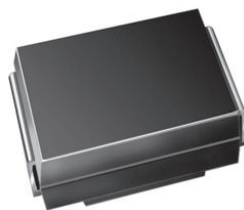


Surface Mount TRANSZORB® Transient Voltage Suppressors



SMB (DO-214AA)



FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- 1500 W peak pulse power capability with a 10/1000 μ s waveform
- Bidirectional
- Excellent clamping capability
- Very fast response time
- 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
Available

PRIMARY CHARACTERISTICS

V_{BR}	12 V to 100 V
V_{WM}	10.2 V to 85.5 V
P_{PPM}	1500 W
T_J max.	175 °C
Polarity	Bidirectional
Package	SMB (DO-214AA)

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, medical, and telecommunication.

MECHANICAL DATA

Case: SMB (DO-214AA)

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: no cathode band for bidirectional types

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

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 μ s waveform (fig.1) ⁽¹⁾	P_{PPM}	1500	W
Peak pulse current with a 10/1000 μ s waveform (fig.3) ⁽¹⁾	I_{PPM}	See table next page	A
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +175	°C

Note

⁽¹⁾ Non-repetitive current pulse, per fig.3 and derated above $T_A = 25$ °C per fig.2

**ELECTRICAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

DEVICE TYPE	DEVICE MARKING CODE	BREAKDOWN VOLTAGE $V_{BR}^{(1)}$ AT I_T (V)			TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_R (μA)	MAXIMUM REVERSE LEAKAGE AT V_{WM} $T_J = 150\text{ }^{\circ}\text{C}$ I_D (μA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)
		MIN.	NOM.	MAX.						
1.5B12CA	5KX	11.4	12.0	12.6	1.0	10.2	2.0	12.0	91.2	17.0
1.5B13CA	5KZ	12.4	13.0	13.7	1.0	11.1	2.0	10.0	83.8	18.5
1.5B15CA	5LG	14.3	15.0	15.8	1.0	12.8	1.0	10.0	73.1	21.2
1.5B16CA	5LK	15.2	16.0	16.8	1.0	13.6	1.0	10.0	68.9	22.5
1.5B18CA	5LM	17.1	18.0	18.9	1.0	15.3	1.0	10.0	60.8	25.5
1.5B20CA	5LR	19.0	20.0	21.0	1.0	17.1	1.0	10.0	56.0	27.7
1.5B22CA	5LS	20.9	22.0	23.1	1.0	18.8	1.0	10.0	50.7	30.6
1.5B24CA	5LV	22.8	24.0	25.2	1.0	20.5	1.0	10.0	46.7	33.2
1.5B27CA	5LW	25.7	27.0	28.4	1.0	23.1	1.0	10.0	41.3	37.5
1.5B30CA	5ME	28.5	30.0	31.5	1.0	25.6	1.0	10.0	37.4	41.4
1.5B33CA	5MG	31.4	33.0	34.7	1.0	28.2	1.0	10.0	33.9	45.7
1.5B36CA	5MJ	34.2	36.0	37.8	1.0	30.8	1.0	15.0	31.1	49.9
1.5B39CA	5MM	37.1	39.0	41.0	1.0	33.3	1.0	15.0	28.8	53.9
1.5B43CA	5MN	40.9	43.0	45.2	1.0	36.8	1.0	20.0	26.1	59.3
1.5B47CA	5MR	44.7	47.0	49.4	1.0	40.2	1.0	20.0	23.9	64.8
1.5B51CA	5MT	48.5	51.0	53.6	1.0	43.6	1.0	20.0	22.1	70.1
1.5B56CA	5MX	53.2	56.0	58.8	1.0	47.8	1.0	20.0	20.1	77.0
1.5B62CA	5NE	58.9	62.0	65.1	1.0	53.0	1.0	20.0	18.2	85.0
1.5B68CA	5NG	64.6	68.0	71.4	1.0	58.1	1.0	20.0	16.8	92.0
1.5B75CA	5NM	71.3	75.0	78.8	1.0	64.1	1.0	20.0	14.9	104
1.5B82CA	5NP	77.9	82.0	86.1	1.0	70.1	1.0	20.0	13.7	113
1.5B91CA	5NT	86.5	91.0	95.5	1.0	77.8	1.0	20.0	12.4	125
1.5B100CA	5NV	95.0	100	105	1.0	85.5	1.0	20.0	11.3	137

Notes

- (1) V_{BR} measured after I_T applied for 300 μs , I_T = square wave pulse or equivalent
(2) Surge current wave form per fig.3 and derated per fig.2
(3) All terms and symbols are consistent with ANSI/IEEE C62.35

IMMUNITY TO STATIC ELECTRICAL DISCHARGE TO THE FOLLOWING STANDARDS($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	VALUE
IEC 61000-4-2	Contact discharge	C = 150 pF, R = 330 Ω	ESD	30 kV
	Air discharge			30 kV

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	$R_{\theta JA}^{(1)}$	110	130	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(2)}$	4.5	6.0	$^{\circ}\text{C/W}$

Notes

- (1) Thermal resistance junction-to-ambient to follow JEDEC[®] 51-2A, device mounted on FR4 PCB, 2 oz. standard footprint
(2) Thermal resistance junction-to-mount to follow JEDEC[®] 51-14 using Transient Dual Interface Test Method (TDIM)

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
1.5B12CA-M3/H	0.107	H	750	7" diameter plastic tape and reel
1.5B12CA-M3/I	0.107	I	3200	13" diameter plastic tape and reel



RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$, unless otherwise noted)

