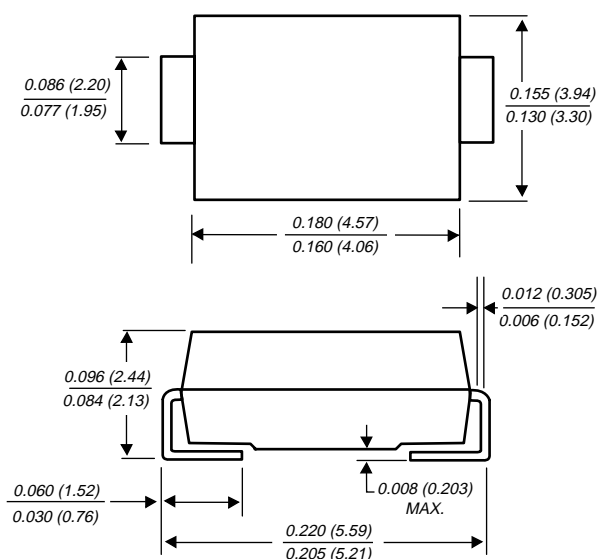


# SM6T SERIES

## TRANSZORB™ SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Breakdown Voltage - 6.8 to 220 Volts Peak Pulse Power - 600 Watts

### DO-214AA



Dimensions in inches and (millimeters)

### FEATURES

- ◆ For surface mounted applications in order to optimize board space
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Glass passivated junction
- ◆ Low inductance
- ◆ Excellent clamping capability
- ◆ Repetition Rate (duty cycle): 0.01%
- ◆ Fast reponse time: typically less than 1ps from 0 volts to VBR min.
- ◆ Typical  $I_D$  less than 1 $\mu$ A above 10V
- ◆ High temperature soldering: 250°C/10 seconds at terminals
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-O



### MECHANICAL DATA

**Case:** JEDEC DO-214AA (SMB) molded plastic over passivated junction

**Terminals:** Solder plated solderable per MIL-STD-750, Method 2026

**Polarity:** For uni-directional types: Color band denotes positive end (cathode)

**Standard Packaging:** 12mm tape (EIA STD RS-481)

**Weight:** 0.003 ounces, 0.093 gram

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

	SYMBOLS	VALUE	UNIT
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (NOTES 1, 2, Fig. 1)	PPPM	Minimum 600	Watts
Peak Pulse Current on 10/1000 $\mu$ s waveform (NOTE 1, Fig. 3)	I <sub>PPM</sub>	See Table 1	Amps
Power Dissipation on Infinite Heatsink, T <sub>A</sub> =50°C	P <sub>M(AV)</sub>	5.0	Watts
Peak Forward Surge Current, 10ms Single Half Sine-wave, Unidirectional Only	I <sub>FSM</sub>	100	Amps
Max. Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to +175	°C
Thermal Resistance Junction to Ambient Air (NOTE 2)	R <sub>θJA</sub>	100	°C/W
Thermal Resistance Junction to Leads	R <sub>θJL</sub>	20	°C/W

#### NOTES

(1) Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub>=25°C per Fig. 2

(2) Mounted on 5.0mm<sup>2</sup> (.013mm thick) land areas.

(3) Measured on 8.3ms single half sine-wave or equivalent squarewave, duty cycle 4 pulses per minute maximum.

