Surface-Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



SMB (DO-214AA)



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.	185 °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 automotive.

FEATURES

AUTOMOTIVE GRADE

RoHS COMPLIANT

HALOGEN FREE Available

- Junction passivation optimized design passivated anisotropic rectifier technology
- T_J = 185 °C capability suitable for high reliability and automotive requirement
- 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
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

MECHANICAL DATA

Case: SMB (DO-214AA)
Molding compound meets UL 94 V-0 flammability rating

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

HM3 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 +185	°C

Note

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

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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.							
T15B12A	KX5	11.4	12.0	12.6	1.0	10.2	2.0	12.0	91.2	17.0	0.070
T15B13A	KZ5	12.4	13.0	13.7	1.0	11.1	2.0	10.0	83.8	18.5	0.072
T15B15A	LG5	14.3	15.0	15.8	1.0	12.8	1.0	10.0	73.1	21.2	0.076
T15B16A	LK5	15.2	16.0	16.8	1.0	13.6	1.0	10.0	68.9	22.5	0.078
T15B18A	LM5	17.1	18.0	18.9	1.0	15.3	1.0	10.0	60.8	25.5	0.080
T15B20A	LR5	19.0	20.0	21.0	1.0	17.1	1.0	10.0	56.0	27.7	0.082
T15B22A	LS5	20.9	22.0	23.1	1.0	18.8	1.0	10.0	50.7	30.6	0.084
T15B24A	LV5	22.8	24.0	25.2	1.0	20.5	1.0	10.0	46.7	33.2	0.085
T15B27A	LW5	25.7	27.0	28.4	1.0	23.1	1.0	10.0	41.3	37.5	0.087
T15B30A	ME5	28.5	30.0	31.5	1.0	25.6	1.0	10.0	37.4	41.4	0.088
T15B33A	MG5	31.4	33.0	34.7	1.0	28.2	1.0	10.0	33.9	45.7	0.089
T15B36A	MJ5	34.2	36.0	37.8	1.0	30.8	1.0	15.0	31.1	49.9	0.090
T15B39A	MM5	37.1	39.0	41.0	1.0	33.3	1.0	15.0	28.8	53.9	0.091
T15B43A	MN5	40.9	43.0	45.2	1.0	36.8	1.0	20.0	26.1	59.3	0.092
T15B47A	MR5	44.7	47.0	49.4	1.0	40.2	1.0	20.0	23.9	64.8	0.092
T15B51A	MT5	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
T15B12AHM3/H (1)	0.107	H	750	7" diameter plastic tape and reel
T15B12AHM3/I (1)	0.107	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

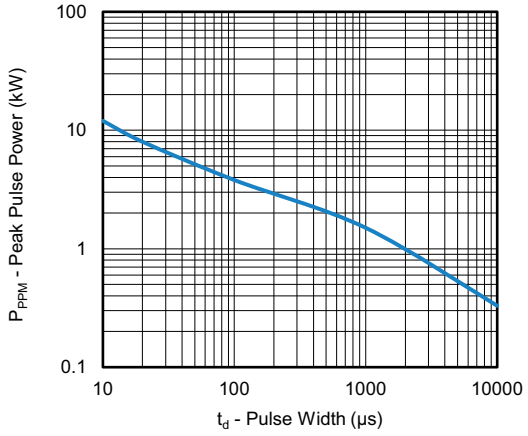


Fig. 1 - Peak Pulse Power Rating Curve

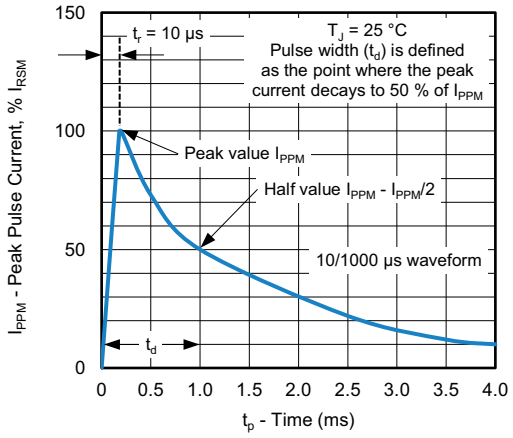


Fig. 3 - Pulse Waveform

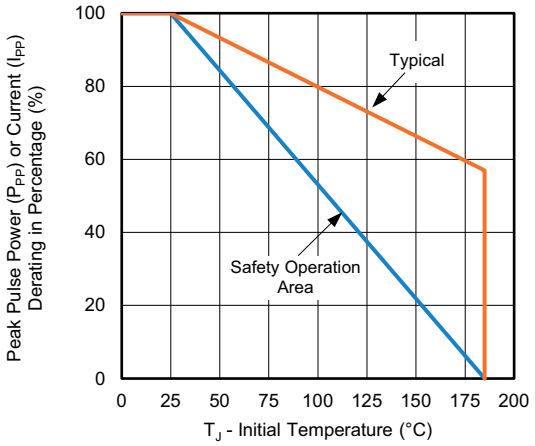


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

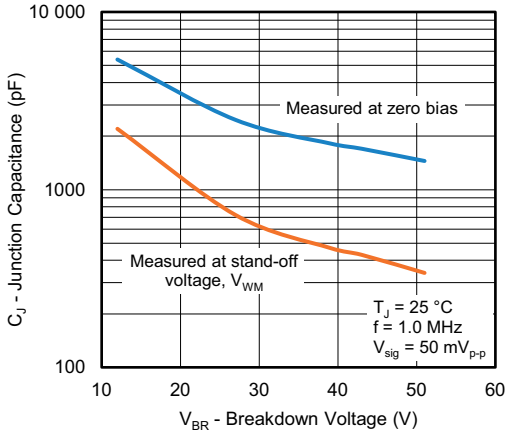


Fig. 4 - Typical Junction Capacitance

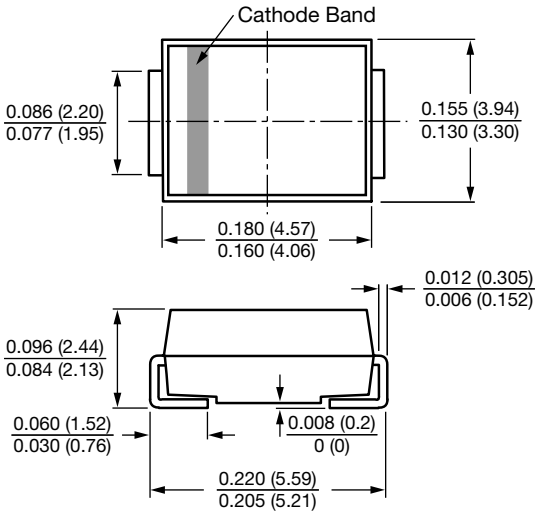
Note

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

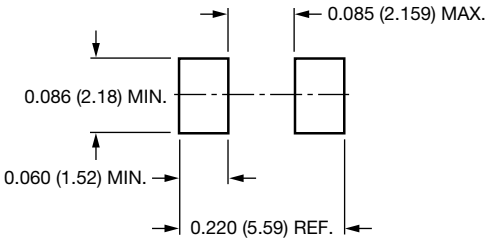
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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