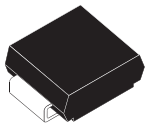
SM6T6V8CA-220CA

600Watts Surface Mount TVS

FEATURES

- PEAK PULSE POWER : 600 W (10/1000µs)
- BREAKDOWN VOLTAGE RANGE : From 6.8V to 220 V.
- UNI AND BIDIRECTIONAL TYPES
- LOW CLAMPING FACTOR
- FAST RESPONSE TIME
- UL RECOGNIZED



SMB
(JEDEC D0-214AA)

DESCRIPTION

Transil diodes provide high overvoltage protection by clamping action. Their instantaneous response to transient overvoltages makes them particularly suited to protect voltage sensitive devices such as MOS Technology and low voltage supplied IC's.

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

Symbol	Parameter		Value	Unit
P_{PP}	Peak pulse power dissipation (see note 1)	Tj initial = T_{amb}	600	W
P	Power dissipation on infinite heatsink	T_{amb} = 50°C	5	W
I_{FSM}	Non repetitive surge peak forward current for unidirectional types	tp = 10ms Tj initial = T_{amb}	100	A
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 65 to + 175 150	°C °C
T_L	Maximum lead temperature for soldering during 10 s.		260	°C

Note 1 : For a surge greater than the maximum values, the diode will fail in short-circuit.

THERMAL RESISTANCES

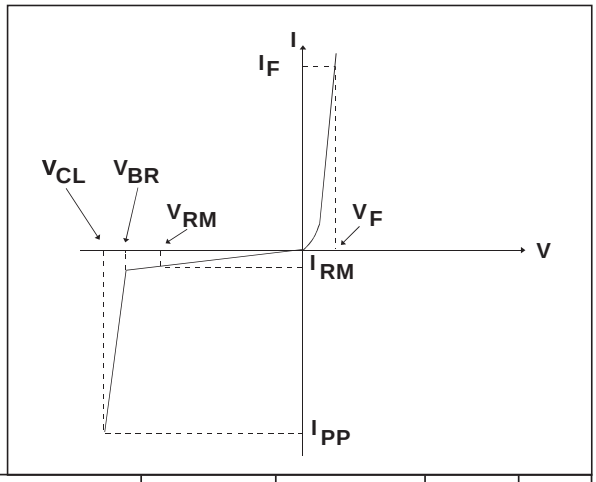
Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction to leads	20	°C/W
$R_{th\ (j-a)}$	Junction to ambient on printed circuit on recommended pad layout	100	°C/W

SM6T6V8CA-220CA

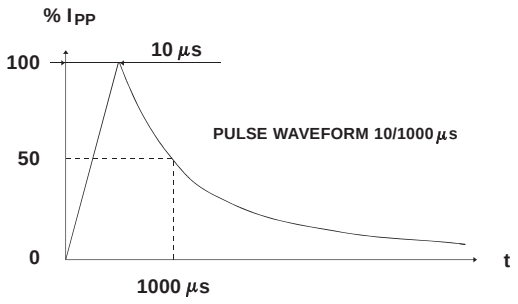
600Watts Surface Mount TVS

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{CL}	Clamping voltage
I_{RM}	Leakage current @ V_{RM}
I_{PP}	Peak pulse current
αT	Voltage temperature coefficient
V_F	Forward voltage drop



