



SMTPB SERIES

TRISIL™

MAIN APPLICATIONS

Any sensitive equipment requiring protection against lightning strikes:

- ANALOG AND DIGITAL LINE CARDS
- MAIN DISTRIBUTION FRAMES
- TERMINALS AND TRANSMISSION EQUIPMENT
- GMS-TUBE REPLACEMENT

DESCRIPTION

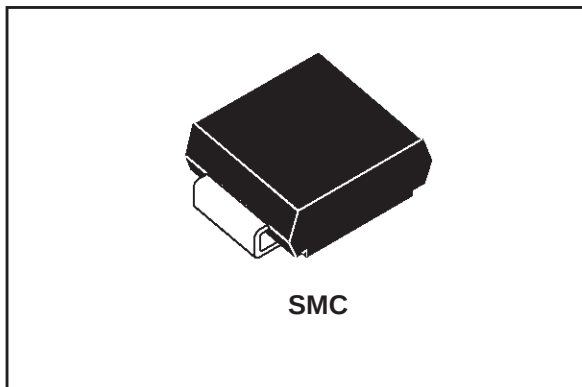
The SMTPBxx series has been designed to protect telecommunication equipment against lightning and transient induced by AC power lines.

FEATURES

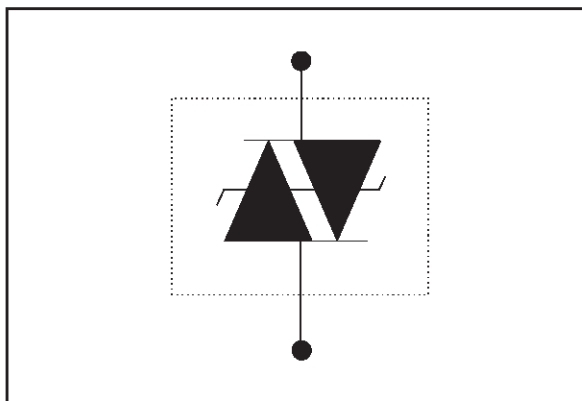
- BIDIRECTIONAL CROWBAR PROTECTION.
- BREAKDOWN VOLTAGE RANGE:
From 62 V To 270 V.
- HOLDING CURRENT: $I_H = 150 \text{ mA min}$
- REPETITIVE PEAK PULSE CURRENT :
 $I_{PP} = 100 \text{ A, } 10/1000 \mu\text{s}$.

BENEFITS

- NO AGEING AND NO NOISE
- IF DESTROYED, THE SMTPB FALLS INTO SHORT CIRCUIT, STILL ENSURING PROTECTION



SCHEMATIC DIAGRAM



COMPLIES WITH THE FOLLOWING STANDARDS:	Peak Surge Voltage (V)	Voltage Waveform (μs)	Current Waveform (μs)	Admissible I_{PP} (A)	Necessary Resistor (Ω)
CCITT K20	4000	10/700	5/310	100	-
VDE0433	4000	10/700	5/310	100	-
VDE0878	4000	1.2/50	1/20	100	-
IEC-1000-4-5	level 4 level 4	10/700 1.2/50	5/310 8/20	100 100	- -
FCC Part 68, lightning surge type A	1500 800	10/160 10/560	10/160 10/560	200 100	- -
FCC Part 68, lightning surge type B	100	5/320	5/320	25	-
BELLCORE TR-NWT-001089 First level	2500 1000	2/10 10/1000	2/10 10/1000	500 100	- -
BELLCORE TR-NWT-001089 Second level	500	2/10	2/10	500	-
CNET I31-24	4000	0.5/700	0.8/310	100	-

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^{\circ}\text{C}$)

