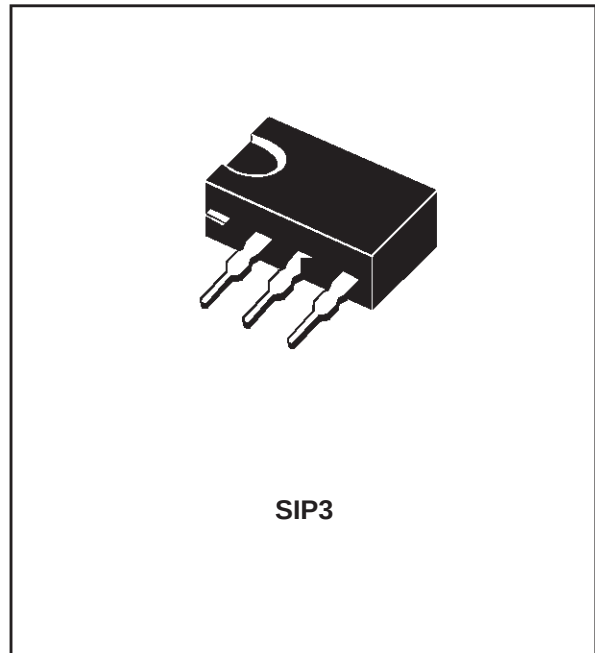


FEATURES

- DUAL BIDIRECTIONAL CROWBAR PROTECTION.
- PEAK PULSE CURRENT :
- $I_{PP} = 35\text{ A}$, $10/1000\text{ }\mu\text{s}$.
- HOLDING CURRENT = 150 mA min
- BREAKDOWN VOLTAGE = 200 V min.
- BREAKOVER VOLTAGE = 290 V max.
- MONOLITHIC DEVICE.

DESCRIPTION

This monolithic protection device has been especially designed to protect subscriber line cards. The THBT200S device is particularly suitable to protect ring generator relay against transient overvoltages.

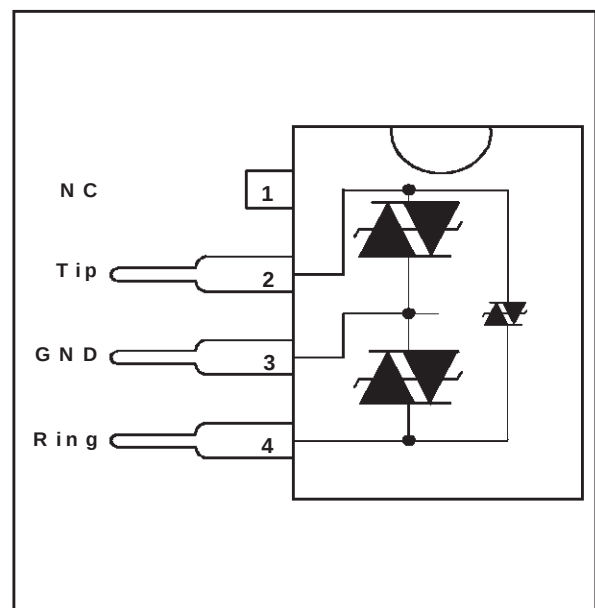


COMPLIES WITH THE FOLLOWING STANDARDS :

CCITT K20 :	10/700 μs	1kV
	5/310 μs	25A
VDE 0433 :	10/700 μs	2kV
	5/310 μs	45A (*)
VDE 0878 :	1.2/50 μs	1.5kV
	1/20 μs	40A
FCC part 68 :	2/10 μs	2.5kV
	2/20 μs	80A (*)
BELLCORE TR-NWT-001089 :	2/10 μs	2.5kV
	2/10 μs	80A
	10/1000 μs	1kV
	10/1000 μs	35A (*)

(*) with series resistors or PTC.

