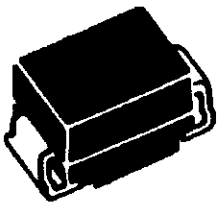
SGS-THOMSON MICROELECTRONICS

SMTPA 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} = 50 A, 10/1000 µs.

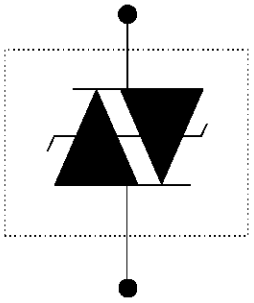


SOD 6
(Plastic)

DESCRIPTION

The SMTPAxx series has been designed to protect telecommunication equipments 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)

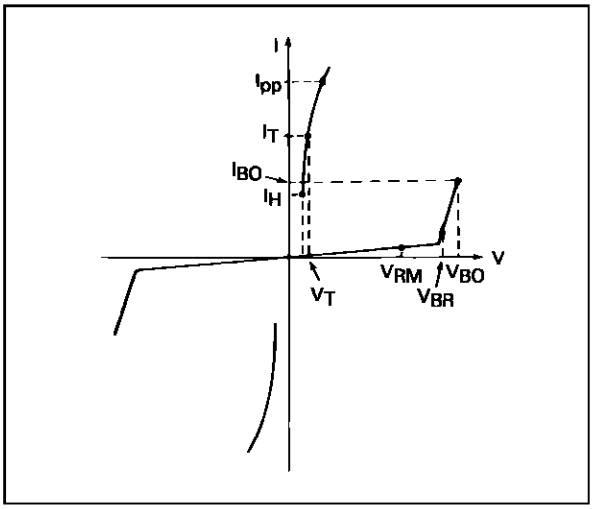
Symbol	Parameter		Value	Unit
P	Power dissipation on infinite heatsink	T_{lead} = 50 °C	5	W
I_{PP}	Peak pulse current	10/1000 µs 8/20 µs	50 100	A
I_{TSM}	Non repetitive surge peak on-state current	tp = 20 ms	30	A
di/dt	Critical rate of rise of on-state current	Non repetitive	100	A/µs
dv/dt	Critical rate 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.	20	°C/W
R_{th} (j-a)	Junction to ambient. on printed circuit with standard footprint dimensions.	100	°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

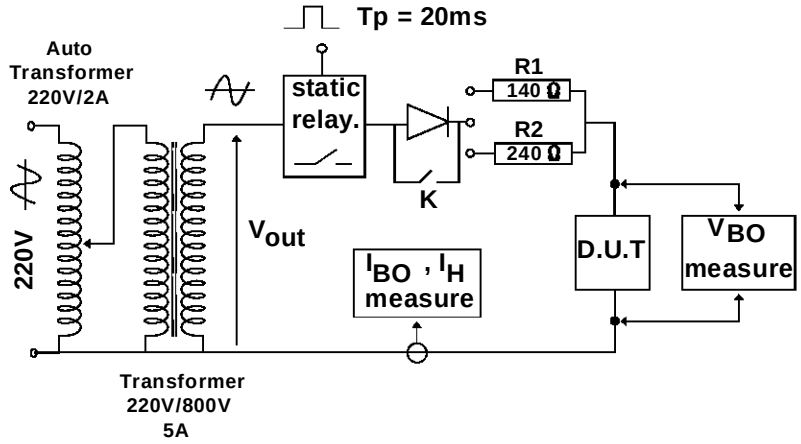


Type	Marking	I_{RM} @ V_{RM} max		V_{BR} @ I_R min		V_{BO} @ I_{BO} max note1		I_H min note1	V_T max note2	C max note3
	Laser	µA	V	V	mA	V	mA	mA	V	pF
SMTPA62	U01	2	56	62	1	82	800	150	2	150
SMTPA68	U05	2	61	68	1	90	800	150	2	150
SMTPA100	U13	2	90	100	1	133	800	150	2	100
SMTPA120	U17	2	108	120	1	160	800	150	2	100
SMTPA130	U19	2	117	130	1	173	800	150	2	100
SMTPA180	U25	2	162	180	1	240	800	150	2	100
SMTPA200	U27	2	180	200	1	267	800	150	2	100
SMTPA220	U31	2	198	220	1	293	800	150	2	100
SMTPA240	U35	2	216	240	1	320	800	150	2	100
SMTPA270	U39	2	243	270	1	360	800	150	2	100

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 = 3A.
Note 3 : V_R = 1V, F = 1MHz.

