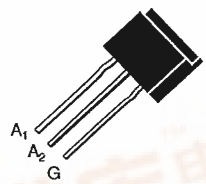
SGS-THOMSON MICROELECTRONICS

TLC 111 B→TLC 381 B

S G S-THOMSON

TRIACS

- GLASS PASSIVATED CHIP
- HIGH SURGE CURRENT



TL
(Plastic)

DESCRIPTION

Low power triacs suited for 50 and 60 Hz up to 380 V_{RMS}.

APPLICATIONS

- CONTROL SPEED FOR LITTLE MOTORS ; ELECTRIC PUMP OR VENTILATOR, SEWING MACHINE
- RELAY, DETECTOR, ALARM SYSTEM
- ELECTRONIC STARTER FOR LAMP
- HIGH POWER TRIAC DRIVER

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	T = 40 °C	1	A
$I_{T(RMS)}$	RMS on-state Current on Printed Circuit (360° conduction angle)	T_a = 25 °C	0.77	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	16	A
		t = 10 ms	15	
I^2t	I^2t Value for Fusing	t = 10 ms	1.125	A^2s
dI/dt	Critical Rate of Rise of on-state Current (1)	Repetitive	10	A/µs
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 40 to 150 – 40 to 110	°C °C

Symbol	Parameter	TLC111B	TLC221B	TLC331B	TLC381B	Unit
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	V

(1) I_G = 500 mA dI_G/dt = 1 A/µs
(2) T_j = 110 °C.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$ $R_{th(j-l)}$	Junction to Ambient on Printed Circuit Junction-leads for 360° Conduction Angle (F = 50 Hz)	75 45	°C/W °C/W

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GATE CHARACTERISTICS (maximum values)

P_{GM} = 2 W (t_p = 10 µs) I_{GM} = 1 A (t_p = 10 µs)
$P_{G(AV)}$ = 0.1 W V_{GM} = 16 V (t_p = 10 µs)

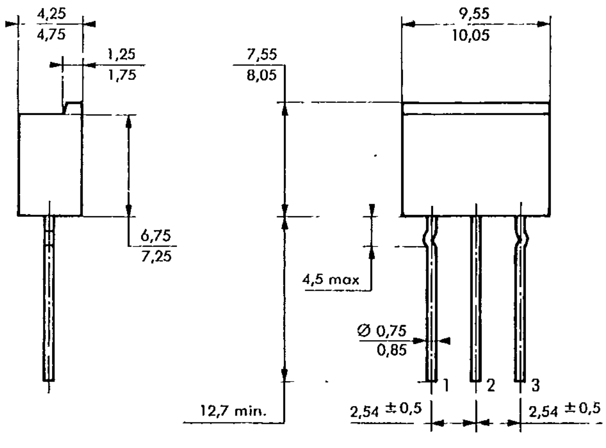
ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrants	Min.	Typ.	Max.	Unit
I_{GT}	T_j = 25 °C V_D = 12 V R_L = 33 Ω Pulse Duration > 20 µs	I-II-III			25	mA
		IV			50	
V_{GT}	T_j = 25 °C V_D = 12 V R_L = 33 Ω Pulse Duration > 20 µs	I-II-III-IV			1.5	V
V_{GD}	T_j = 110 °C V_D = V_{DRM} R_L = 3.3 kΩ	I-II-III-IV	0.2			V
I_H*	T_j = 25 °C I_T = 100 mA Gate Open			8		mA
I_L	T_j = 25 °C V_D = 12 V I_G = 100 mA Pulse Duration > 20 µs	I-II-III-IV		8		mA
V_{TM}*	T_j = 25 °C I_{TM} = 1.4 A t_p = 10 ms				1.8	V
I_{DRM}*	V_{DRM} Specified — T_j = 25 °C				0.01	mA
	T_j = 110 °C				0.75	
dv/dt*	T_j = 110 °C Gate Open Linear Slope up to V_D = 67 % V_{DRM}		20			V/µs
(dv/dt)$_c$*	T_j = 40 °C V_D = V_{DRM} I_T = 1.4 A (di/dt)$_c$ = 0.4 A/ms		5			V/µs
t_{gt}	T_j = 25 °C V_D = V_{DRM} I_T = 1.4 A I_G = 100 mA di_G/dt = 1 A/µs	I-II-III-IV		3		µs

* For either polarity of electrode A_2 voltage with reference to electrode A_1.

PACKAGE MECHANICAL DATA

TL Plastic



Triac : 1 2 3 = A1 A2 G

Cooling method : by convection (method A)
Marking : type number
Weight : 0.8 g.

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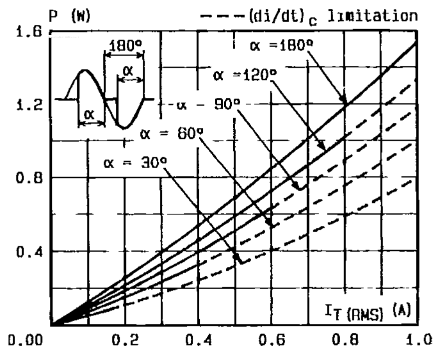

Fig.1 - Maximum mean power dissipation versus RMS on-state current.