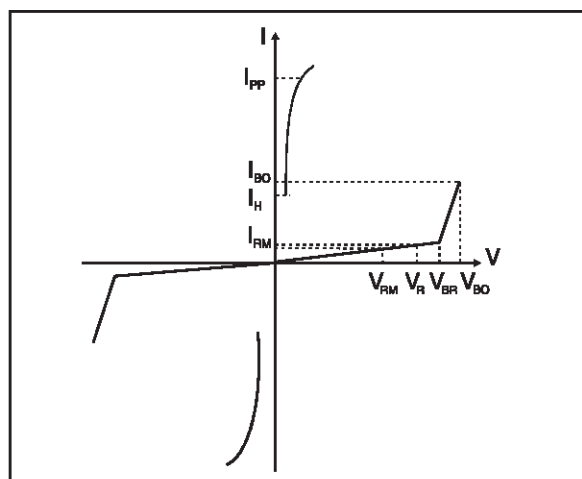
Symbol	Parameter		Value	Unit
P	Power dissipation	$T_{lead} = 50^{\circ}\text{C}$	5	W
I_{PP}	Peak pulse current	10/1000 μs 8/20 μs 2/10 μs	100 250 500	A
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 20\text{ ms}$	50	A
dV/dt	Critical rate of rise of off-state voltage	V_{RM}	5	KV/ μs
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 55 to + 150 + 150	$^{\circ}\text{C}$ $^{\circ}\text{C}$
T_L	Maximum lead temperature for soldering during 10 s.		+ 260	$^{\circ}\text{C}$

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to leads	20	$^{\circ}\text{C/W}$
$R_{th(j-a)}$	Junction to ambient. On printed circuit with standard footprint dimensions.	75	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$)

Symbol	Parameter
V_{RM}	Stand-off voltage
I_{RM}	Leakage current at stand-off voltage
V_R	Continuous Reverse voltage
V_{BR}	Breakdown voltage
V_{BO}	Breakover voltage
I_H	Holding current
I_{BO}	Breakover current
I_{PP}	Peak pulse current
C	Capacitance



Type	Marking	$I_{RM} @ V_{RM}$ max.		$I_R @ V_R$ max. note1		$V_{BO} @ I_{BO}$ max. note2		I_H min. note3	C typ. note4
		μA	V	μA	V	V	mA	mA	pF
SMTPB62	W07	2	56	50	62	82	800	150	160
SMTPB68	W11	2	61	50	68	90	800	150	160
SMTPB120	W21	2	108	50	120	160	800	150	140
SMTPB200	W31	2	180	50	200	267	800	150	130
SMTPB270	W43	2	243	50	270	360	800	150	120

All parameters tested at 25°C , except where indicated.

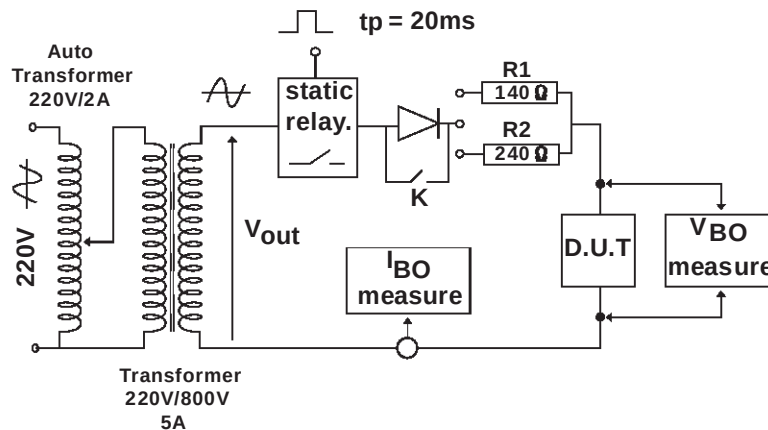
Note 1: I_R measured at V_R guarantees $V_{BRmin} \geq V_R$

Note 2: Measured at 50 Hz (1 cycle) - See test circuit 1.

Note 3: See test circuit 2.

Note 4: $V_R = 1\text{V}$, $F = 1\text{MHz}$. Refer to fig 3 for C versus V_R .

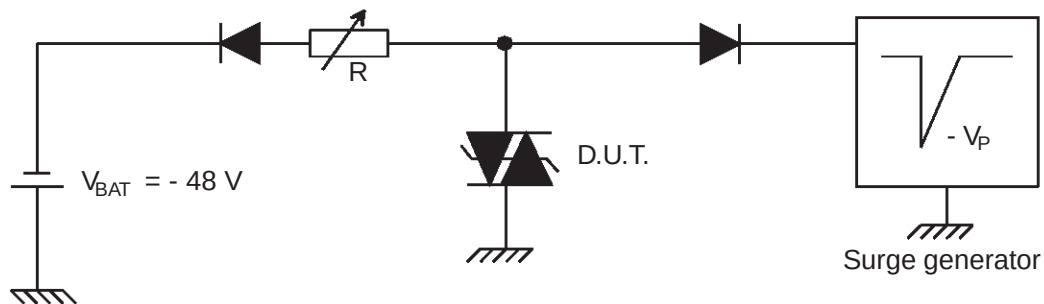
TEST CIRCUIT 1 FOR I_{BO} and V_{BO} parameters:



