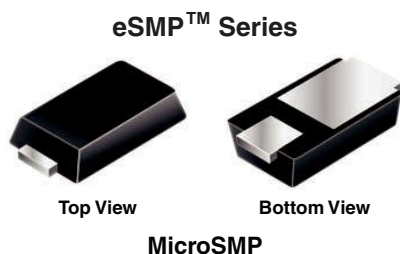


## Surface Mount TRANSZORB<sup>®</sup> Transient Voltage Suppressors



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  $\mu$ 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 $\mu$ 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) <sup>(1)</sup>		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAX. REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu$ A)	MAX. CLAMPING VOLTAGE <sup>(2)</sup> $V_C$ (V) AT $I_{PPM}$ (A) 10/1000 $\mu$ s		MAX. CLAMPING VOLTAGE <sup>(2)</sup> $V_C$ (V) AT $I_{PPM}$ (A) 8/20 $\mu$ 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:  $t_p \leq 50\text{ ms}$

(2) Surge current waveform per fig. 1 and derate per fig. 2

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	$> 8\text{ kV}$
IEC-61000-4-2 (2)	Human body model (air discharge mode) (1)	$C = 150\text{ pF}$ , $R = 150\text{ W}$		4	$> 15\text{ kV}$

**Notes**

- (1) Immunity to IEC 61000-4-2 air discharge mode has a typical performance  $> 30\text{ kV}$
- (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)

