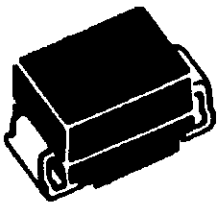
SGS-THOMSON MICROELECTRONICS

SMTPB SERIES

TRISIL

FEATURES

- BIDIRECTIONAL CROWBAR PROTECTION.
- BREAKDOWN VOLTAGE RANGE: From 62 V To 270 V.
- HOLDING CURRENT = 150 mA min
- PEAK PULSE CURRENT : I_{PP} = 90 A, 10/1000 µs.

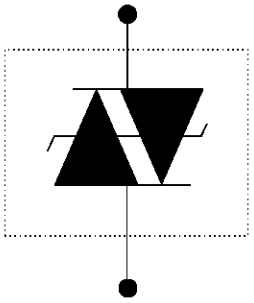


SOD 15
(Plastic)

DESCRIPTION

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

SCHEMATIC DIAGRAM



IN ACCORDANCE WITH FOLLOWING STANDARDS :

CCITT K17 - K20	10/700 µs	1.5 kV
	5/310 µs	38 A
VDE 0433	10/700 µs	2 kV
	5/200 µs	50 A
CNET	0.5/700 µs	1.5 kV
	0.2/310 µs	38 A

ABSOLUTE RATINGS (limiting values) (-40°C ≤ T_{amb} ≤ + 85°C)

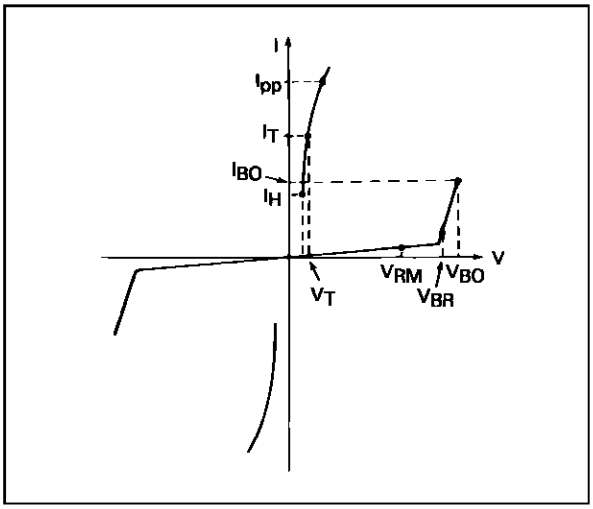
Symbol	Parameter		Value	Unit
P	Power dissipation on infinite heatsink	T_{lead} = 50 °C	10	W
I_{PP}	Peak pulse current	10/1000 µs 8/20 µs	90 150	A
I_{TSM}	Non repetitive surge peak on-state current	tp = 20 ms	50	A
di/dt	Critical rate of rise of on-state current	Non repetitive	100	A/µs
dv/dt	Critical rate of rise of off-state voltage	67% V_{BR}	5	KV/µs
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 + 150	°C °C
T_L	Maximum lead temperature for soldering during 10 s.		+ 260	°C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R_{th} (j-l)	Junction to leads. On infinite heatsink.	10	°C/W
R_{th} (j-a)	Junction to ambient. On printed circuit with standard footprint dimensions.	75	°C/W

ELECTRICAL CHARACTERISTICS

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{BO}	Breakover voltage
I_H	Holding current
V_T	On-state voltage
I_{BO}	Breakover current
I_{PP}	Peak pulse current

