Surface Mount TRANSZORB® Transient Voltage Suppressors

DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Available in uni-directional polarity only
- Excellent clamping capability
- 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

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, automotive, and telecommunication.

MECHANICAL DATA

Case: DO-214AC (SMA)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant and commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

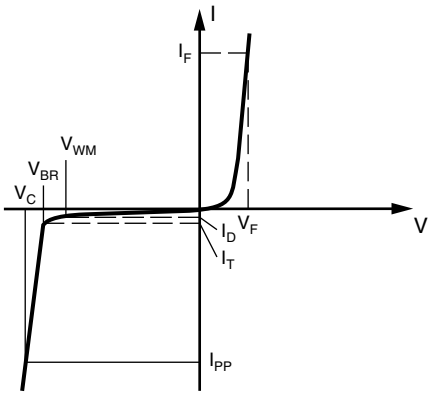
PRIMARY CHARACTERISTICS	
V_{BR}	6.4 V to 34.4 V
V_{WM}	5.0 V to 28 V
P_{PPM} (10 x 1000 µs)	600 W
P_{PPM} (8 x 20 µs)	4000 W
P_D at T_A = 50 °C	4 W
I_{FSM}	50 A
T_J max.	150 °C
Polarity	Uni-directional
Package	DO-214AC (SMA)

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 µs waveform (1)(2)	P_{PPM}	600	W
Peak pulse power dissipation with a 8/20 µs waveform		4000	
Peak pulse current with a 10/1000 µs waveform (1)(2)	I_{PPM}	See next table	A
Peak pulse current with a 8/20 µs waveform			
Power dissipation on infinite heatsink, T_A = 50 °C	P_D	4.0	W
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	50	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Notes

(1) Non-repetitive current pulse, per fig. 1 and derated above T_A = 25 °C per fig. 2.
(2) Mounted on PCB with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

INDEX OF SYMBOLS	
SYMBOL	**PARAMETER**
V_{WM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_C	Clamping voltage
I_D	Leakage current at V_{WM}
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient
V_F	Forward voltage drop
R_D	Dynamic resistance



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

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE V_{BR} AT I_T (1)			MAXIMUM REVERSE LEAKAGE I_D AT V_{WM}		STAND-OFF VOLTAGE V_{WM}	V_C AT I_{PP} 10/1000 µs		R_D (2)	V_C AT I_{PP} 8/20 µs		R_D (2)	αT (3)
		MIN.	MAX.		25 °C	85 °C		MAX.			MAX.			MAX.
		V		mA	µA		V	V	A	Ω	V	A	Ω	10^{-4}/°C
SMA6J5.0A	6AE	6.4	7.07	10	150	375	5.0	9.1	65.9	0.031	13.4	298	0.021	5.7
SMA6J6.0A	6AG	6.7	7.41	10	600	1500	6.0	9.5	63.2	0.033	13.7	290	0.022	5.9
SMA6J6.5A	6AK	7.2	7.96	10	100	250	6.5	10.2	58.8	0.038	14.5	276	0.024	6.1
SMA6J7.5A	6AP	8.33	9.21	1	50	125	7.5	11.8	50.8	0.051	17.0	235	0.033	6.5
SMA6J8.0A	6AR	8.89	9.83	1	20	50	8.0	12.5	48.0	0.056	18.2	220	0.038	7.0
SMA6J8.5A	6AT	9.4	10.4	1	20	50	8.5	13.3	45.1	0.064	18.7	205	0.040	7.3
SMA6J10A	6AX	11.1	12.3	1	1	5	10	15.7	38.2	0.089	19.6	184	0.040	7.8
SMA6J11A	6AZ	12.2	13.5	1	1	5	11	17.2	34.8	0.107	21.5	172	0.047	8.1
SMA6J12A	6BE	13.3	14.7	1	0.2	1	12	18.8	31.9	0.128	23.5	157	0.056	8.3
SMA6J13A	6BG	14.4	15.9	1	0.2	1	13	20.4	29.4	0.153	23.9	147	0.054	8.4
SMA6J15A	6BM	16.7	18.5	1	0.2	1	15	23.6	25.4	0.201	27.7	123	0.075	8.8
SMA6J16A	6BP	17.8	19.7	1	0.2	1	16	25.2	23.8	0.229	29.5	119	0.083	8.8
SMA6J17A	6BR	18.9	20.9	1	0.2	1	17	26.7	22.5	0.259	31.4	111	0.094	9.0
SMA6J18A	6BT	20.0	22.1	1	0.2	1	18	28.3	21.2	0.292	33.2	102	0.109	9.2
SMA6J20A	6BV	22.2	24.5	1	0.2	1	20	31.4	19.1	0.361	36.8	93	0.132	9.4
SMA6J22A	6BX	24.4	26.9	1	0.2	1	22	34.5	17.4	0.437	40.4	89	0.152	9.5
SMA6J24A	6BZ	26.7	29.5	1	0.2	1	24	37.8	15.9	0.523	44.3	80	0.185	9.6
SMA6J26A	6CE	28.9	31.9	1	0.2	1	26	40.9	14.7	0.614	47.9	75	0.213	9.7
SMA6J28A	6CG	31.1	34.4	1	0.2	1	28	44.0	13.6	0.704	51.6	68	0.253	9.8

