



THDT58S1
THDT58S

Application Specific Discretes
A.S.D.™

TRANSIENT VOLTAGE SUPPRESSOR
FOR SLIC PROTECTION

FEATURES

- CROWBAR PROTECTION
- DUAL ASYMMETRICAL TRANSIENT SUPPRESSOR
- PEAK PULSE CURRENT :
 - $I_{PP} = 75\text{ A}$, 10/1000 μs for THDT58S.
 - $I_{PP} = 35\text{ A}$, 10/1000 μs 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.

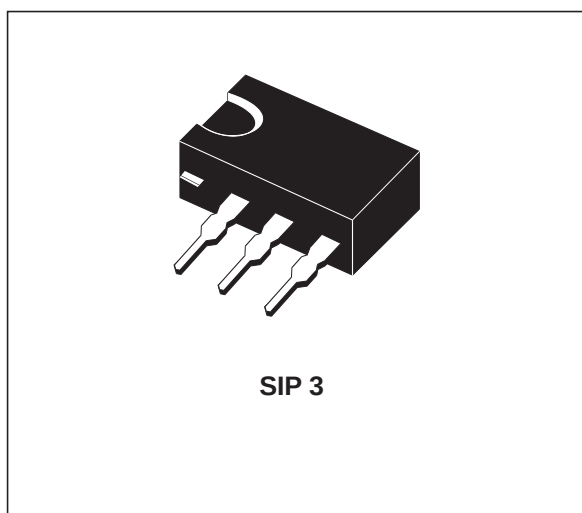
Its ion-implanted technology confers its excellent electrical characteristics.

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.

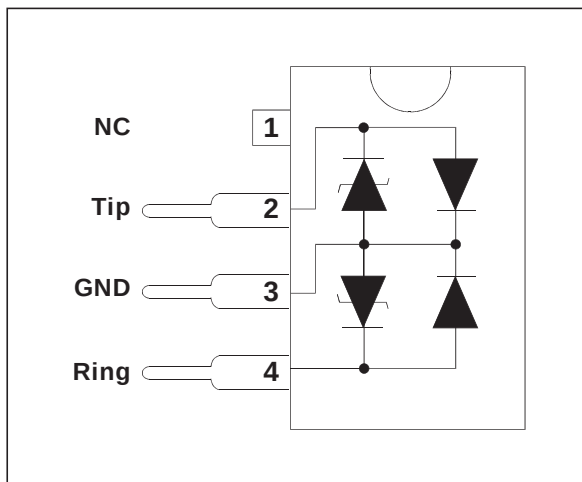
COMPLIES WITH THE FOLLOWING STANDARDS :

CCITT K20 :	10/700 μs	1kV
	5/310 μs	25A
VDE 0433 :	10/700 μs	2kV
	5/200 μs	45/50A(*)
VDE 0878 :	1.2/50 μs	1.5kV
	1/20 μs	40A
CNET I3124:	0.5/700 μs	1kV
	0.2/310 μs	25A
BELLCORE		
TR-NWT-001089 :	10/1000 μs	1kV
	10/1000 μs	35/75A (*)

(*) with series resistors or PTC.



SCHEMATIC DIAGRAM



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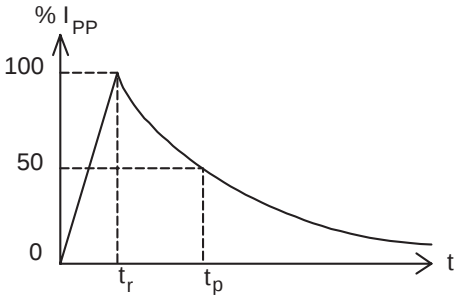
THDT58S / THDT58S1

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

Symbol	Parameter		THDT58S1	THDT58S	Unit
I _{PP}	Peak pulse current (see note 1)	10/1000 μs 8/20 μs 2/10 μs	35 70 80	75 150	A
I _{TSM}	Non repetitive surge peak on-state current (F = 50Hz)	t = 20 ms	20	30	A
dV/dt	Critical rate of rise of off-state voltage	67% V _{BR}		5	kV/μs
T _{stg} T _j	Storage temperature range Maximum operating junction temperature		-55 to +150 +150	-40 to +150 +150	°C °C
T _L	Maximum lead temperature for soldering during 10s		260	260	°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