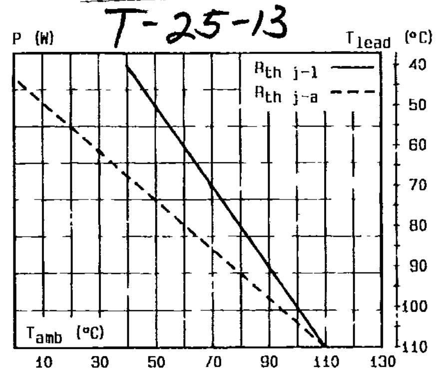

Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

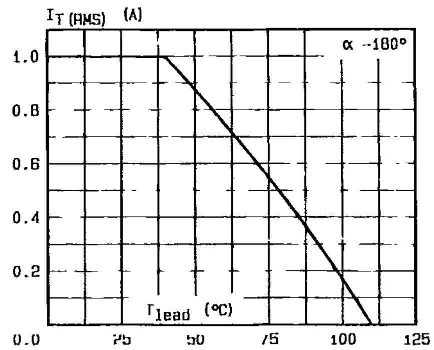

Fig.3 - RMS on-state current versus lead temperature.

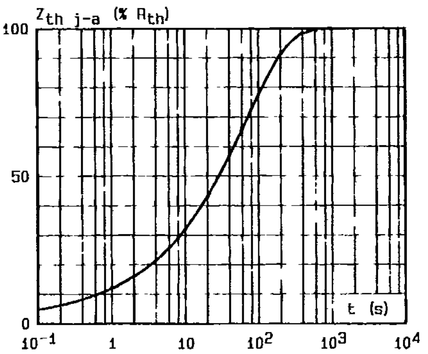

Fig.4 - Thermal transient impedance junction to ambient versus pulse duration.

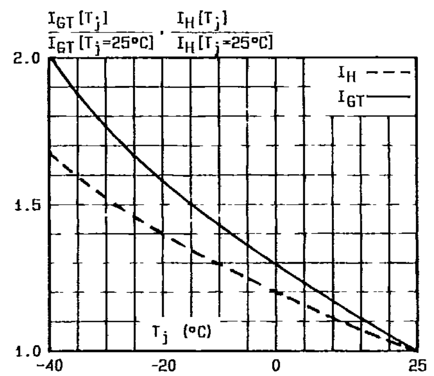

Fig 5 - Relative variation of gate trigger current and holding current versus junction temperature.

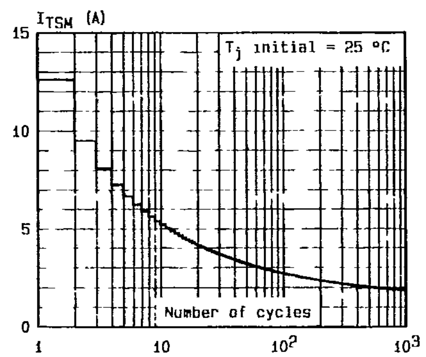

Fig 6 - Non repetitive surge peak on-state current versus number of cycles.

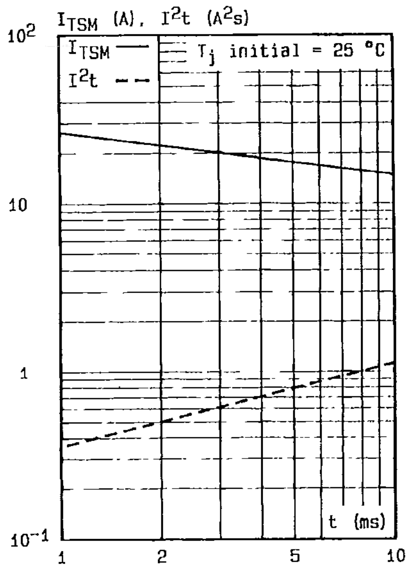

Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ⩽ 10 ms, and corresponding value of I^2t.

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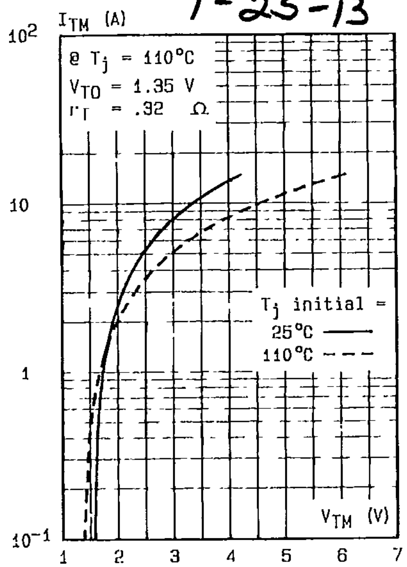

Fig.8 - On-state characteristics (maximum values).