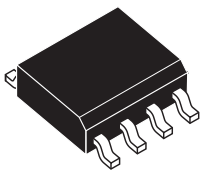
THDT6511D

Application Specific Discretes A.S.D.™

TRANSIENT VOLTAGE SUPPRESSOR FOR SLIC PROTECTION

FEATURES

- DUAL ASYMETRICAL TRANSIENT SUPPRESSOR
- PEAK PULSE CURRENT : I_{PP} = 40A, 10/100µs
- HOLDING CURRENT : 150 mA min.
- BREAKDOWN VOLTAGE : 65 V min.
- LOW DYNAMIC CHARACTERISTICS
- STAND CCITT K20 AND LSSGR



SO-8

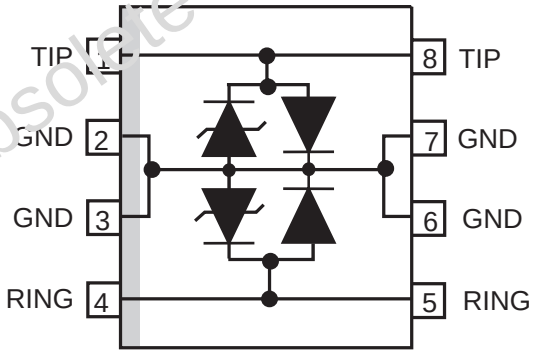
DESCRIPTION

This device has been especially designed to protect subscriber line cards against overvoltage.

Two diodes clamp positive overloads while negative surges are suppressed by two protection thyristors.

A particular attention has been given to the internal wire bonding. The “4-point” configuration ensures a reliable protection, eliminating overvoltages introduced by the parasitic inductances of the wiring (Ldi/dt), especially for very fast transient overvoltages.

SCHEMATIC DIAGRAM



COMPLIES WITH THE FOLLOWING STANDARDS :

CCITT K20 :	10/700µs 5/310µs	1kV 38A
VDE 0433 :	10/700µs 5/310µs	2kV 50A
VDE 0878 :	1.2/50µs 1/20µs	1.5kV 40A
I3124	0.5/700µs 0.2/310µs	1kV 38A
FCC part 68 :	2/10µs 2/10µs	2.5kV 125A (*)
BELLCORE TR-NWT-001089 :	2/10µs 2/10µs 10/1000µs 10/1000µs	2.5kV 125A (*) 1kV 40A (*)

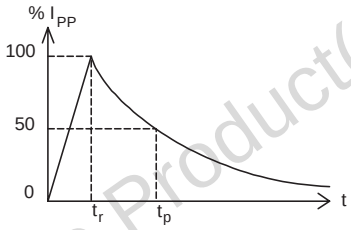
(*) with series resistors or PTC.

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

Symbol	Parameter		Value	Unit
I_{PP}	Peak pulse current (see note 1)	10/1000µs 5/310µs 2/10µs	40 50 125	A
I_{TSM}	Non repetitive surge peak on-state current F = 50 Hz	t = 300 ms t = 1 s t = 5 s	10 3.5 1	A
I_{TSM}	F = 50 Hz, 60 x 1 s, 2 mn between pulse		1	A
T_{stg} T_j	Storage temperature range Maximum junction temperature		- 55 to + 150 150	°C
T_L	Maximum lead temperature for soldering during 10s		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



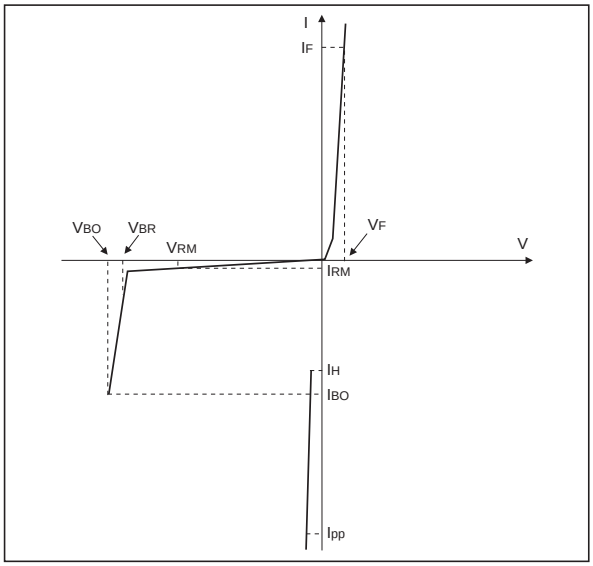
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to ambient	170	°C/W

ELECTRICAL CHARACTERISTICS

(T_{amb} = 25°C)

