MSP5.0A

Vishay General Semiconductor

Surface Mount TRANSZORB® Transient Voltage Suppressors

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

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 µs)
- 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**

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

MECHANICAL DATA

Case: MicroSMP

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

Base P/NHM3 - halogen-free, RoHS compliant, and automotive grade

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

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.

MAXIMUM RATINGS (T_A = 25 °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 µs 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 °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 °C unless otherwise noted)

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE V_{BR} AT I_T (V) (1)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAX. REVERSE LEAKAGE AT V_{WM} I_D (A)	MAX. CLAMPING VOLTAGE (2) V_C (V) AT I_{PPM} (A) 10/1000 s		MAX. CLAMPING VOLTAGE (2) V_C (V) AT I_{PPM} (A) 8/20 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

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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

Note

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB 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 °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 kW	V_C	H3B	> 8 kV
IEC-61000-4-2 (2)	Human body model (air discharge mode) (1)	C = 150 pF, R = 150 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-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) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

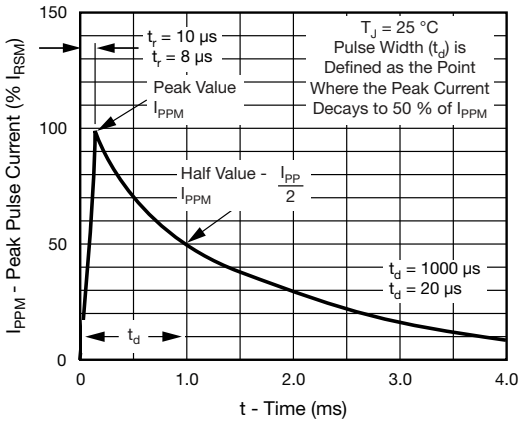

Fig. 1 - Pulse Waveform

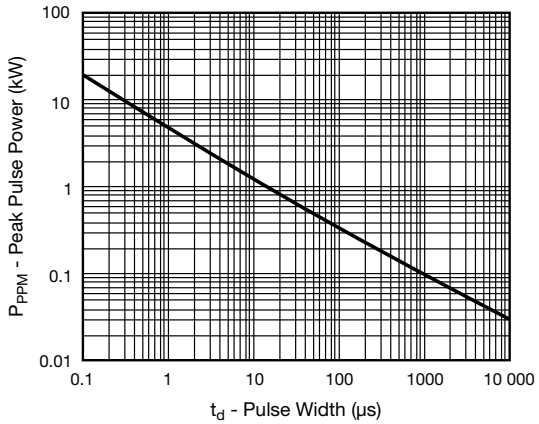

Fig. 2 - Peak Pulse Power Rating Curve

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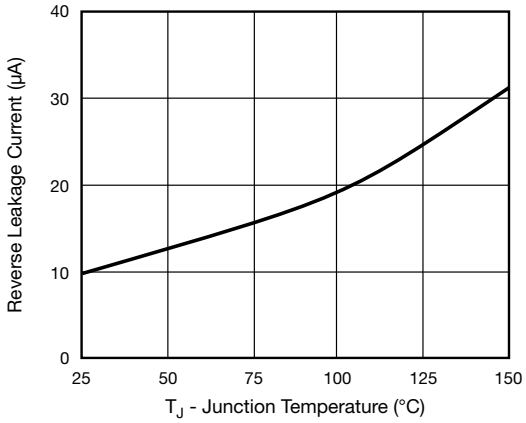


