Surface Mount TRANSZORB® Transient Voltage Suppressors

eSMP® Series



SMP (DO-220AA)

Anode ○—▶|—○ Cathode

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
V_{BR} uni-directional	4.10 V to 44.2 V
V_{WM}	3.3 V to 36 V
P_{PPM}	400 W
I_{FSM}	40 A
T_J max.	150 °C
Polarity	Unidirectional
Package	SMP (DO-220AA)

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Available in unidirectional
- 400 W peak pulse power capability with a 10/1000 µs waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

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 for consumer, computer, industrial, and telecommunication.

MECHANICAL DATA

Case: SMP (DO-220AA)
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and industrial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation with a 10/1000 µs waveform (fig. 1) (1)(2)	P_{PPM}	400	W
Peak pulse current with a 10/1000 µs waveform (1)	I_{PPM}	See table next page	A
Peak forward surge current 10 ms single half sine-wave (2)	I_{FSM}	40	A
Maximum instantaneous forward voltage at 25 A (3)	V_F	2.5	V
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2
(2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal
(3) Pulse test: 300 µs pulse width, 1 % duty cycle

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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) (3)**	**MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (A) (2)**	**MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)**
		MIN.	**MAX.**					
SMP3V3	AC	4.10	5.10	1.0	3.3	200	54.8	7.3
SMP5.0A	AE	6.40	7.07	10	5.0	150	43.5	9.2
SMP6.0A	AG	6.67	7.37	10	6.0	600	38.8	10.3
SMP6.5A	AK	7.22	7.98	10	6.5	100	35.7	11.2
SMP7.0A	AM	7.78	8.60	10	7.0	50	33.3	12.0
SMP7.5A	AN	8.33	9.21	1.0	7.5	50	31.0	12.9
SMP8.0A	AR	8.89	9.83	1.0	8.0	20	29.4	13.6
SMP11A	AZ	12.2	13.5	1.0	11	1.0	22.0	18.2
SMP12A	BE	13.3	14.7	1.0	12	1.0	20.1	19.9
SMP13A	BG	14.4	15.9	1.0	13	1.0	18.6	21.5
SMP14A	BK	15.6	17.2	1.0	14	1.0	17.2	23.2
SMP15A	BM	16.7	18.5	1.0	15	1.0	16.4	24.4
SMP16A	BP	17.8	19.7	1.0	16	1.0	15.4	26.0
SMP17A	BR	18.9	20.9	1.0	17	1.0	14.5	27.6
SMP18A	BT	20.0	22.1	1.0	18	1.0	13.7	29.2
SMP20A	BV	22.2	24.5	1.0	20	1.0	12.3	32.4
SMP22A	BX	24.4	26.9	1.0	22	1.0	11.3	35.5
SMP24A	BZ	26.7	29.5	1.0	24	1.0	10.3	38.9
SMP26A	CE	28.9	31.9	1.0	26	1.0	9.5	42.1
SMP28A	CG	31.1	34.4	1.0	28	1.0	8.8	45.4
SMP30A	CK	33.3	36.8	1.0	30	1.0	8.3	48.4
SMP33A	CM	36.7	40.6	1.0	33	1.0	7.5	53.3
SMP36A	CP	40.0	44.2	1.0	36	1.0	6.9	58.1

Notes

(1) V_{BR} measured after I_T applied for 300 µs, I_T = square wave pulse or equivalent

(2) Surge current waveform per fig. 3 and derate per fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE C62.35

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**LIMIT**	**UNIT**
Typical thermal resistance, junction to lead (1)	$R_{\theta JL}$	50	°C/W
Typical thermal resistance, junction to ambient (2)	$R_{\theta JA}$	250	°C/W

Notes

(1) Mounted on PCB with 5.0 mm x 5.0 mm copper pad areas attached to each terminal

(2) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SMP3V3-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SMP3V3-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel
SMP11A-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
SMP11A-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