Symbol	Parameter
V_{RM}	Stand-off voltage
I_{RM}	Leakage current at stand-off voltage
V_{BR}	Breakdown voltage
V_{BO}	Breakover voltage
I_H	Holding current
V_F	Forward voltage drop
V_{FP}	Peak forward voltage
I_{BO}	Breakover current
I_{PP}	Peak pulse current
C	Capacitance
αT	Temperature coefficient



1 - PARAMETERS RELATED TO DIODE LINE / GND

Symbol	Test conditions	Min.	Typ.	Max.	Unit
V_F	I_F = 1 A tp = 100 µs			2	V
V_{FP}	see curve fig. 1	NA	NA	NA	V

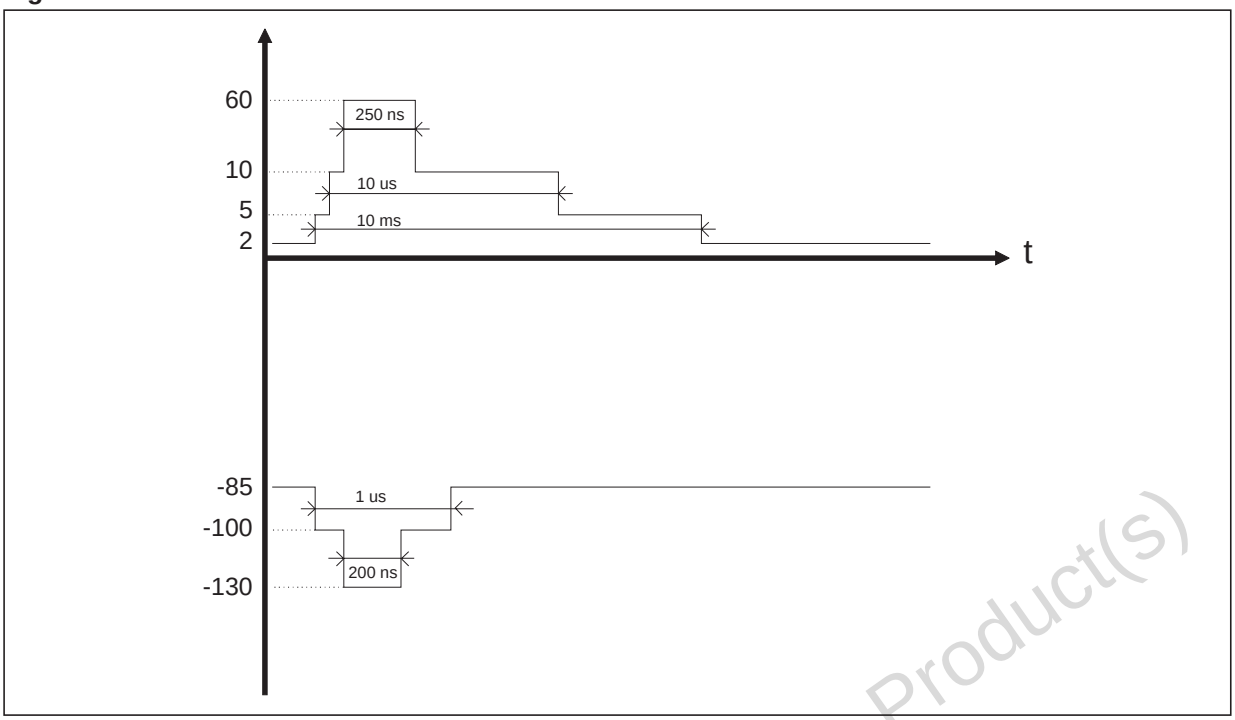
NA : Non Available

2 - PARAMETERS RELATED TO PROTECTION THYRISTOR

Symbol	Tests conditions	Min.	Typ.	Max.	Unit
V_{BR}	I_R = 1mA	65			V
V_{BO}		68		85	V
I_{RM}	V_{RM} = 63 V			100	µA
I_{BO}	tp = 100 µs	110		450	mA
I_{BO}	F = 50 Hz RG = 600 Ω			500	mA
I_H		150			mA
αT			15		10^{-4}/°C
C	V_D = 100 mV_{RMS} F = 1KHz			500	pF
dV/dt	Linear ramp up to 67 % of V_{BR}	5			kV / µs

