

**FEATURES**

- CROWBAR PROTECTION
- DUAL ASYMMETRICAL TRANSIENT SUPPRESSOR
- PEAK PULSE CURRENT :
  - $I_{PP} = 75\text{ A}$ , 10/1000  $\mu\text{s}$  for THDT58S.
  - $I_{PP} = 35\text{ A}$ , 10/1000  $\mu\text{s}$  for THDT58S1.
- HOLDING CURRENT = 150 mA min
- BREAKDOWN VOLTAGE = 58 V.
- BREAKOVER VOLTAGE = 80V max

**DESCRIPTION**

This device has been especially designed to protect subscriber line card interfaces (SLIC) against transient overvoltages.

Its ion-implanted technology confers its excellent electrical characteristics.

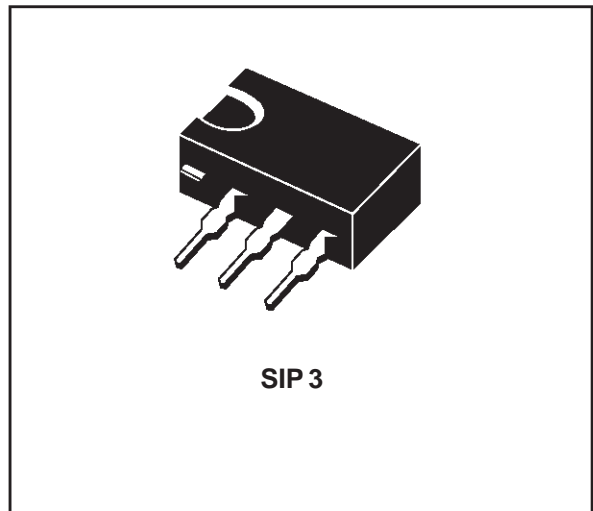
This is why this device easily fulfils the main protection standards which are related to the overvoltages suppression on telecom lines.

The product pinout is compatible with TO202 and TO220 packages.

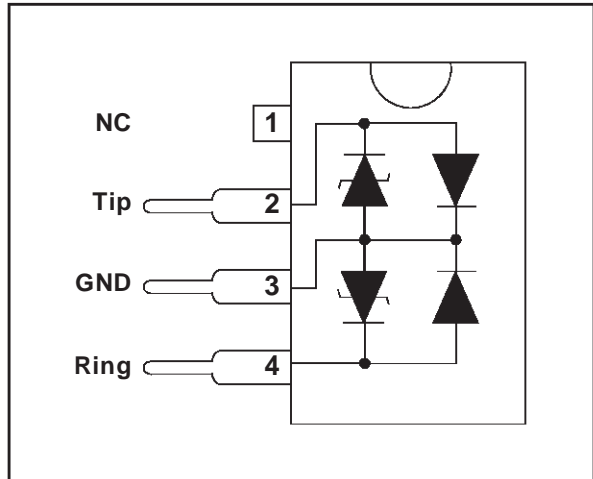
**COMPLIES WITH THE FOLLOWING STANDARDS :**

<b>CCITT K20 :</b>	10/700 $\mu\text{s}$	1kV
	5/310 $\mu\text{s}$	25A
<b>VDE 0433 :</b>	10/700 $\mu\text{s}$	2kV
	5/200 $\mu\text{s}$	45/50A(*)
<b>VDE 0878 :</b>	1.2/50 $\mu\text{s}$	1.5kV
	1/20 $\mu\text{s}$	40A
<b>CNET I3124:</b>	0.5/700 $\mu\text{s}$	1kV
	0.2/310 $\mu\text{s}$	25A
<b>BELLCORE</b>		
<b>TR-NWT-001089 :</b>	10/1000 $\mu\text{s}$	1kV
	10/1000 $\mu\text{s}$	35/75A (*)

(\*) with series resistors or PTC.



