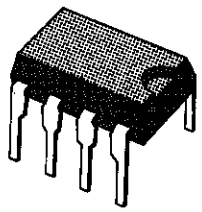
SGS-THOMSON MICROELECTRONICS

LS5018B
LS5060B/LS5120B

TRISIL

FEATURES

- BIDIRECTIONAL CROWBAR PROTECTION.
- BREAKDOWN VOLTAGE RANGE: FROM 18 V To 120 V.
- HOLDING CURRENT = 200 mA min.
- HIGH SURGE CURRENT CAPABILITY I_{PP} = 100A 10/1000 µs

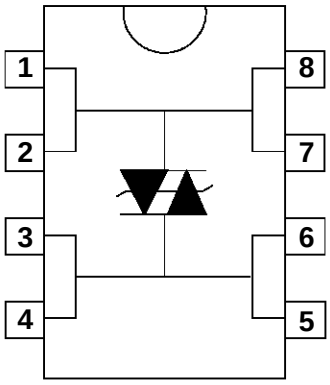


DIL 8
(Plastic)

DESCRIPTION

The LS50xxB series has been designed to protect telecommunication equipment against lightning and transients induced by AC power lines.
Its high surge current capability makes the LS50xxB a reliable protection device for very exposed equipment, or when series resistors are very low.

SCHEMATIC DIAGRAM



IN ACCORDANCE WITH FOLLOWING STANDARDS :

CCITT K17 - K20	10/700 µs	1.5 kV
	5/310 µs	38 A
VDE 0433	10/700 µs	2 kV
	5/200 µs	50 A
CNET	0.5/700 µs	1.5 kV
	0.2/310 µs	38 A

ABSOLUTE RATINGS (limiting values) (- 40°C ≤ T_{amb} ≤ +85°C)

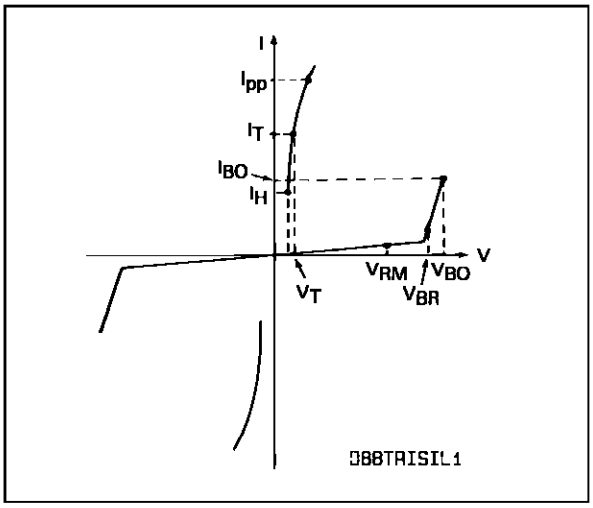
Symbol	Parameter		Value	Unit
I_{PP}	Peak pulse current	10/1000 µs 8/20 µs	100 250	A
I_{TSM}	Non repetitive surge peak on-state current	tp = 20 ms	50	A
di/dt	Critical rate of rise of on-state current	Non repetitive	100	A/µs
dv/dt	Critical rate of rise of off-state voltage	67% V_{BR}	5	KV/µs
T_{stg} T_j	Storage and operating junction temperature range		- 40 to + 150 150	°C °C

THERMAL RESISTANCE

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

ELECTRICAL CHARACTERISTICS.

Symbol	Parameter
V_{RM}	Stand-off voltage
V_{BR}	Breakdown voltage
V_{BO}	Breakover voltage
I_H	Holding current
V_T	On-state voltage @ I_T
I_{BO}	Breakover current
I_{PP}	Peak pulse current