TEST PROCEDURE :

- Pulse Test duration ($t_p = 20\text{ms}$):
 - For Bidirectional devices = Switch K is closed
 - For Unidirectional devices = Switch K is open.
- V_{OUT} Selection
 - Device with $V_{BO} < 200\text{ Volt}$
 - $V_{OUT} = 250\text{ VRMS}$, $R_1 = 140\ \Omega$.
 - Device with $V_{BO} \geq 200\text{ Volt}$
 - $V_{OUT} = 480\text{ VRMS}$, $R_2 = 240\ \Omega$.

TEST CIRCUIT 2 for I_H parameter.



This is a GO-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit.

TEST PROCEDURE :

- 1) Adjust the current level at the I_H value by short circuiting the AK of the D.U.T.
- 2) Fire the D.U.T with a surge Current : $I_{pp} = 10\text{A}$, $10/1000\ \mu\text{s}$.
- 3) The D.U.T will come back off-state within 50 ms max.

Fig. 1: Non repetitive surge peak on-state current versus overload duration (T_j initial=25°C).

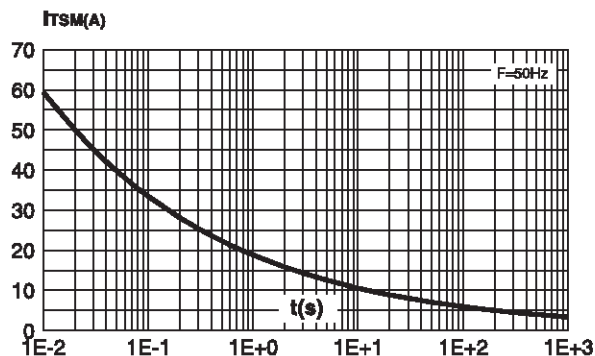


Fig. 2: Relative variation of holding current versus junction temperature.

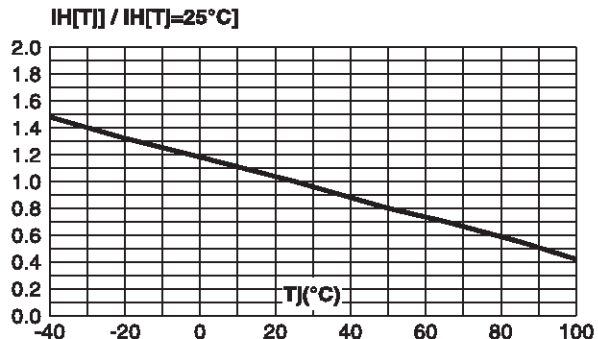


Fig. 3: Relative variation of junction capacitance versus reverse applied voltage (typical values). Note: For V_{RM} upper than 56V, the curve is extrapolated (dotted line).

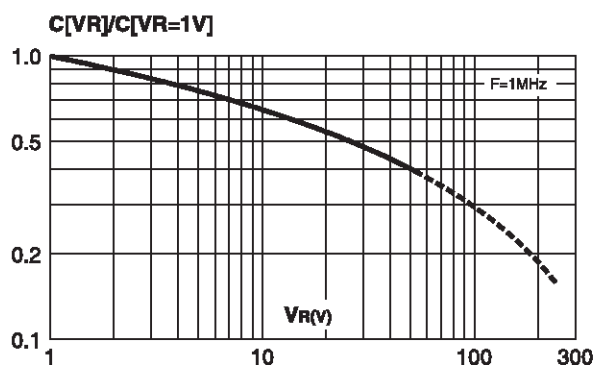


Fig. 4: On-state voltage versus on-state current (typical values).

