

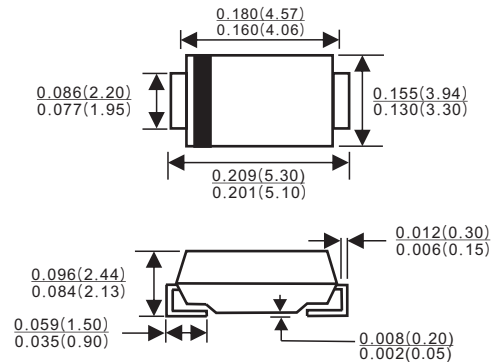
## FEATURES

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

## 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.

## SMB/DO-214AA



Dimensions in inches and(millimeters)

## ABSOLUTE MAXIMUM RATINGS (T<sub>amb</sub> = 25°C)

Symbol	Parameter		Value	Unit
P <sub>PP</sub>	Peak pulse power dissipation (see note 1)	T <sub>j</sub> initial = T <sub>amb</sub>	600	W
P	Power dissipation on infinite heatsink	T <sub>amb</sub> = 50°C	5	W
I <sub>FSM</sub>	Non repetitive surge peak forward current for unidirectional types	t <sub>p</sub> = 10ms T <sub>j</sub> initial = T <sub>amb</sub>	100	A
T <sub>stg</sub> T <sub>j</sub>	Storage temperature range Maximum junction temperature		- 65 to + 175 150	°C °C
T <sub>L</sub>	Maximum lead temperature for soldering during 10 s.		260	°C

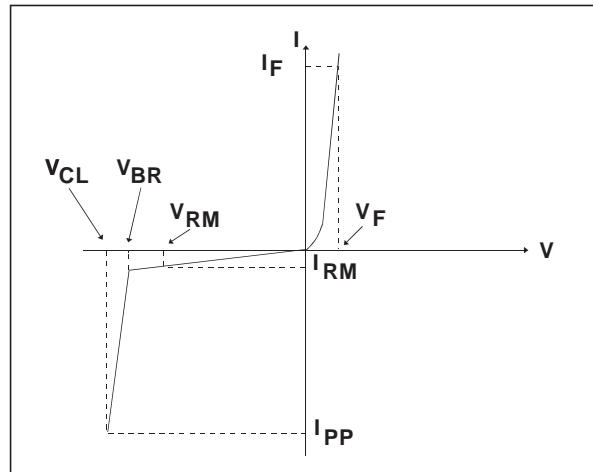
**Note 1** : For a surge greater than the maximum values, the diode will fail in short-circuit.

## THERMAL RESISTANCES

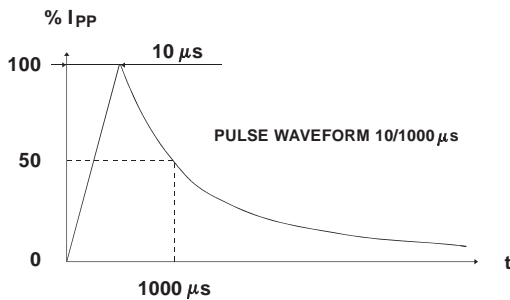
Symbol	Parameter	Value	Unit
R <sub>th (j-l)</sub>	Junction to leads	20	°C/W
R <sub>th (j-a)</sub>	Junction to ambient on printed circuit on recommended pad layout	100	°C/W

### ELECTRICAL CHARACTERISTICS (T<sub>amb</sub> = 25°C)

Symbol	Parameter
V <sub>RM</sub>	Stand-off voltage
V <sub>BR</sub>	Breakdown voltage
V <sub>CL</sub>	Clamping voltage
I <sub>RM</sub>	Leakage current @ V <sub>RM</sub>
I <sub>PP</sub>	Peak pulse current
α <sub>T</sub>	Voltage temperature coefficient
V <sub>F</sub>	Forward voltage drop