Types				I_{RM} @ V_{RM} max		V_{BR} @ I_R min	nom	max		V_{CL} @ I_{PP} max 10/1000µs		V_{CL} @ I_{PP} max 8/20µs		αT max note3	C typ note4
Uni directional	Mar-king	Bi directional	Mar-king	µA	V	V	V	V	mA	V	A	V	A	10^{-4}/°C	pF
SM6T6V8A	DE	SM6T6V8CA	LE	1000	5.8	6.45	6.8	7.14	10	10.5	57	13.4	298	5.7	4000
SM6T7V5A	DG	SM6T7V5CA	LG	500	6.4	7.13	7.5	7.88	10	11.3	53	14.5	276	6.1	3700
SM6T10A	DP	SM6T10CA	LP	10	8.55	9.5	10	10.5	1	14.5	41	18.6	215	7.3	2800
SM6T12A	DT	SM6T12CA	LT	5	10.2	11.4	12	12.6	1	16.7	36	21.7	184	7.8	2300
SM6T15A	DX	SM6T15CA	LX	1	12.8	14.3	15	15.8	1	21.2	28	27.2	147	8.4	1900
SM6T18A	EE	SM6T18CA	ME	1	15.3	17.1	18	18.9	1	25.2	24	32.5	123	8.8	1600
SM6T22A	EK	SM6T22CA	MK	1	18.8	20.9	22	23.1	1	30.6	20	39.3	102	9.2	1350
SM6T24A	EM	SM6T24CA	MM	1	20.5	22.8	24	25.2	1	33.2	18	42.8	93	9.4	1250
SM6T27A	EP	SM6T27CA	MP	1	23.1	25.7	27	28.4	1	37.5	16	48.3	83	9.6	1150
SM6T30A	ER	SM6T30CA	MR	1	25.6	28.5	30	31.5	1	41.5	14.5	53.5	75	9.7	1075
SM6T33A	ET	SM6T33CA	MT	1	28.2	31.4	33	34.7	1	45.7	13.1	59.0	68	9.8	1000
SM6T36A	EV	SM6T36CA	MV	1	30.8	34.2	36	37.8	1	49.9	12	64.3	62	9.9	950
SM6T39A	EX	SM6T39CA	MX	1	33.3	37.1	39	41.0	1	53.9	11.1	69.7	57	10.0	900
SM6T68A	FQ	SM6T68CA	NQ	1	58.1	64.6	68	71.4	1	92	6.5	121	33	10.4	625
SM6T75A	FS	SM6T75CA	NS	1	64.1	71.3	-	78.8	1	103	5.8	134	30	10.5	575
SM6T100A	FY	SM6T100CA	NY	1	85.5	95.0	100	105	1	137	4.4	178	22.5	10.6	500
SM6T150A	GL	SM6T150CA	OL	1	128	143	150	158	1	207	2.9	265	15	10.8	400
SM6T200A	GU	SM6T200CA	OU	1	171	190	200	210	1	274	2.2	353	11.3	10.8	350
SM6T220A	GW	SM6T220CA	OW	1	188	209	220	231	1	328	2	388	10.3	10.8	330



Note 2 : Pulse test : t_p < 50 ms.

Note 3 : $\Delta V_{BR} = \alpha T * (T_{amb} - 25) * V_{BR}(25°C)$.

Note 4 : V_R = 0 V, F = 1 MHz. For bidirectional types, capacitance value is divided by 2.

Fig. 1: Peak pulse power dissipation versus initial junction temperature (printed circuit board).

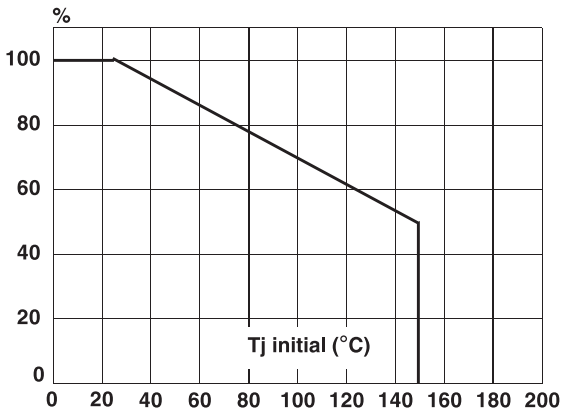


Fig. 2 : Peak pulse power versus exponential pulse duration.