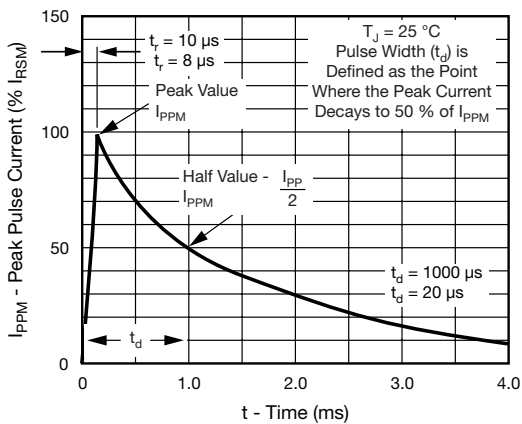


Fig. 1 - Pulse Waveform

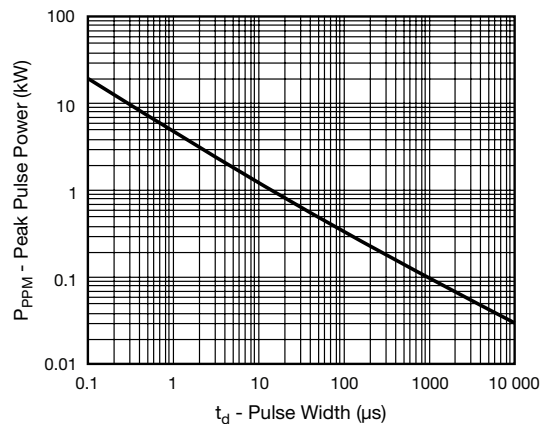


Fig. 2 - Peak Pulse Power Rating Curve

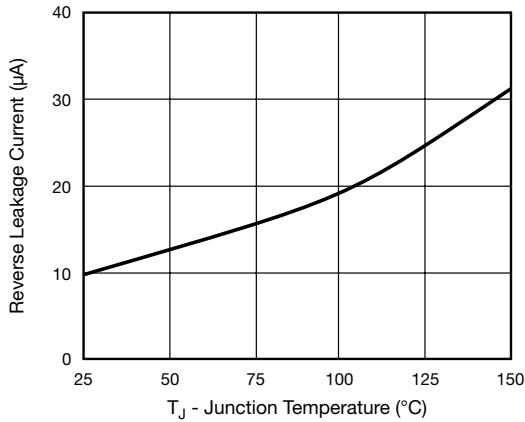


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

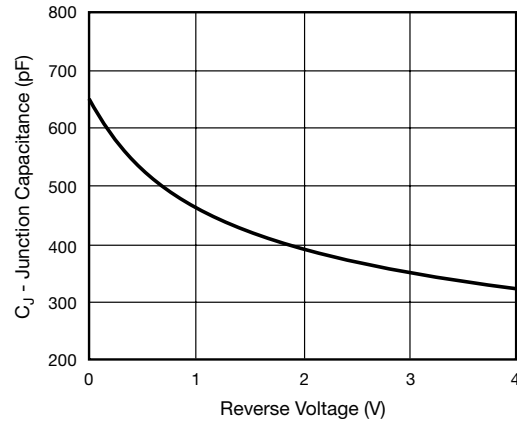


Fig. 5 - Typical Junction Capacitance

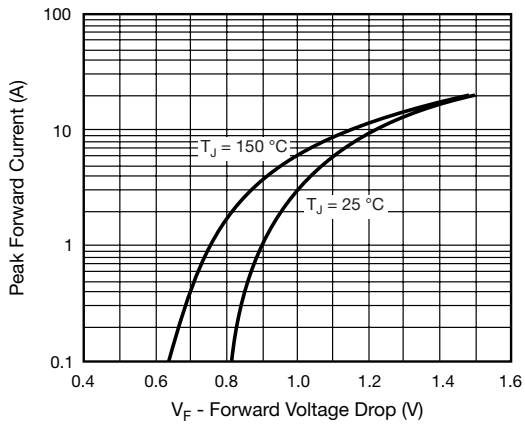


Fig. 4 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

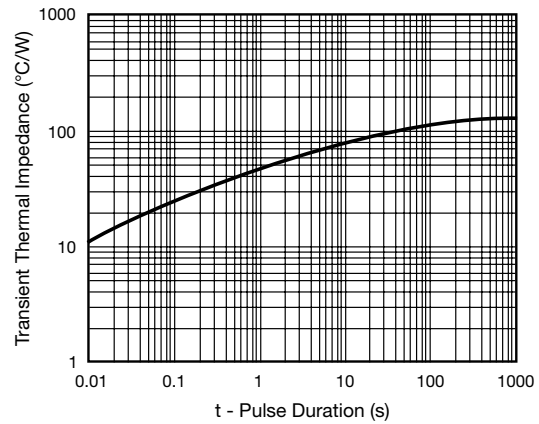
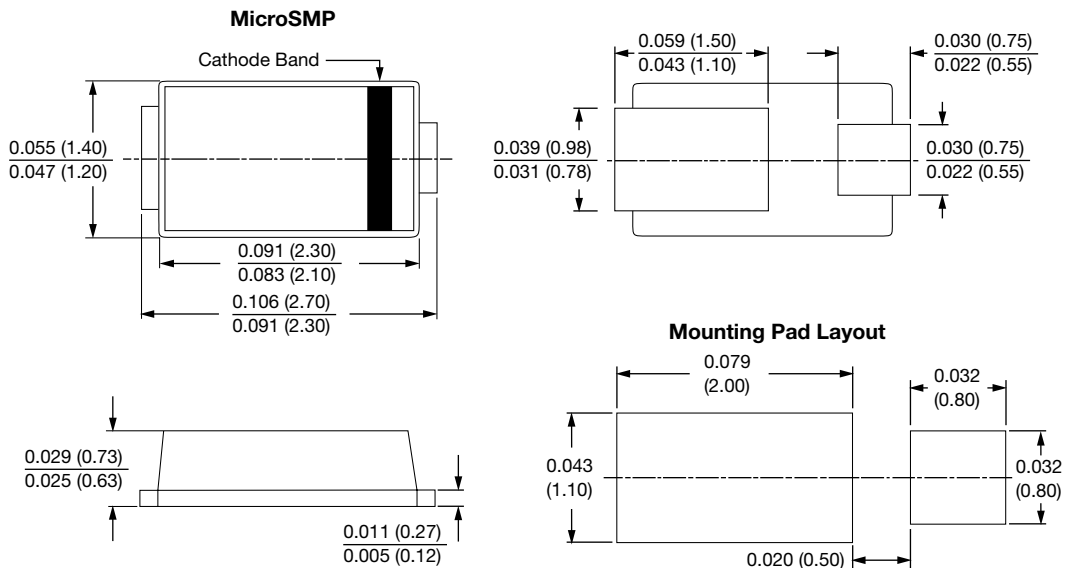


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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