



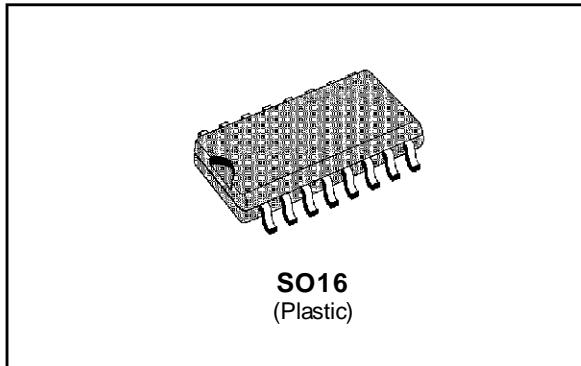
SGS-THOMSON
MICROELECTRONICS

TSIx_{xx}B5

TELEPHONE SET INTERFACE

FEATURES

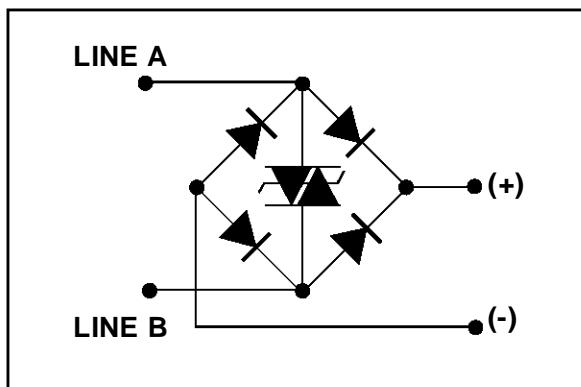
- SINGLE DEVICE PROVIDING :
DIODE BRIDGE
BIDIRECTIONAL PROTECTION
- CROWBAR PROTECTION
- PEAK PULSE CURRENT :
 $I_{PP} = 30A, 10/1000 \mu s$
- VOLTAGE RANGE FROM 120V to 270V
- Maximum current : $I_o = 0.5$



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

FUNCTIONAL DIAGRAM



ABSOLUTE RATINGS (limiting values) (-40°C ≤ Tamb ≤ +85°C)

Symbol	Parameter	Value	Unit	
I_{PP}	Peak pulse current	10/1000 μs 5/310 μs 2/10 μs	30 40 75	A
I_o	Maximum current	0.5	A	
ITSM	Non repetitive surge peak on-state current	tp = 10 ms tp = 1 s	5 3.5	A
dv/dt	Critical rate of rise of off-state voltage	67% V_{BR}	KV/ μs	
T_{stg} T_j	Storage and operating junction temperature range	- 40 to + 150 150	°C °C	

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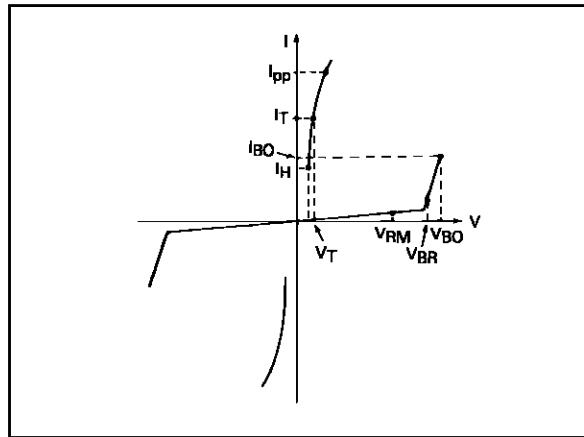
THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (j-a)	Junction-ambient thermal resistance - mounting on FR4	80	°C/W

ELECTRICAL CHARACTERISTICS

T_{amb} = 25°C

Symbol	Parameter
V _{RM}	Stand-off voltage
V _{BR}	Breakdown voltage
V _{BO}	Breakover voltage
I _H	Holding current
V _T	On-state voltage
V _F	Forward Voltage Drop
I _{BO}	Breakover current
I _{PP}	Peak pulse current



PARAMETERS RELATED TO THE PROTECTION DEVICE

Types	I _R @ V _{RM}		V _{BO} @ I _{BO} max note1	I _H min note1	I _{BO}		V _T max note2
	μA	V			mA	mA	
TSI120B5	1 5	50 120	180	150	50	400	8
TSI150B5	1 5	50 150	230	150	50	400	8
TSI180B5	1 5	50 180	250	150	50	400	8
TSI200B5	1 5	50 200	290	150	50	400	8
TSI270B5	1 5	50 270	380	150	50	400	8