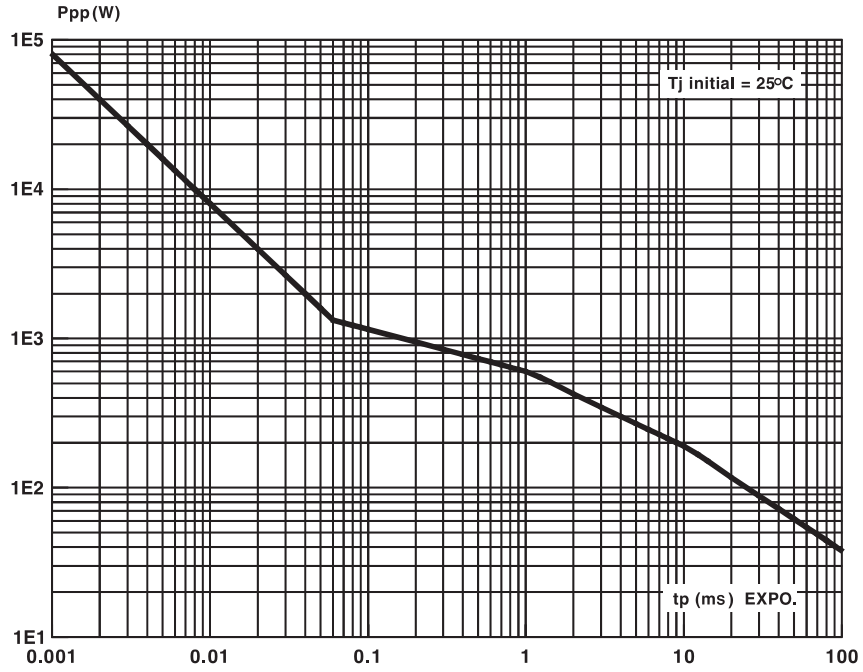
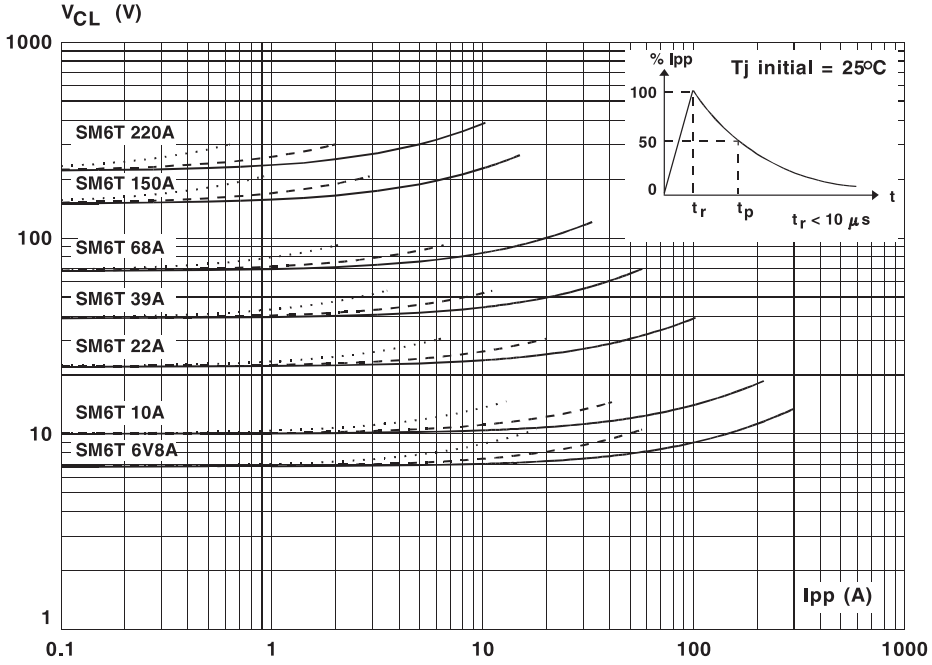


Fig. 3 : Clamping voltage versus peak pulse current.
Exponential waveform t_p = 20 µs _____
t_p = 1 ms _____-
t_p = 10 ms .....



