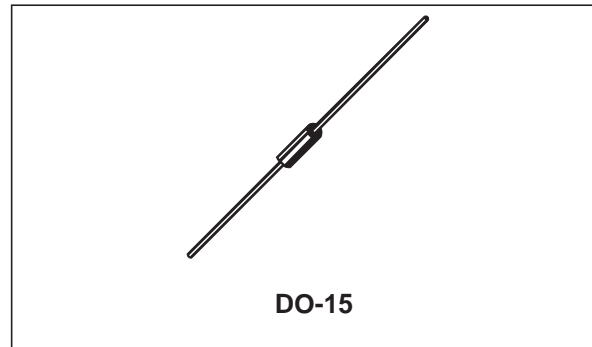


## FEATURES

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

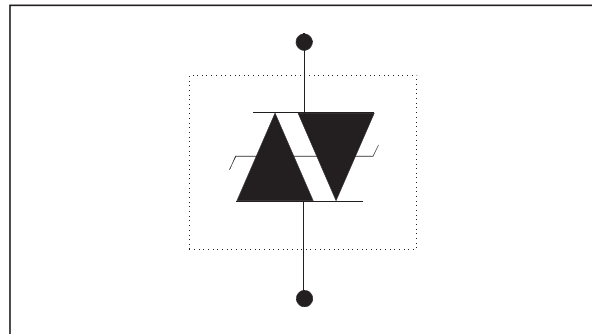


## DESCRIPTION

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 ( $\mu\text{s}$ )	Current Waveform ( $\mu\text{s}$ )	Admissible $I_{pp}$ (A)	Necessary Resistor ( $\Omega$ )
(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	-

## TPA SERIES

### ABSOLUTE MAXIMUM RATINGS (T<sub>amb</sub> = 25°C)

Symbol	Parameter	Value	Unit	
P	Power dissipation on infinite heatsink	T <sub>amb</sub> = 50 °C	1.7	W
I <sub>PP</sub>	Peak pulse current	10/1000 μs 8/20 μs	50 100	A
I <sub>TSM</sub>	Non repetitive surge peak on-state current	t <sub>p</sub> = 20 ms	30	A
I <sup>2</sup> t	I <sup>2</sup> t value for fusing	t <sub>p</sub> = 20 ms	9	A <sup>2</sup> s
dV/dt	Critical rate of rise of off-state voltage	V <sub>RM</sub>	5	kV/μs
T <sub>stg</sub> T <sub>j</sub>	Storage temperature range Maximum junction temperature		- 55 to + 150 150	°C °C

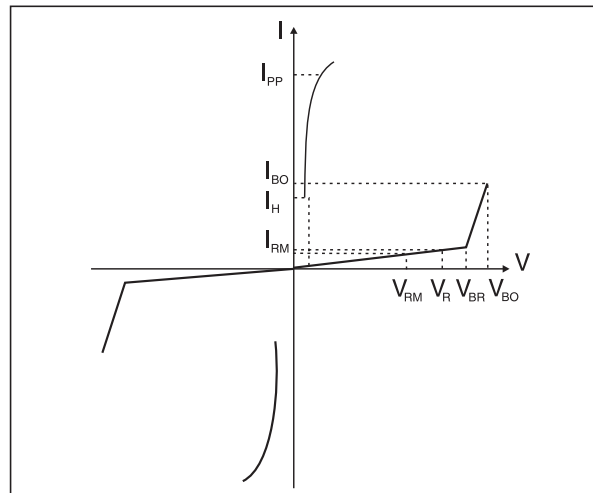
### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R <sub>th (j-l)</sub>	Junction to leads (L <sub>lead</sub> = 10mm)	60	°C/W
R <sub>th (j-a)</sub>	Junction to ambient on printed circuit (L <sub>lead</sub> = 10 mm)	100	°C/W

### ELECTRICAL CHARACTERISTICS

(T<sub>amb</sub> = 25°C)

Symbol	Parameter
V <sub>RM</sub>	Stand-off voltage
I <sub>RM</sub>	Leakage current at stand-off voltage
V <sub>R</sub>	Continuous Reverse voltage
V <sub>BR</sub>	Breakdown voltage
V <sub>BO</sub>	Breakover voltage
I <sub>H</sub>	Holding current
I <sub>BO</sub>	Breakover current
I <sub>PP</sub>	Peak pulse current
C	Capacitance