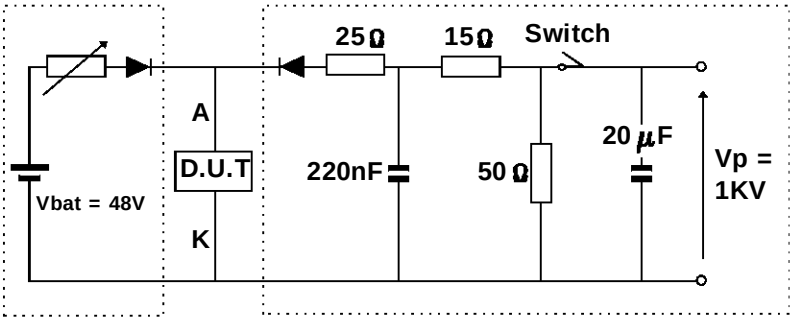
REFERENCE TEST CIRCUIT FOR I_H, I_{BO} and V_{BO} parameters :



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 sinusoidal pulse: F= 50 Hz).

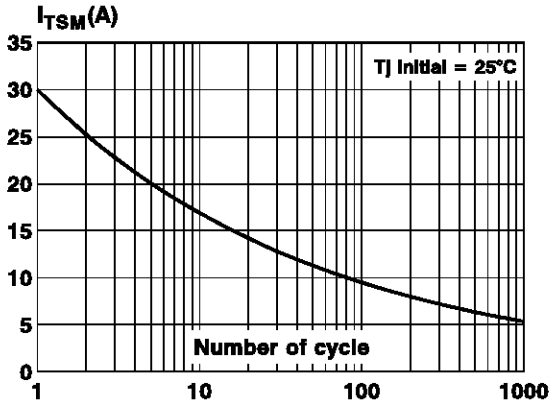


Figure 2 : On state characteristics (typical values).

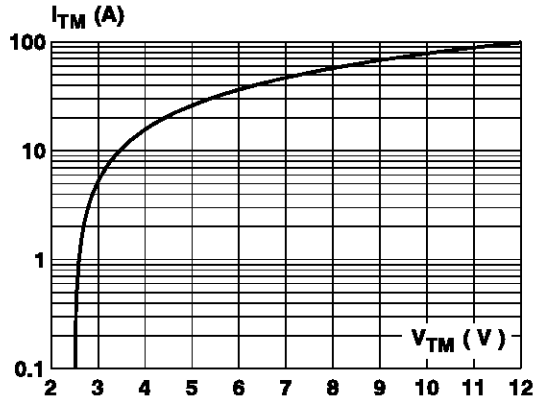
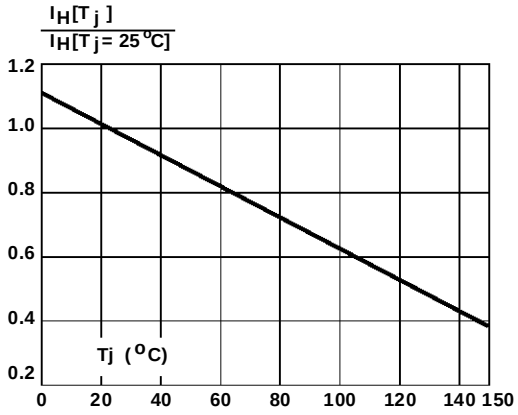
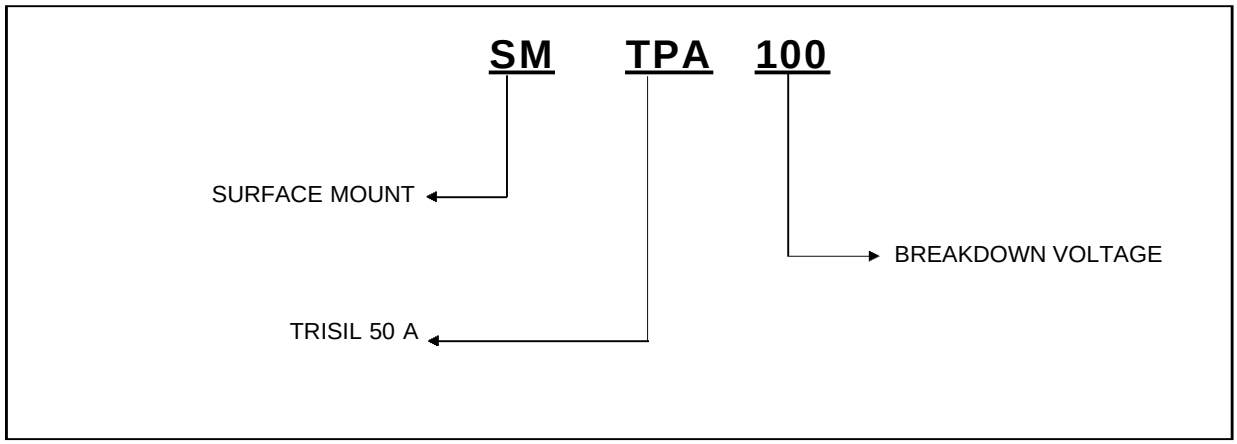