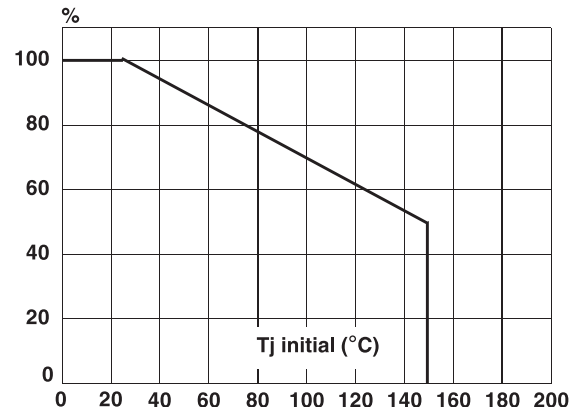


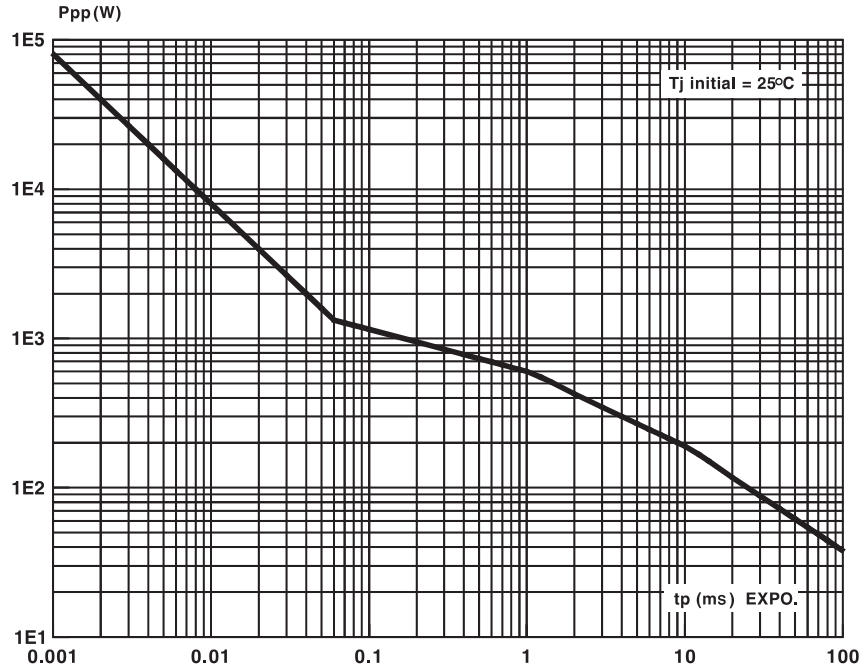
Types			I <sub>RM</sub> @ V <sub>RM</sub> max		V <sub>BR</sub> @ I <sub>R</sub> min nom max note2					V <sub>CL</sub> @ I <sub>PP</sub> max 10/1000μs		V <sub>CL</sub> @ I <sub>PP</sub> max 8/20μs		α <sub>T</sub> max note3	C typ note4
Uni directional		Bi directional	μA	V	V	V	V	V	mA	V	A	V	A	10 <sup>-4</sup> /°C	pF
SM6T6V8A		SM6T6V8CA	1000	5.8	6.45	6.8	7.14	10	10.5	57	13.4	298	5.7	4000	
SM6T7V5A		SM6T7V5CA	500	6.4	7.13	7.5	7.88	10	11.3	53	14.5	276	6.1	3700	
SM6T10A		SM6T10CA	10	8.55	9.5	10	10.5	1	14.5	41	18.6	215	7.3	2800	
SM6T12A		SM6T12CA	5	10.2	11.4	12	12.6	1	16.7	36	21.7	184	7.8	2300	
SM6T15A		SM6T15CA	1	12.8	14.3	15	15.8	1	21.2	28	27.2	147	8.4	1900	
SM6T18A		SM6T18CA	1	15.3	17.1	18	18.9	1	25.2	24	32.5	123	8.8	1600	
SM6T22A		SM6T22CA	1	18.8	20.9	22	23.1	1	30.6	20	39.3	102	9.2	1350	
SM6T24A		SM6T24CA	1	20.5	22.8	24	25.2	1	33.2	18	42.8	93	9.4	1250	
SM6T27A		SM6T27CA	1	23.1	25.7	27	28.4	1	37.5	16	48.3	83	9.6	1150	
SM6T30A		SM6T30CA	1	25.6	28.5	30	31.5	1	41.5	14.5	53.5	75	9.7	1075	
SM6T33A		SM6T33CA	1	28.2	31.4	33	34.7	1	45.7	13.1	59.0	68	9.8	1000	
SM6T36A		SM6T36CA	1	30.8	34.2	36	37.8	1	49.9	12	64.3	62	9.9	950	
SM6T39A		SM6T39CA	1	33.3	37.1	39	41.0	1	53.9	11.1	69.7	57	10.0	900	
SM6T68A		SM6T68CA	1	58.1	64.6	68	71.4	1	92	6.5	121	33	10.4	625	
SM6T75A		SM6T75CA	1	64.1	71.3	-	78.8	1	103	5.8	134	30	10.5	575	
SM6T100A		SM6T100CA	1	85.5	95.0	100	105	1	137	4.4	178	22.5	10.6	500	
SM6T150A		SM6T150CA	1	128	143	150	158	1	207	2.9	265	15	10.8	400	
SM6T200A		SM6T200CA	1	171	190	200	210	1	274	2.2	353	11.3	10.8	350	
SM6T220A		SM6T220CA	1	188	209	220	231	1	328	2	388	10.3	10.8	330	