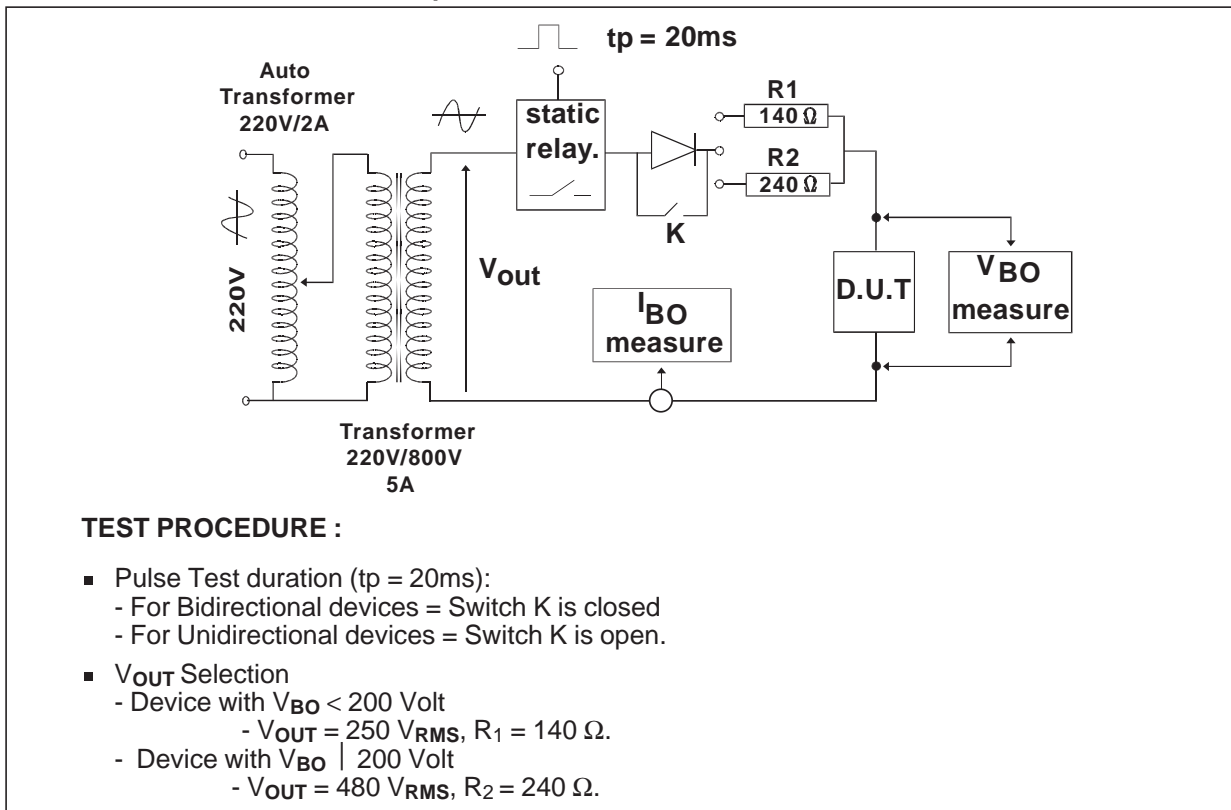


Type	I <sub>RM</sub> @ V <sub>RM</sub>		I <sub>R</sub> @ V <sub>R</sub>		V <sub>BO</sub> @ I <sub>BO</sub>		I <sub>H</sub>	C
	max. μA	V	max. note 1 μA	V	max. note 2 V	mA	min. note 3 mA	max. note 4 pF
TPA62	2	56	50	62	82	800	150	150
TPA68	2	61	50	68	90	800	150	150
TPA100	2	90	50	100	133	800	150	100
TPA120	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

