

L3121B

Application Specific Discretes A.S.D. $^{\text{TM}}$

PROGRAMMABLE TRANSIENT VOLTAGE SUPPRESSOR FOR SLIC PROTECTION

FEATURES

- BIDIRECTIONAL FUNCTION WITH VOLTAGE PROGRAMMABILITY IN BOTH POSITIVE AND NEGATIVE POLARITIES.
- PROGRAMMABLE BREAKDOWN VOLTAGE UP TO 100 V.
- HOLDING CURRENT = 150 mA min.
- HIGH SURGE CURRENT CAPABILITY. IPP = 100A, 10/1000 µs

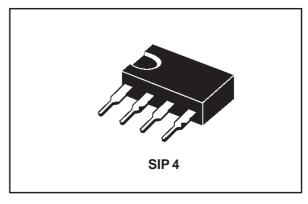
DESCRIPTION

This device has been especially designed to protect a subscriber line interface circuit (SLIC) with an integrated ring generator.

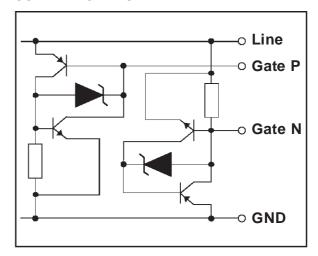
Used with the recommended application circuit, each line (TIP and RING) is protected against positive and negative surges. In the positive polarity, the breakdown voltage is referenced to the + VB , and in the negative polarity, the breakdown voltage is referenced to the -Vbat . Its high surge current capability makes the L3121B a reliable protection device for very exposed equipment, or when series resistors are very low.

IN ACCORDANCE WITH FOLLOWING STANDARDS

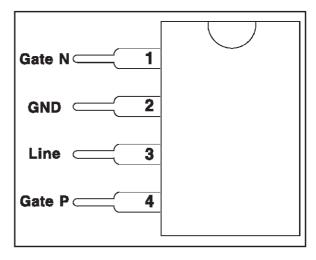
CCITT K20	10/700 μs	1 kV
	5/310 μs	25 A
VDE 0433	10/700 μs	2 kV
	5/310 μs	50 A
CNET	0.5/700 μs	1 kV
	0.2/310 us	25 A



SCHEMATIC DIAGRAM



CONNECTION DIAGRAM



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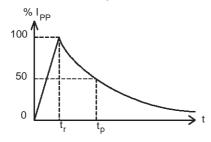
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ABSOLUTE MAXIMUM RATINGS (Tamb = 25°C)

Symbol	Parameter	Value	Unit	
Ірр	Peak pulse current	10/1000 μs 8/20 μs	100 250	А
ITSM	Non repetitive surge peak on-state tp = 10 ms current		50	А
V _{MLG} V _{MGL}	Maximum voltage LINE/GND. Maximum voltage GATE/LINE.		100 80	V
T _{stg}	Storage temperature range Maximum operating junction tempera	- 40 to + 150 + 150	°C °C	
TL	Maximum lead temperature for solder	260	°C	

Pulse waveform 10/1000 µs

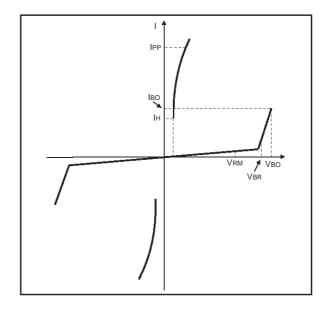


THERMAL RESISTANCE

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

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C)

Symbol	Parameter			
V _{RM}	Stand-off voltage			
I _{RM}	Reverse leakage current			
V _{BR}	Breakdown voltage			
V _{BO}	Breakovervoltage			
lн	Holding current			
I _{BO}	Breakover current			
I _{PP}	Peak pulse current			
V _{GN}	Gate voltage			
Ign, Igp	Triggering gate current			
С	Capacitance			



1- OPERATION WITHOUT GATE

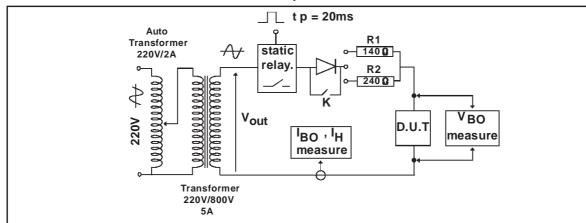
	I _{RM} @ V _{RM}		V _{BR} @ I _R		V _{BO}	@	во	lн	С
Туре	max.		min.		max.	typ.	max.	min.	max.
,						note 1		note 1	note 2
	μА	V	V	mA	V	mA	mA	mA	pF
L3121B	5 8	60 90	100	1	180	200	500	150	200

2- OPERATION WITH GATE

	V _{GN} @ I _{GN} = 200mA		I _{GN} @ \	V _{AC} = 60V	I _{GP} @ V _{AC} = 60V	
Туре	min.	min. max. min. m		max.	max.	
	V	V	mA	mA	mA	
L3121B	0.6	1.8	80	200	180	

Note 1: See the reference test circuits for I_H , I_{BO} and V_{BO} parameters. Note 2: $V_R = 5 \text{ V}$, F = 1 MHz.

