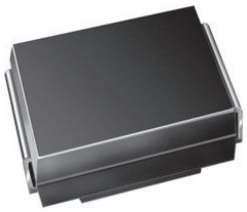
Surface-Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



SMB (DO-214AA)

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.	185 °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 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
- Bidirectional
- 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: 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 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

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_R (µA)	MAXIMUM PEAK PULSE SURGE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)
		MIN.	NOM.	MAX.						
T15B12CA	KX5	11.4	12.0	12.6	1.0	10.2	2.0	12.0	91.2	17.0
T15B13CA	KZ5	12.4	13.0	13.7	1.0	11.1	2.0	10.0	83.8	18.5
T15B15CA	LG5	14.3	15.0	15.8	1.0	12.8	1.0	10.0	73.1	21.2
T15B16CA	LK5	15.2	16.0	16.8	1.0	13.6	1.0	10.0	68.9	22.5
T15B18CA	LM5	17.1	18.0	18.9	1.0	15.3	1.0	10.0	60.8	25.5
T15B20CA	LR5	19.0	20.0	21.0	1.0	17.1	1.0	10.0	56.0	27.7
T15B22CA	LS5	20.9	22.0	23.1	1.0	18.8	1.0	10.0	50.7	30.6
T15B24CA	LV5	22.8	24.0	25.2	1.0	20.5	1.0	10.0	46.7	33.2
T15B27CA	LW5	25.7	27.0	28.4	1.0	23.1	1.0	10.0	41.3	37.5
T15B30CA	ME5	28.5	30.0	31.5	1.0	25.6	1.0	10.0	37.4	41.4
T15B33CA	MG5	31.4	33.0	34.7	1.0	28.2	1.0	10.0	33.9	45.7
T15B36CA	MJ5	34.2	36.0	37.8	1.0	30.8	1.0	15.0	31.1	49.9
T15B39CA	MM5	37.1	39.0	41.0	1.0	33.3	1.0	15.0	28.8	53.9
T15B43CA	MN5	40.9	43.0	45.2	1.0	36.8	1.0	20.0	26.1	59.3
T15B47CA	MR5	44.7	47.0	49.4	1.0	40.2	1.0	20.0	23.9	64.8
T15B51CA	MT5	48.5	51.0	53.6	1.0	43.6	1.0	20.0	22.1	70.1
T15B56CA	MX5	53.2	56.0	58.8	1.0	47.8	1.0	20.0	20.1	77.0
T15B62CA	MZ5	58.9	62.0	65.1	1.0	53.0	1.0	20.0	18.2	85.0
T15B68CA	NF5	64.6	68.0	71.4	1.0	58.1	1.0	20.0	16.8	92.0
T15B75CA	NL5	71.3	75.0	78.8	1.0	64.1	1.0	20.0	14.9	104
T15B82CA	NP5	77.9	82.0	86.1	1.0	70.1	1.0	20.0	13.7	113
T15B91CA	NT5	86.5	91.0	95.5	1.0	77.8	1.0	20.0	12.4	125
T15B100CA	NV5	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 °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 °C unless otherwise noted)

PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Thermal resistance	$R_{\theta JA}$ (1)	110	130	°C/W
	$R_{\theta JM}$ (2)	4.5	6.0	°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
T15B12CAHM3/H (1)	0.107	H	750	7" diameter plastic tape and reel
T15B12CAHM3/I (1)	0.107	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

