Surface Mount TRANSZORB® Transient Voltage Suppressors

DO-214AA (SMB)

PRIMARY CHARACTERISTICS	
V_{BR}	6.8 V to 220 V
P_{PPM}	600 W
P_D	5.0 W
I_{FSM} (uni-directional only)	100 A
T_J max.	150 °C

DEVICES FOR BI-DIRECTION APPLICATIONS

For bi-directional devices use CA suffix (e.g. SM6T12CA).

Electrical characteristics apply in both directions.

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- 600 W peak pulse power capability with a 10/1000 µs waveform
- Available in uni-directional and bi-directional
- Excellent clamping capability
- Low inductance
- Meets MSL level 1, per J-STD-020C, LF max peak of 260 °C
- Solder dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

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.

MECHANICAL DATA

Case: DO-214AA (SMB)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation on 10/1000 µs waveform (1)(2) (Fig. 1)	P_{PPM}	600	W
Peak power pulse current with a 10/1000 µs waveform (1) (Fig. 3)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink T_A = 50 °C	P_D	5.0	W
Peak forward surge current 10 ms single half sine-wave uni-directional only (2)	I_{FSM}	100	A
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to +150	°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 x 5.0 mm) copper pads to each terminal

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

TYPE (1)	DEVICE MARKING CODE		BREAKDOWN VOLTAGE V_{BR} AT I_T (2) (V)		TEST CURRENT (mA)	STAND-OFF VOLTAGE V_{RM} (V)	LEAKAGE CURRENT (3) I_{RM} AT V_{RM} (µA)	CLAMPING VOLTAGE V_C AT I_{PP} 10/1000 µs		CLAMPING VOLTAGE V_C AT I_{PP} 8/20 µs		α_T Max 0^{-4}/°C
	UNI	BI	MIN	MAX				(V)	(A)	(V)	(A)	
SM6T6V8A	KE7	KE7	6.45	7.14	10	5.80	1000	10.5	57.0	13.4	298	5.7
SM6T7V5A	KK7	AK7	7.13	7.88	10	6.40	500	11.3	53.0	14.5	276	6.1
SM6T10A	KT7	AT7	9.50	10.5	1.0	8.55	10.0	14.5	41.0	18.6	215	7.3
SM6T12A	KX7	AX7	11.4	12.6	1.0	10.2	5.0	16.7	36.0	21.7	184	7.8
SM6T15A	LG7	LG7	14.3	15.8	1.0	12.8	1.0	21.2	28.0	27.2	147	8.4
SM6T18A	LM7	BM7	17.1	18.9	1.0	15.3	1.0	25.2	24.0	32.5	123	8.8
SM6T22A	LT7	BT7	20.9	23.1	1.0	18.8	1.0	30.6	20.0	39.3	102	9.2
SM6T24A	LV7	LV7	22.8	25.2	1.0	20.5	1.0	33.2	18.0	42.8	93	9.4
SM6T27A	LX7	BX7	25.7	28.4	1.0	23.1	1.0	37.5	16.0	48.3	83	9.6
SM6T30A	ME7	CE7	28.5	31.5	1.0	25.6	1.0	41.5	14.5	53.5	75	9.7
SM6T33A	MG7	MG7	31.4	34.7	1.0	28.2	1.0	45.7	13.1	59.0	68	9.8
SM6T36A	MK7	CK7	34.2	37.8	1.0	30.8	1.0	49.9	12.0	64.3	62	9.9
SM6T39A	MM7	CM7	37.1	41.0	1.0	33.3	1.0	53.9	11.1	69.7	57	10.0
SM6T68A	NG7	NG7	64.6	71.4	1.0	58.1	1.0	92.0	6.50	121	33	10.4
SM6T100A	NV7	NV7	95.0	105	1.0	85.5	1.0	137	4.40	178	22.5	10.6
SM6T150A	PK7	PK7	143	158	1.0	128	1.0	207	2.90	265	15	10.8
SM6T200A	PR7	PR7	190	210	1.0	171	1.0	274	2.20	353	11.3	10.8
SM6T220A	PR8	PR8	209	231	1.0	188	1.0	328	2.00	388	10.3	10.8

