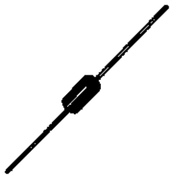
SGS-THOMSON
MICROELECTRONICS

TPA SERIES

TRISIL

FEATURES

- BIDIRECTIONAL CROWBAR PROTECTION.
- BREAKDOWN VOLTAGE RANGE:
  From 62 V To 270 V.
- HOLDING CURRENT = I_H
  Suffix 12 = 120mA min.
  Suffix 18 = 180mA min.
- PEAK PULSE CURRENT :
  I_{PP} = 50 A, 10/1000 µs.



F 126
(Plastic)

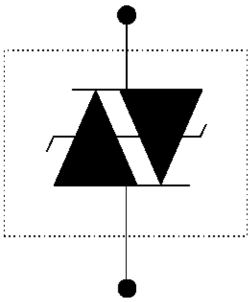
DESCRIPTION

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

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

SCHEMATIC DIAGRAM



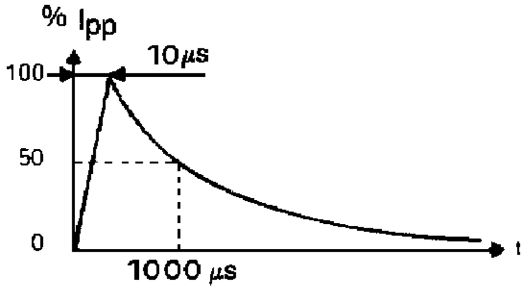
ABSOLUTE RATINGS (limiting values) (-40°C ≤ T_{amb} ≤ + 85°C)

Symbol	Parameter		Value	Unit
P	Power dissipation on infinite heatsink	T_{amb} = 50 °C	1.7	W
I_{PP}	Peak pulse current See note1	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.		230	°C

THERMAL RESISTANCES

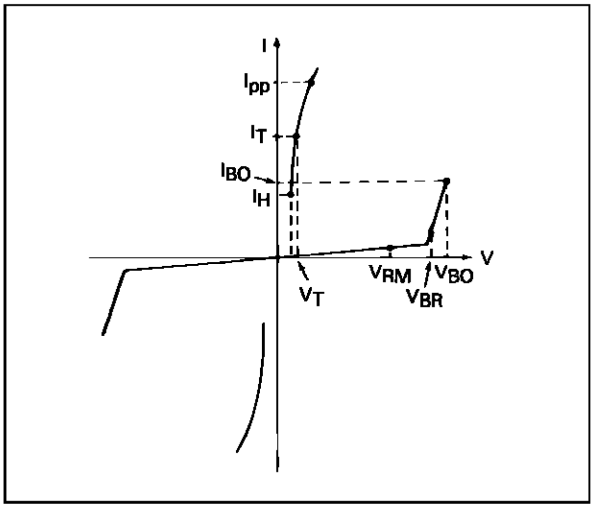
Symbol	Parameter	Value	Unit
R_{th} (j-l)	Junction to leads on infinite heatsink.	60	°C/W
R_{th} (j-a)	Junction to ambient. on printed circuit. Llead = 10 mm	100	°C/W

Note 1: 10/1000 µs wave form.



