SGS-THOMSON MICROELECTRONICS

THDT6511D

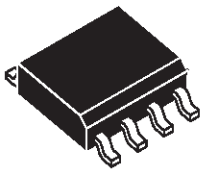
Application Specific Discretes
A.S.D.™

TRANSIENT VOLTAGE SUPPRESSOR FOR SLIC PROTECTION

PRELIMINARY DATASHEET

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



SO8

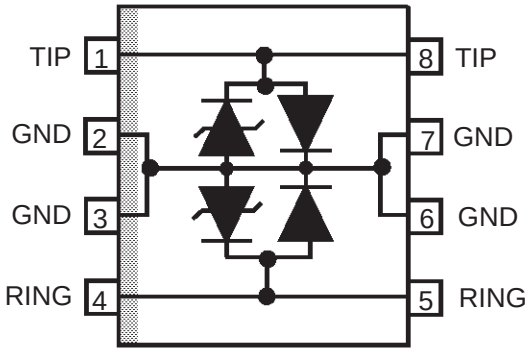
DESCRIPTION

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 (*)

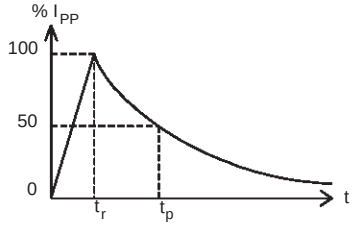
(*) with series resistors or PTC.