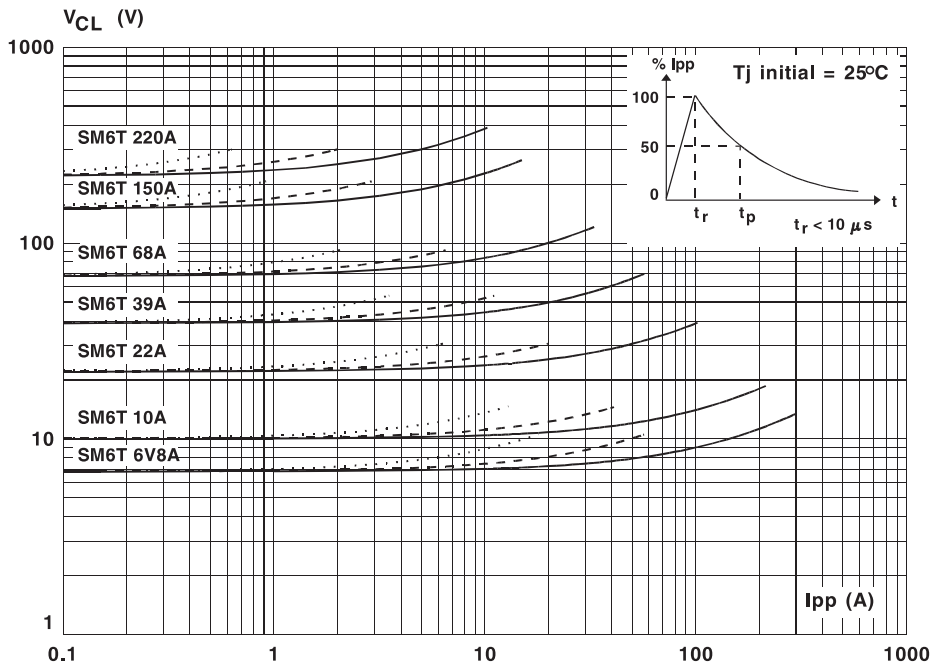


- Note 2 :** Pulse test : t<sub>p</sub> < 50 ms.
- Note 3 :** ΔV<sub>BR</sub> = α<sub>T</sub> \* (T<sub>amb</sub> - 25) \* V<sub>BR</sub>(25°C).
- Note 4 :** V<sub>R</sub> = 0 V, F = 1 MHz. For bidirectional types, capacitance value is divided by 2.