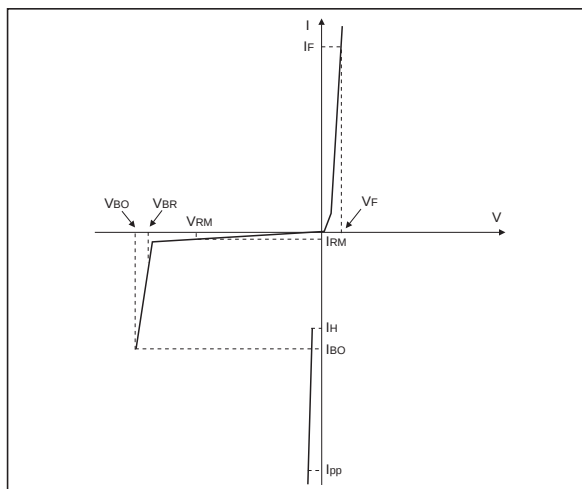


THERMAL RESISTANCES

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}	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	$I_F = 5\text{ A}$ $t_p = 500\text{ }\mu\text{s}$	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 min. note 2	C max. note 3
	μA	V	V	mA	max. V	min. mA note 1	max. mA	mA	pF
THDT58S	10	56	58	1	80	150	800	150	400
THDT58S1	10	56	58	1	80	50	800	150	200

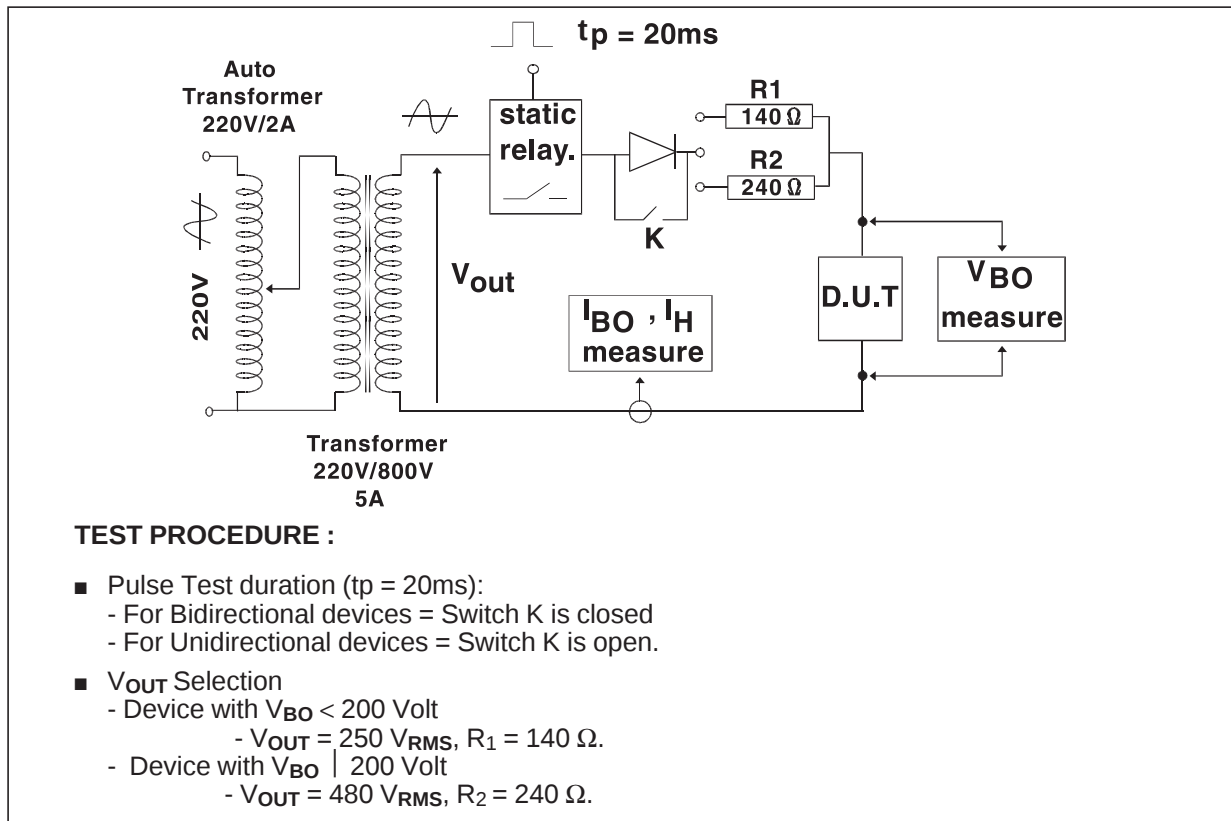
Note 1: See the reference test circuit 1 for I_{BO} and V_{BO} parameters.