**SCHEMATIC DIAGRAM**



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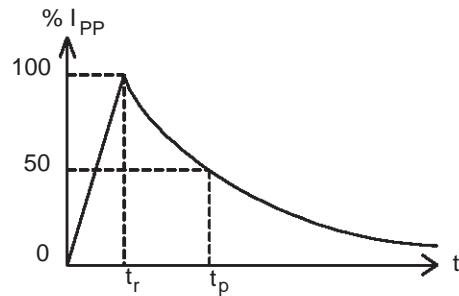
## THDT58S / THDT58S1

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ )

Symbol	Parameter		THDT58S1	THDT58S	Unit
$I_{PP}$	Peak pulse current (see note 1)	10/1000 $\mu\text{s}$ 8/20 $\mu\text{s}$ 2/10 $\mu\text{s}$	35 70 80	75 150	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $F = 50\text{Hz}$ )	$t = 20 \text{ ms}$	20	30	A
$dV/dt$	Critical rate of rise of off-state voltage	67% $V_{BR}$		5	$\text{kV}/\mu\text{s}$
$T_{stg}$ $T_j$	Storage temperature range Maximum operating junction temperature		-55 to +150 +150	-40 to +150 +150	$^{\circ}\text{C}$ $^{\circ}\text{C}$
$T_L$	Maximum lead temperature for soldering during 10s		260	260	$^{\circ}\text{C}$

Note 1 : Pulse waveform :

10/1000 $\mu\text{s}$	$t_r=10\mu\text{s}$	$t_p=1000\mu\text{s}$
5/310 $\mu\text{s}$	$t_r=5\mu\text{s}$	$t_p=310\mu\text{s}$
2/10 $\mu\text{s}$	$t_r=2\mu\text{s}$	$t_p=10\mu\text{s}$

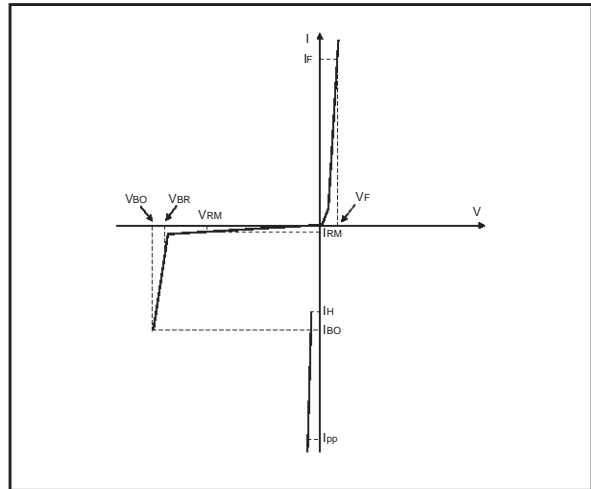


### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	80	$^{\circ}\text{C}/\text{W}$

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

Symbol	Parameter
$V_{RM}$	Stand-off voltage
$I_{RM}$	Leakage current at $V_{RM}$
$V_{BR}$	Breakdown voltage
$V_{BO}$	Breakover voltage
$I_H$	Holding current
$V_F$	Forward Voltage drop
$I_{BO}$	Breakover current
$I_{PP}$	Peak pulse current
C	Capacitance



**1 - PARAMETER RELATED TO THE DIODE LINE/GND**

Symbol	Test conditions	Value	Unit
$V_F$	$I_F = 5\text{ A}$ $t_p = 500\ \mu\text{s}$	5	V

**2 - PARAMETERS RELATED TO THE PROTECTION THYRISTOR**

Type	$I_{RM} @ V_{RM}$ max.		$V_{BR} @ I_R$ min.		$V_{BO} @ I_{BO}$			$I_H$	C
	$\mu\text{A}$	V	V	mA	max. V	min. mA note1	max. mA	min. mA note 2	max. pF note 3
THDT58S	10	56	58	1	80	150	800	150	400
THDT58S1	10	56	58	1	80	50	800	150	200