## ELECTRICAL CHARACTERISTICS RATINGS at (TA=25°C unless otherwise noted)

Type <sup>(1)</sup>	Device Marking Code		Standoff Voltage VRM (Volts)	Leakage Current <sup>(3)</sup> IRM @ VRM (µA)	Breakdown Voltage VBR @ IT <sup>(2)</sup> (Volts)		Test Current IT (mA)	Clamping Voltage Vc @ IPP 10/1000µs		Clamping Voltage Vc @ IPP 8/20µs		αT Max 10 <sup>-4</sup> /°C
	Uni	Bi			Min	Max		(Volts)	(Amps)	(Volts)	(Amps)	
SM6T6V8A	KE7	KE7	5.80	1000	6.45	7.14	10	10.5	57.0	13.4	298	5.7
SM6T7V5A	KK7	AK7	6.40	500	7.13	7.88	10	11.3	53.0	14.5	276	6.1
SM6T10A	KT7	AT7	8.55	10.0	9.50	10.5	1.0	14.5	41.0	18.6	215	7.3
SM6T12A	KX7	AX7	10.2	5.00	11.4	12.6	1.0	16.7	36.0	21.7	184	7.8
SM6T15A	LG7	LG7	12.8	1.00	14.3	15.8	1.0	21.2	28.0	27.2	147	8.4
SM6T18A	LM7	BM7	15.3	1.00	17.1	18.9	1.0	25.2	24	32.5	123	8.8
SM6T22A	LT7	BT7	18.8	1.00	20.9	23.1	1.0	30.6	20.0	39.3	102	9.2
SM6T24A	LV7	LV7	20.5	1.00	22.8	25.2	1.0	33.2	18.0	42.8	93	9.4
SM6T27A	LX7	BX7	23.1	1.00	25.7	28.4	1.0	37.5	16.0	48.3	83	9.6
SM6T30A	ME7	CE7	25.6	1.00	28.5	31.5	1.0	41.5	14.5	53.5	75	9.7
SM6T33A	MG7	MG7	28.2	1.00	31.4	34.7	1.0	45.7	13.1	59.0	68	9.8
SM6T36A	MK7	CK7	30.8	1.00	34.2	37.8	1.0	49.9	12.0	64.3	62	9.9
SM6T39A	MM7	CM7	33.3	1.00	37.1	41.0	1.0	53.9	11.1	69.7	57	10.0
SM6T68A	NG7	NG7	58.1	1.00	64.6	71.4	1.0	92.0	6.50	121	33	10.4
SM6T100A	NV7	NV7	85.5	1.00	95.0	105	1.0	137	4.40	178	22.5	10.6
SM6T150A	PK7	PK7	128	1.00	143	158	1.0	207	2.90	265	15	10.8
SM6T200A	PR7	PR7	171	1.00	190	210	1.0	274	2.20	353	11.3	10.8
SM6T220A	PR8	PR8	188	1.00	209	231	1.0	328	2.00	388	10.3	10.8

### NOTES:

(1) For bi-directional devices add "C" for ±10% and "CA" for ±5% tolerance of VBR

(2) VBR measured after IT applied for 300µs square wave pulse

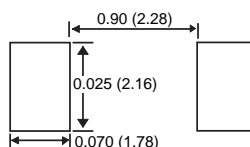
(3) For bipolar devices with VR=10 Volts or under, the IT limit is doubled

## APPLICATION NOTES

A 600W (SMB) device is normally selected when the threat of transients is from lightning induced transients, conducted via external leads or I/O lines. It is also used to protect against switching transients induced by large coils or industrial motors. Source impedance at component level in a system is usually high enough to limit the current within the peak pulse current (IPP) rating of this series. In an overstress condition, the failure mode is a short circuit.

## RECOMMENDED PAD SIZES

The pad dimensions should be 0.010" (0.25mm) longer than the contact size, in the lead axis. This allows a solder fillet to form, see figure below. Contact factory for soldering methods.



