THE DATASHEET OF

MSP5.0AHM3/89A

www.win-source.net 0086-755-83957316

MSP5.0A

Vishay General Semiconductor

Surface Mount TRANSZORB® Transient Voltage Suppressors

eSMP™ Series



Top View Bottom View

MicroSMP

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
- Solder dip 265 °C max. 10 s, per JESD 22-A111
- 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**
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications

RoHS COMPLIANT
HALOGEN FREE
AUTOMOTIVE GRADE Available

PRIMARY CHARACTERISTICS	
V_{WM}	5.0 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 5.0 V supplied sensitive equipment against transient overvoltages.

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, 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

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}	10.9	A
Non repetitive peak forward surge current 10 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 mm x 6.0 mm copper pads to each terminal

MSP5.0A

Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

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

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 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 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
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) Automotive grade

For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com

Document Number: 88487
Revision: 16-Jun-09

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

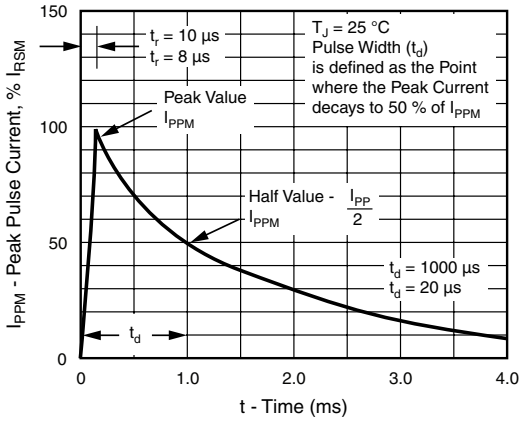


Figure 1. Pulse Waveform

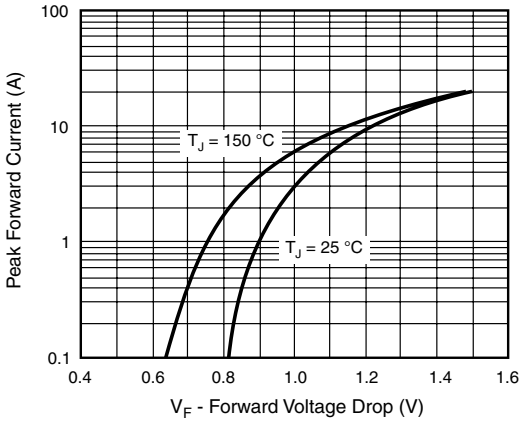


Figure 4. Typical Peak Forward Voltage Drop vs. Peak Forward Current

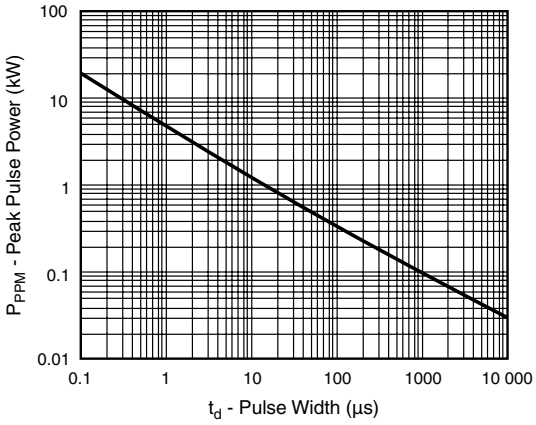


Figure 2. Peak Pulse Power Rating Curve

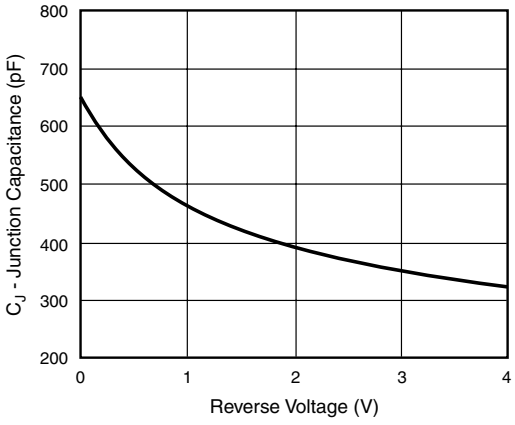


Figure 5. Typical Junction Capacitance

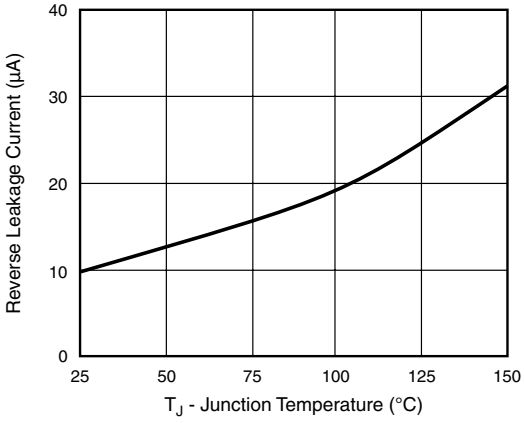


Figure 3. Relative Variation of Leakage Current vs. Junction Temperature

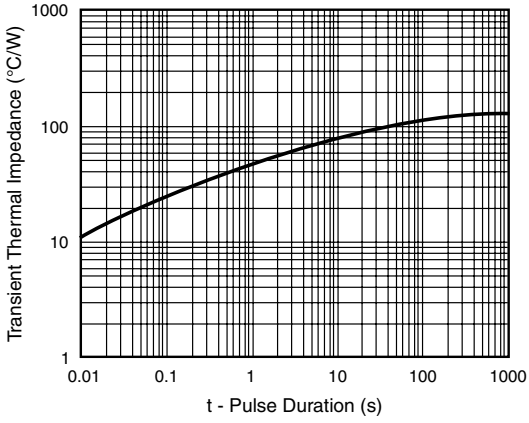
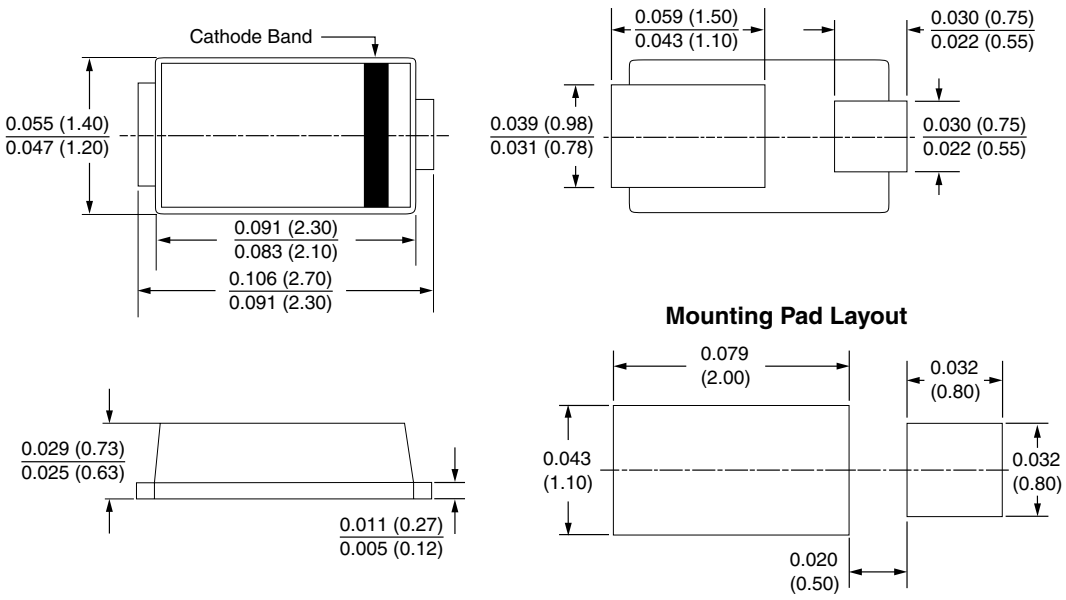


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

MicroSMP



Mounting Pad Layout

For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com

Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- View MSP5.0AHM3/89A on WIN SOURCE
- Vishay Information

Optimize Your Supply Chain with WIN SOURCE Solutions

- Global Sourcing Solution
- Obsolete Management
- Cost Control Management
- Shortage Management
- Alternative Solution
- Excess Inventory Management