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

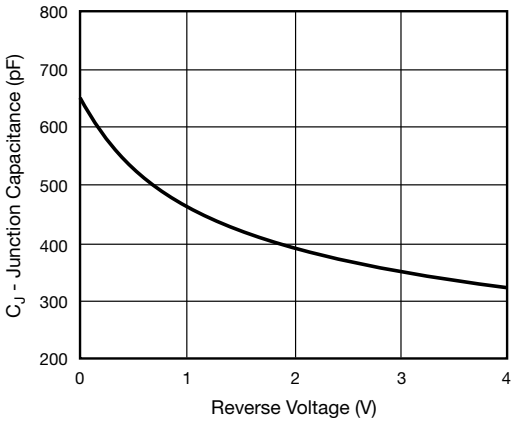


Fig. 5 - Typical Junction Capacitance

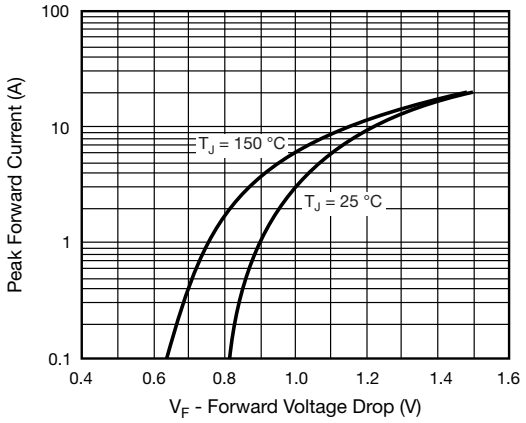


Fig. 4 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

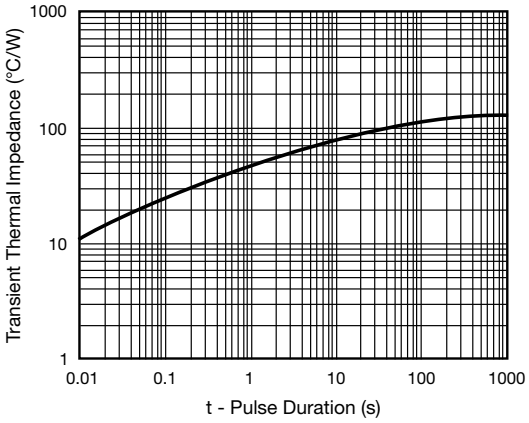
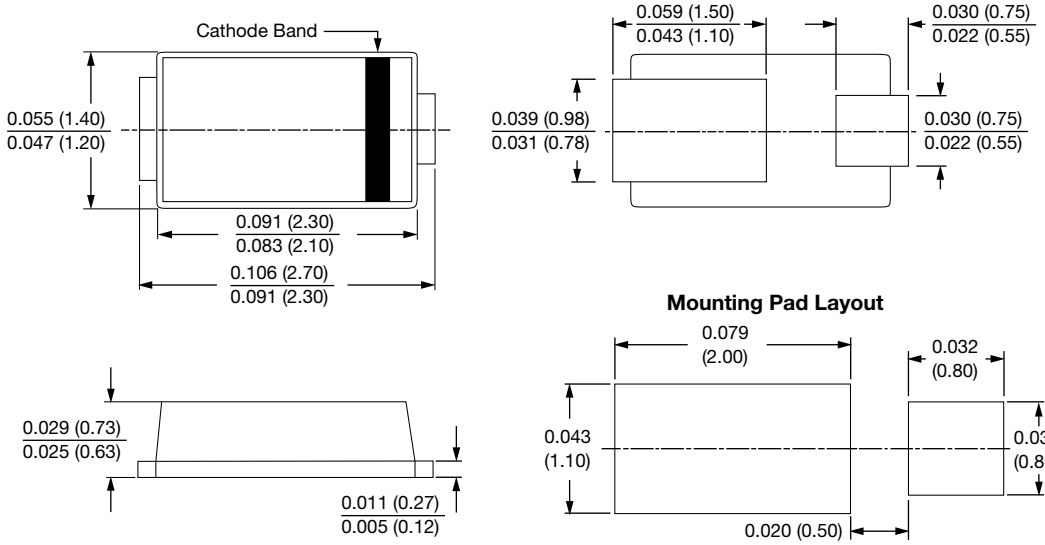


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



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