DYNAMIC CHARACTERISTICS : V_{FP} and V_{BO}

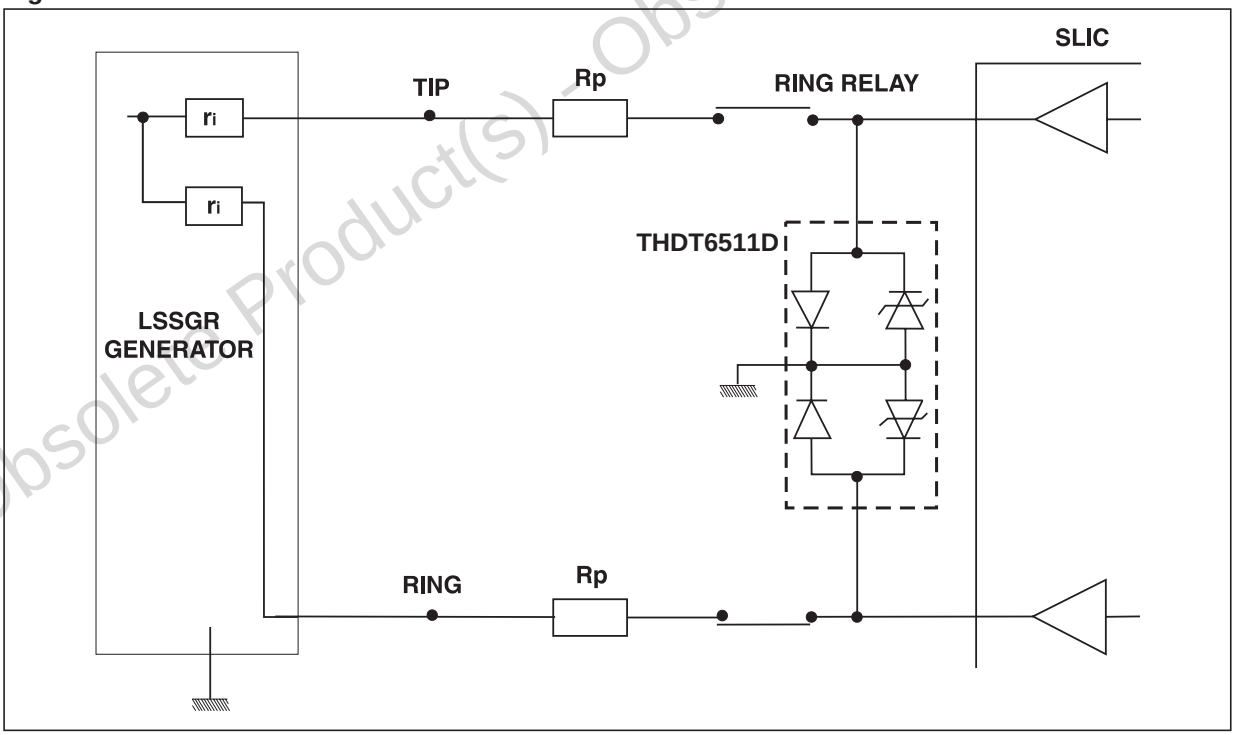
Figure 1 :



Under lightning and power crossing test, the device limits the transient voltage to the values indicated in the figure