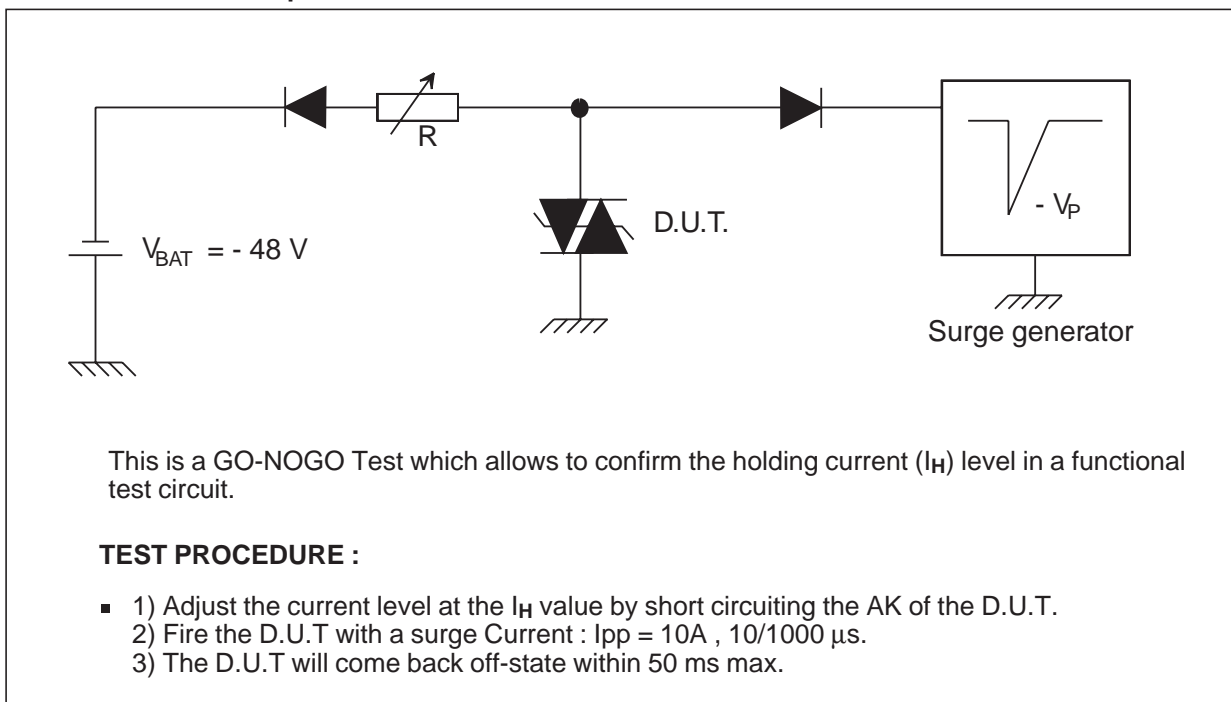
**Note 1:** I<sub>R</sub> measured at V<sub>R</sub> guarantee V<sub>BRmin</sub> | V<sub>R</sub>  
**Note 3:** See test circuit 2.

**Note 2:** Measured at 50 Hz (1 cycle) - See test circuit 1.  
**Note 4:** V<sub>R</sub> = 1V, F = 1MHz. Refer to fig.3 for C versus V<sub>R</sub>.

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

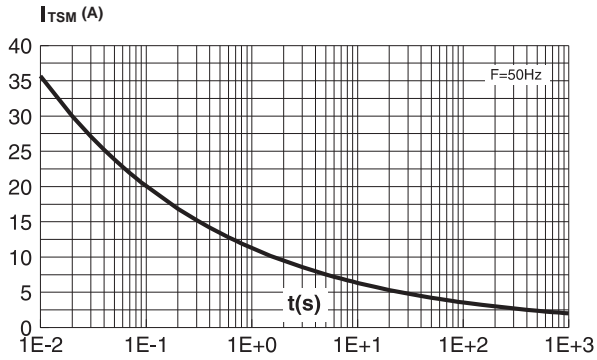


**TEST CIRCUIT 2 for  $I_H$  parameter.**

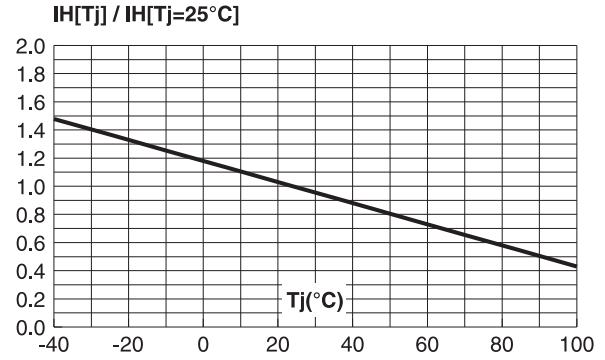


## TPA SERIES

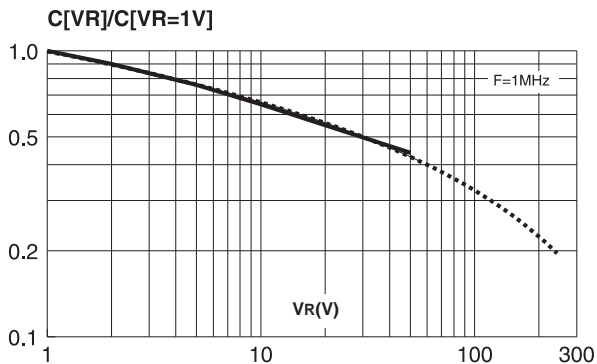
**Fig. 1:** Non repetitive surge peak on-state current versus overload duration ( $T_j$  initial=25°C).



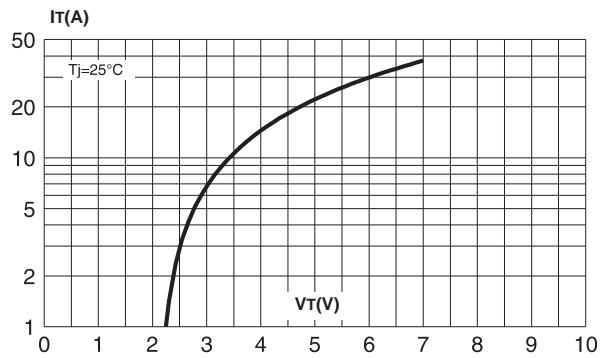
**Fig. 2:** Relative variation of holding current versus junction temperature.