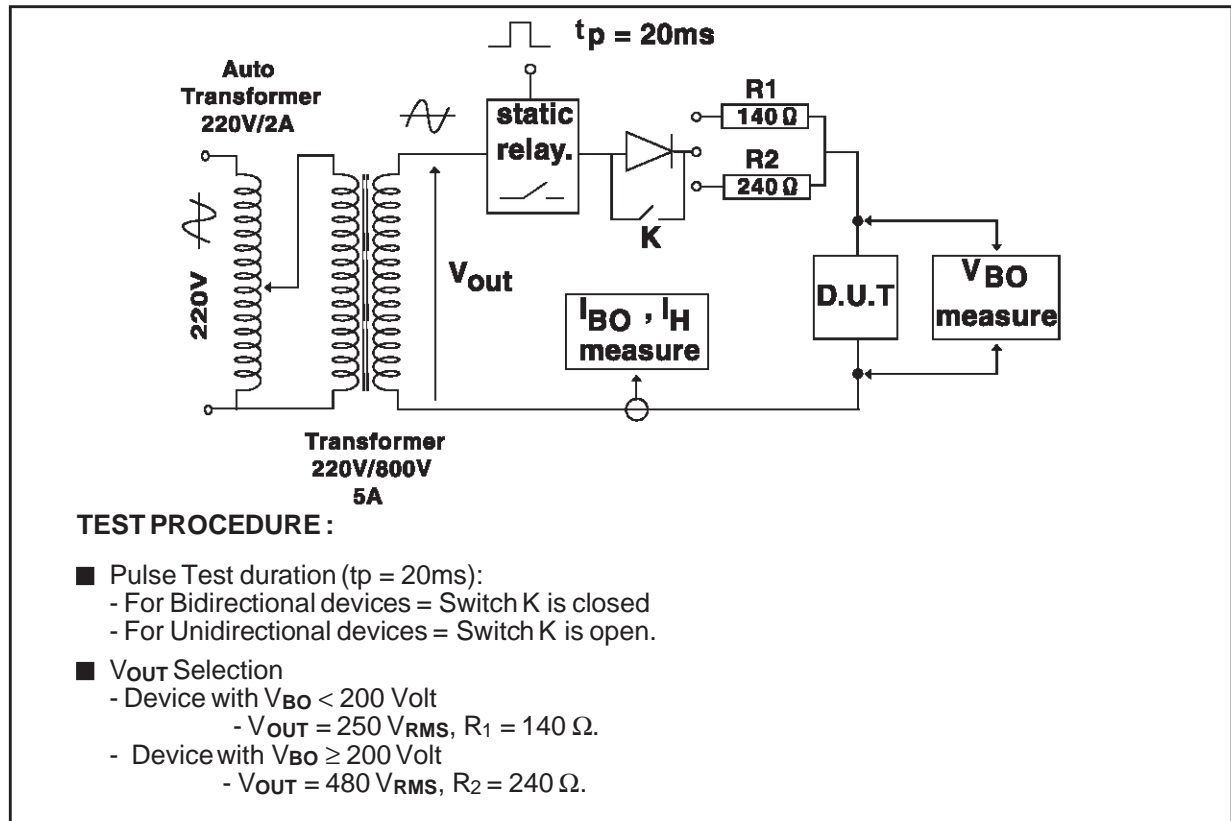
**Note 1 :** See the reference test circuit 1 for  $I_{BO}$  and  $V_{BO}$  parameters.