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

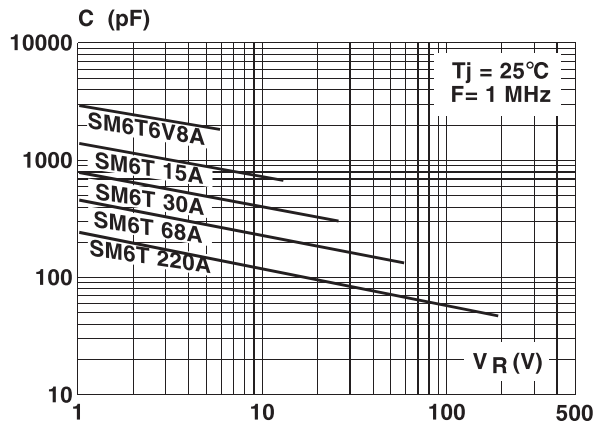


**Fig. 2 :** Peak pulse power versus exponential pulse duration.

**Fig. 3 :** Clamping voltage versus peak pulse current.

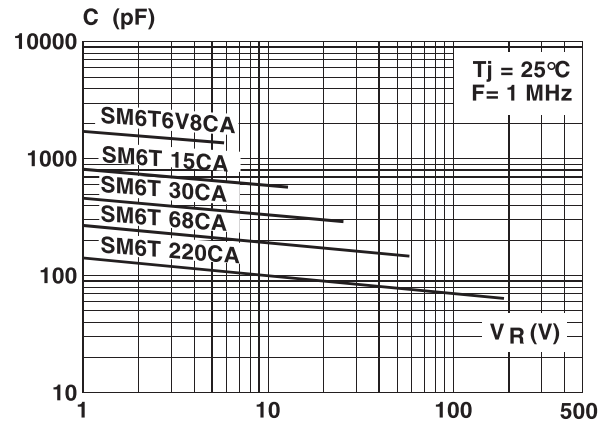
 Exponential waveform  $t_p = 20 \mu s$  \_\_\_\_\_  
 $t_p = 1 ms$  \_\_\_\_\_  
 $t_p = 10 ms$  .....


**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 :  
 $\Delta V_{BR} = \alpha T \cdot [T_{amb} - 25] \cdot V_{BR}(25^\circ C)$   
 For intermediate voltages, extrapolate the given results.

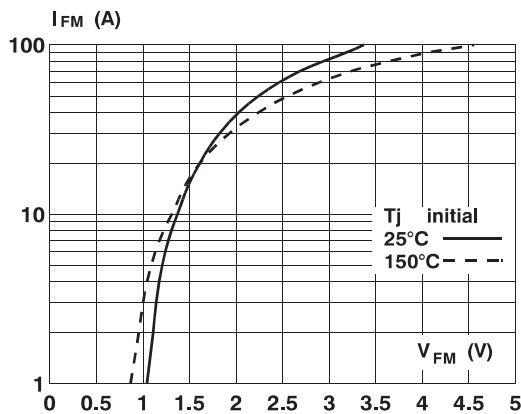
**Fig. 4a** : Capacitance versus reverse applied voltage for unidirectional types (typical values).



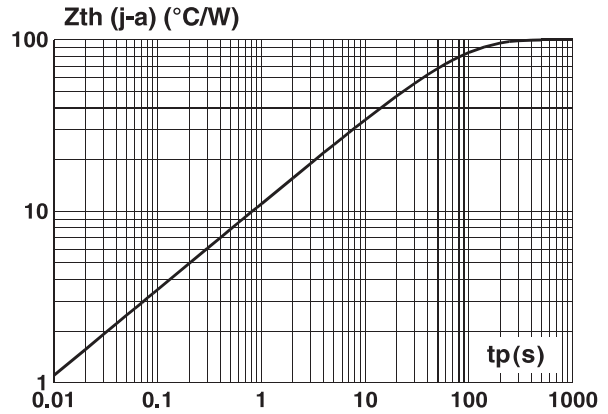
**Fig. 4b** : Capacitance versus reverse applied voltage for bidirectional types (typical values).