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

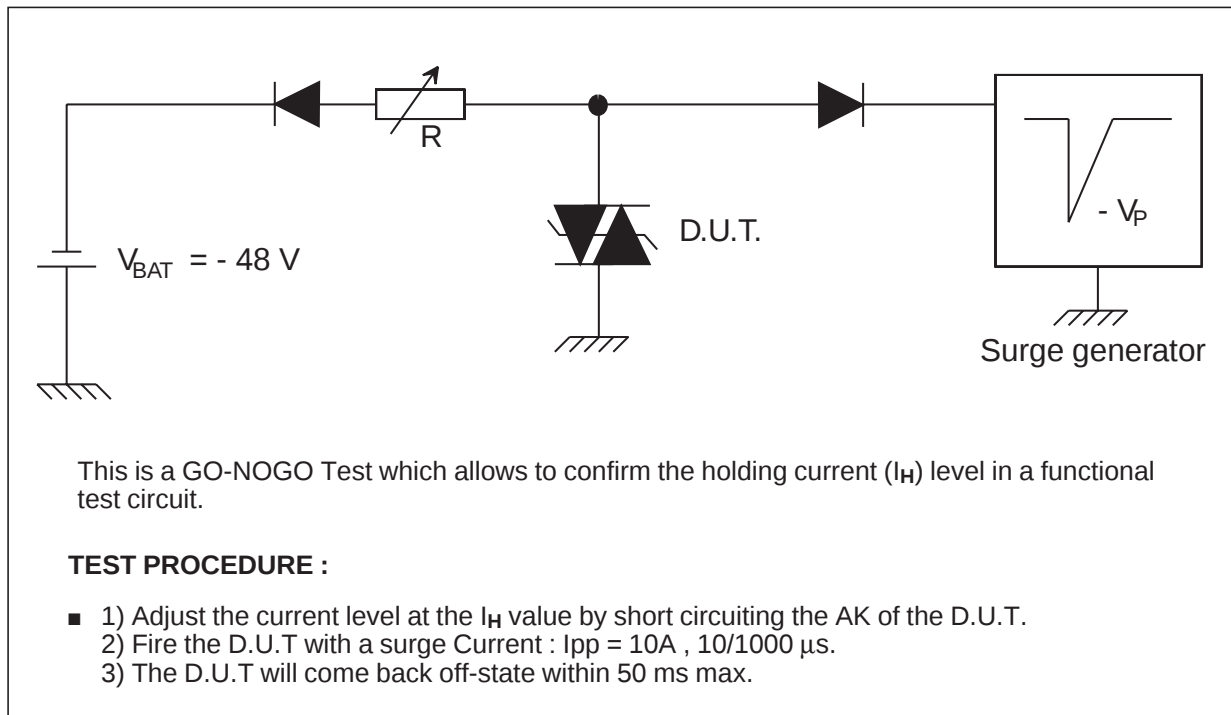


Fig. 1: Relative variation of holding current junction temperature.