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



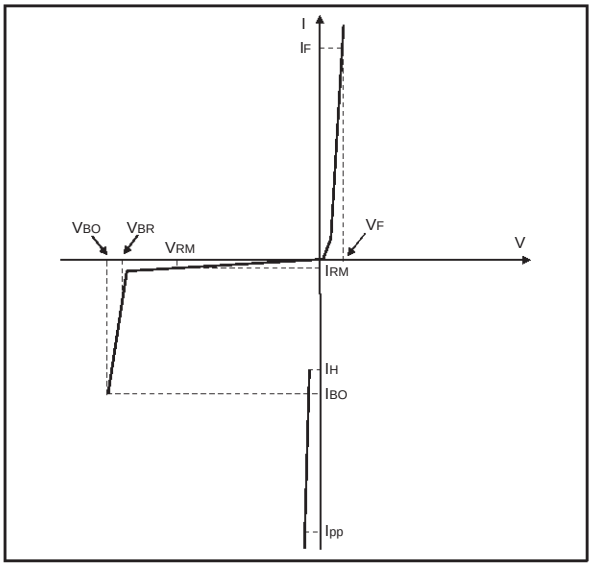
THERMAL RESISTANCES

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

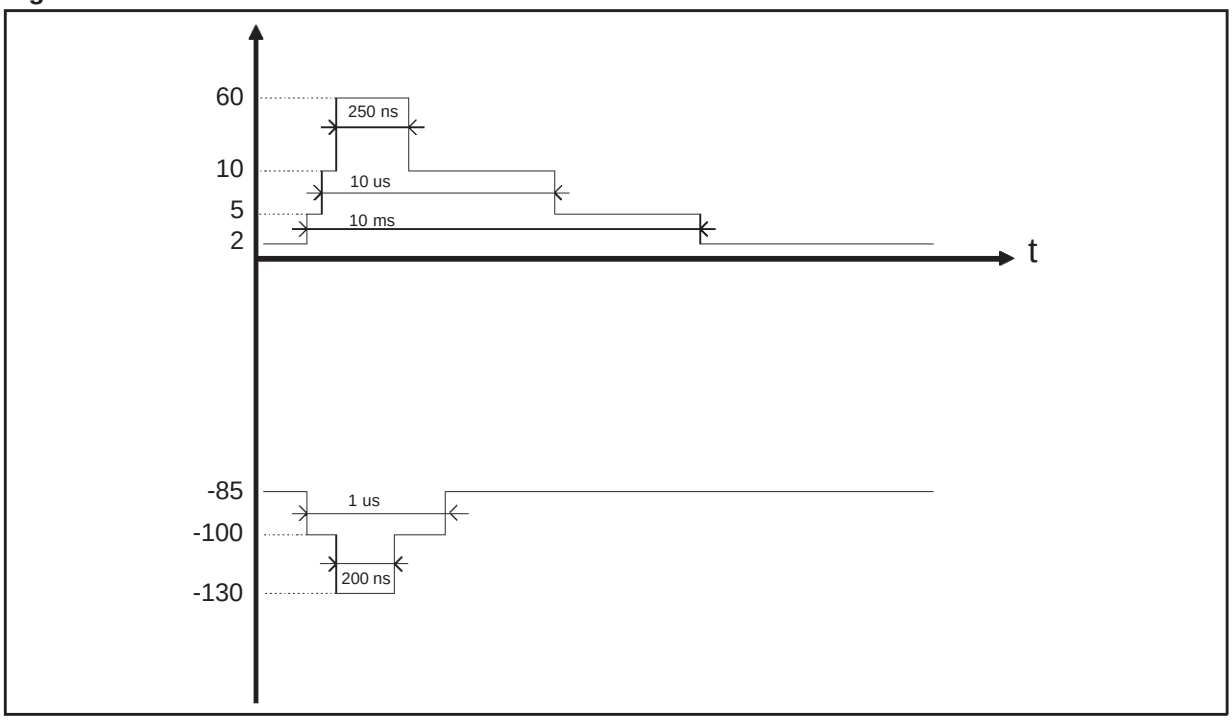
NA : Non Available

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}

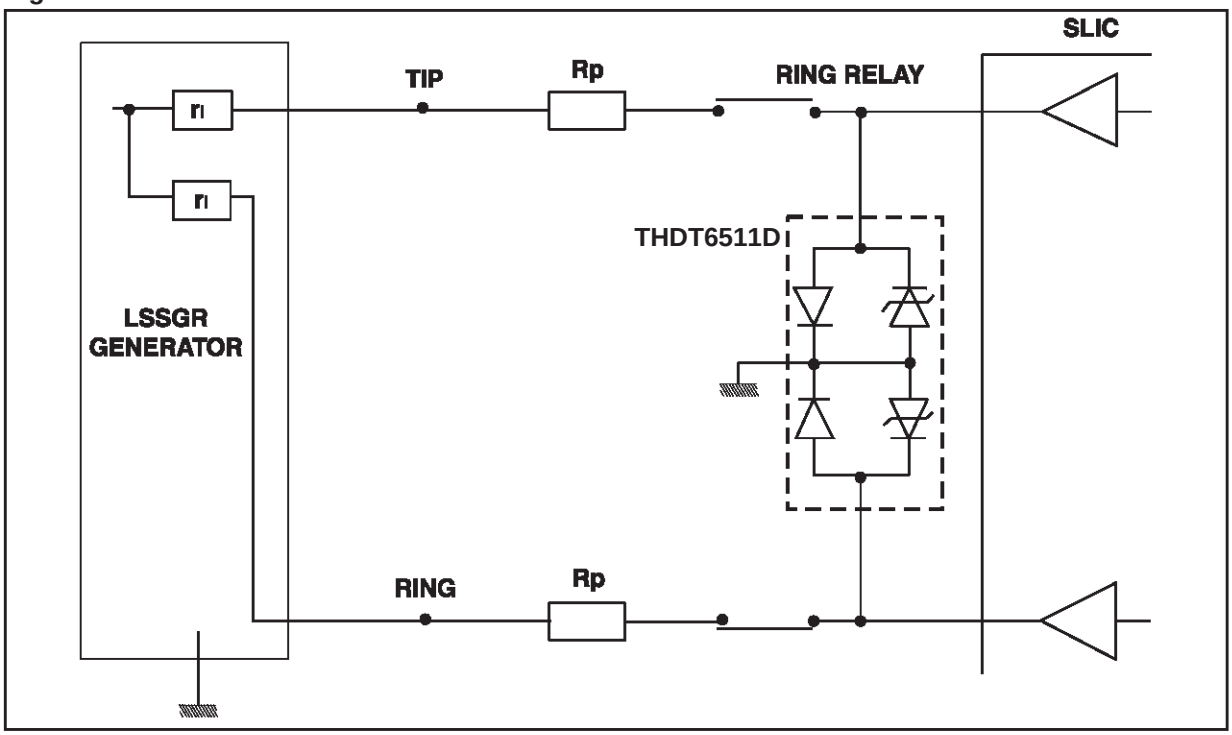
Figure 1 :