Figure 3 : Relative variation of holding current versus junction temperature.



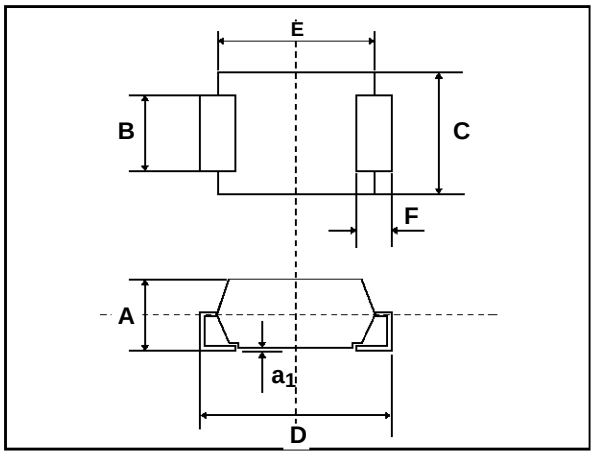
ORDER CODE



MARKING : Logo, date code, type code.

PACKAGE MECHANICAL DATA.

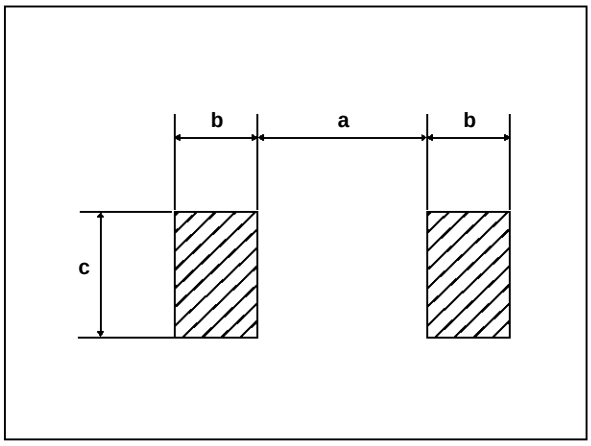
SOD 6 Plastic.



Ref	Millimeters		Inches	
	min	max	min	max
A	2.48	2.61	0.096	0.103
a_1	0.10	0.20	0.004	0.008
B	1.96	2.11	0.077	0.083
C	3.65	3.93	0.143	0.155
D	5.39	5.59	0.212	0.220
E	4.15	4.30	0.163	0.170
F	1.00	1.27	0.039	0.050

FOOTPRINT DIMENSIONS (Millimeters)

SOD 6 Plastic.



Ref	Millimeters
a	2.75
b	1.52
c	2.30

Packaging : Standard packaging is in film.