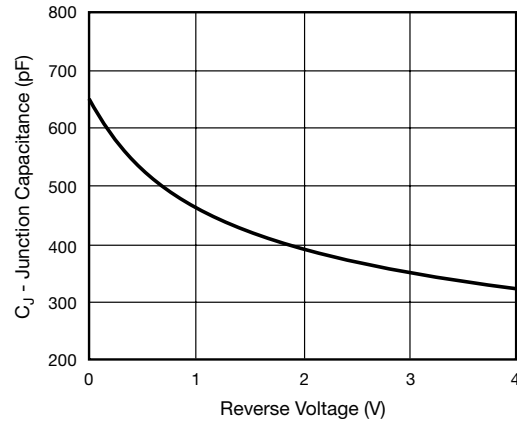


Fig. 5 - Typical Junction Capacitance

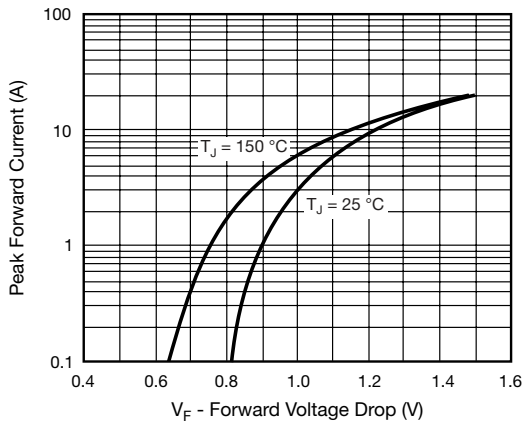


Fig. 4 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

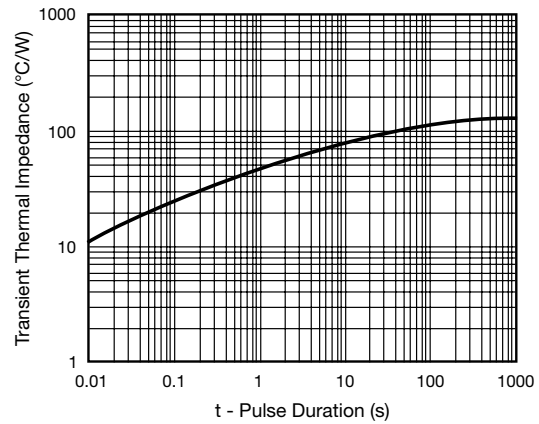
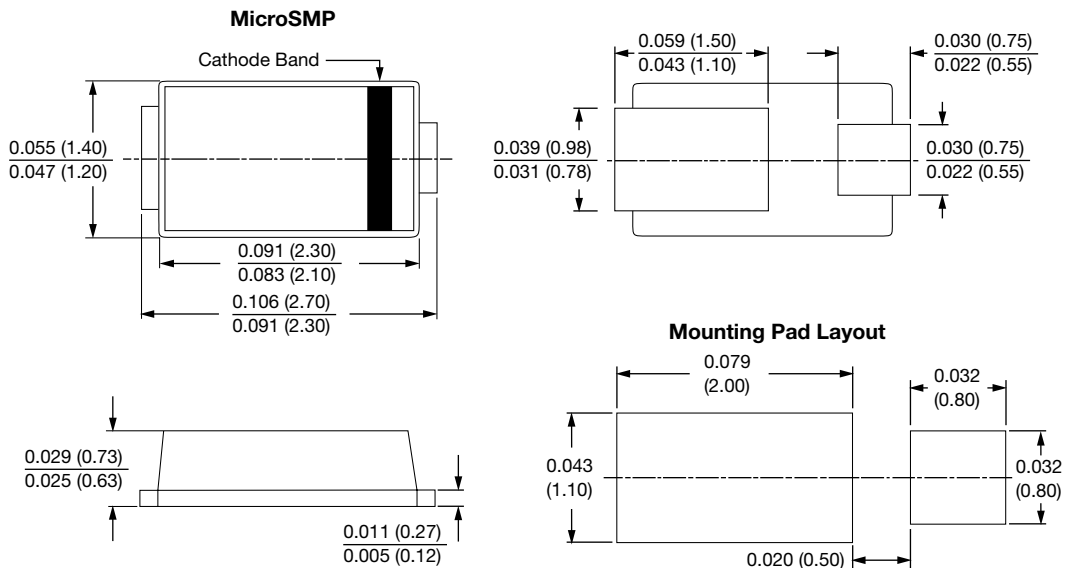


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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