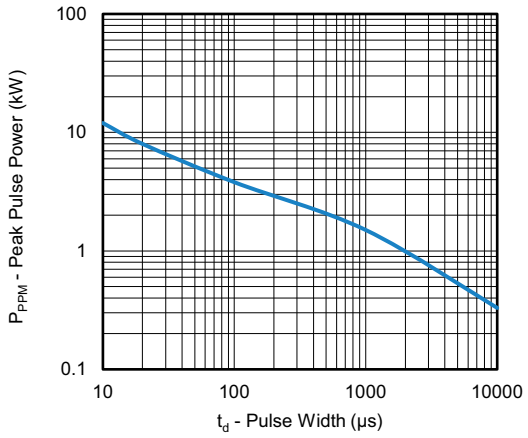


Fig. 1 - Peak Pulse Power Rating Curve

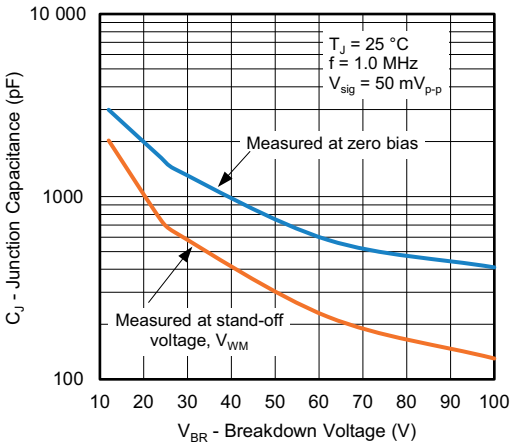


Fig. 4 - Typical Junction Capacitance

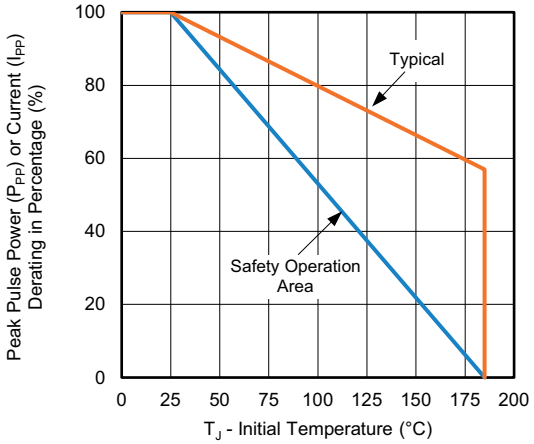


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

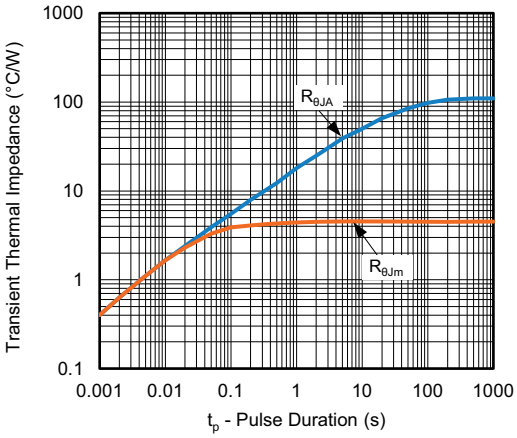


Fig. 5 - Typical Transient Thermal Impedance

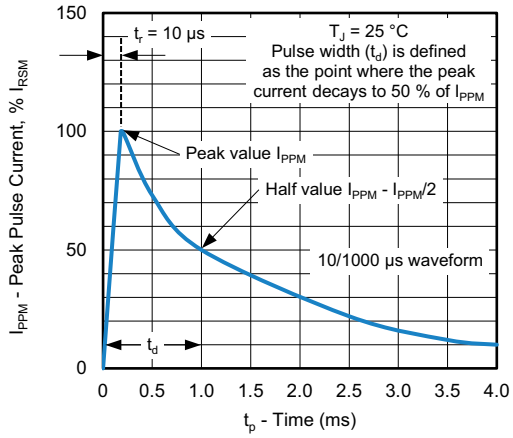


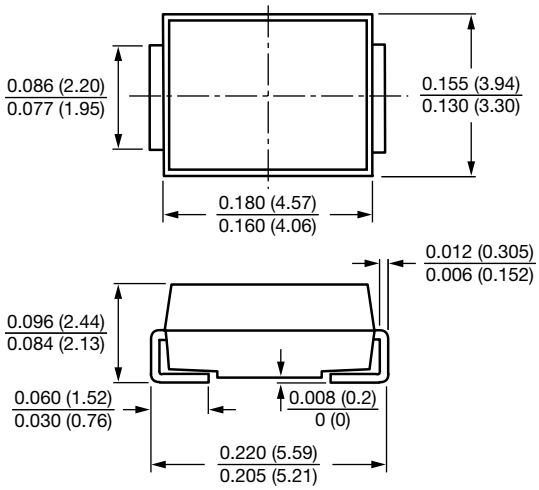
Fig. 3 - Pulse Waveform

Note

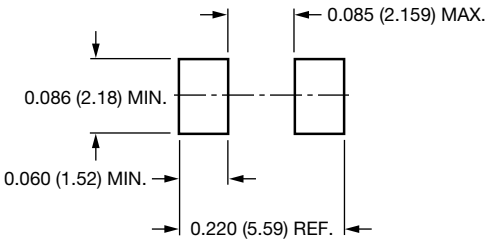
- Fig.1, power calculations is based on I_{PPM} times defined maximum clamping voltage by pulse width

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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