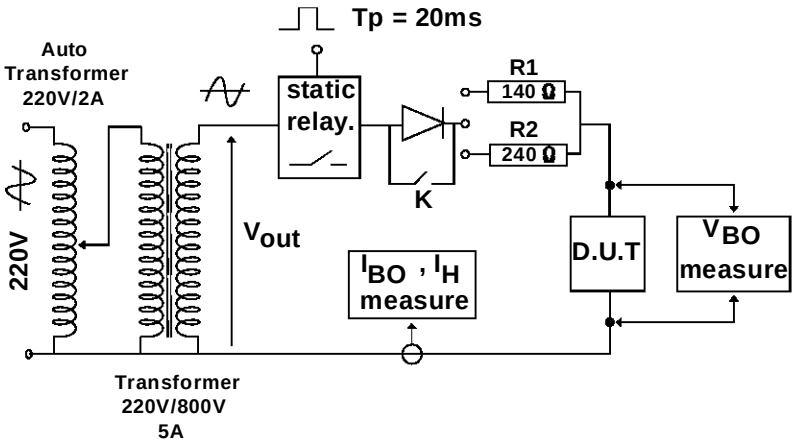


Type	Marcking	I_{RM} @ V_{RM} max		V_{BR} @ I_R min		V_{BO} @ I_{BO} max note1		I_H min note1	V_T max note2	C max note3
	Laser	µA	V	V	mA	V	mA	mA	V	pF
SMTPB62	W07	2	56	62	1	82	800	150	3.5	350
SMTPB68	W11	2	61	68	1	90	800	150	3.5	350
SMTPB100	W17	2	90	100	1	133	800	150	3.5	200
SMTPB120	W21	2	108	120	1	160	800	150	3.5	200
SMTPB130	W23	2	117	130	1	173	800	150	3.5	200
SMTPB180	W29	2	162	180	1	240	800	150	3.5	200
SMTPB200	W31	2	180	200	1	267	800	150	3.5	200
SMTPB220	W35	2	198	220	1	293	800	150	3.5	200
SMTPB240	W39	2	216	240	1	320	800	150	3.5	200
SMTPB270	W43	2	243	270	1	360	800	150	3.5	200

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

Note 1 : See the reference test circuit for I_H, I_{BO} and V_{BO} parameters.
Note 2 : Square pulse Tp = 1 ms - I_T = 5A.
Note 3 : V_R = 1V, F = 1MHz.

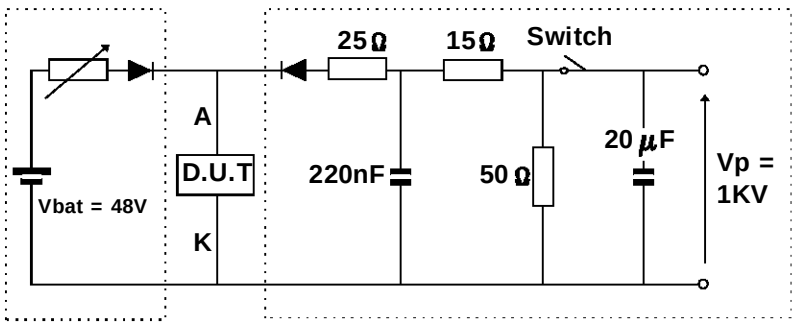
REFERENCE TEST CIRCUIT FOR I_H, I_{BO} and V_{BO} parameters :



TEST PROCEDURE :

- Pulse Test duration (Tp = 20ms):
  - For Bidirectional devices = Switch K is closed
  - For Unidirectional devices = Switch K is open.
- V_{OUT} Selection
  - Device with $V_{BR} \leq 150$ Volt
    - $V_{OUT} = 250\ V_{RMS}$, $R_1 = 140\ \Omega$.
  - Device with $V_{BR} \geq 150$ Volt
    - $V_{OUT} = 480\ V_{RMS}$, $R_2 = 240\ \Omega$.

FUNCTIONAL HOLDING CURRENT (I_H) TEST CIRCUIT = GO - NOGO TEST.



Surge Generator
10/700 µsec
Vp =1KV / Ipp = 25A

This is a GO-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit. This test can be performed if the reference test circuit can't be implemented.

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 : Ipp = 25A , 10/700 µs.
  3) The D.U.T will come back to the OFF-State withing a duration of 50 ms max.

Figure 1 : Non repetitive surge peak on state current versus number of cycles. (with sinusoïdal pluse: F= 50 Hz).

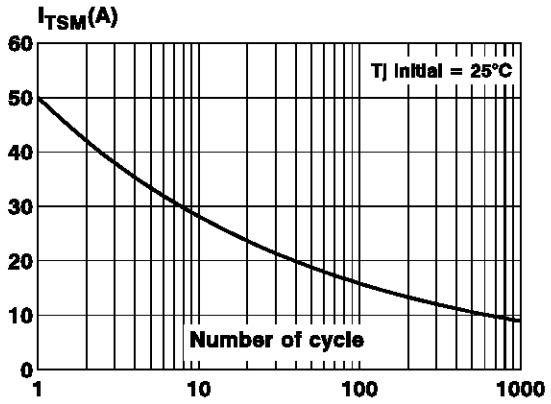


Figure 2 : On - state characteristics (typical values).

