Surface Mount TRANSZORB® Transient Voltage Suppressors

eSMP™ Series

Top View Bottom View

MicroSMP

FEATURES

- Very low profile - typical height of 0.68 mm
- Ideal for automated placement
- Oxide planar chip junction
- Uni-directional polarity only
- Peak pulse power: 100 W (10/1000 µs)
- ESD capability: **15 kV (air), 8 kV (contact)**
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 260 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**

RoHS COMPLIANT

HALOGEN FREE

PRIMARY CHARACTERISTICS	
V_{WM}	3.3 V
P_{PPM}	100 W
I_{FSM}	25 A
T_J 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 3.3 V supplied sensitive equipment against transient overvoltages.

MECHANICAL DATA

Case: MicroSMP

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade
Base P/NHE3 - RoHS compliant, high reliability/ automotive grade (AEC-Q101 qualified)
Base P/N-M3 - halogen-free and RoHS compliant, commercial grade
Base P/NHM3 - halogen-free and RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102
E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation (1)(2)	P_{PPM}	100	W
Peak pulse current with a 10/1000 µs waveform (Fig. 1)	I_{PPM}	13.7	A
Peak pulse current with a 8/20 µs waveform (Fig. 1)	I_{PPM}	75	A
Non repetitive peak forward surge current 8.3 ms single half sine-wave (2)	I_{FSM}	25	A
Power dissipation T_L = 120 °C (2)	P_D	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 x 6.0 mm copper pads to each terminal

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)											
DEVICE TYPE	**DEVICE MARKING CODE**	**BREAKDOWN VOLTAGE V_{BR} AT I_T MIN.**		**MAXIMUM REVERSE LEAKAGE CURRENT I_R AT V_{WM} MAX.**		**MAXIMUM CLAMPING VOLTAGE AT V_C AT I_{PPM} 10/1000 µs**		**MAXIMUM CLAMPING VOLTAGE AT V_C AT I_{PPM} 8/20 µs**		**TYPICAL TEMP. COEFFICIENT OF V_{BR}**	**TYPICAL JUNCTION CAPACITANCE C_J AT 0 V 1 MHz**
		V	**mA**	**µA**	**V**	**V**	**A**	**V**	**A**	**(10^{-4}/°C)**	**pF**
MSP3V3	KC	4.1	1.0	200	3.3	7.3	13.7	11.0	75	- 5.3	850

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

Note:

(1) Thermal resistance from junction to ambient and junction to lead mounted on P.C.B. with 6.0 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 °C unless otherwise noted)					
STANDARD	**TEST TYPE**	**TEST CONDITIONS**	**SYMBOL**	**CLASS**	**VALUE**
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ	V_C	H3B	> 8 kV
IEC-61000-4-2 (2)	Human body model (air discharge mode) (1)	C = 150 pF, R = 150 Ω		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**
MSP3V3-E3/89A	0.006	89A	4500	7" diameter plastic tape and reel
MSP3V3HE3/89A (1)	0.006	89A	4500	7" diameter plastic tape and reel
MSP3V3-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel
MSP3V3HM3/89A (1)	0.006	89A	4500	7" diameter plastic tape and reel

Note:

(1) High reliability/automotive grade (AEC-Q101 qualified)