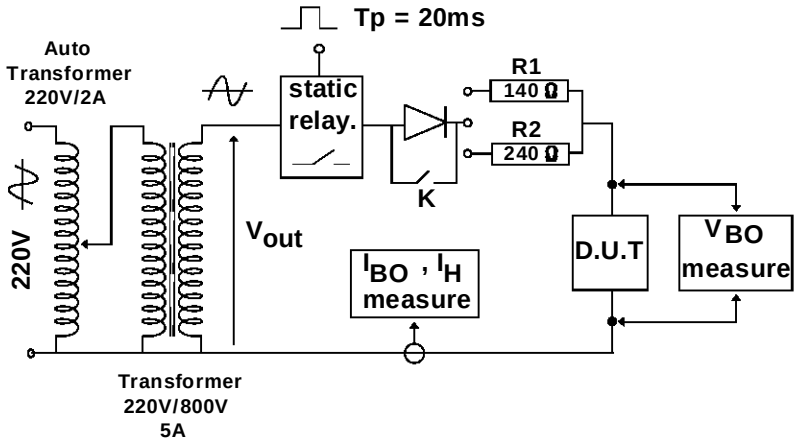


Type	I_{RM} @ V_{RM} max		V_{BR} @ I_R min		V_{BO} max	@ min note 1	I_{BO} max	I_H min note 1	V_T max note 2	C max note 3
	µA	V	V	mA	V	mA	mA	mA	V	pF
LS5018B	5	16	17	1	22		1300	200	3	150
LS5060B	10	50	60	1	85		1000	200	3	150
LS5120B	20	100	120	1	180	500	1250	250	3	150

All parameters tested at 25°C, except where indicated.

Note 1 : See the reference test circuit for I_H, I_{BO} and V_{BO} parameters.
Note 2 : Square pulse T_P= 500µs - I_T = 1A.
Note 3 : V_R = 5 V, F = 1MHz.

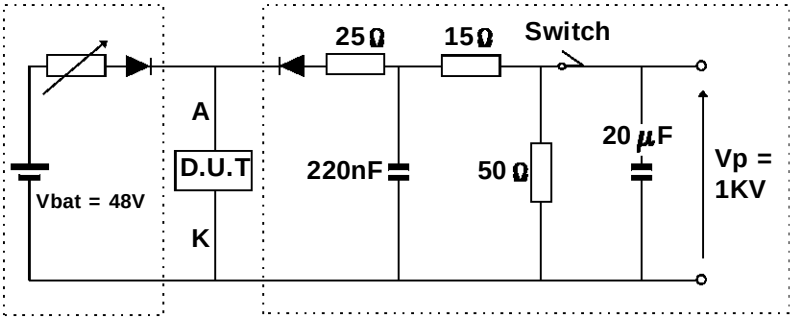
REFERENCE TEST CIRCUIT FOR I_H, I_{BO} and V_{BO} parameters :



TEST PROCEDURE :

- Pulse Test duration (Tp = 20ms):
  - For Bidirectional devices = Switch K is closed
  - For Unidirectional devices = Switch K is open.
- V_{OUT} Selection
  - Device with $V_{BR} \leq 150$ Volt
    - $V_{OUT} = 250\ V_{RMS}$, $R_1 = 140\ \Omega$.
  - Device with $V_{BR} \geq 150$ Volt
    - $V_{OUT} = 480\ V_{RMS}$, $R_2 = 240\ \Omega$.

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



Surge Generator
10/700 µsec
Vp =1KV / Ipp = 25A

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 I_H value by short circuiting the AK of the D.U.T.
  2) Fire the D.U.T with a surge Current : Ipp = 25A , 10/700 µs.
  3) The D.U.T will come back to the OFF-State within a duration of 50 ms max.

Figure 1 : Non repetitive surge peak on state current versus number of cycles. (with sinusoïdal pluse: F = 50 Hz).

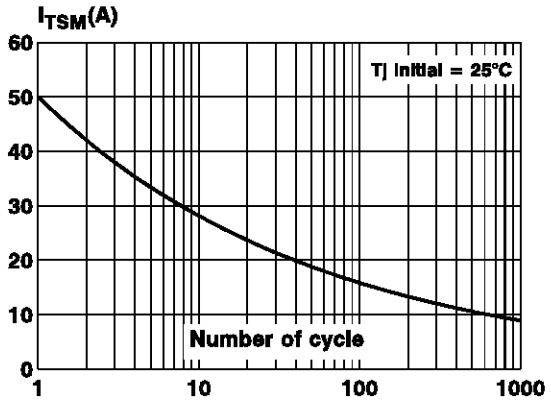


Figure 2 : Relative variation of holding current versus ambient temperature.