**Note 2 :** See test circuit 2.

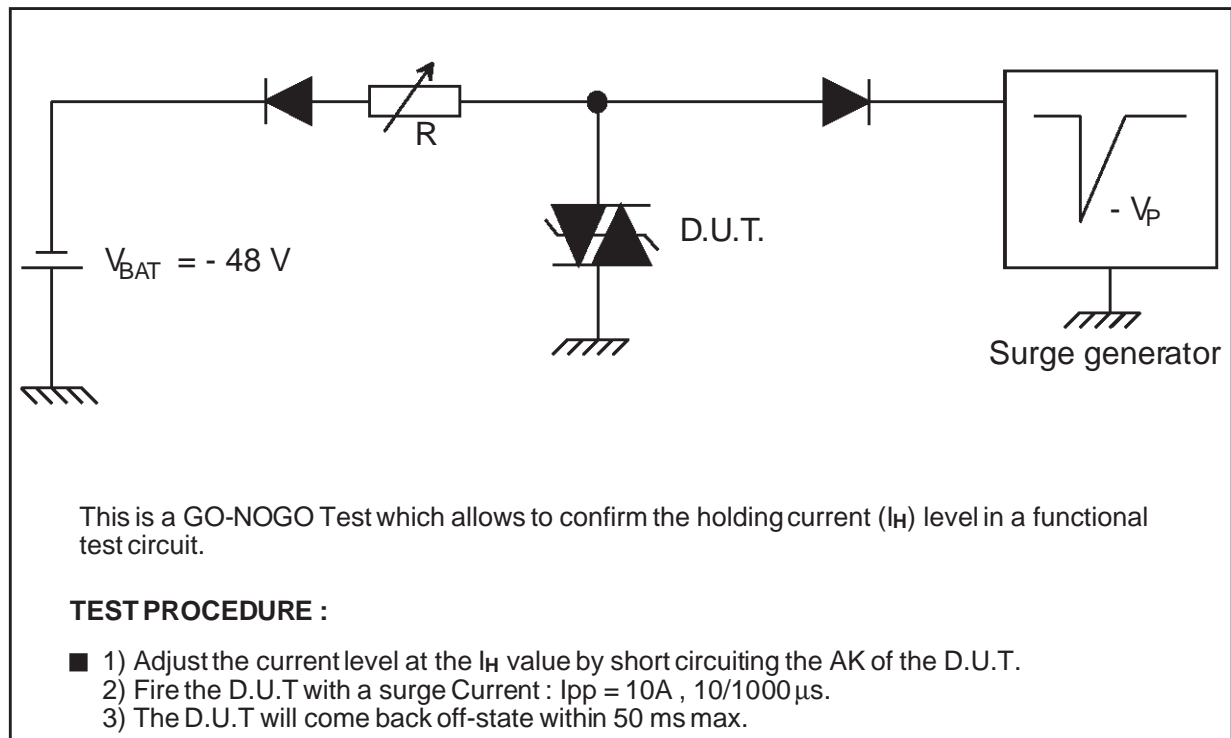
**Note 3 :**  $V_R = 1\text{V}$ ,  $F = 1\text{MHz}$ .

## THDT58S / THDT58S1

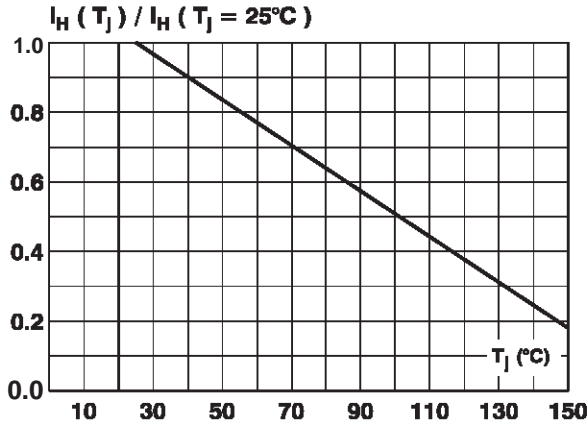
### REFERENCE TEST CIRCUIT 1 :



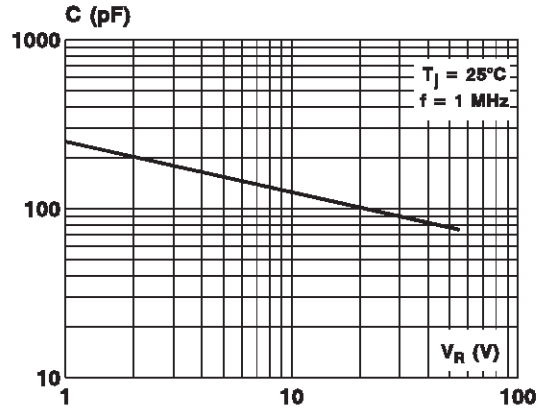
### FUNCTIONAL HOLDING CURRENT ( $I_H$ ) TEST CIRCUIT 2