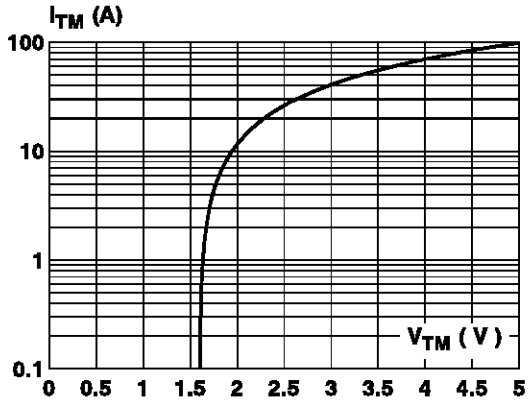
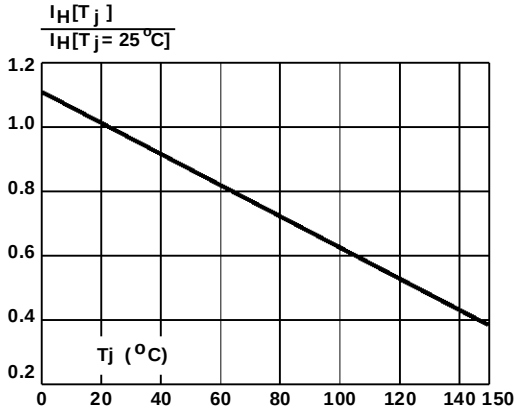
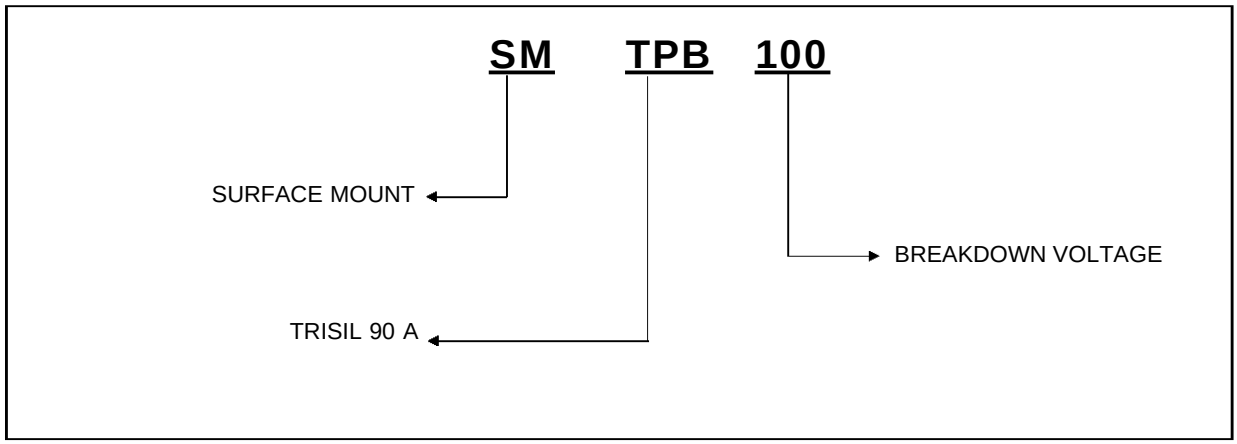


Figure 3 : Relative variation of holding current versus junction temperature.



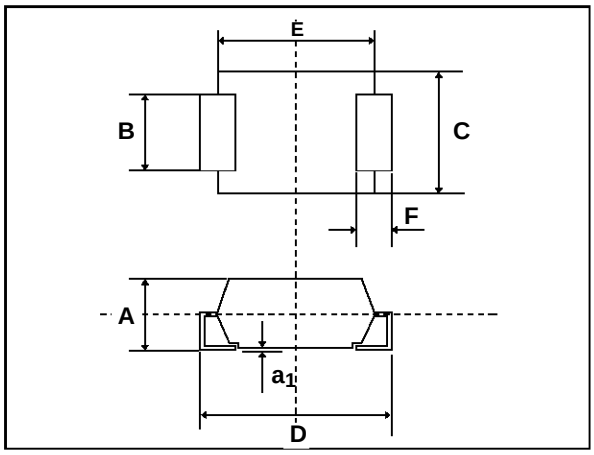
ORDER CODE



MARKING : Logo, date code, type code.

PACKAGE MECHANICAL DATA.

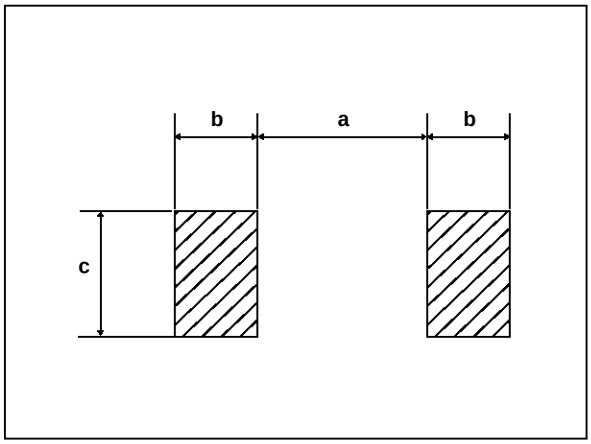
SOD 15 Plastic.



Ref	Millimeters		Inches	
	min	max	min	max
A	2.5	3.1	0.098	0.122
a_1	-	0.2	-	0.008
B	2.9	3.1	0.114	0.122
C	4.8	5.2	0.190	0.200
D	7.6	8.0	0.300	0.315
E	6.3	6.6	0.248	0.259
F	1.3	1.7	0.051	0.067

FOOTPRINT DIMENSIONS.

SOD 15 Plastic.



Ref	Millimeters
a	4.2
b	2
c	3.3

Packaging : Standard packaging is in film.