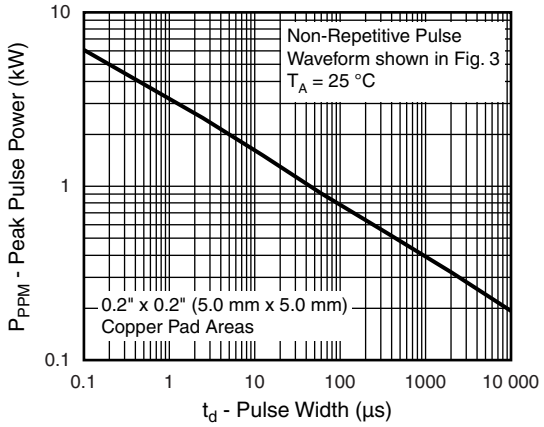


Fig. 1 - Peak Pulse Power Rating Curve

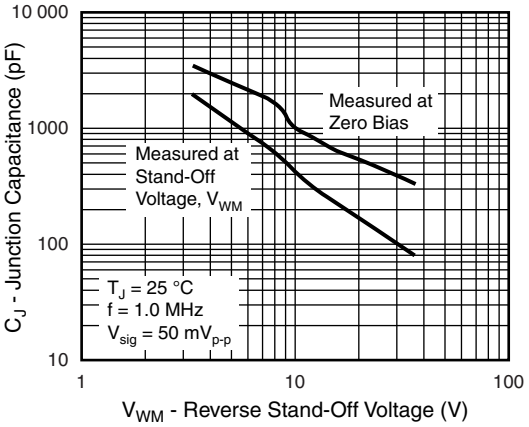


Fig. 4 - Typical Junction Capacitance

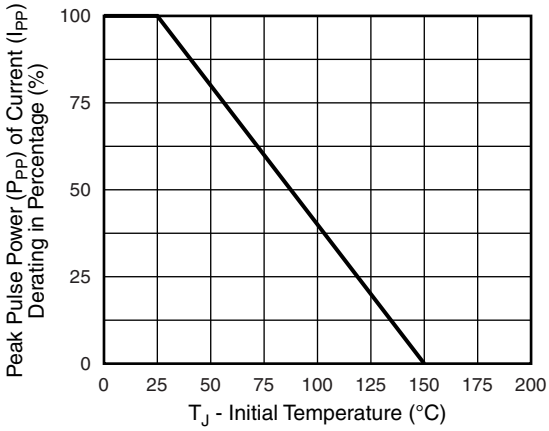


Fig. 2 - Pulse Derating Curve

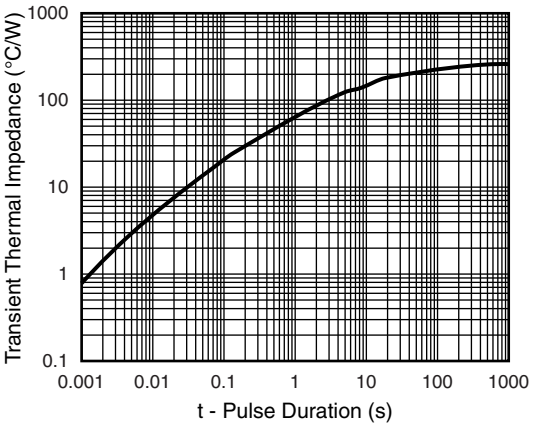


Fig. 5 - Typical Transient Thermal Impedance

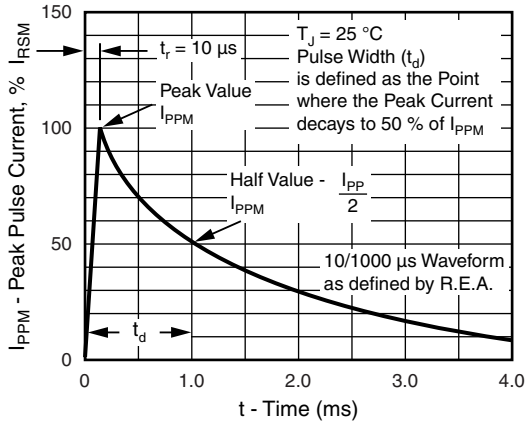


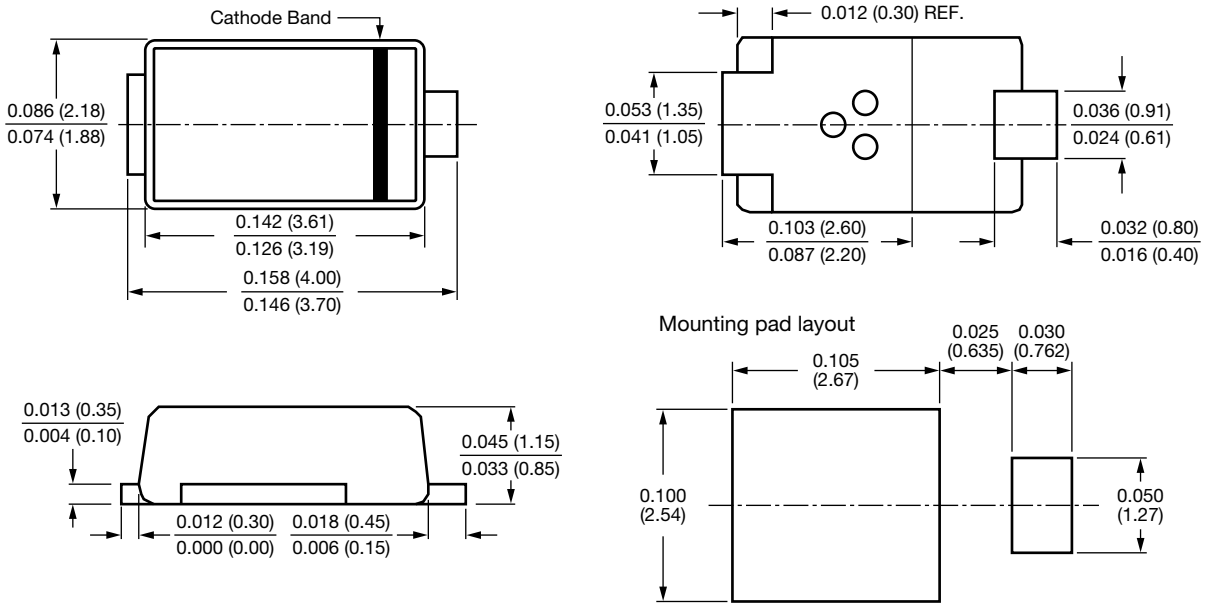
Fig. 3 - Pulse Waveform

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)



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