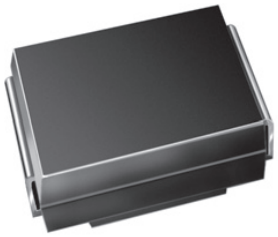
Surface Mount PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-214AA (SMBJ)

PRIMARY CHARACTERISTICS	
V_{BR}	6.8 V to 43 V
V_{WM}	5.50 V to 36.8 V
P_{PPM}	600 W
I_{FSM}	75 A
T_J max.	185 °C
Polarity	Uni-directional
Package	DO-214AA (SMBJ)

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.

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- T_J = 185 °C capability suitable for high reliability and automotive requirement
- Available in uni-directional polarity only
- 600 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- 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

RoHS COMPLIANT

MECHANICAL DATA

Case: DO-214AA (SMBJ)
Molding compound meets UL 94 V-0 flammability rating
Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
HE3 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)(2)	P_{PPM}	600	W
Peak pulse current with a 10/1000 µs waveform (fig. 3) (1)	I_{PPM}	See table next page	A
Peak forward surge current 8.3 ms single half sine-wave (2)(3)	I_{FSM}	75	A
Maximum instantaneous forward voltage at 50 A (2)(3)	V_F	3.5	V
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +185	°C

Notes

(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2
(2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads at each terminal
(3) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

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} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)
		MIN.	MAX.						
TPSMB6.8	KDP	6.12	7.48	10	5.5	500	1000	55.6	10.8
TPSMB6.8A	KEP	6.45	7.14	10	5.8	500	1000	57.1	10.5
TPSMB7.5	KFP	6.75	8.25	10	6.05	250	500	51.3	11.7
TPSMB7.5A	KGP	7.13	7.88	10	6.4	250	500	53.1	11.3
TPSMB8.2	KHP	7.38	9.02	10	6.63	100	200	48	12.5
TPSMB8.2A	KKP	7.79	8.61	10	7.02	100	200	49.6	12.1
TPSMB9.1	KLP	8.19	10	1	7.37	25	50	43.5	13.8
TPSMB9.1A	KMP	8.65	9.55	1	7.78	25	50	44.8	13.4
TPSMB10	KNP	9	11	1	8.1	5	20	40	15
TPSMB10A	KPP	9.5	10.5	1	8.55	5	20	41.4	14.5
TPSMB11	KQP	9.9	12.1	1	8.92	2	5	37	16.2
TPSMB11A	KRP	10.5	11.6	1	9.4	2	5	38.5	15.6
TPSMB12	KSP	10.8	13.2	1	9.72	2	5	34.7	17.3
TPSMB12A	KTP	11.4	12.6	1	10.2	2	5	35.9	16.7
TPSMB13	KUP	11.7	14.3	1	10.5	2	5	31.6	19
TPSMB13A	KVP	12.4	13.7	1	11.1	2	5	33	18.2
TPSMB15	KWP	13.5	16.5	1	12.1	1	5	27.3	22
TPSMB15A	KXP	14.3	15.8	1	12.8	1	5	28.3	21.2
TPSMB16	KYP	14.4	17.6	1	12.9	1	5	25.5	23.5
TPSMB16A	KZP	15.2	16.8	1	13.6	1	5	26.7	22.5
TPSMB18	LDP	16.2	19.8	1	14.5	1	5	22.6	26.5
TPSMB18A	LEP	17.1	18.9	1	15.3	1	5	23.8	25.2
TPSMB20	LFP	18	22	1	16.2	1	5	20.6	29.1
TPSMB20A	LGP	19	21	1	17.1	1	5	21.7	27.7
TPSMB22	LHP	19.8	24.2	1	17.8	1	5	18.8	31.9
TPSMB22A	LKP	20.9	23.1	1	18.8	1	5	19.6	30.6
TPSMB24	LLP	21.6	26.4	1	19.4	1	5	17.3	34.7
TPSMB24A	LMP	22.8	25.2	1	20.5	1	5	18.1	33.2
TPSMB27	LNP	24.3	29.7	1	21.8	1	5	15.3	39.1
TPSMB27A	LPP	25.7	28.4	1	23.1	1	5	16	37.5
TPSMB30	LQP	27	33	1	24.3	1	5	13.8	43.5
TPSMB30A	LRP	28.5	31.5	1	25.6	1	5	14.5	41.4
TPSMB33	LSP	29.7	36.3	1	26.8	1	5	12.6	47.7
TPSMB33A	LTP	31.4	34.7	1	28.2	1	5	13.1	45.7
TPSMB36	LUP	32.4	39.6	1	29.1	1	5	11.5	52
TPSMB36A	LVP	34.2	37.8	1	30.8	1	5	12	49.9
TPSMB39	LWP	35.1	42.9	1	31.6	1	5	10.6	56.4
TPSMB39A	LXP	37.1	41	1	33.3	1	5	11.1	53.9
TPSMB43	LYP	38.7	47.3	1	34.8	1	5	9.7	61.9
TPSMB43A	LZP	40.9	45.2	1	36.8	1	5	10.1	59.3

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

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TPSMB6.8AHE3/52T (1)	0.096	52T	750	7" diameter plastic tape and reel
TPSMB6.8AHE3/5BT (1)	0.096	5BT	3200	13" diameter plastic tape and reel