Notes:

(1) For bi-directional devices add suffix “CA”

(2) V_{BR} measured after I_T applied for 300 µs square wave pulse

(3) For bipolar devices with V_R = 10 V or under, the I_T limit is doubled

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Thermal resistance, junction to ambient air (1)	$R_{\theta JA}$	100	°C/W
Thermal resistance, junction to leads	$R_{\theta JL}$	20	°C/W

Note:

(1) Mounted on minimum recommended pad layout

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SM6T10A-E3/52	0.096	52	750	7" diameter plastic tape and reel
SM6T10A-E3/5B	0.096	5B	3200	13" diameter plastic tape and reel
SM6T10AHE3/52 (1)	0.096	52	750	7" diameter plastic tape and reel
SM6T10AHE3/5B (1)	0.096	5B	3200	13" diameter plastic tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

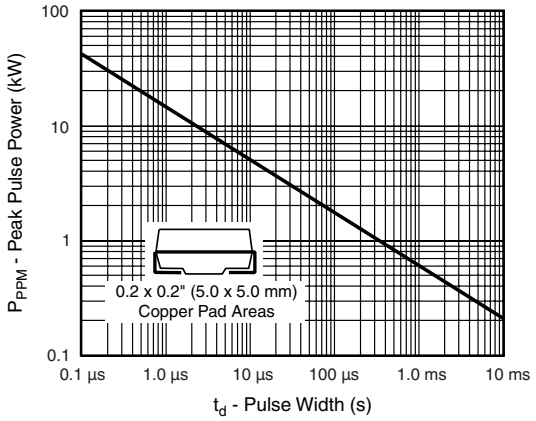


Figure 1. Peak Pulse Power Rating Curve

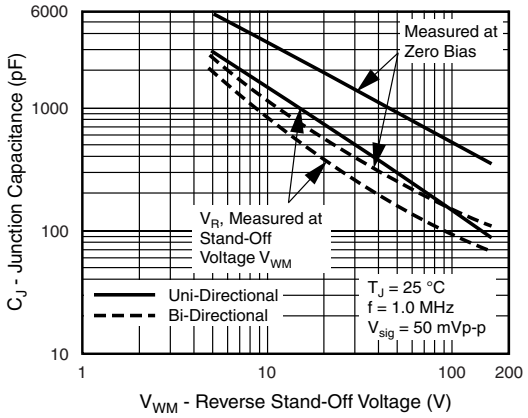


Figure 4. Typical Junction Capacitance

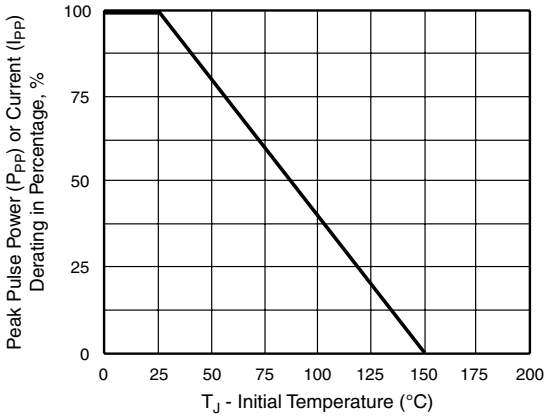


Figure 2. Pulse Power or Current vs. Initial Junction Temperature

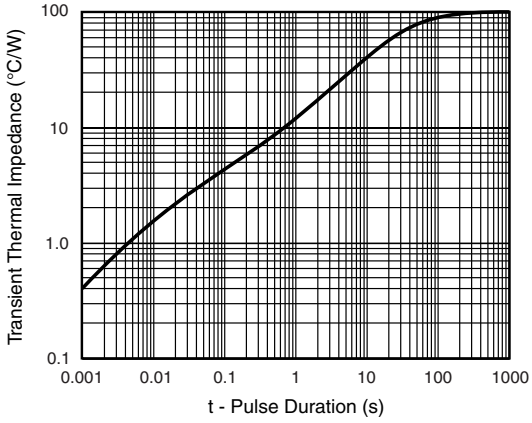


Figure 5. Typical Transient Thermal Impedance

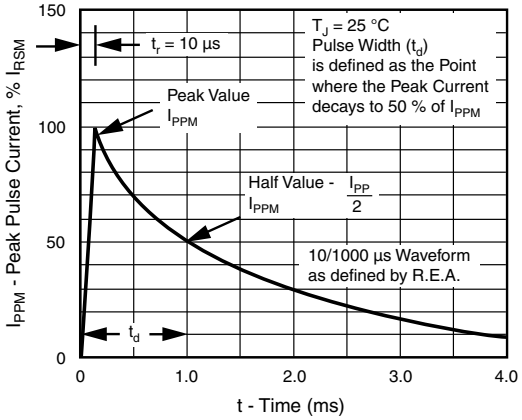


Figure 3. Pulse Waveform

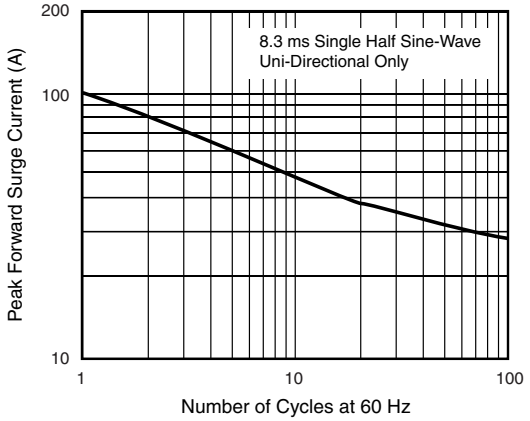
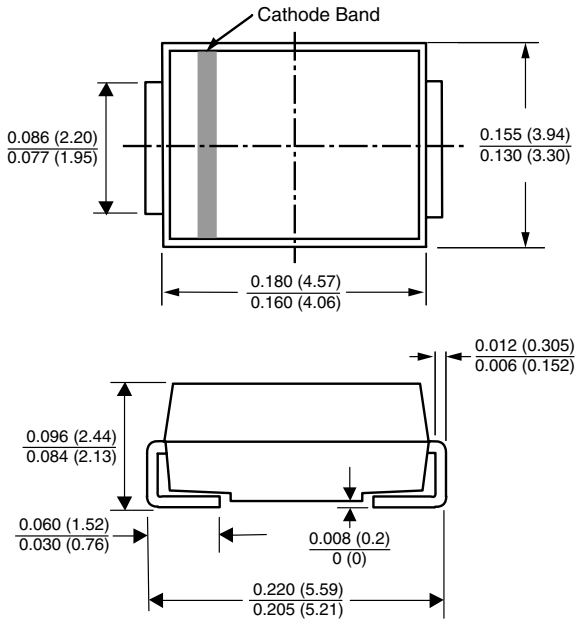


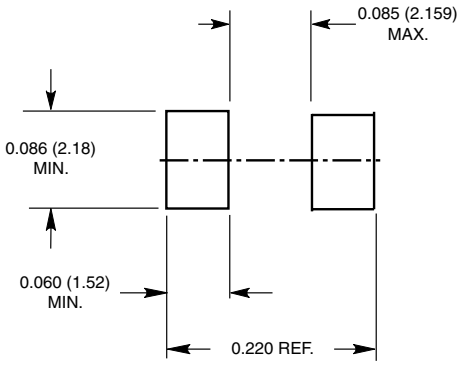
Figure 6. Maximum Non-Repetitive Peak Forward Surge Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout



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