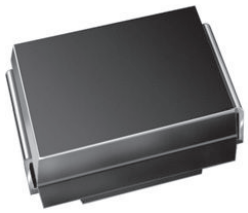
Surface Mount TRANSZORB® Transient Voltage Suppressors



SMB (DO-214AA)

Cathode ○—|◀|—○ Anode

PRIMARY CHARACTERISTICS	
V_{BR}	12 V to 51 V
V_{WM}	10.2 V to 43.6 V
P_{PPM}	1500 W
T_J max.	175 °C
Polarity	Unidirectional
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.

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- 1500 W peak pulse power capability with a 10/1000 µs waveform
- Unidirectional
- 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

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: 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)	P_{PPM}	1500	W
Peak pulse current with a 10/1000 µs 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 °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 °C I_D (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (2) αT (%/°C)
		MIN.	NOM.	MAX.							
1.5B12A	5KX	11.4	12.0	12.6	1.0	10.2	2.0	12.0	91.2	17.0	0.070
1.5B13A	5KZ	12.4	13.0	13.7	1.0	11.1	2.0	10.0	83.8	18.5	0.072
1.5B15A	5LG	14.3	15.0	15.8	1.0	12.8	1.0	10.0	73.1	21.2	0.076
1.5B16A	5LK	15.2	16.0	16.8	1.0	13.6	1.0	10.0	68.9	22.5	0.078
1.5B18A	5LM	17.1	18.0	18.9	1.0	15.3	1.0	10.0	60.8	25.5	0.080
1.5B20A	5LR	19.0	20.0	21.0	1.0	17.1	1.0	10.0	56.0	27.7	0.082
1.5B22A	5LS	20.9	22.0	23.1	1.0	18.8	1.0	10.0	50.7	30.6	0.084
1.5B24A	5LV	22.8	24.0	25.2	1.0	20.5	1.0	10.0	46.7	33.2	0.085
1.5B27A	5LW	25.7	27.0	28.4	1.0	23.1	1.0	10.0	41.3	37.5	0.087
1.5B30A	5ME	28.5	30.0	31.5	1.0	25.6	1.0	10.0	37.4	41.4	0.088
1.5B33A	5MG	31.4	33.0	34.7	1.0	28.2	1.0	10.0	33.9	45.7	0.089
1.5B36A	5MJ	34.2	36.0	37.8	1.0	30.8	1.0	15.0	31.1	49.9	0.090
1.5B39A	5MM	37.1	39.0	41.0	1.0	33.3	1.0	15.0	28.8	53.9	0.091
1.5B43A	5MN	40.9	43.0	45.2	1.0	36.8	1.0	20.0	26.1	59.3	0.092
1.5B47A	5MR	44.7	47.0	49.4	1.0	40.2	1.0	20.0	23.9	64.8	0.092
1.5B51A	5MT	48.5	51.0	53.6	1.0	43.6	1.0	20.0	22.1	70.1	0.093

Notes

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

(2) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at T_J = V_{BR} at 25 °C x (1 + αT x (T_J - 25))

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

IMMUNITY TO STATIC ELECTRICAL DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °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

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
1.5B12A-M3/H	0.107	H	750	7" diameter plastic tape and reel
1.5B12A-M3/I	0.107	I	3200	13" diameter plastic tape and reel