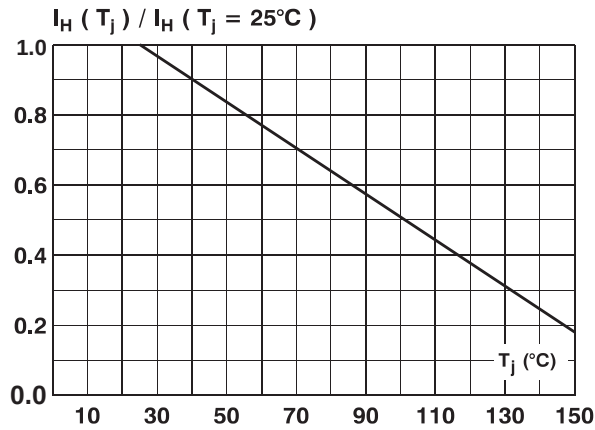


Fig. 2: Capacitance versus reverse applied voltage (typical values).

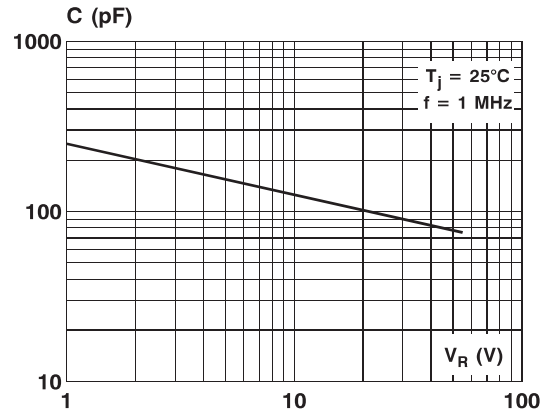


Fig. 3: Peak on state voltage versus peak on state current (typical values).

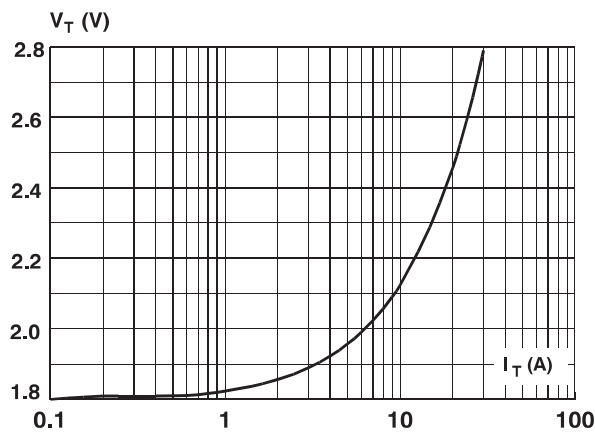


Fig. 4: Peak forward voltage drop versus peak forward current (typical values).

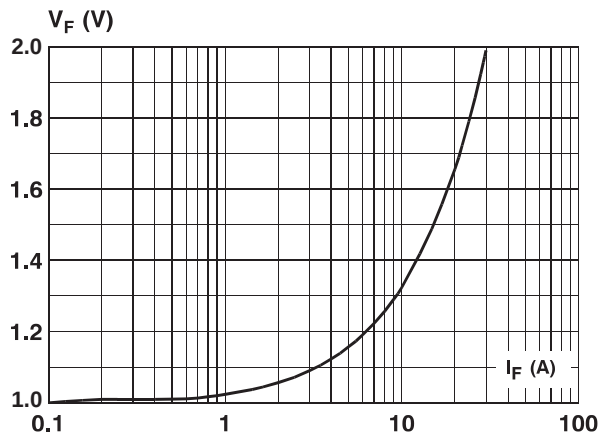


Fig. 5: Surge peak current versus overload duration (THDT58S).