PARAMETERS RELATED TO THE DIODE BRIDGE

Symbol	Test conditions	Value	Unit
V _F	I _F = 20mA note 3 I _F = 100mA note 3	0.9 1.0	V
C	note 4	200	pF

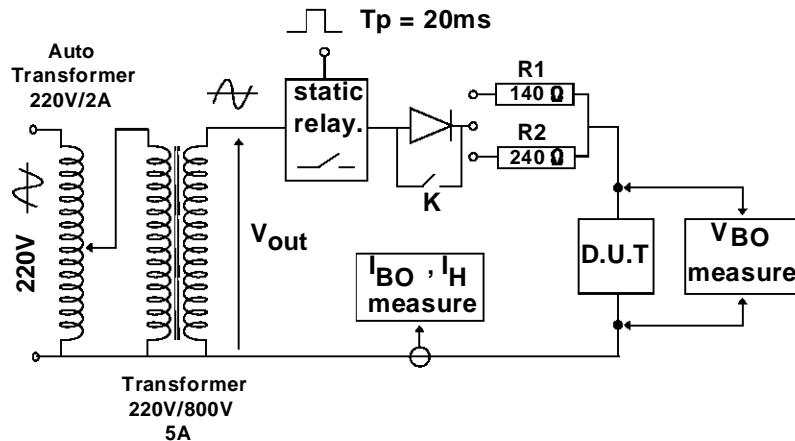
All parameters are tested at 25°C, except where indicated

Note 1 : See test conditions for V_{BO}, I_{BO}, I_H parameters

Note 2 : Square pulse tp = 500 μs - I_T = 5A.

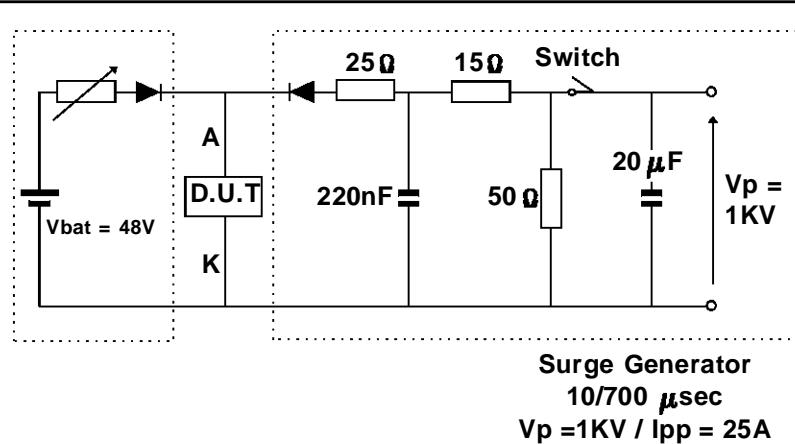
Note 3 : V_F is given for one diode

Note 4 : V_R = 0V, F = 1MHz.

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

TEST PROCEDURE :

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

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

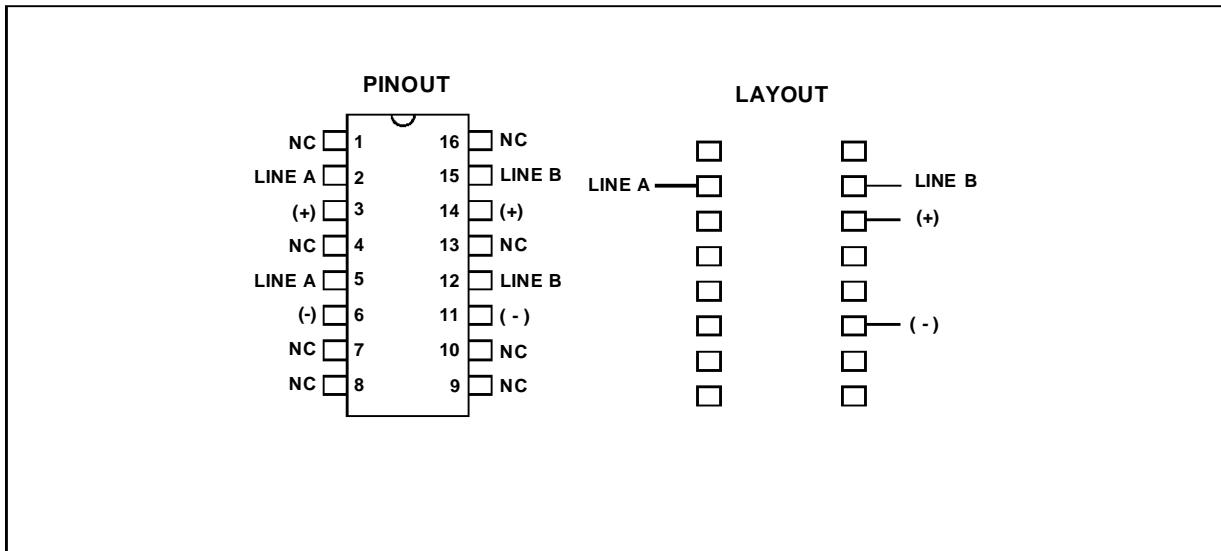
This is a GO-NOGO Test which allows to confirm the holding current (I_H) level in a functional test circuit. This test can be performed if the reference test circuit can't be implemented.