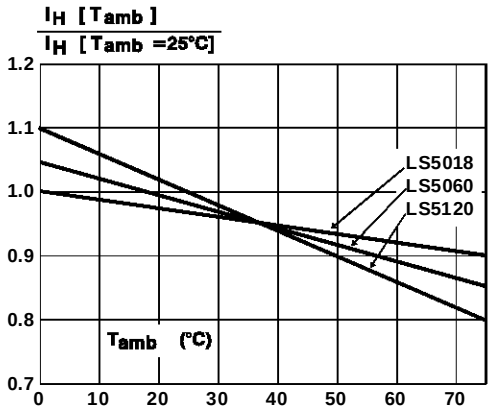


Figure 3 : Relative variation of breakdown voltage versus ambient temperature.

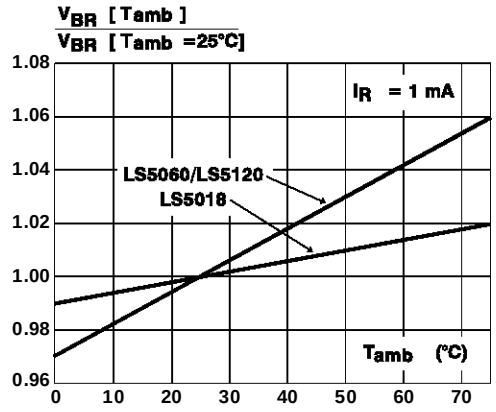
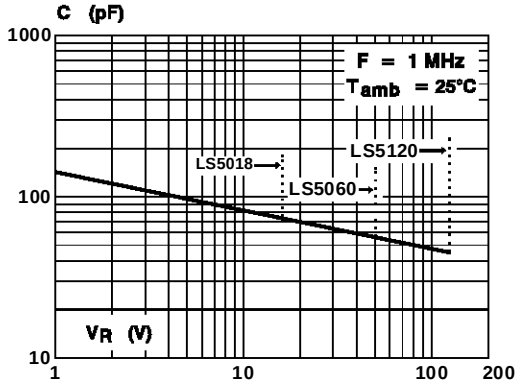
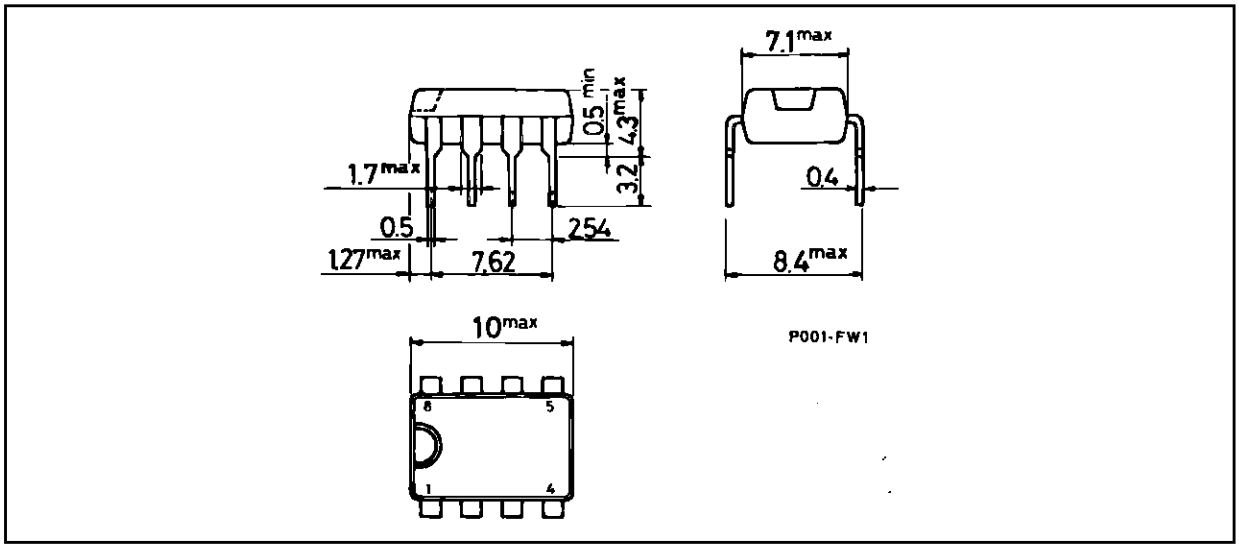


Figure 4 : Junction capacitance versus reverse applied voltage.



PACKAGE MECHANICAL DATA (in millimeters).

DIL 8 Plastic



MARKING : Logo, Date Code,part Number.

PACKAGING : Products supplied in antistatic tubes.