SCHEMATIC DIAGRAM



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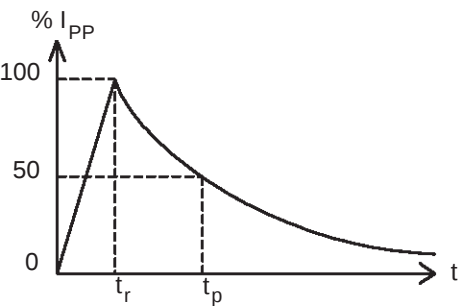
THBT200S1

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

Symbol	Parameter		Value	Unit
I _{PP}	Peak pulse current (see note 1)	10/1000 μs 8/20 μs 2/10 μs	35 70 80	A
I _{TSM}	Non repetitive surge peak on-state current	t _p = 20ms	20	A
T _{stg} T _j	Storage and operating junction temperature range Maximum junction temperature		- 40 to + 150 + 150	°C
T _L	Maximum lead temperature for soldering during 10s		230	°C

Note 1 : Pulse waveform :

10/1000μs	t _r =10μs	t _p =1000μs
5/310μs	t _r =5μs	t _p =310μs
2/10μs	t _r =2μs	t _p =10μs

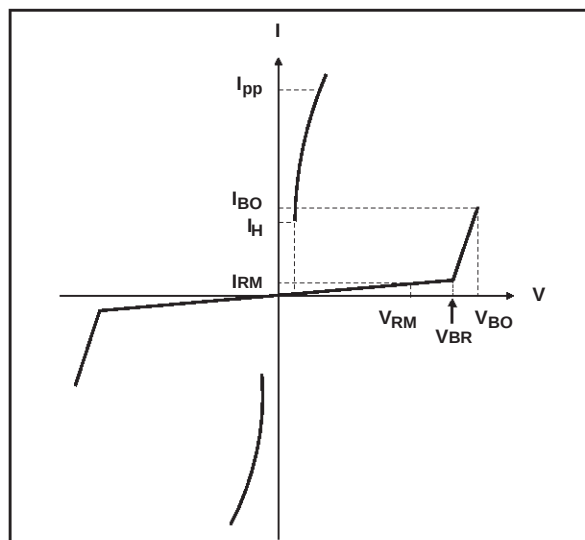


THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
R _{th(j-a)}	Junction to ambient	80	°C/W

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$)

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



1 - PARAMETERS RELATED TO ONE TRISIL. (Between TIP and GND or RING and GND)

I_{RM} @ V_{RM}		V_{BR} @ I_R		V_{BO} @ I_{BO}			I_H	C
max.		min.		max.	min.	max.	min.	max.
				note 1			note 2	note 3
μA	V	V	mA	V	mA	mA	mA	pF
10	180	200	1	290	150	800	150	200

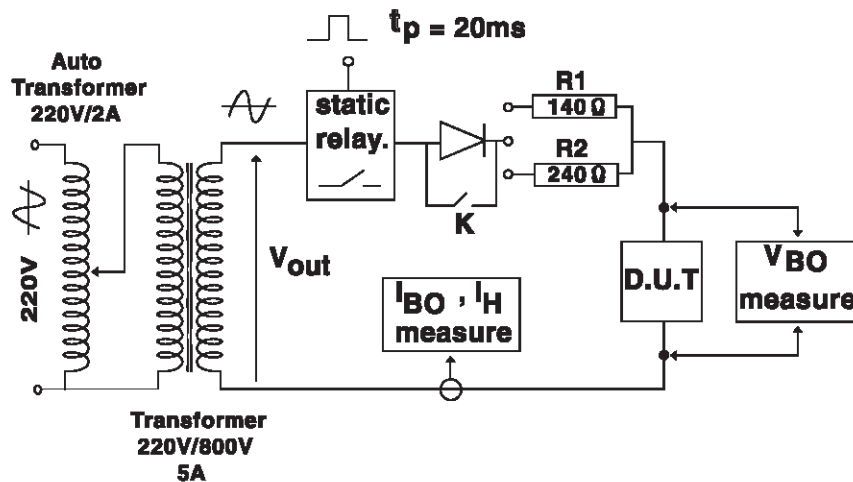
Note 1 : See reference test circuit 1 for I_H , I_{BO} and V_{BO} parameters.

Note 2 : See test circuit 2.

Note 3 : $V_R = 1\text{V}$, $F = 1\text{MHz}$.

2 - PARAMETERS RELATED TO TIP and RING TRISIL.