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



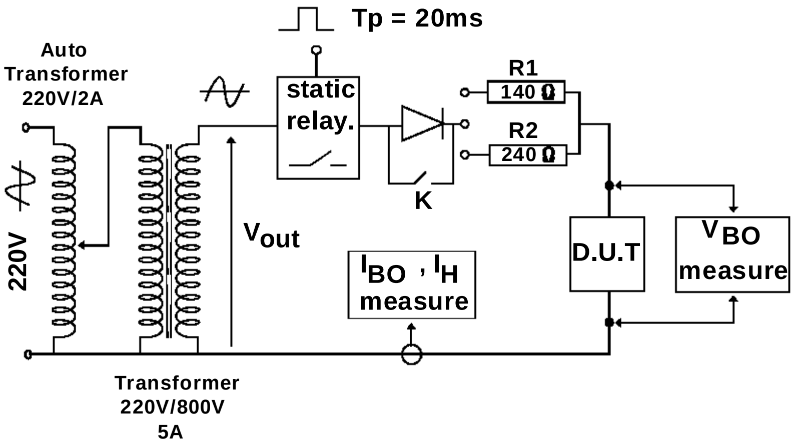
ELECTRICAL CHARACTERISTICS

Type	I_{RM} @	V_{RM}	V_{BR} @	I_R	V_{BO} @	I_{BO}	V_T	C	I_H
	max		min		max note2	max	max note3	max note4	min note2
	μA	V	V	mA	V	mA	V	pF	mA
P TPA62A - 12 or 18	2	56	62	1	82	300	2	150	
TPA62B - 12 or 18	2	56	62	1	75	300	2	150	
P TPA68A - 12 or 18	2	61	68	1	90	300	2	150	
TPA68B - 12 or 18	2	61	68	1	82	300	2	150	
(1) TPA75A - 12 or 18	2	67	75	1	100	300	2	150	
(1) TPA75B - 12 or 18	2	67	75	1	91	300	2	150	
(1) TPA82A - 12 or 18	2	74	82	1	109	300	2	150	
(1) TPA82B - 12 or 18	2	74	82	1	99	300	2	150	Suffix 12
(1) TPA91A - 12 or 18	2	82	91	1	121	300	2	150	for 120 mA.
(1) TPA91B - 12 or 18	2	82	91	1	110	300	2	150	
P TPA100A - 12 or 18	2	90	100	1	133	300	2	100	
TPA100B - 12 or 18	2	90	100	1	121	300	2	100	
P TPA110A - 12 or 18	2	99	110	1	147	300	2	100	
TPA110B - 12 or 18	2	99	110	1	133	300	2	100	
P TPA120A - 12 or 18	2	108	120	1	160	300	2	100	Suffix 18
TPA120B - 12 or 18	2	108	120	1	145	300	2	100	for 180 mA.
P TPA130A - 12 or 18	2	117	130	1	173	300	2	100	
TPA130B - 12 or 18	2	117	130	1	157	300	2	100	
(1) TPA150A - 12 or 18	2	135	150	1	200	300	4	75	
(1) TPA150B - 12 or 18	2	135	150	1	181	300	4	75	
(1) TPA160A - 12 or 18	2	144	160	1	213	300	4	75	
(1) TPA160B - 12 or 18	2	144	160	1	193	300	4	75	
P TPA180A - 12 or 18	2	162	180	1	240	300	4	75	
TPA180B - 12 or 18	2	162	180	1	217	300	4	75	
P TPA200A - 12 or 18	2	180	200	1	267	300	4	75	
TPA200B - 12 or 18	2	180	200	1	241	300	4	75	
P TPA220A - 12 or 18	2	198	220	1	293	300	4	75	
TPA220B - 12 or 18	2	198	220	1	265	300	4	75	
P TPA240A - 12 or 18	2	216	240	1	320	300	4	75	
TPA240B - 12 or 18	2	216	240	1	289	300	4	75	
P TPA270A - 12 or 18	2	243	270	1	360	300	4	75	
TPA270B - 12 or 18	2	243	270	1	325	300	4	75	

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

P : Preferred device.
(1): These voltages are on request.
Note 2 : See the reference test circuit for I_H, I_{BO} and V_{BO} parameters.
Note 3 : Square pulse Tp = 1 ms - I_T = 3A.
Note 4 : V_R = 1V, F = 1MHz.

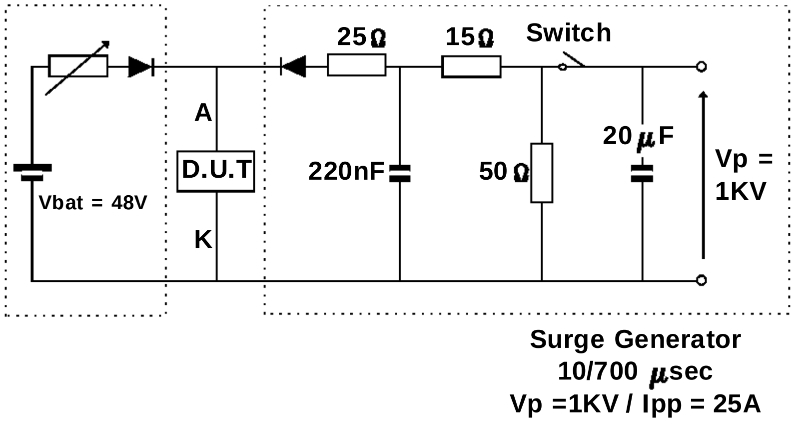
REFERENCE TEST CIRCUIT FOR I_H, I_{BO} and V_{BO} parameters :



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 Ω.
  - Device with $V_{BR} \geq 150$ Volt
    - V_{OUT} = 480 V_{RMS}, R_2 = 240 Ω.

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



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

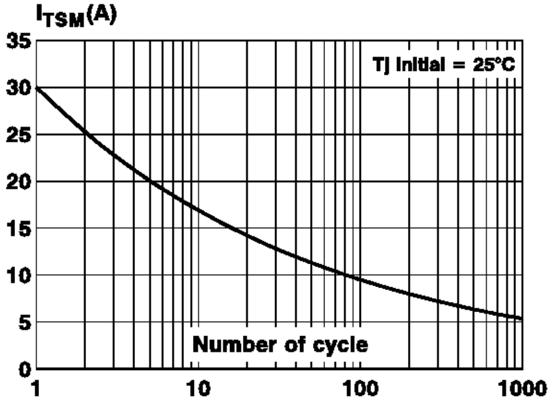
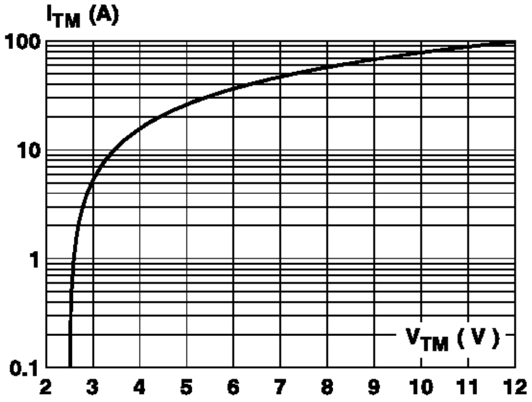
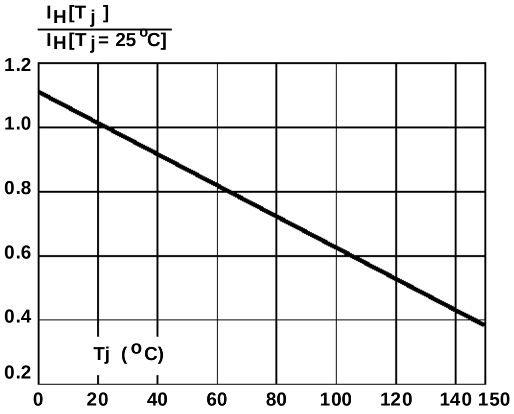