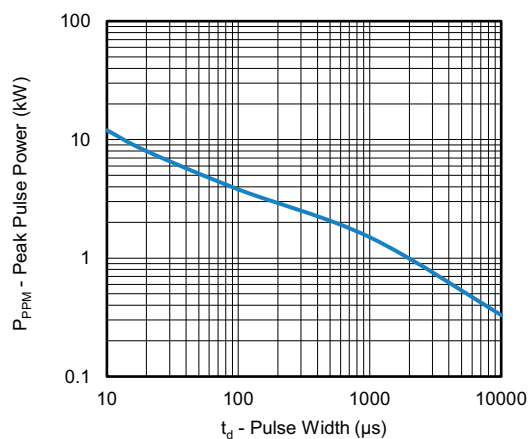


Fig. 1 - Peak Pulse Power Rating Curve

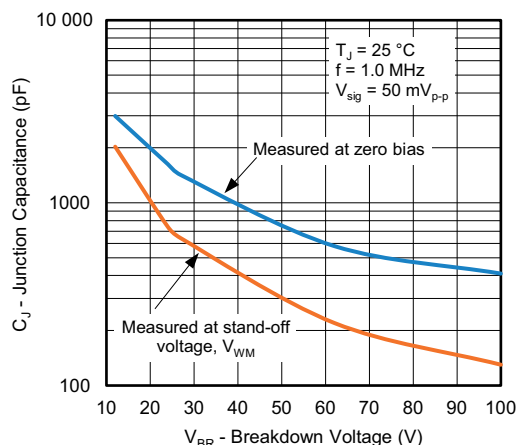


Fig. 4 - Typical Junction Capacitance

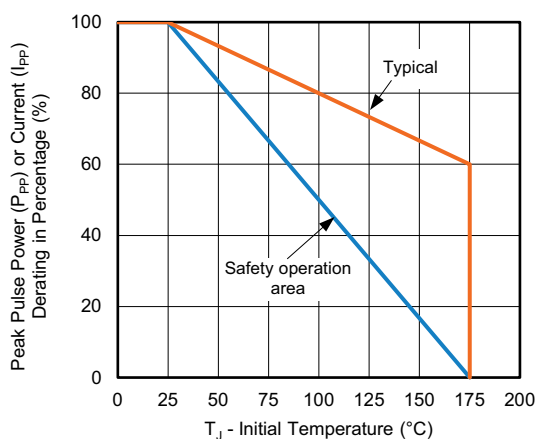


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

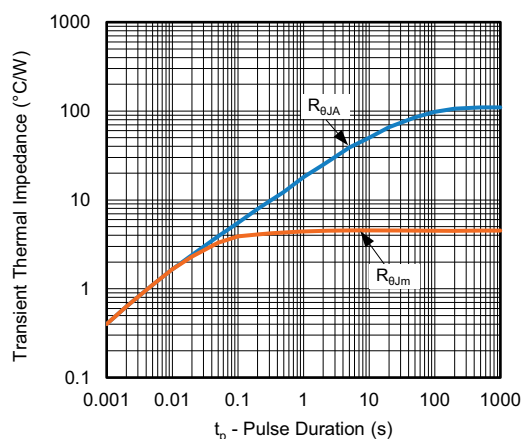


Fig. 5 - Typical Transient Thermal Impedance

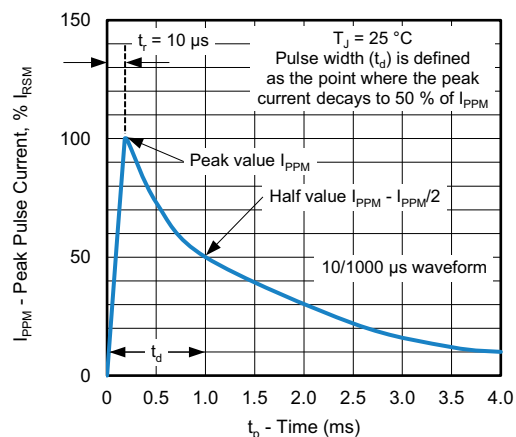


Fig. 3 - Pulse Waveform

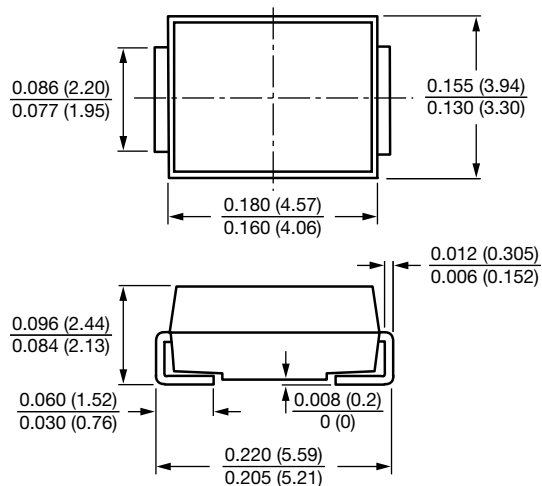
Note

- Fig.1, power calculations is based on I_{PPM} times defined maximum clamping voltage by pulse width

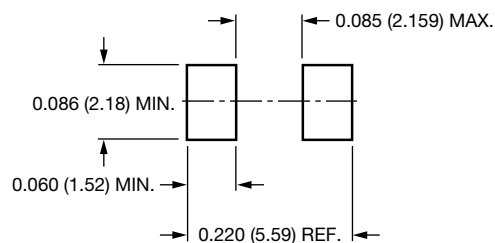


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout





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