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

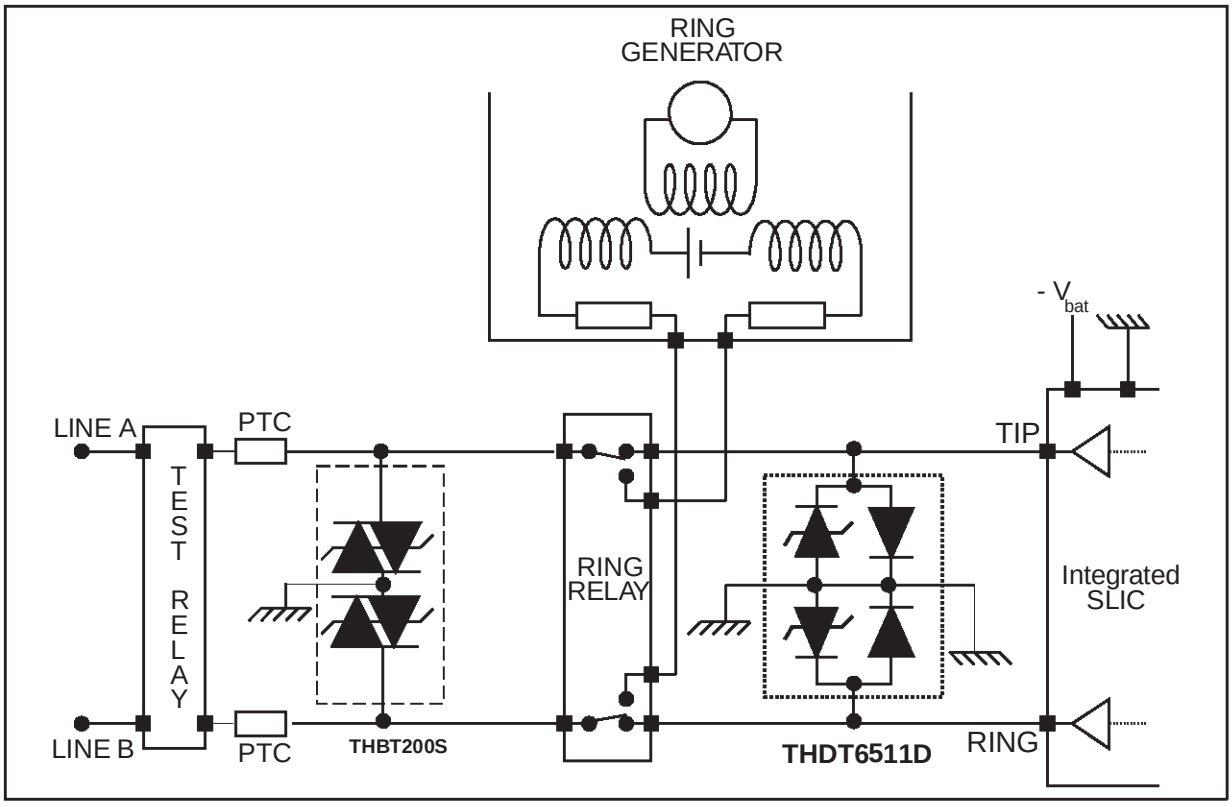
LSSGR TEST DIAGRAM

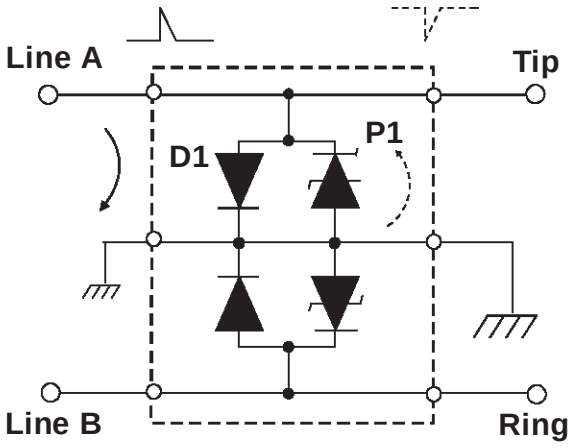
Figure 2 :



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

TYPICAL APPLICATION

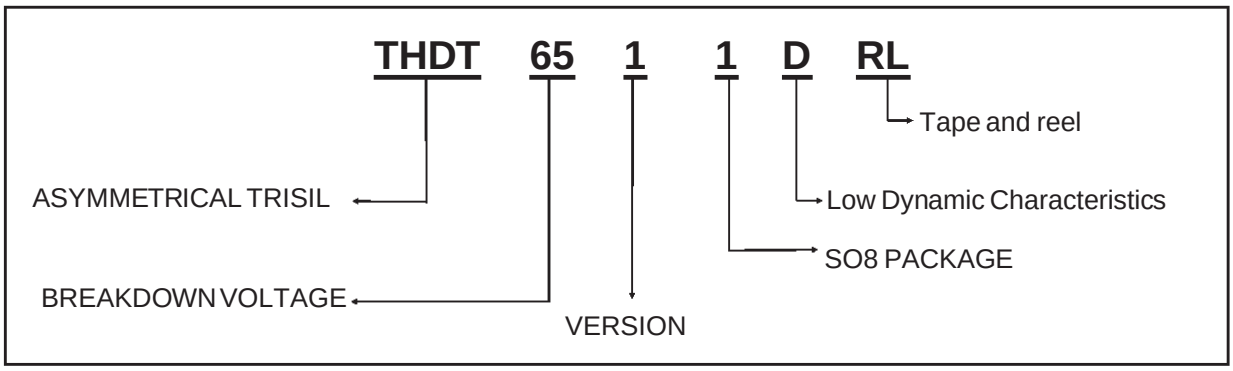