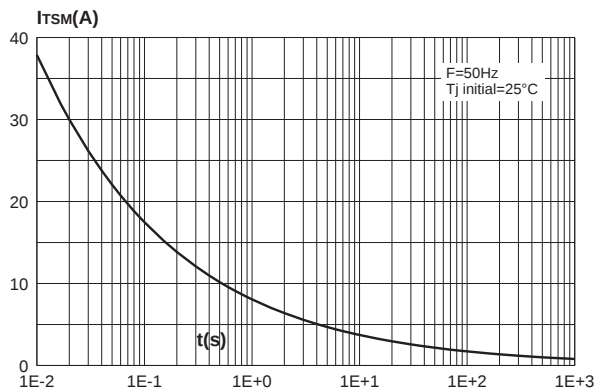
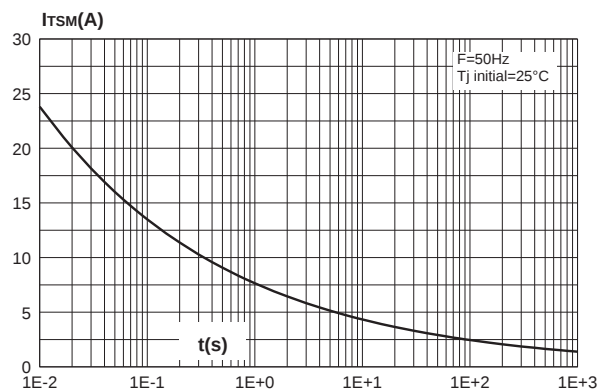
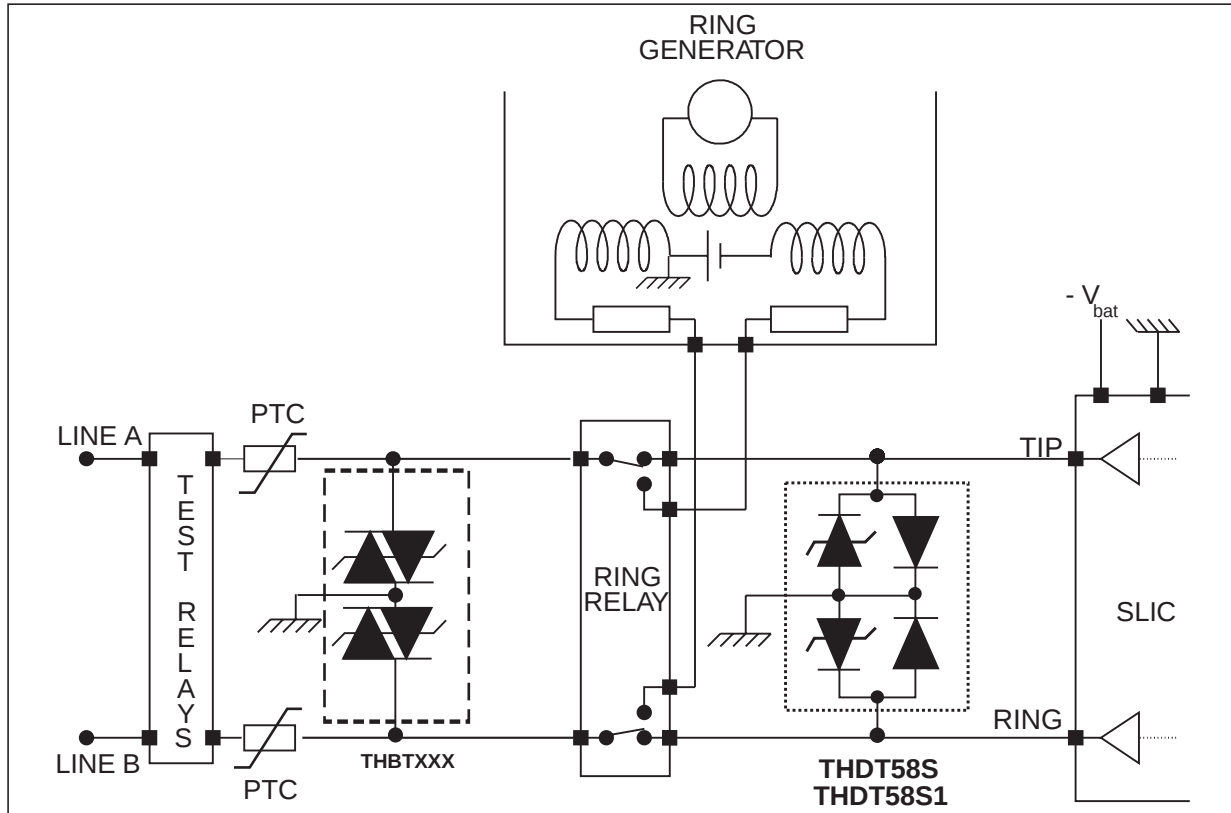


Fig. 6: Surge peak current versus overload duration (THDT58S1).

