TPA SERIES

FEATURES

- BIDIRECTIONAL CROWBAR PROTECTION.
- VOLTAGE RANGE: FROM 62 V TO 270 V.
- HOLDING CURRENT :
  I_H = 150mA min.
- REPETITIVE PEAK PULSE CURRENT :
  I_{PP} = 50 A, 10/1000 µs.

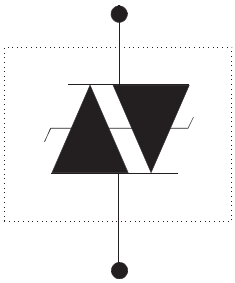
DO-15

DESCRIPTION

The TPA series are TRISIL devices especially designed for protecting sensitive telecommunication equipment against lightning and transient voltages induced by AC power lines. They are available in the DO-15 axial package.

TRISIL devices provide bidirectional protection by crowbar action. Their characteristic response to transient overvoltages makes them particularly suited to protect voltage sensitive telecommunication equipment.

SCHEMATIC DIAGRAM



COMPLIES WITH THE FOLLOWING STANDARDS:	Peak Surge Voltage (V)	Voltage Waveform (µs)	Current Waveform (µs)	Admissible Ipp (A)	Necessary Resistor (Ω)
(CCITT) ITU-K20	1000	10/700	5/310	25	-
(CCITT) ITU-K17	1500	10/700	5/310	38	-
VDE0433	2000	10/700	5/310	50	-
VDE0878	2000	1.2/50	1/20	50	-
IEC-1000-4-5	level 3 level 4	10/700 1.2/50	5/310 8/20	50 100	- -
FCC Part 68, lightning surge type A	1500 800	10/160 10/560	10/160 10/560	75 55	12.5 6.5
FCC Part 68, lightning surge type B	1000	9/720	5/320	25	-
BELLCORE TR-NWT-001089 First level	2500 1000	2/10 10/1000	2/10 10/1000	150 50	11.5 10
BELLCORE TR-NWT-001089 Second level	5000	2/10	2/10	150	11.5
CNET I31-24	1000	0.5/700	0.8/310	25	-

This datasheet has been downloaded from http://www.digchip.com at this page

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

Symbol	Parameter		Value	Unit
P	Power dissipation on infinite heatsink	T_{amb} = 50 °C	1.7	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
I^2t	I^2t value for fusing	tp = 20 ms	9	A^2s
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	°C °C

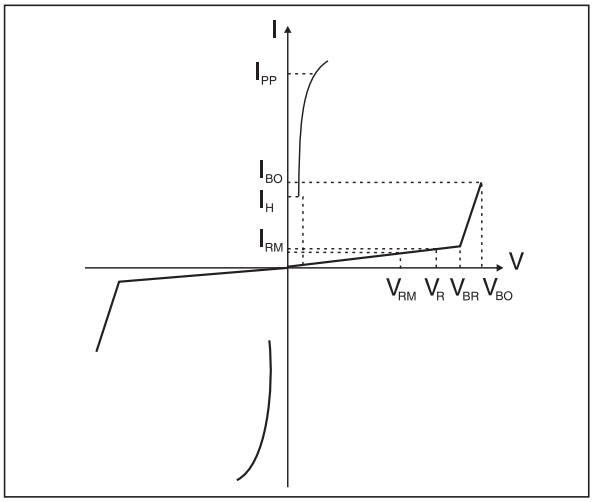
THERMAL RESISTANCES

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

ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C)

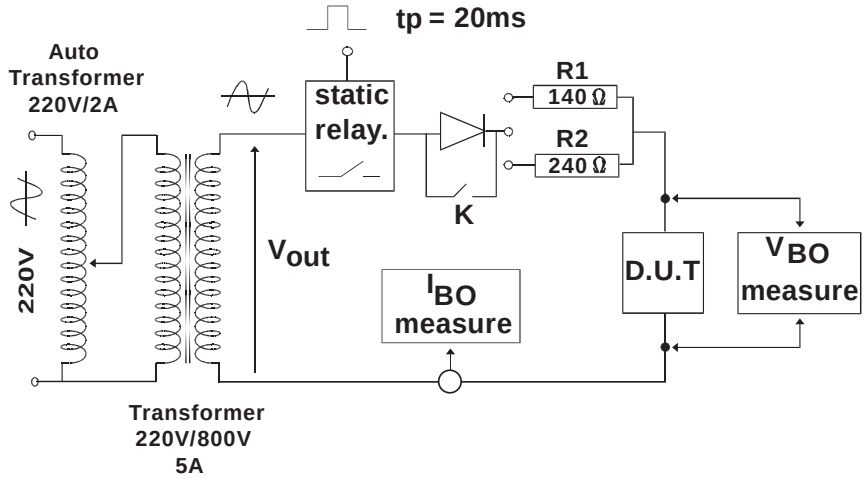
Symbol	Parameter
V_{RM}	Stand-off voltage
I_{RM}	Leakage current at stand-off voltage
V_R	Continuous Reverse voltage
V_{BR}	Breakdown voltage
V_{BO}	Breakover voltage
I_H	Holding current
I_{BO}	Breakover current
I_{PP}	Peak pulse current
C	Capacitance