Note : The curves of the figure 3 are specified for a junction temperature of 25°C before surge.
The given results may be extrapolated for other junction temperatures by using the following formula :
$\Delta V_{BR} = \alpha T * [T_{amb} - 25] * V_{BR}(25°C)$
For intermediate voltages, extrapolate the given results.

Fig. 4a : Capacitance versus reverse applied voltage for unidirectional types (typical values).

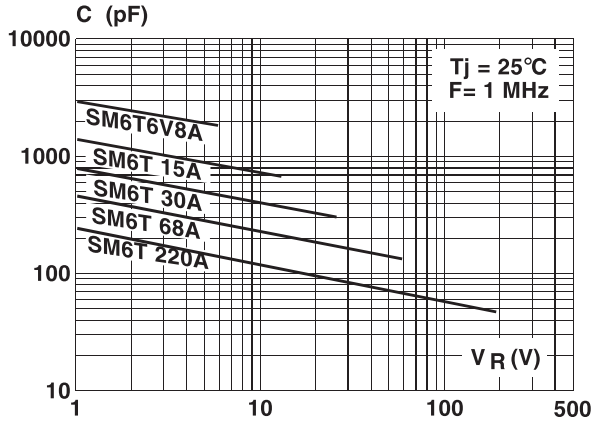


Fig. 4b : Capacitance versus reverse applied voltage for bidirectional types (typical values).

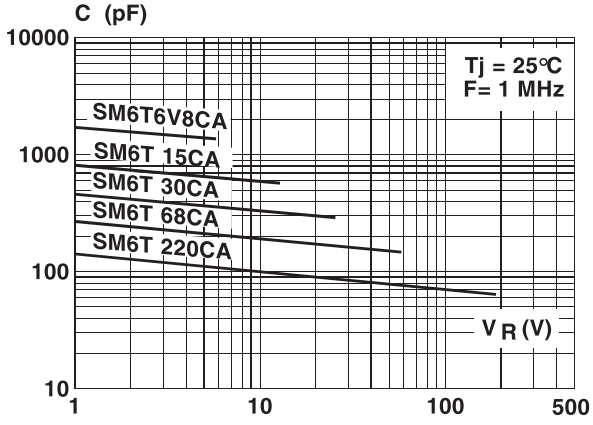


Fig. 5 : Peak forward voltage drop versus peak forward current (typical values for unidirectional types).

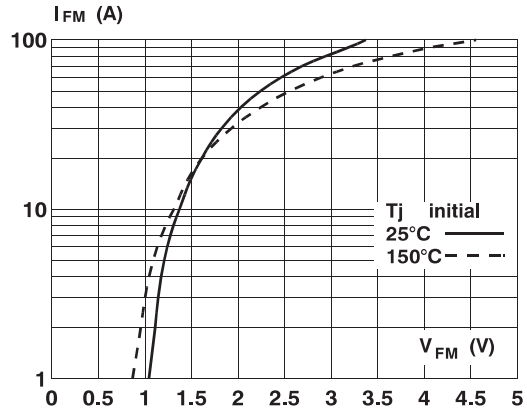


Fig. 6 : Transient thermal impedance junction-ambient versus pulse duration.
Mounting on FR4 PC Board with Recommended pad layout.