I_{RM} @ V_{RM}		C
max.		max.
μA	V	pF
10	180	200

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

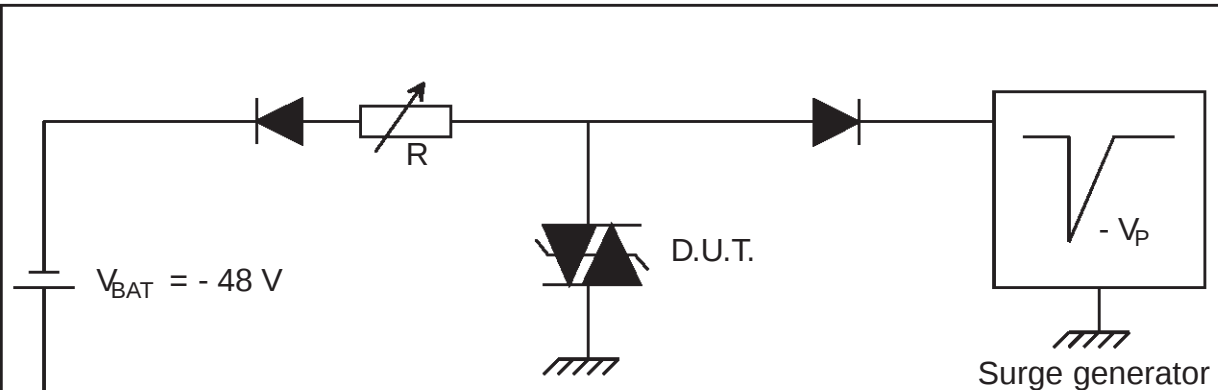
TEST PROCEDURE :

Pulse Test duration ($t_p = 20ms$):

- For Bidirectional devices = Switch K is closed
- For Unidirectional devices = Switch K is open.

V_{OUT} Selection

- Device with $V_{BO} < 200$ Volt
 - $V_{OUT} = 250 V_{RMS}$, $R_1 = 140 \Omega$.
- Device with $V_{BO} \geq 200$ Volt
 - $V_{OUT} = 480 V_{RMS}$, $R_2 = 240 \Omega$.

FUNCTIONAL HOLDING CURRENT (I_H) TEST CIRCUIT 2.

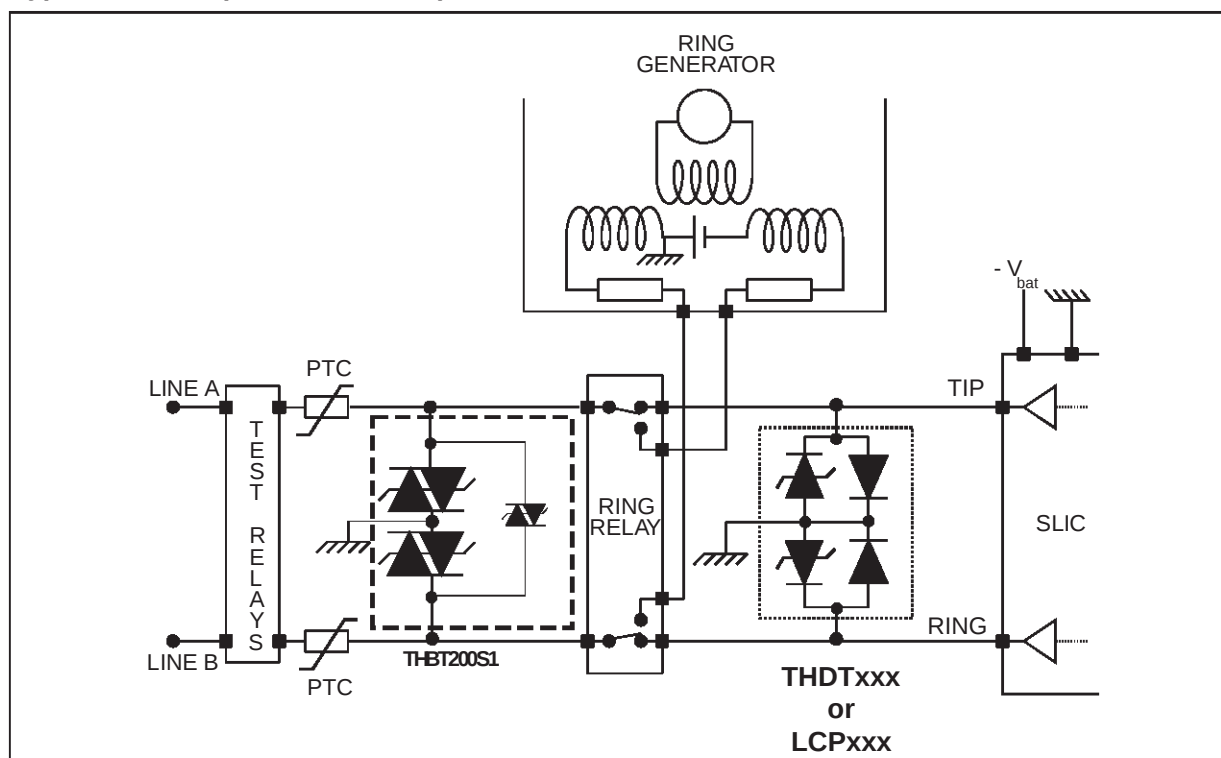
This is a GO-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit.

