

Vishay General Semiconductor

Surface Mount TRANSZORB® Transient Voltage Suppressors



DO-214AC (SMA)

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)					

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 <u>www.vishay.com/doc?99912</u>



RoHS

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

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)	В	600	W				
Peak pulse power dissipation with a 8/20 µs waveform	P _{PPM}	4000	l vv				
Peak pulse current with a 10/1000 μs waveform (1)(2)		See next table	^				
Peak pulse current with a 8/20 µs waveform	ІРРМ	See next table	Α				
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	А				
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 $^{\circ}$ 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

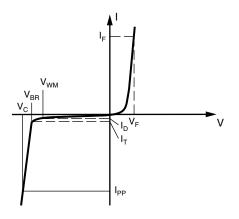




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INDEX OF SYMBOLS					
SYMBOL PARAMETER					
V_{WM}	Stand-off voltage				
V_{BR}	Breakdown voltage				
V _C	Clamping voltage				
I _D	Leakage current at V _{WM}				
I _{PP}	Peak pulse current				
αΤ	Voltage temperature coefficient				
V _F	Forward voltage drop				
R_D	Dynamic resistance				



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)														
		BREAKDOWN		MAXIMUM		STAND-OFF	V _C AT I _{PP} R _D ⁽²⁾		V _C AT I _{PP} R _D ⁽²⁾					
DEVICE MARKIN	DEVICE MARKING	VOLTAGE		REVERSE LEAKAGE I _D AT V _{WM}		VOLTAGE V _{WM}	10/1000 μs		8/20 µs		αT ⁽³⁾			
	CODE	MIN.	MAX.		25 °C	85 °C		MAX.			MAX.			MAX.
		١	/	mA	μ	Α	V	V	Α	Ω	V	Α	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: $t_p \le 50 \text{ ms}$

 $^{^{(2)}}$ 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 + α T x (T_J - 25)

 $^{^{(4)}}$ V_F = 3.5 V at I_F = 25 A, pulse test: 300 μ s pulse width



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THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	SYMBOL	VALUE	UNIT				
Typical thermal resistance, junction to ambient (1)	$R_{ hetaJA}$	120	°C/W				
Typical thermal resistance, junction to lead							

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)

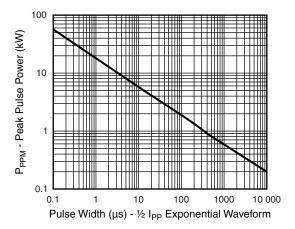


Fig. 1 - Peak Pulse Power Rating Curve

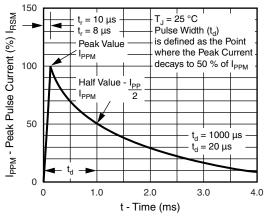


Fig. 3 - Pulse Waveform

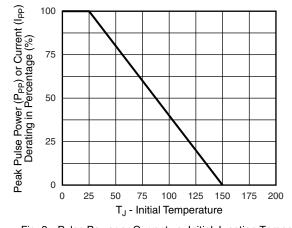


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

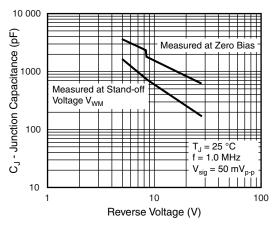


Fig. 4 - Typical Junction Capacitance



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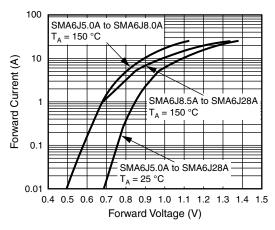


Fig. 5 - Typical Forward Characteristics

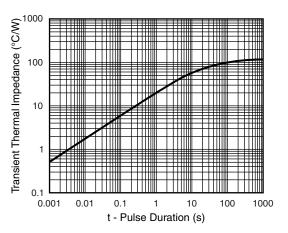
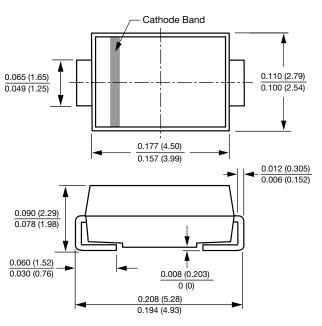


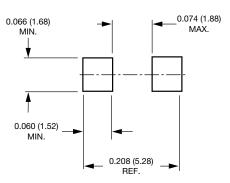
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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