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

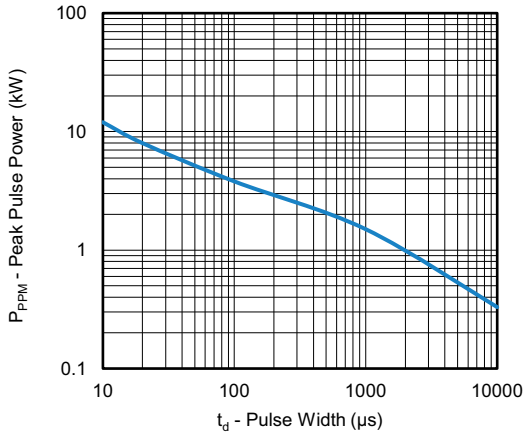


Fig. 1 - Peak Pulse Power Rating Curve

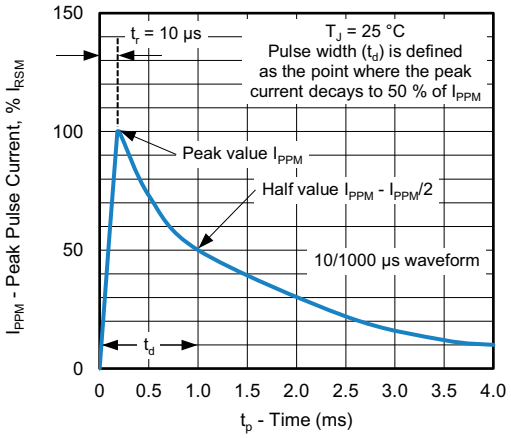


Fig. 3 - Pulse Waveform

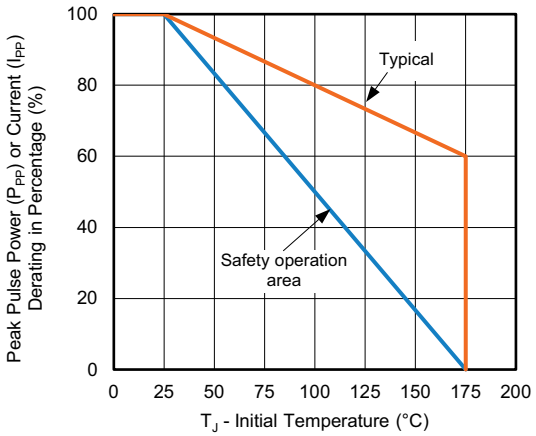


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

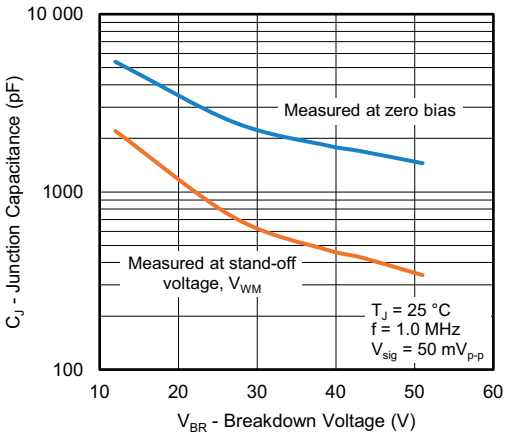


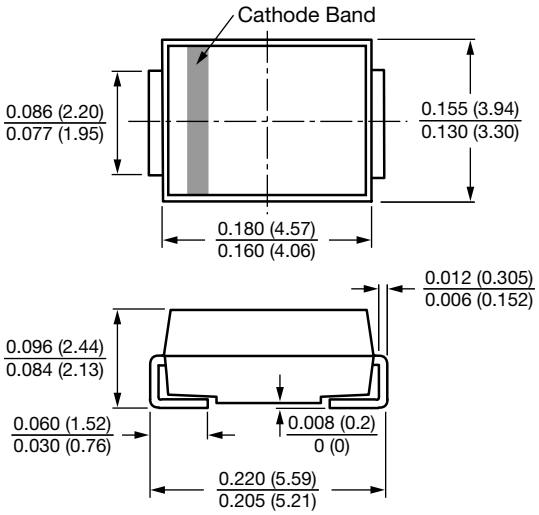
Fig. 4 - Typical Junction Capacitance

Note

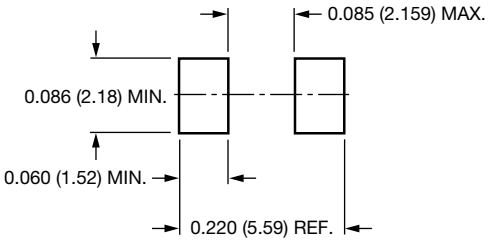
- Fig.1, power calculations is based on I_{PPM} times defined maximum clamping voltage by pulse width

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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