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

APPLICATION CIRCUIT

Typical line card protection concept



FUNCTIONAL DESCRIPTION

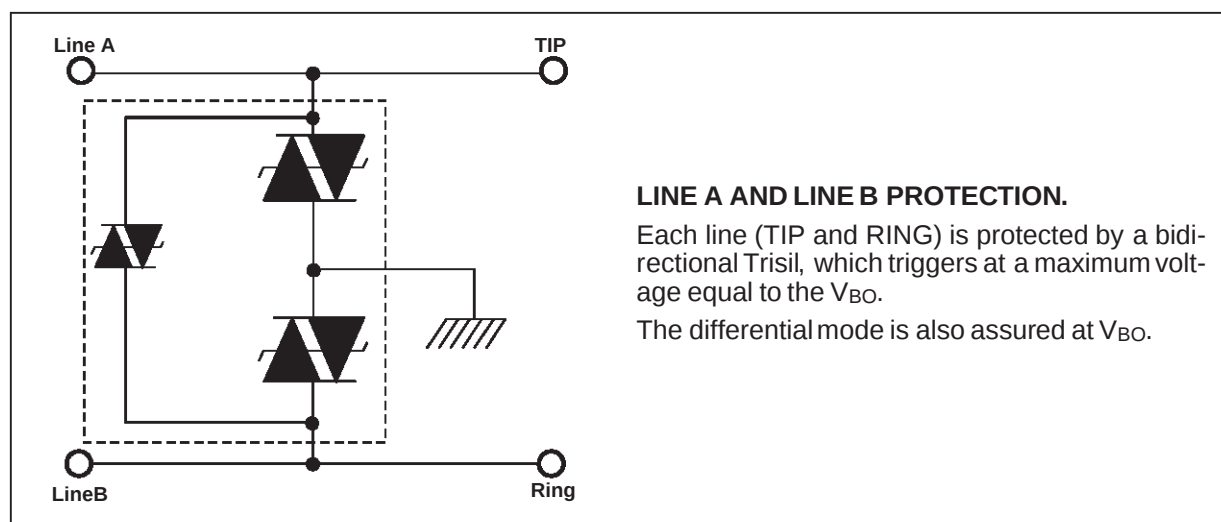


Fig. 1 : Relative variation of holding current versus junction temperature.

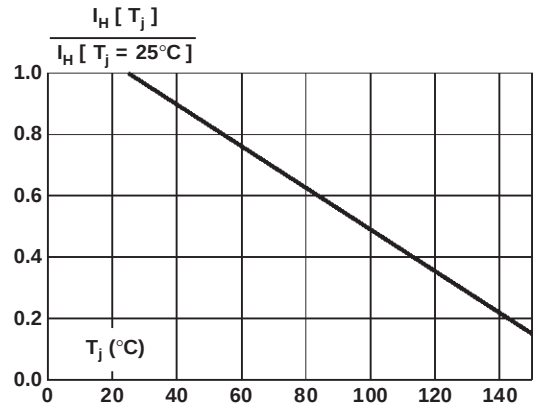


Fig. 2 : Surge peak current versus overload duration.