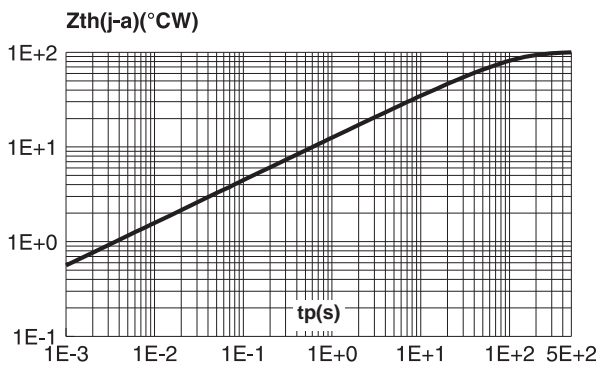
**Fig. 3:** Relative variation of junction capacitance versus reverse applied voltage (typical values). **Note:** For  $V_{RM}$  upper than 56V, the curve is extrapolated (dotted line).



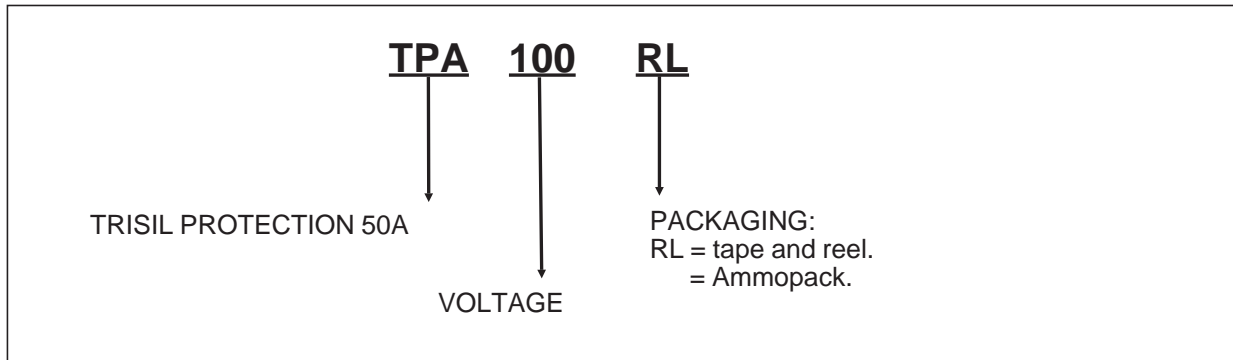
**Fig. 4:** On-state current versus on-state voltage (typical values).



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

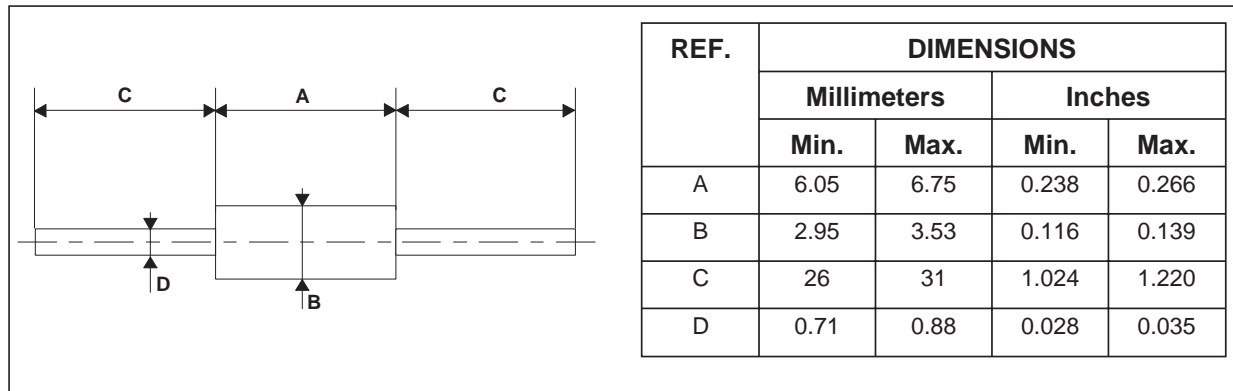


**ORDER CODE**



**MARKING** : Logo, Date Code, Part Number.

**PACKAGE MECHANICAL DATA**  
 DO-15 (Plastic)



**Weight:** 0.4 g

**Packaging** : Standard packaging is in tape and reel.

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