■ TEST PROCEDURE :

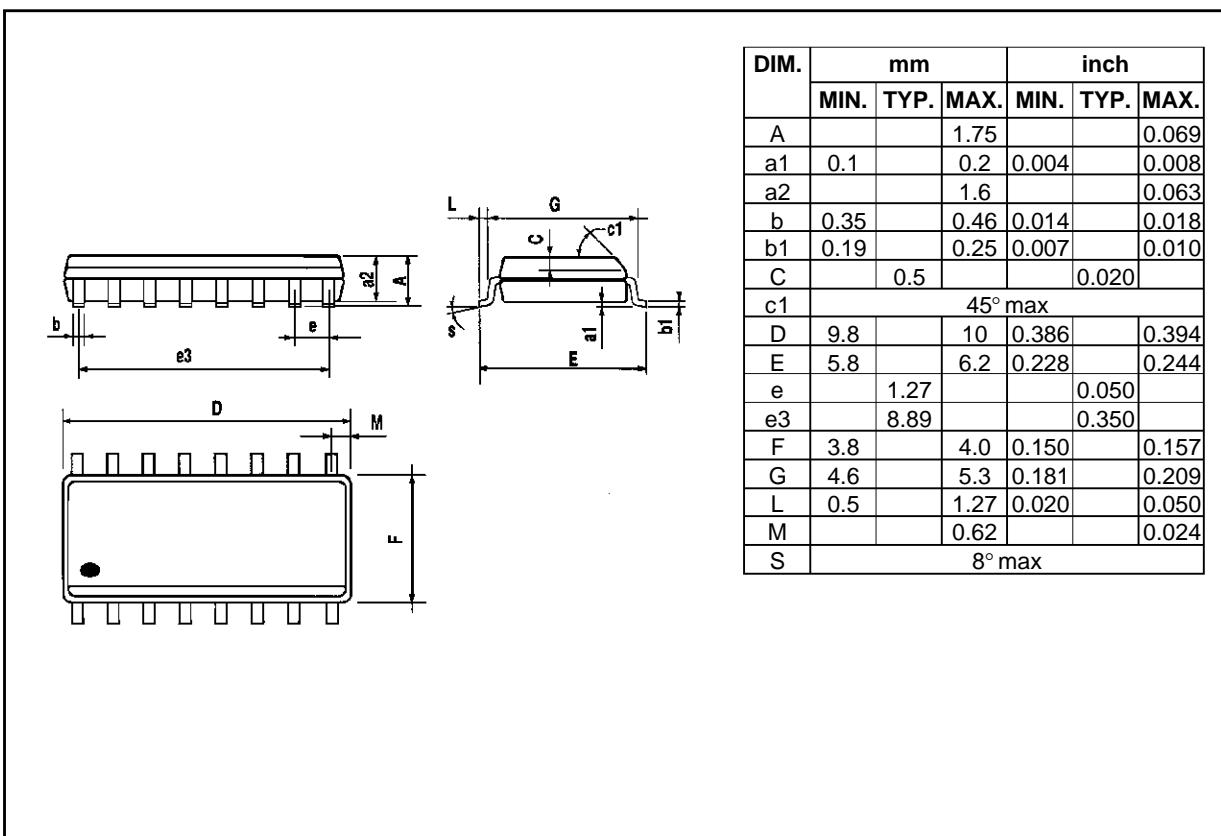
- 1) Adjust the current level at the I_H value by short circuiting the AK of the D.U.T.
- 2) Fire the D.U.T with a surge Current : $I_{pp} = 25\text{A}$, 10/700 μs .
- 3) The D.U.T will come back to the OFF-State withing a duration of 50 ms max.

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PINOUT CONFIGURATION AND LAYOUT RECOMMENDATIONS :



PACKAGE MECHANICAL DATA



MARKING : LOGO, DATE CODE, DEVICE CODE.

DEVICE	TSI120B5	TSI150B5	TSI180B5	TSI200B5	TSI270B5
MARKING	TSI120	TSI150	TSI180	TSI200	TSI270

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