Figure 2 : On - state characteristics (typical values).

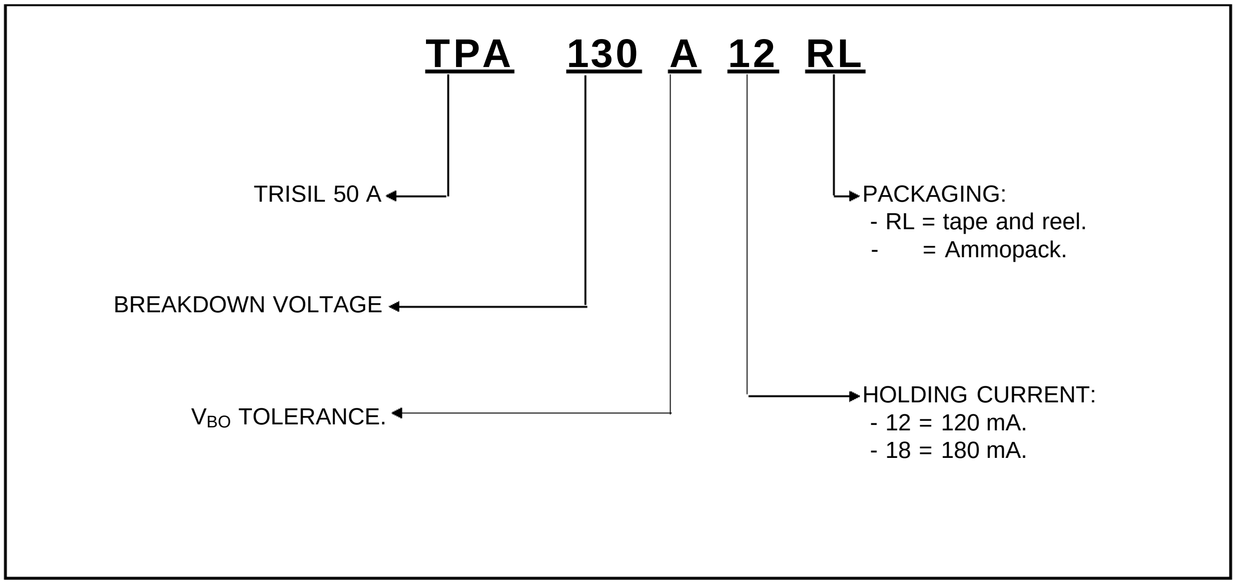


Note : For device with V_{BR} > 150 Volt
The V_T value is twice that shown.

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



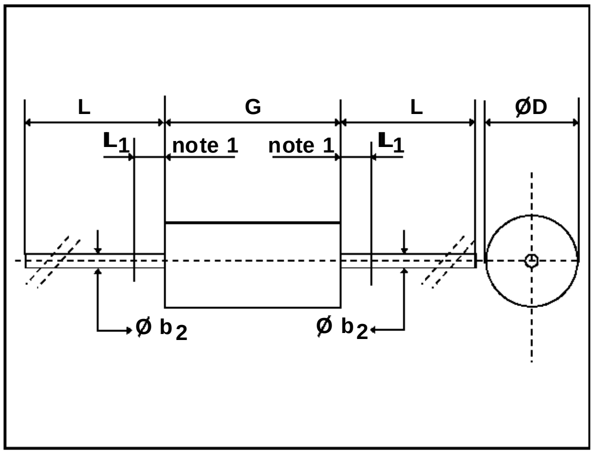
ORDER CODE



MARKING : Logo, Date Code, Part Number.

PACKAGE MECHANICAL DATA.

F 126 Plastic.



Ref	Millimeters		Inches	
	min	max	min	max
∅ b_2	0.76	0.86	0.03	0.034
∅ D	-	3.05	-	0.12
G	-	6.35	-	0.25
L	26	-	1.02	-
L_1	-	1.27	-	0.05
note 1:The diameter ∅ b_2 is not controlled over zone L_1.				

Packaging : Standard packaging is in tape and reel.

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