# RATINGS AND CHARACTERISTICS CURVES SM6T SERIES

FIG. 1 - PEAK PULSE POWER RATING CURVE

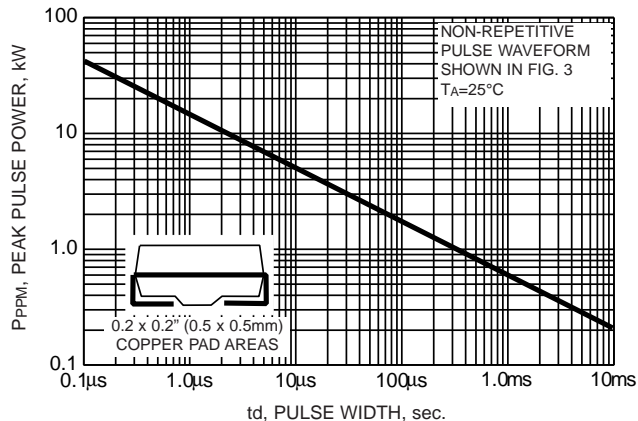


FIG. 2 - PULSE DERATING CURVE

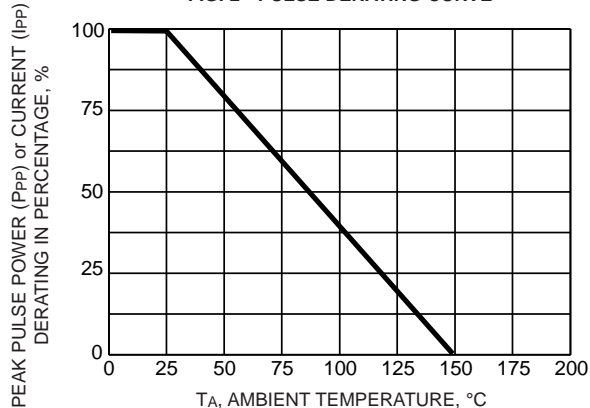


FIG. 3 - PULSE WAVEFORM

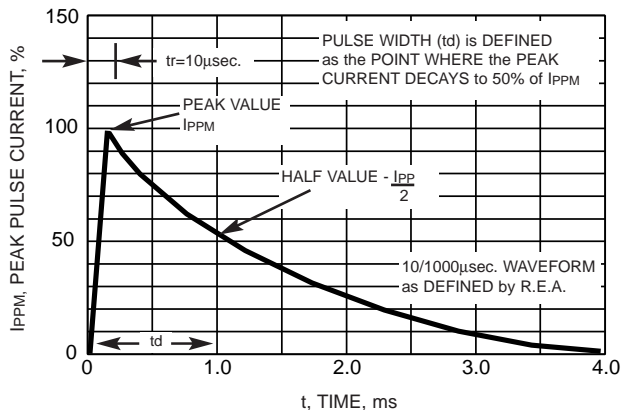


FIG. 4 - TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

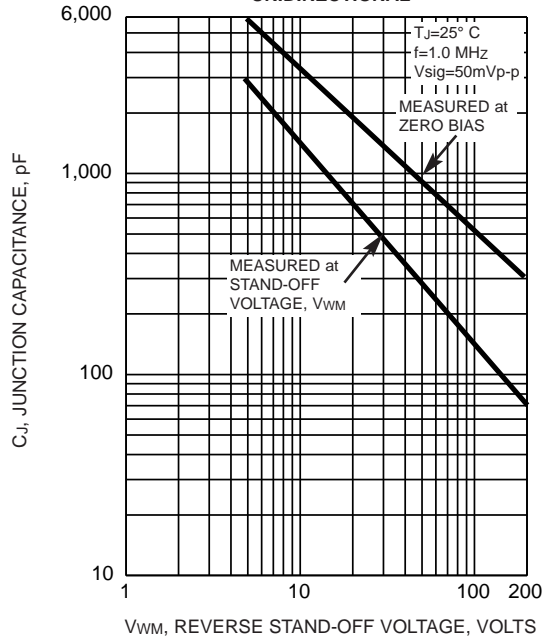


FIG. 5 - TYPICAL JUNCTION CAPACITANCE BIDIRECTIONAL

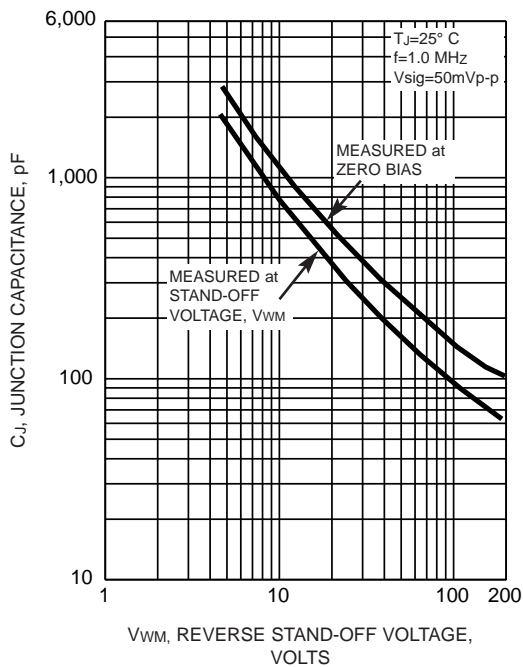


FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