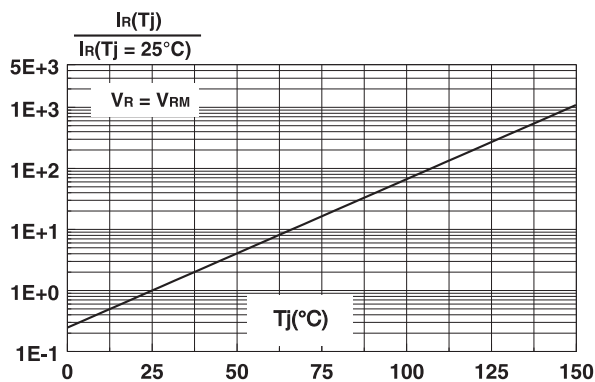
**Fig. 5** : Peak forward voltage drop versus peak forward current (typical values for unidirectional types).



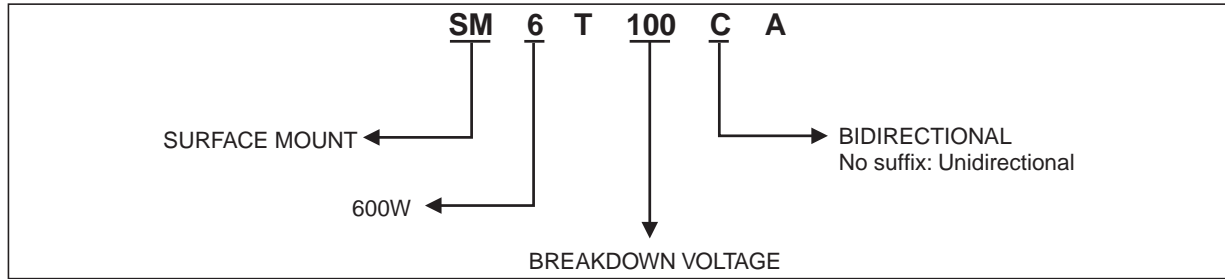
**Fig. 6** : Transient thermal impedance junction-ambient versus pulse duration. Mounting on FR4 PC Board with Recommended pad layout.



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



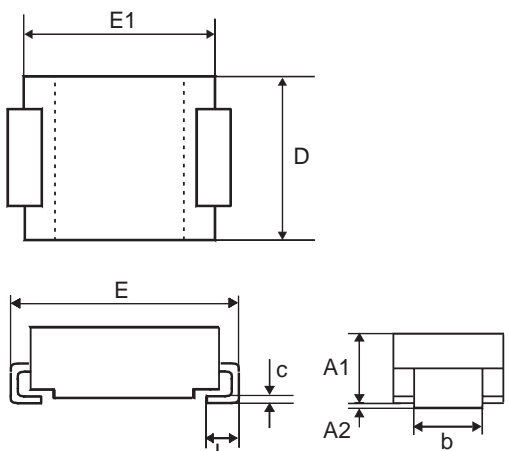
### ORDER CODE



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

### PACKAGE MECHANICAL DATA

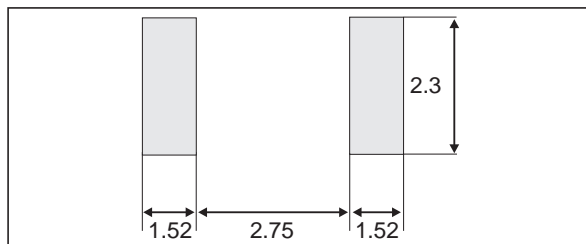
SMB (Plastic)



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

PACKAGE	SPQ/PCS	CARTON SPQ/PCS	CARTON SIZE/CM	CARTON GW/KG	CARTON NW/KG
SMB	3000/REEL	48000	36X35.8X36.5	12.00	11.00