Type	I_{RM} @ V_{RM} max.		I_R @ V_R max. note 1		V_{BO} @ I_{BO} max. note 2		I_H min. note 3	C max. note 4
	µA	V	µA	V	V	mA	mA	pF
TPA62	2	56	50	62	82	800	150	150
TPA68	2	61	50	68	90	800	150	150
TPA100	2	90	50	100	133	800	150	100
TPA120	2	108	50	120	160	800	150	100
TPA130	2	117	50	130	173	800	150	100
TPA180	2	162	50	180	240	800	150	100
TPA200	2	180	50	200	267	800	150	100
TPA220	2	198	50	220	293	800	150	100
TPA240	2	216	50	240	320	800	150	100
TPA270	2	243	50	270	360	800	150	100

Note 1: I_R measured at V_R guarantee V_{BRmin} | V_R
Note 2: Measured at 50 Hz (1 cycle) - See test circuit 1.
Note 3: See test circuit 2.
Note 4: V_R = 1V, F = 1MHz. Refer to fig.3 for C versus V_R.

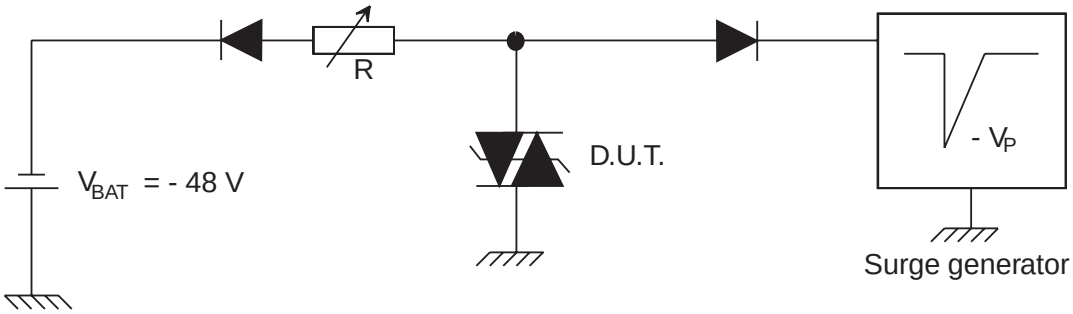
TEST CIRCUIT 1 FOR I_{BO} and V_{BO} parameters :



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_{BO} < 200 Volt
    - V_{OUT} = 250 V_{RMS}, R_1 = 140 Ω.
  - Device with V_{BO} ≥ 200 Volt
    - V_{OUT} = 480 V_{RMS}, R_2 = 240 Ω.

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 : Ipp = 10A , 10/1000 µs.
  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 (Tj initial=25°C).

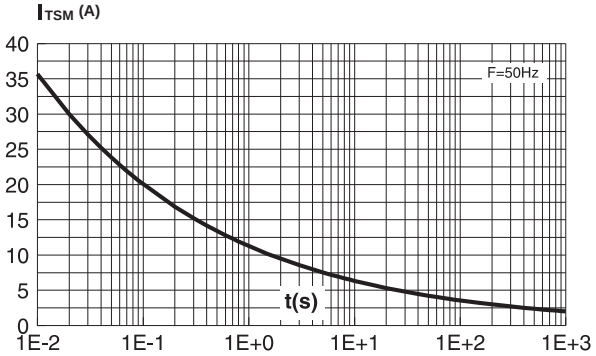


Fig. 2: Relative variation of holding current versus junction temperature.