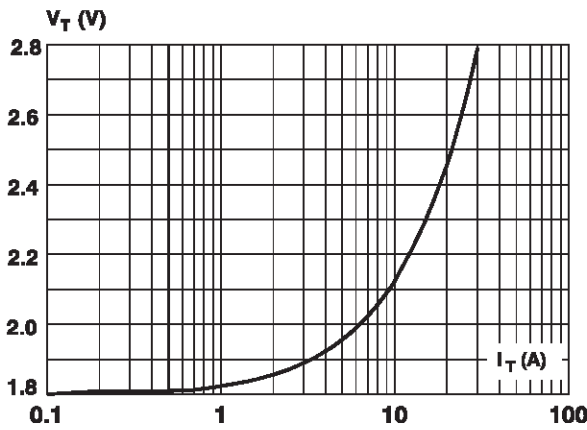
**Fig. 1:** Relative variation of holding current versus junction temperature.



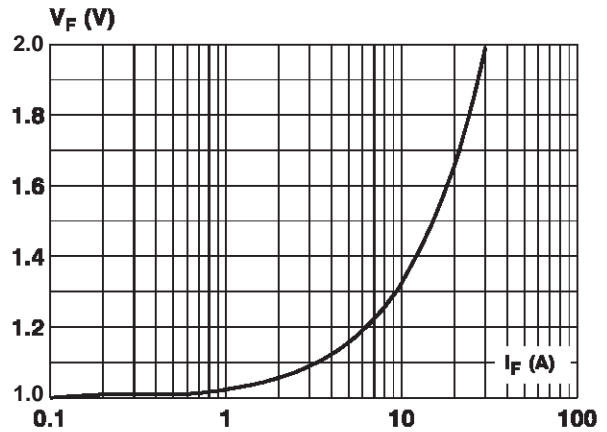
**Fig. 2:** Capacitance versus reverse applied voltage (typical values).



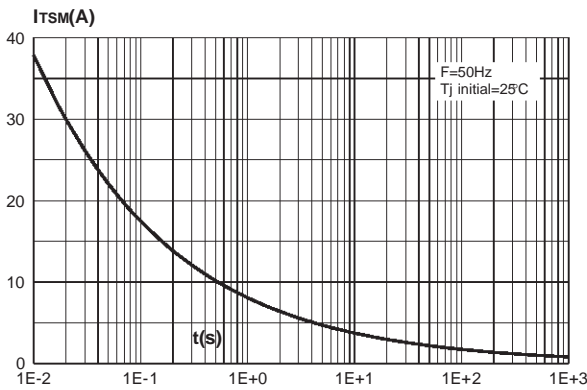
**Fig. 3:** Peak on state voltage versus peak on state current (typical values).



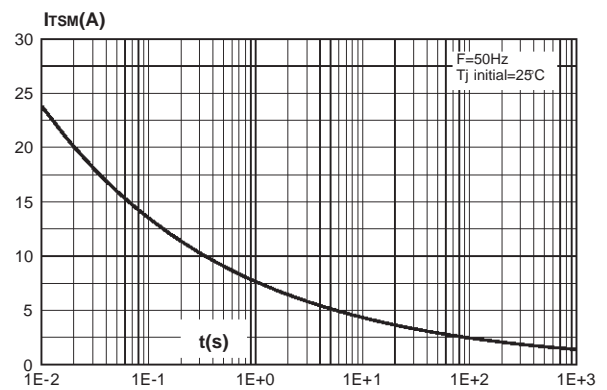
**Fig. 4:** Peak forward voltage drop versus peak forward current (typical values).