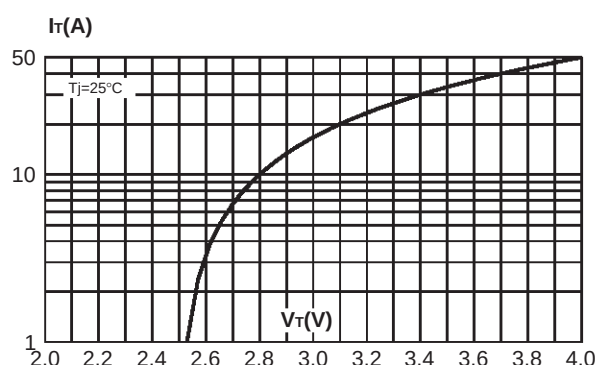
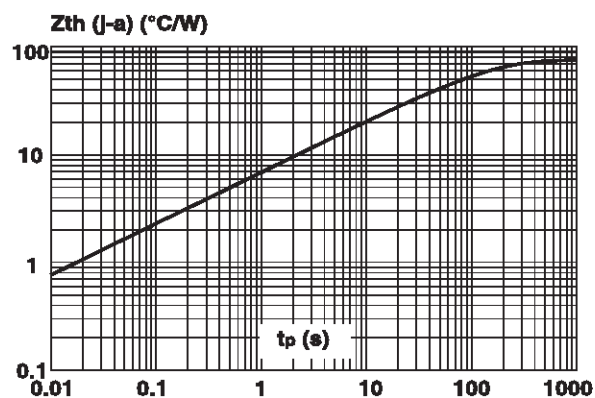
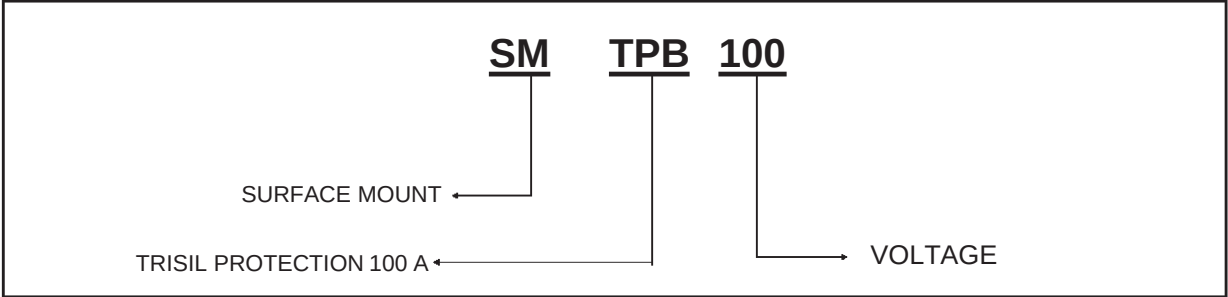


Fig. 5: Transient thermal impedance junction to ambient versus pulse duration (for FR4 PC Board with recommended pad layout).



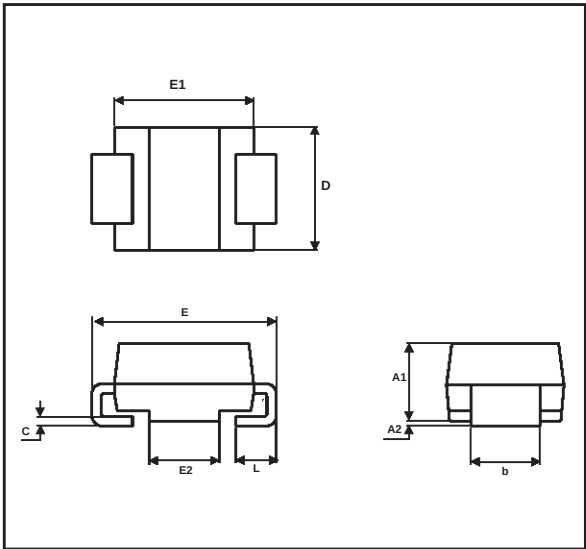
ORDER CODE



Marking : Logo, date code, type code.

PACKAGE MECHANICAL DATA.

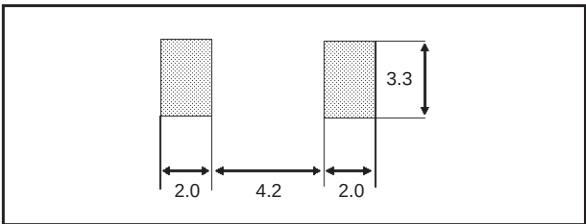
SMC



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	2.90	3.2	0.114	0.126
c	0.15	0.41	0.006	0.016
E	7.75	8.15	0.305	0.321
E1	6.60	7.15	0.260	0.281
E2	4.40	4.70	0.173	0.185
D	5.55	6.25	0.218	0.246
L	0.75	1.60	0.030	0.063

FOOTPRINT DIMENSIONS (in millimeters)

SMC



Packaging : Standard packaging is in tape and reel
Weight : 0.25g.

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