



TPA SERIES

TRISIL™

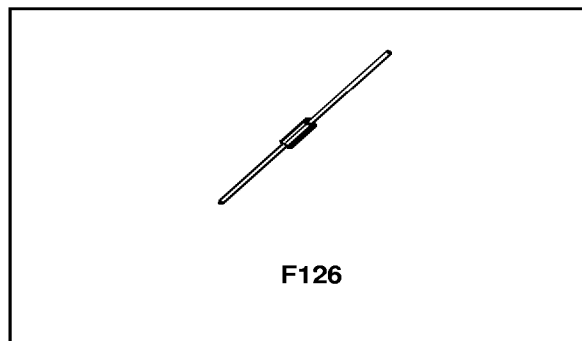
FEATURES

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

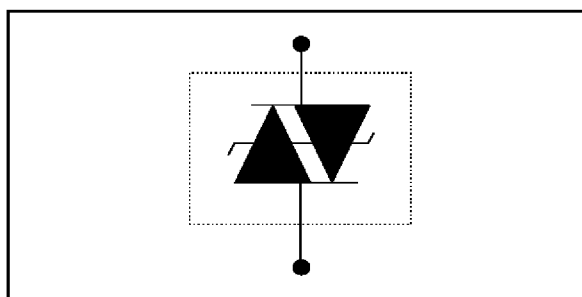
DESCRIPTION

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 F126 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 I_{PP} (A)	Necessary Resistor (Ω)
CCITT K20	4000	10/700	5/310	100	-
VDE0433	4000	10/700	5/310	100	-
VDE0878	4000	1.2/50	1/20	100	-
IEC-1000-4-5	level 4 level 4	10/700 1.2/50	5/310 8/20	100 100	- -
FCC Part 68, lightning surge type A	1500 800	10/160 10/560	10/160 10/560	200 100	- -
FCC Part 68, lightning surge type B	100	5/320	5/320	25	-
BELLCORE TR-NWT-001089 First level	2500 1000	2/10 10/1000	2/10 10/1000	500 100	- -
BELLCORE TR-NWT-001089 Second level	500	2/10	2/10	500	-
CNET I31-24	4000	0.5/700	0.8/310	100	-

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ABSOLUTE MAXIMUM RATINGS (Tamb = 25°C)

Symbol	Parameter		Value	Unit
P	Power dissipation on infinite heatsink	Tamb = 50 °C	1.7	W
IPP	Peak pulse current	10/1000 μs 8/20 μs	50 100	A
ITSM	Non repetitive surge peak on-state current	tp = 20 ms	30	A
I ² t	I ² t value for fusing	tp = 20 ms	9	A ² s
dV/dt	Critical rate of rise of off-state voltage	VRM	5	kV/μs
Tstg Tj	Storage temperature range Maximum junction temperature		- 55 to + 150 150	°C °C
TL	Maximum lead temperature for soldering during 10s at 5mm from case		230	°C

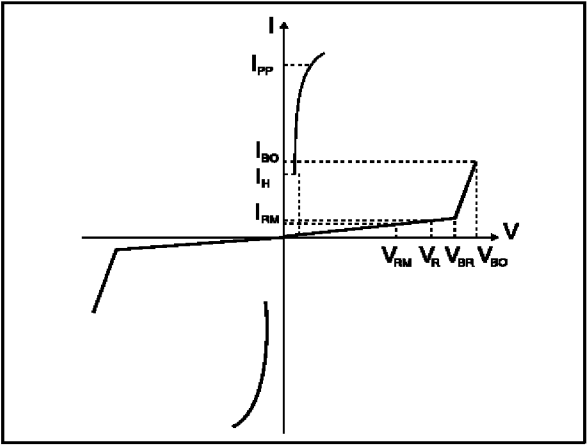
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-l)	Junction to leads (Llead = 10mm)	60	°C/W
Rth (j-a)	Junction to ambient on printed circuit (Llead = 10 mm)	100	°C/W

ELECTRICAL CHARACTERISTICS

(Tamb = 25°C)

Symbol	Parameter
VRM	Stand-off voltage
IRM	Leakage current at stand-off voltage
VR	Continuous Reverse voltage
VBR	Breakdown voltage
VBO	Breakover voltage
IH	Holding current
IBo	Breakover current
IPP	Peak pulse current
C	Capacitance



Type	IRM @ VRM max.		IR @ VR max. note 1		VBO @ IBo max. note 2		IH 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