**Fig. 5:** Surge peak current versus overload duration (THDT58S).



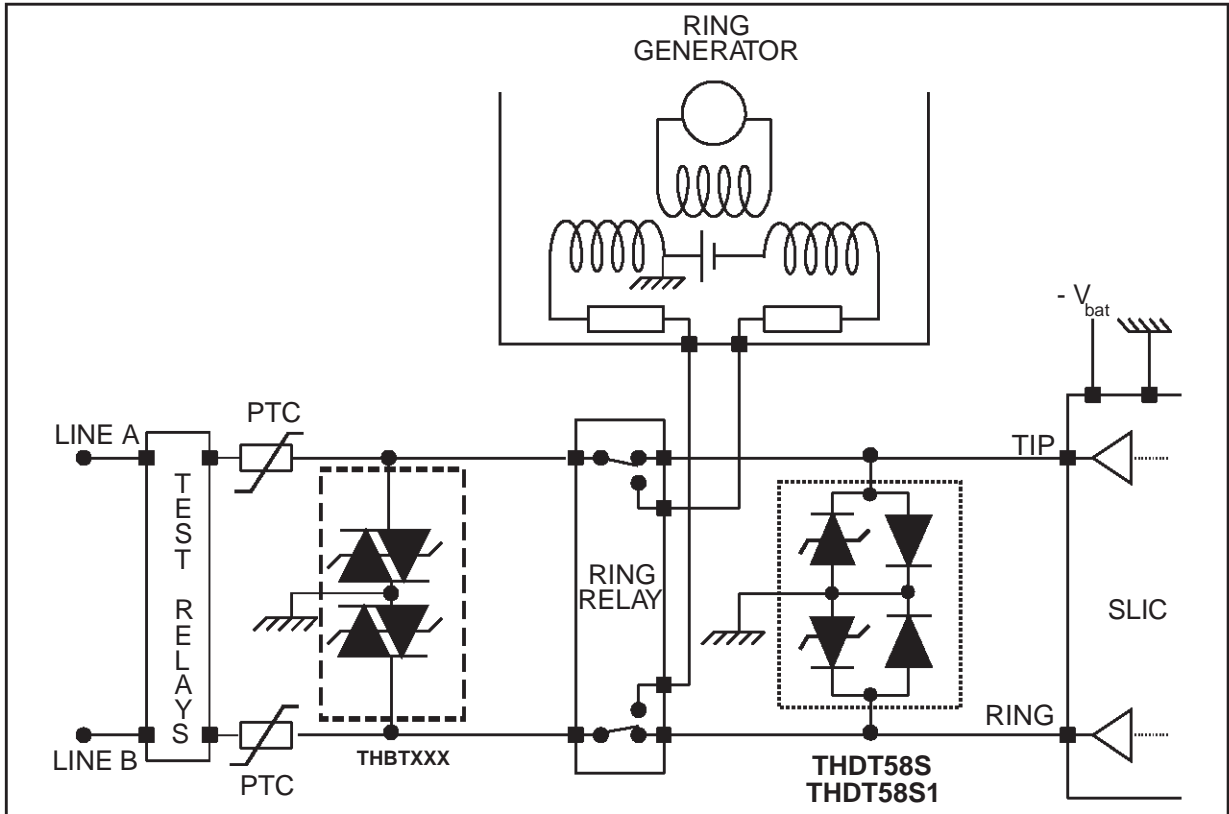
**Fig. 6:** Surge peak current versus overload duration (THDT58S1).