Notes

(1) Pulse test: $t_p \leq 50$ ms

(2) To calculate maximum clamping voltage at other surge currents, use the following formula: $V_{CLmax.} = R_D \times I_{PP} + V_{BRmax.}$

(3) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at $T_J = V_{BR}$ at 25 °C x $(1 + \alpha T \times (T_J - 25)$

(4) V_F = 3.5 V at I_F = 25 A, pulse test: 300 µs pulse width

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to ambient (1)	$R_{\theta JA}$	120	°C/ W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	25	

Note

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SMA6J5.0A-E3/61	0.064	61	1800	7" diameter plastic tape and reel
SMA6J5.0A-E3/5A	0.064	5A	7500	13" diameter plastic tape and reel

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

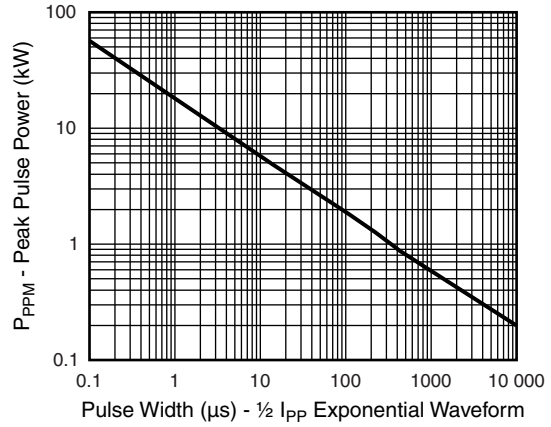


Fig. 1 - Peak Pulse Power Rating Curve

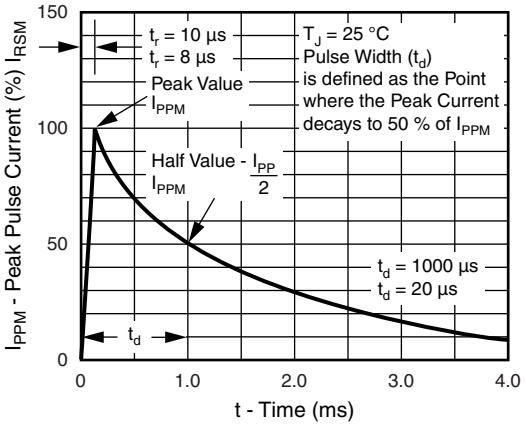


Fig. 3 - Pulse Waveform

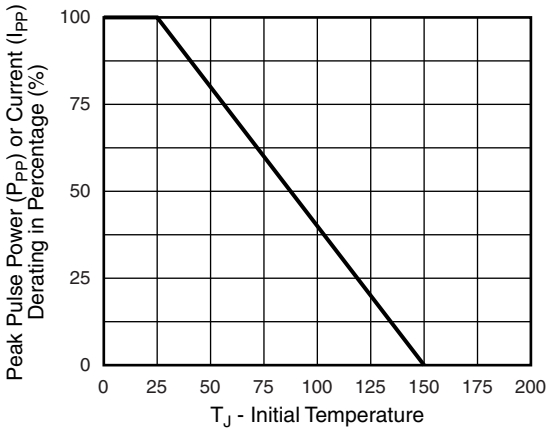


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

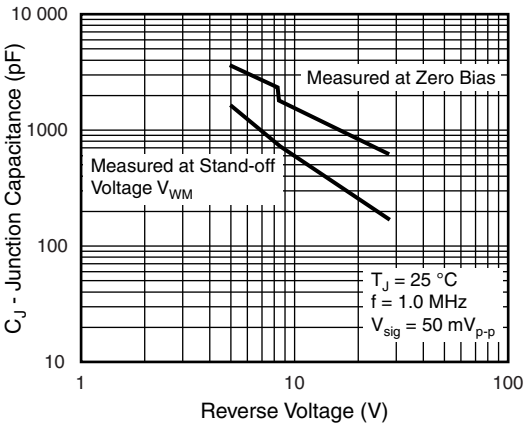


Fig. 4 - Typical Junction Capacitance

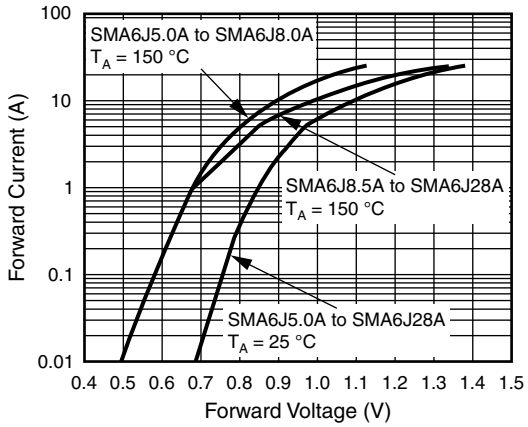


Fig. 5 - Typical Forward Characteristics

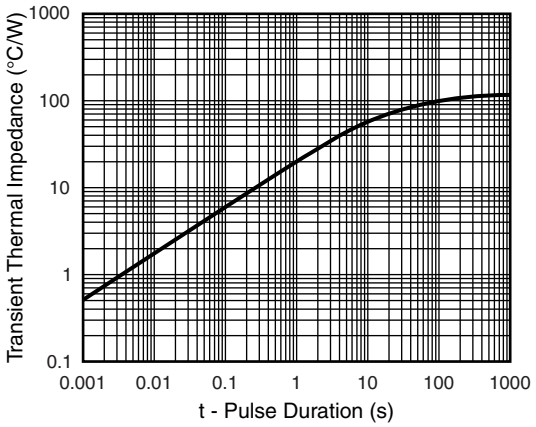
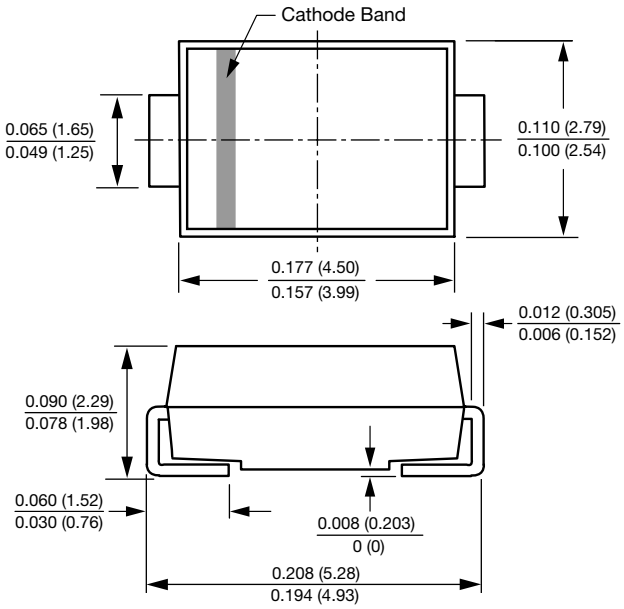


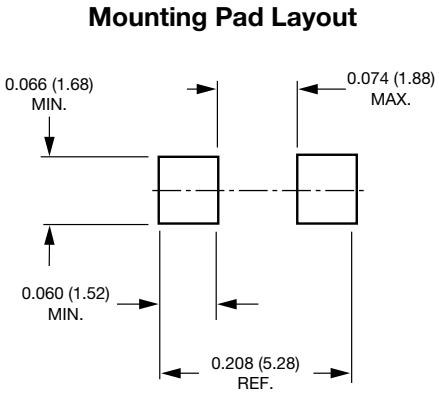
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout



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