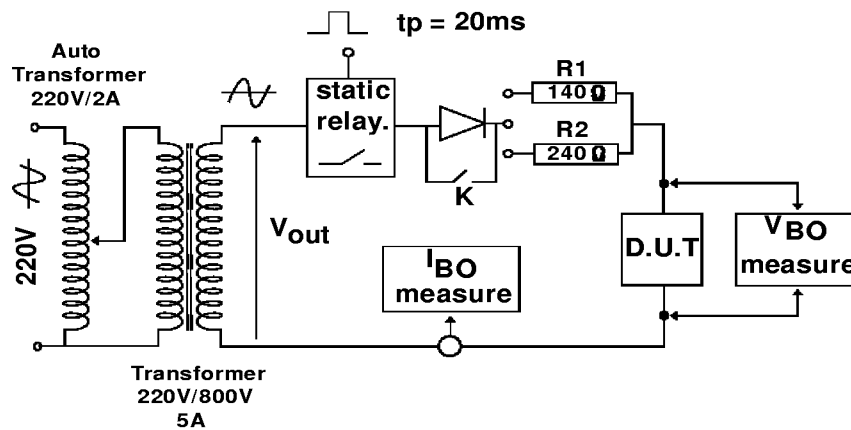
Note 1: IR measured at VR guarantee VBRmin ≥ VR

Note 3: See test circuit 2.

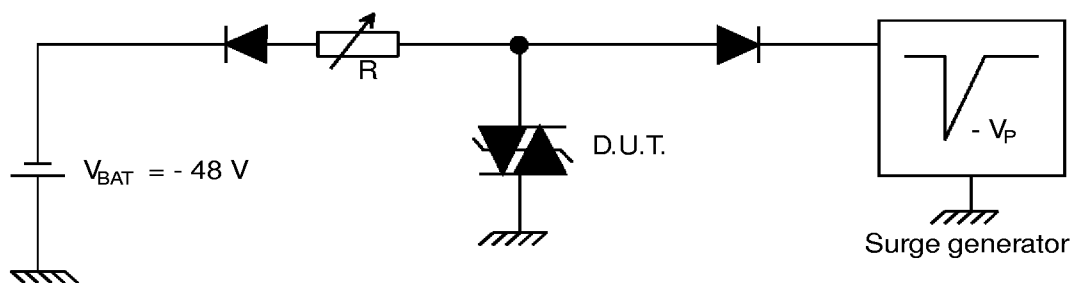
Note 2: Measured at 50 Hz (1 cycle) - See test circuit 1.

Note 4: VR = 1V, F = 1MHz. Refer to fig.3 for C versus VR.



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

- Pulse Test duration ($t_p = 20\text{ms}$):
 - For Bidirectional devices = Switch K is closed
 - For Unidirectional devices = Switch K is open.
- V_{OUT} Selection
 - Device with $V_{BO} < 200\text{ Volt}$
 - $V_{OUT} = 250\text{ V}_{RMS}$, $R_1 = 140\ \Omega$.
 - Device with $V_{BO} \geq 200\text{ Volt}$
 - $V_{OUT} = 480\text{ V}_{RMS}$, $R_2 = 240\ \Omega$.

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 : $I_{pp} = 10\text{A}$, $10/1000\ \mu\text{s}$.
- 3) The D.U.T will come back off-state within 50 ms max.

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

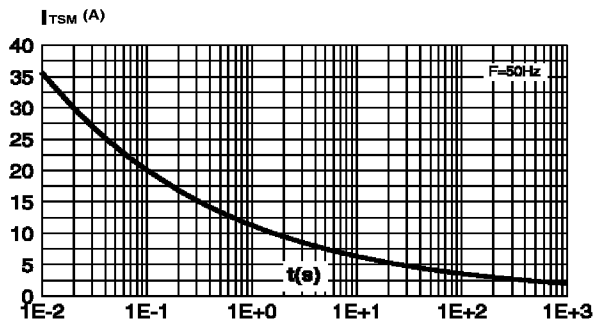


Fig. 2: Relative variation of holding current versus junction temperature.

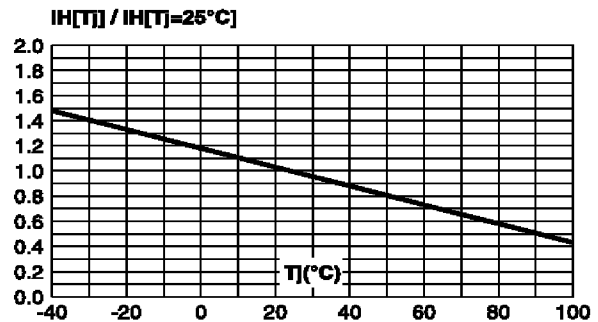


Fig. 3: Relative variation of junction capacitance versus reverse applied voltage (typical values).
Note: For V_{RM} upper than 56V, the curve is extrapolated (dotted line).