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

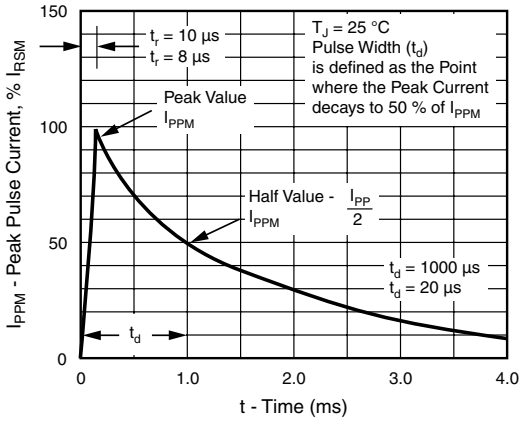


Figure 1. Pulse Waveform

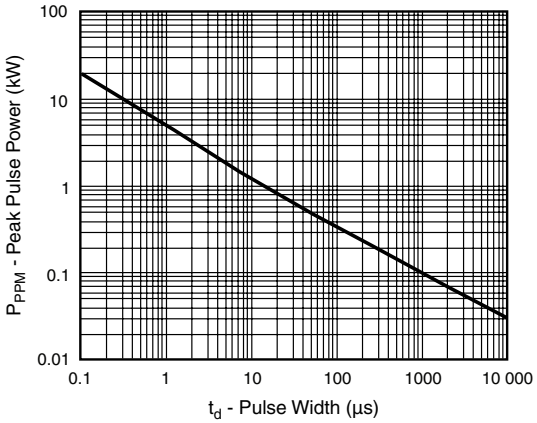


Figure 2. Peak Pulse Power Rating Curve

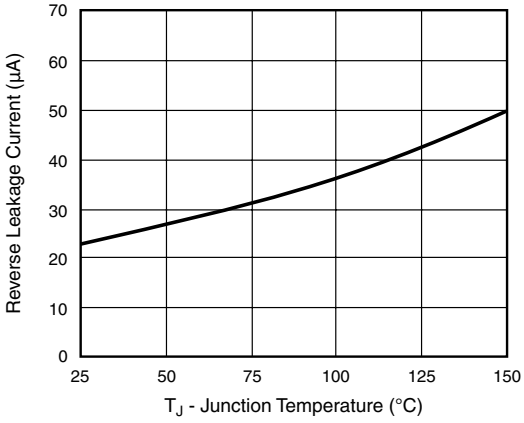


Figure 3. Relative Variation of Leakage Current vs. Junction Temperature

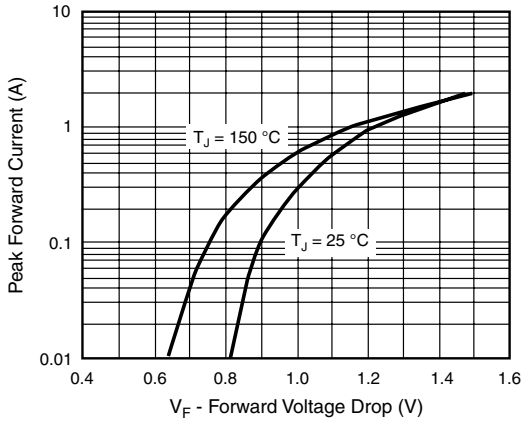


Figure 4. Typical Peak Forward Voltage Drop vs. Peak Forward Current

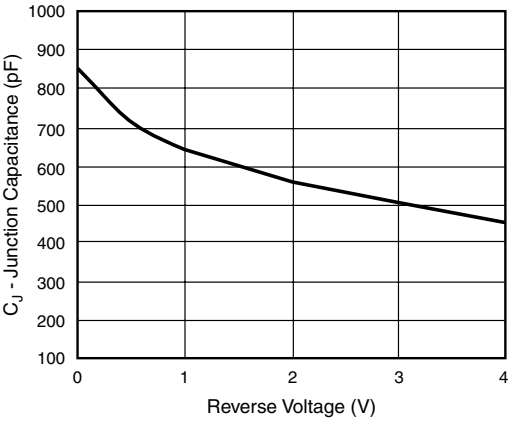


Figure 5. Typical Junction Capacitance

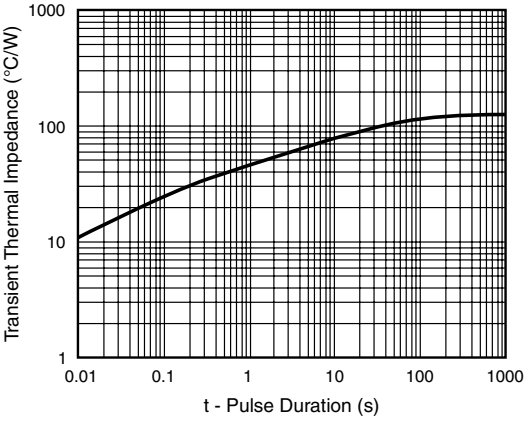
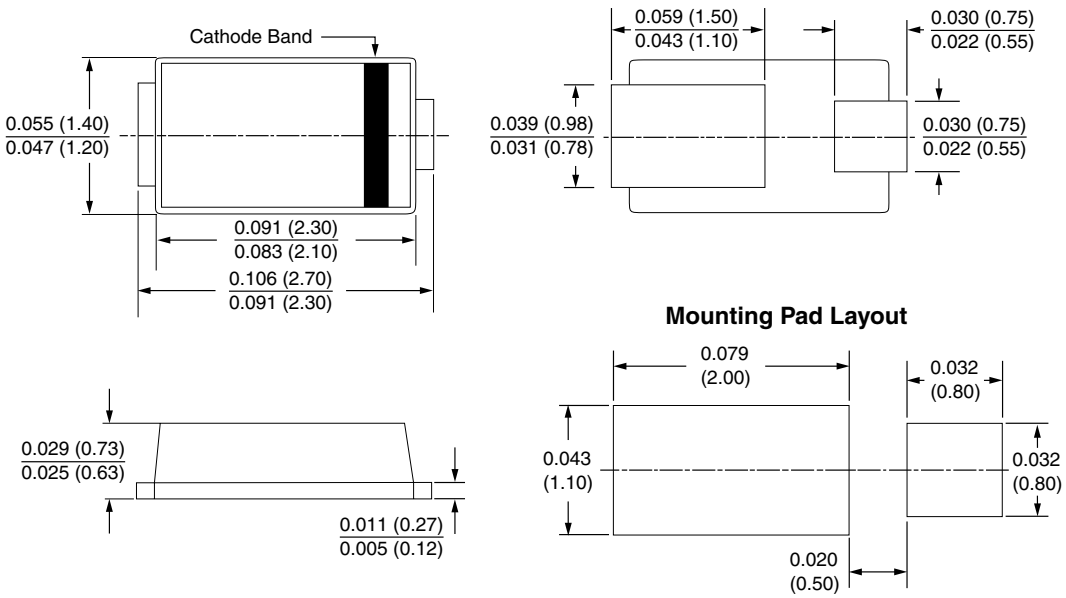


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



Mounting Pad Layout

For technical questions within your region, please contact one of the following:
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