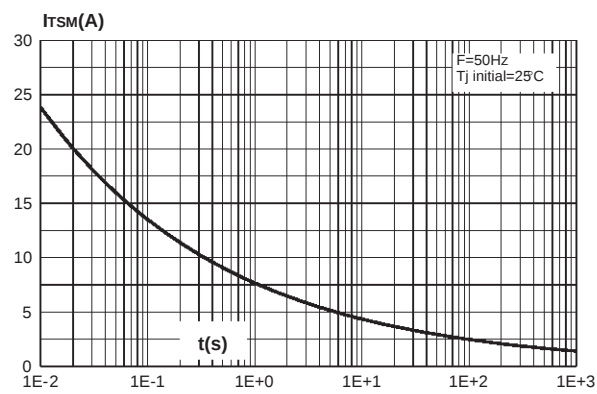


Fig. 3 : Peak on state voltage versus peak on state current (typical values).

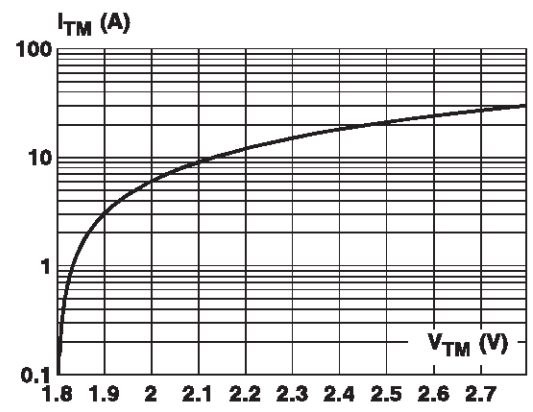
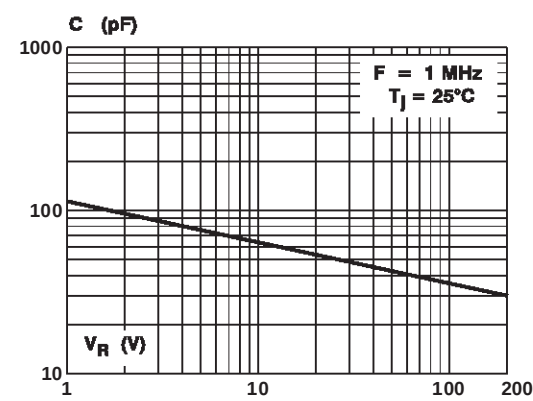


Fig. 4 : Capacitance versus reverse applied voltage (typical values).



ORDER CODE

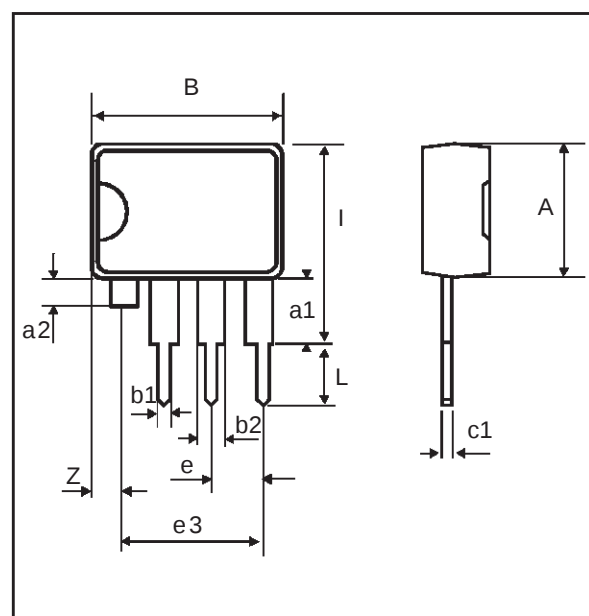
	THBT	200	S	1	
					35A VERSION
BIDIRECTIONAL TRISIL					
BREAKDOWN VOLTAGE					Package : S = SIP3

MARKING :

Package	Types	Marking
SIP3	THBT200S1	TBT200S1

PACKAGE MECHANICAL DATA

SIP3 Plastic

**Packaging:** Product supplied in antistatic tubes.**Weight :** 0.55g

REF.	DIMENSIONS					
	Millimetres			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			7.10			0.280
a1	2.80			0.110		
a2	1.50		1.90	0.059		0.075
B			10.15			0.400
b1		0.50			0.020	
b2	1.35		1.75	0.053		0.069
c1	0.38		0.50	0.015		0.020
e		2.54			0.100	
e3		7.62			0.200	
L			10.50			0.413
L		3.30			0.130	
Z			1.50			0.059

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