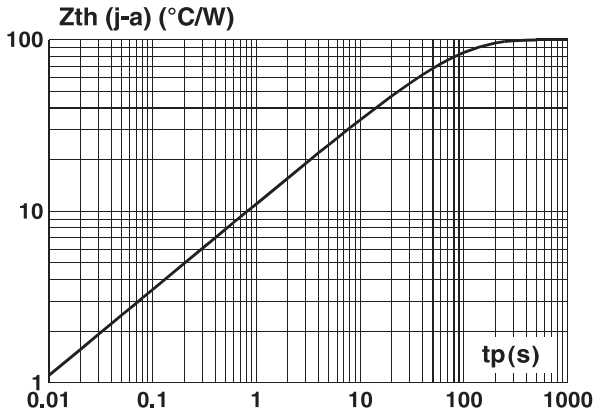
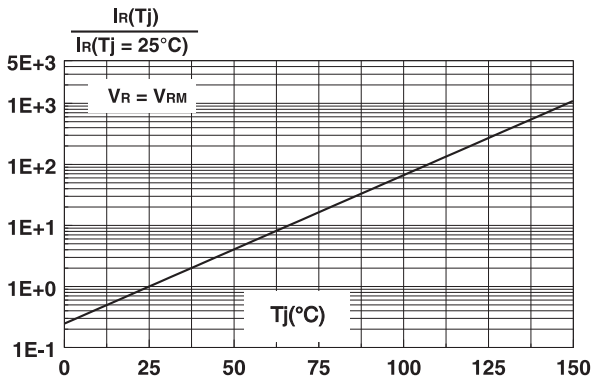


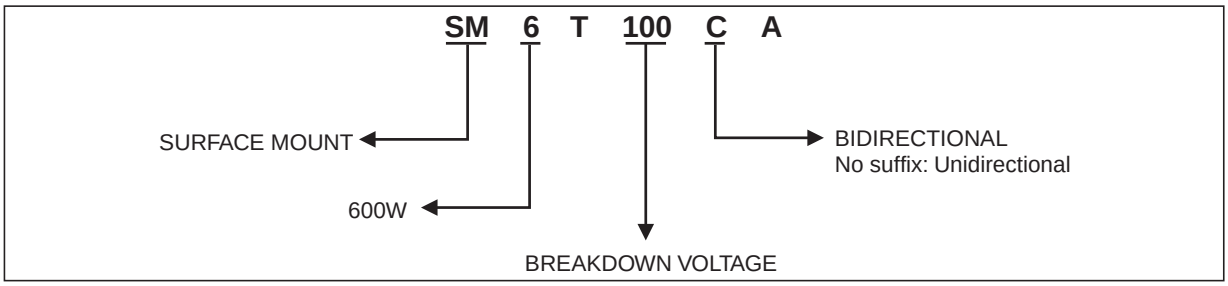
Fig. 7 : Relative variation of leakage current versus junction temperature.



SM6T6V8CA-220CA

600Watts Surface Mount TVS

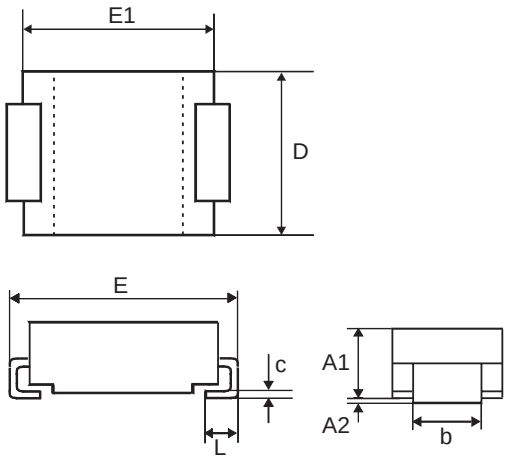
ORDER CODE



MARKING : Logo, Date Code, Type Code, Cathode Band (for unidirectional types only).

PACKAGE MECHANICAL DATA

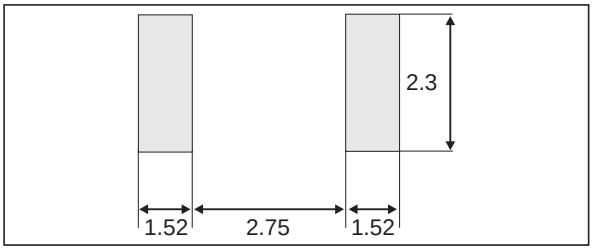
SMB (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

FOOTPRINT DIMENSIONS (Millimeter)

SMB Plastic.



Packaging : standard packaging is tape and reel.
SOD15 = Standard packaging is in Film.

Weight = 0.12 g