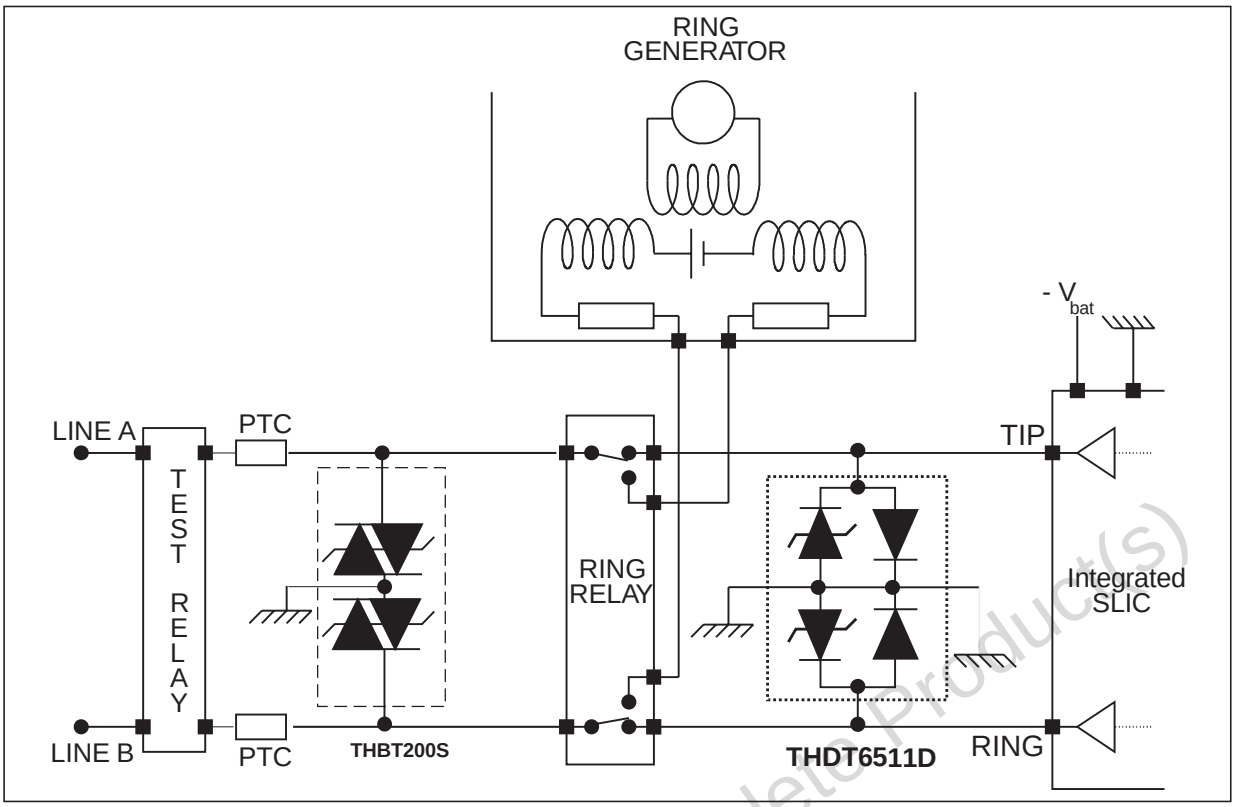
LSSGR TEST DIAGRAM

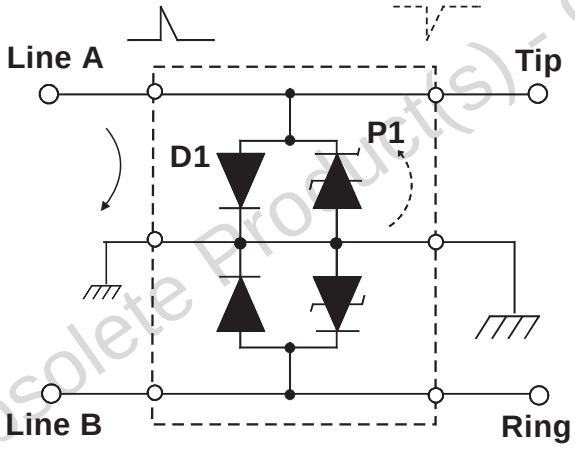
Figure 2 :



To stand the LSSGR test requirements, Rp must be ⎪ 15 Ω

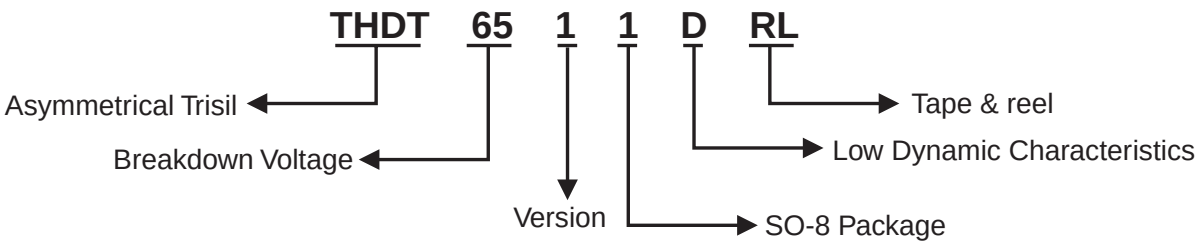
TYPICAL APPLICATION





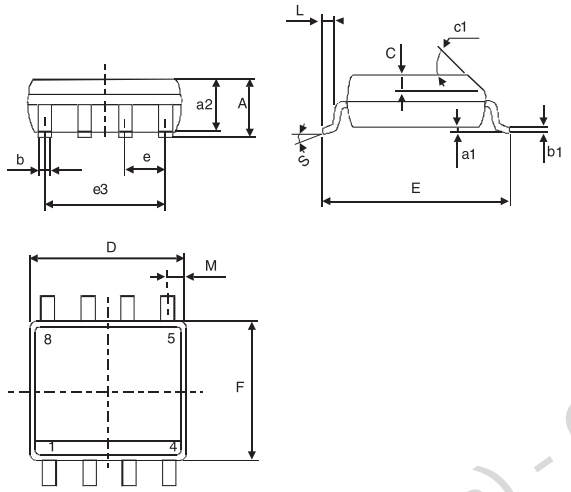
- For positive surges versus GND (TIP), diode D_1 will conduct.
- For negative surges versus GND (TIP), protection device P_1 will trigger at maximum voltage equal to V_{BO}.

ORDER CODE



PACKAGE MECHANICAL DATA.

SO-8 Plastic



REF.	DIMENSIONS					
	Millimetres			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C		0.50			0.020	
c1	45° (typ)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.15		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max)					

MARKING : DT651D

PACKAGING : Products supplied in antistatic tube or tape and reel.

Weight : 0.08g