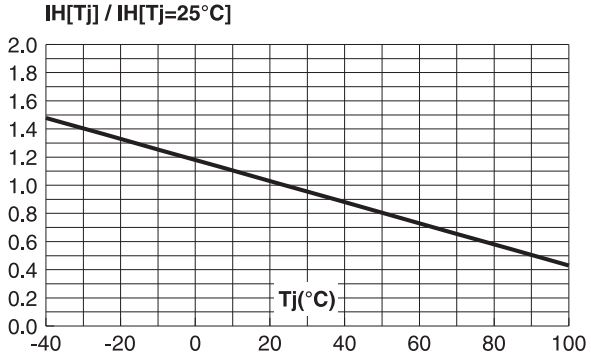


Fig. 3: Relative variation of junction capacitance versus reverse applied voltage (typical values). ***Note:*** *For V_{RM} upper than 56V, the curve is extrapolated (dotted line).*

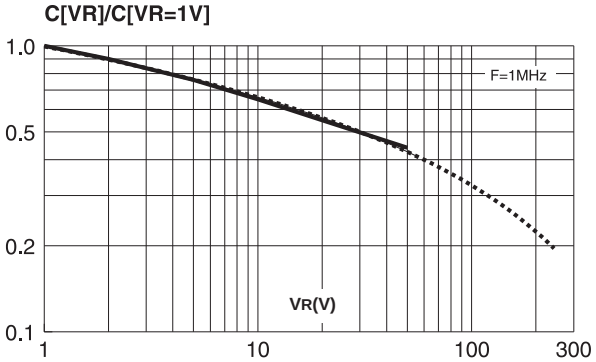


Fig. 4: On-state current versus on-state voltage (typical values).

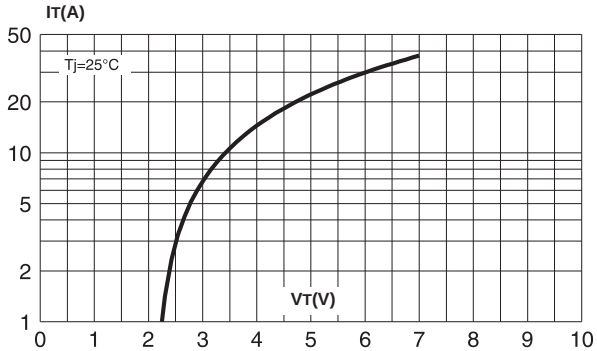
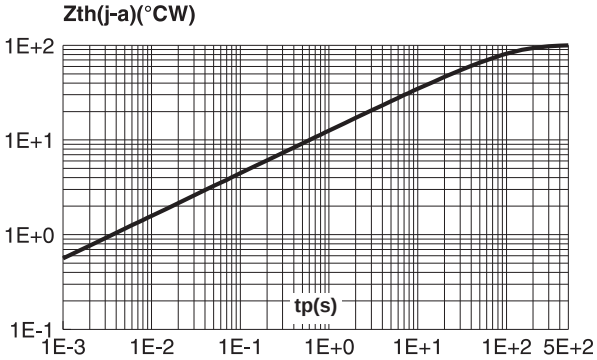


Fig. 5: Transient thermal impedance junction to ambient versus pulse duration (for FR4 PC Board with T_{lead} = 10 mm).



ORDER CODE

TPA 100 RL

TPA → TRISIL PROTECTION 50A

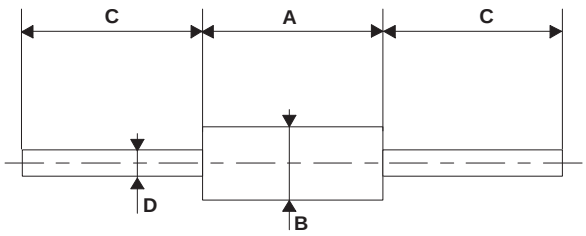
100 → VOLTAGE

RL → PACKAGING:
RL = tape and reel.
= Ammopack.

MARKING : Logo, Date Code, Part Number.

PACKAGE MECHANICAL DATA

DO-15 (Plastic)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	6.05	6.75	0.238	0.266
B	2.95	3.53	0.116	0.139
C	26	31	1.024	1.220
D	0.71	0.88	0.028	0.035

Weight: 0.4 g

Packaging : Standard packaging is in tape and reel.

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