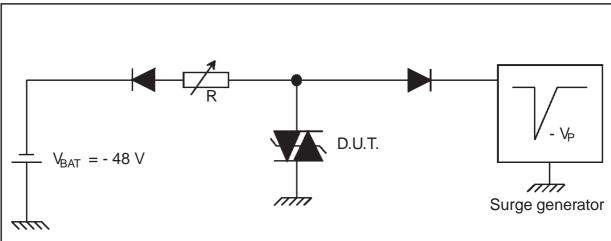
REFERENCE TEST CIRCUIT FOR IBO and VBO parameters:



TEST PROCEDURE:

- Pulse Test duration (tp = 20ms):
 - For Bidirectional devices = Switch K is closed
 - For Unidirectional devices = Switch K is open.
- Vour Selection
 - Device with V_{BO} < 200 Volt
 - Vout = 250 V_{RMS}, $R_1 = 140 \Omega$.
 - Device with V_{BO} ≥ 200 Volt
 - Vout = 480 V_{RMS}, R_2 = 240 Ω .

FUNCTIONAL HOLDING CURRENT (IH) TEST CIRCUIT = GO - NOGO TEST.



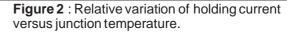
This is a GO-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit.

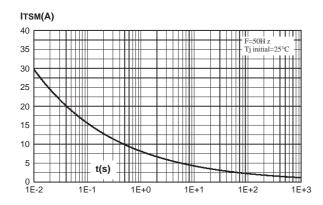
This test can be performed if the reference test circuit can't be implemented.

TEST PROCEDURE:

- 1) Adjust the current level at the IH value by short circuiting the line and GND pins of the D.U.T.
- 2) Fire the D.U.T with a surge Current : Ipp = 10A, $10/1000 \mu s$.
- 3) The D.U.T will come back to the OFF-State within a duration of 50 ms max.

Figure 1: Surge peak current versus overload duration (typical values).





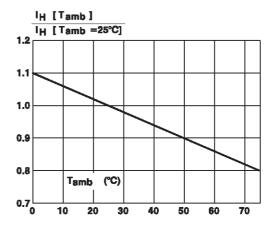


Figure 3: Relative variation of breakdown voltage versus ambient temperature.

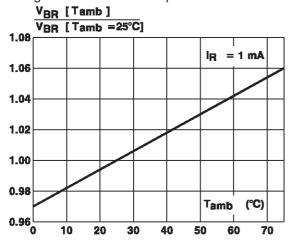
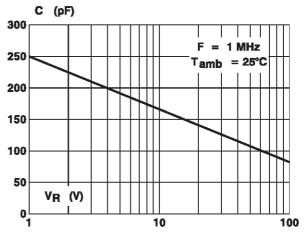
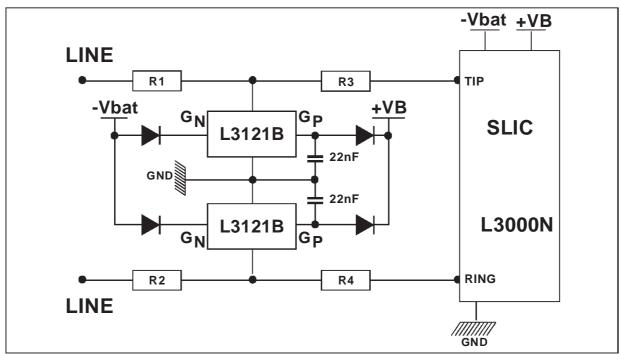


Figure 4: Junction capacitance versus reverse applied voltage.

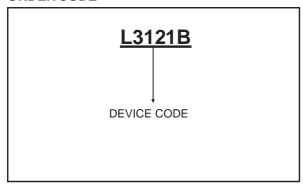


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Typical Slic Protection Concept.



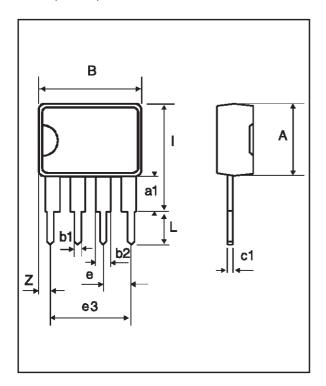
ORDER CODE



MARKING: Logo, Date Code, Part Number

PACKAGE MECHANICAL DATA

SIP 4 (Plastic)



	DIMENSIONS								
REF.	Millimetr		es		;				
	Min.	Тур.	Max.	Min.	Тур.	Max.			
А			7.10			0.280			
a1	2.80			0.110					
В			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			
е		2.54			0.100				
еЗ		7.62			0.200				
I			10.50			0.413			
L		3.30			0.130				
Z			1.50			0.059			

PACKAGING: Products supplied in antistatic tubes

WEIGHT: 0.55g

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