- For positive surges versus GND (TIP), diode D_1 will conduct.
- For negative surges versus GND (TIP), protection device P_1 will trigger at maximum voltage equal to V_{BO}.

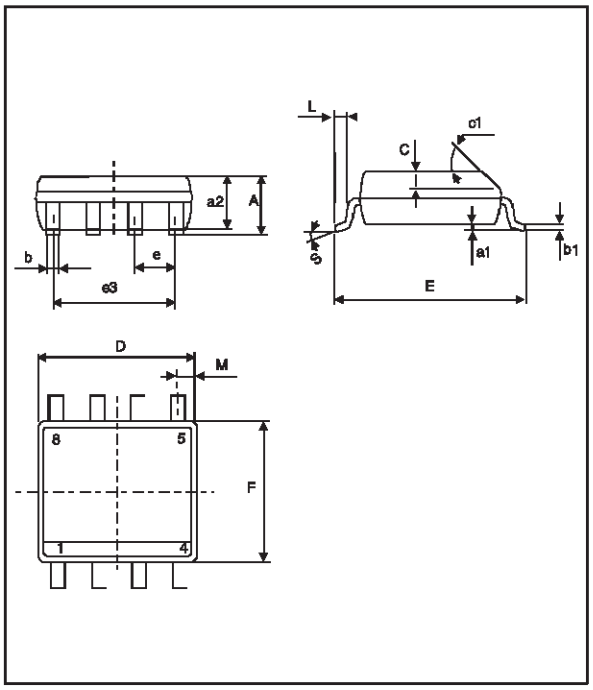
THDT6511D

ORDER CODE



PACKAGE MECHANICAL DATA.

SO8 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