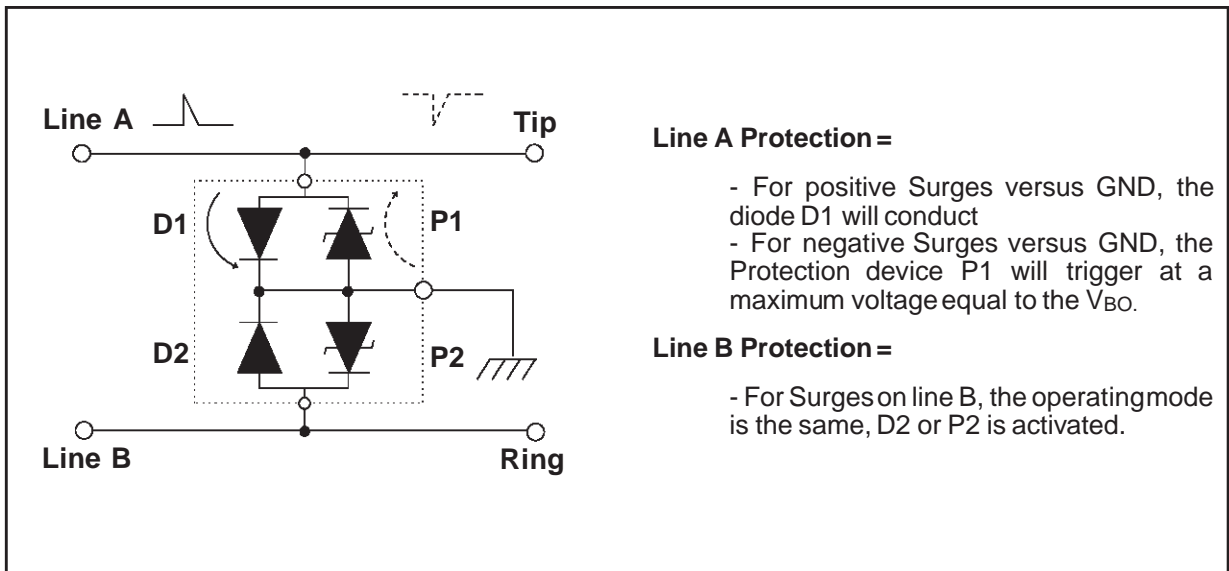
# THDT58S / THDT58S1

## APPLICATION CIRCUIT

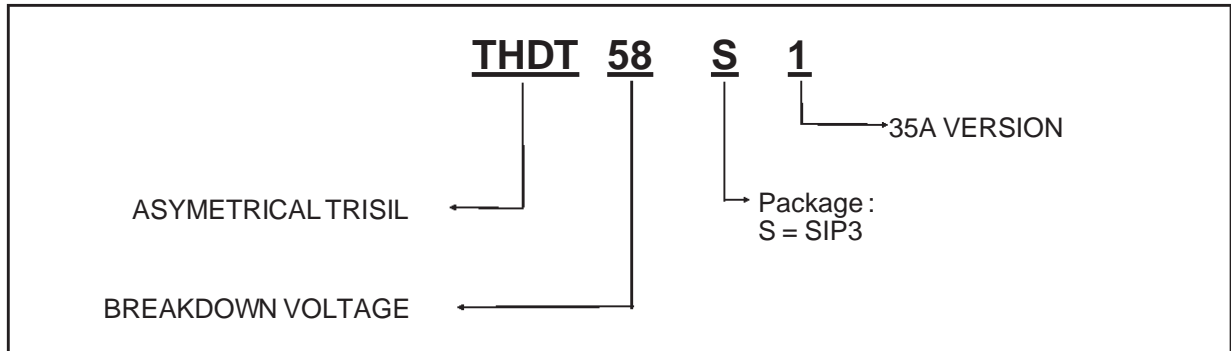
Typical SLIC protection concept



### FUNCTIONAL DESCRIPTION



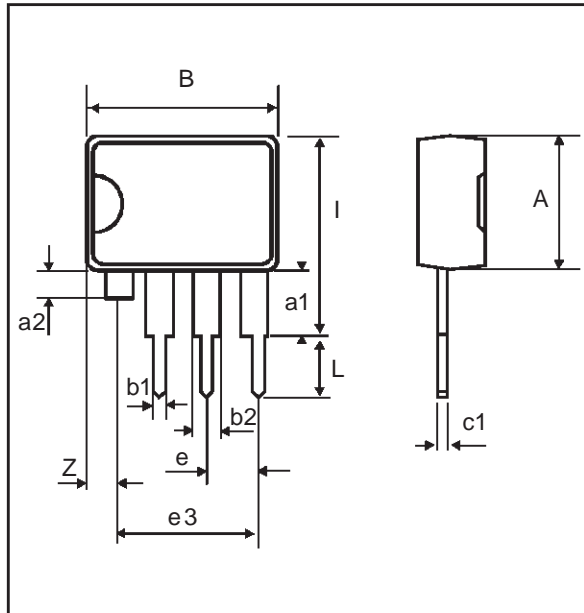
ORDER CODE



MARKING

Type	Marking
THDT58S	THDT58S
THDT58S1	THDT58S1

PACKAGE MECHANICAL DATA.  
SIP 3 Plastic



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	
I			10.50			0.413
L		3.30			0.130	
Z			1.50			0.059

**Packaging:** Standard packaging is in antistatic tubes

**Weight:** 0.55g

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