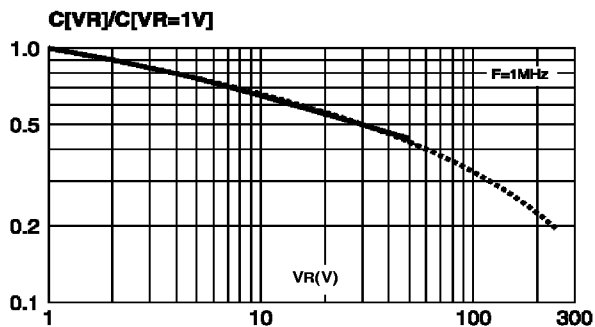


Fig. 4: On-state current versus on-state voltage (typical values).

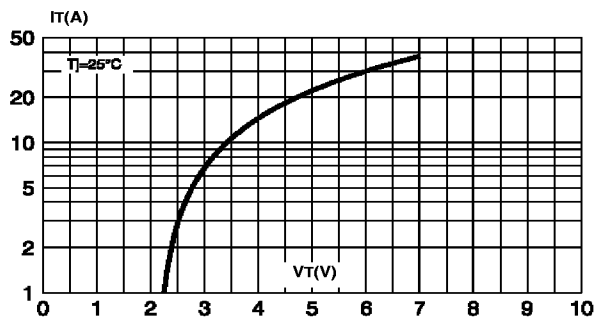
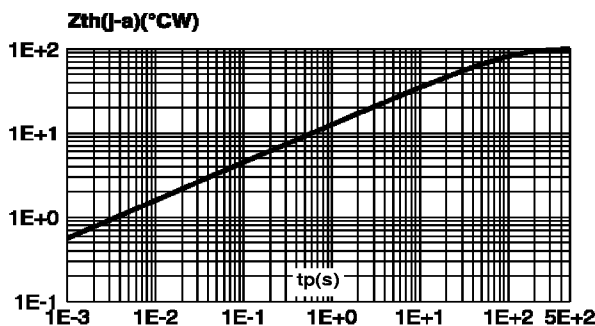
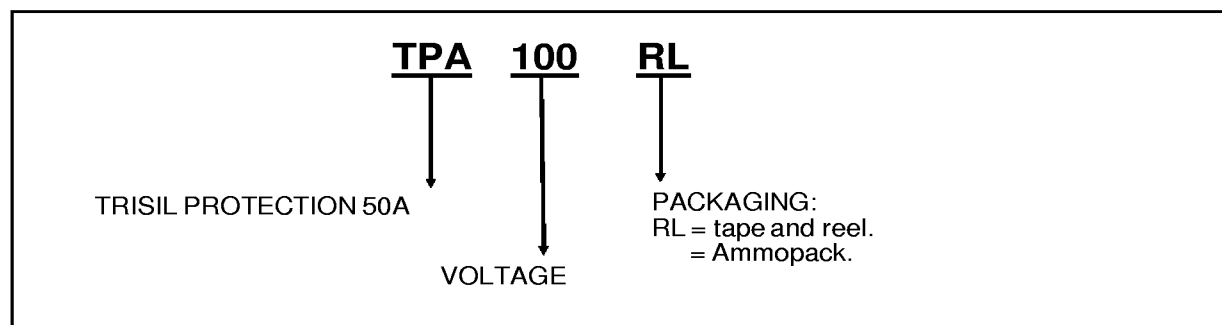


Fig. 5: Transient thermal impedance junction to ambient versus pulse duration (for FR4 PC Board with $T_{lead} = 10$ mm).



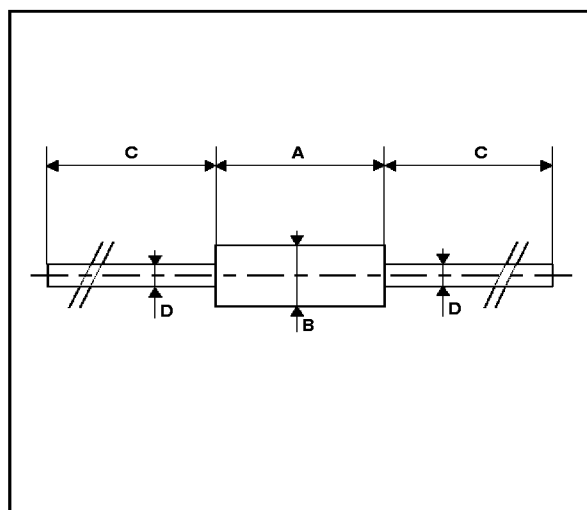
ORDER CODE



MARKING : Logo, Date Code, Part Number.

PACKAGE MECHANICAL DATA

F126 Plastic



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	6.05	6.20	6.35	0.238	0.244	0.250
B	2.95	3.00	3.05	0.116	0.118	0.120
C	26		31	1.024		1.220
D	0.76	0.81	0.86	0.030	0.032	0.034

Weight: 0.40 g

Packaging : Standard packaging is in tape and reel.

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