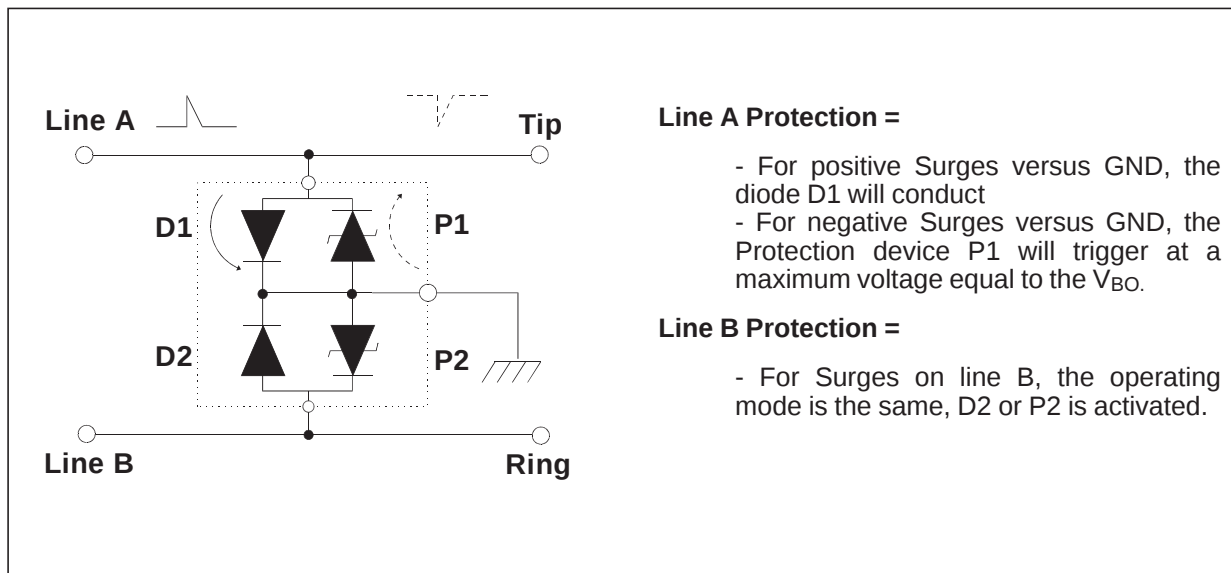


APPLICATION CIRCUIT

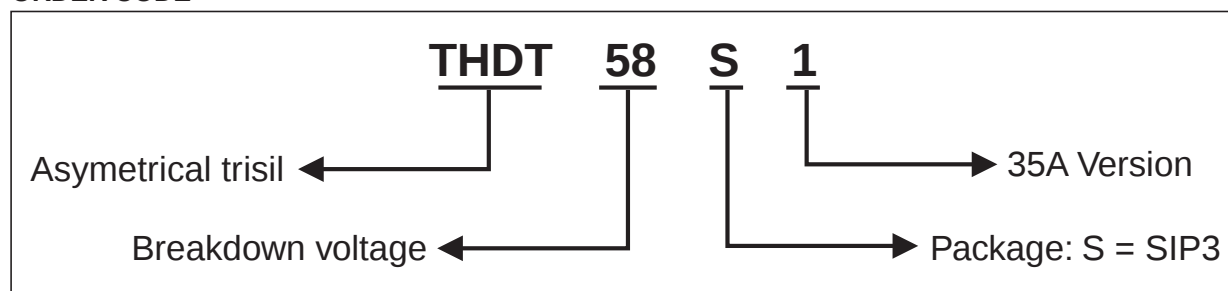
Typical SLIC protection concept



FUNCTIONAL DESCRIPTION



ORDER CODE



MARKING

Type	Marking
THDT58S	THDT58S
THDT58S1	THDT58S1

Packaging : Standard packaging is in antistatic tubes

Weight : 0.55g

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	
l			10.50			0.413
L		3.30			0.130	
Z			1.50			0.059

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