Note

(1) Automotive grade

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

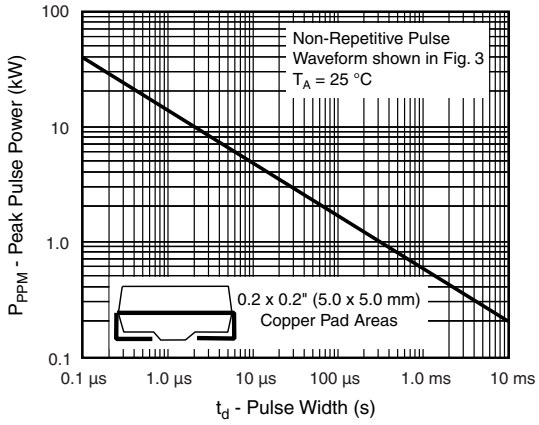


Fig. 1 - Peak Pulse Power Rating Curve

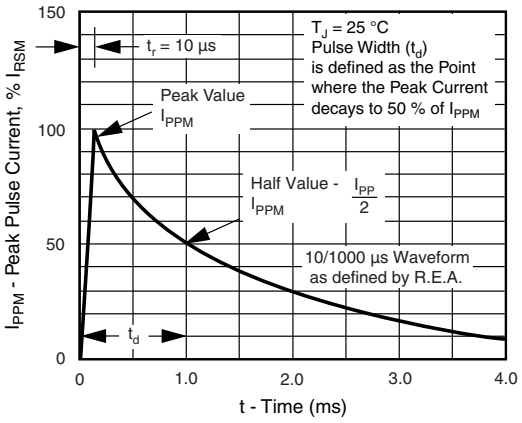


Fig. 3 - Pulse Waveform

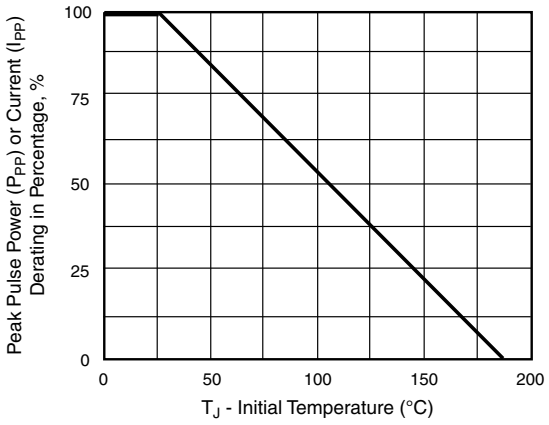


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

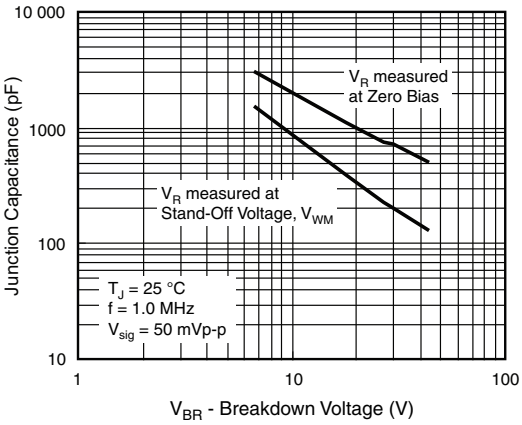


Fig. 4 - Typical Junction Capacitance

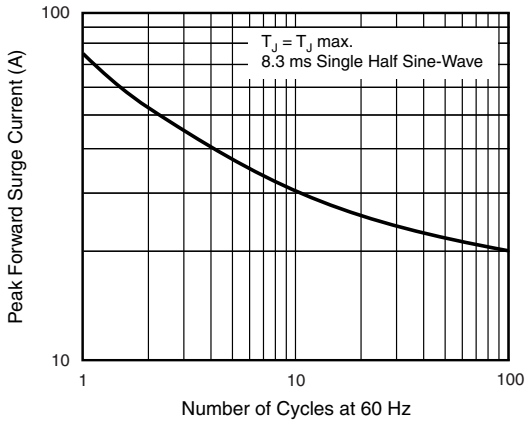
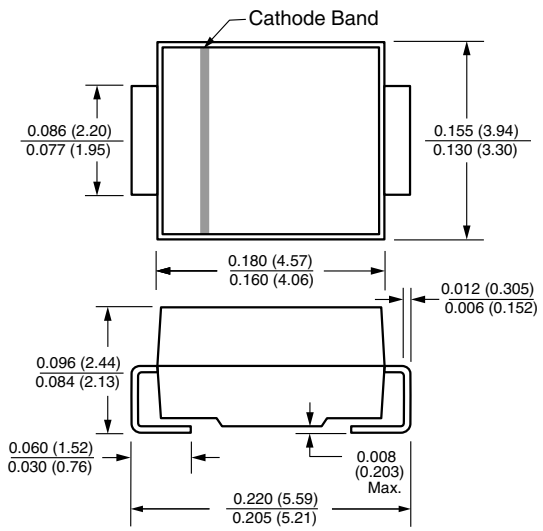


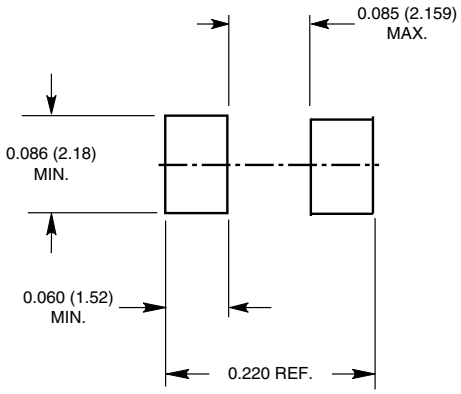
Fig. 5 - Maximum Non-Repetitive/Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMBJ)



Mounting Pad Layout



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