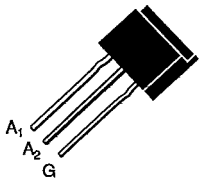
SGS-THOMSON MICROELECTRONICS

S G S-THOMSON

TLC 111 S→TLC 381 S

SENSITIVE GATE 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_l = 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	TLC111S	TLC221S	TLC331S	TLC381S	Unit
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	V

(1) I_G = 100 mA di_G/dt = 1 A/µs
(2) T_l = 110 °C.

THERMAL RESISTANCES

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

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)

T-25-13

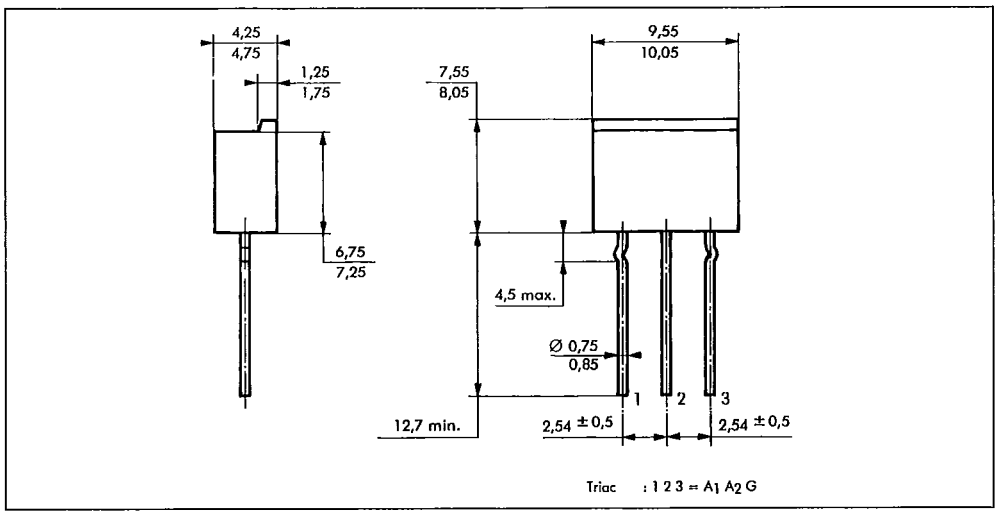
ELECTRICAL CHARACTERISTICS

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-IV			10	mA
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						25	mA
I_L	T_j = 25 °C V_D = 12 V I_G = 20 mA Pulse Duration > 20 µs			I-II-III-IV			25	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



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

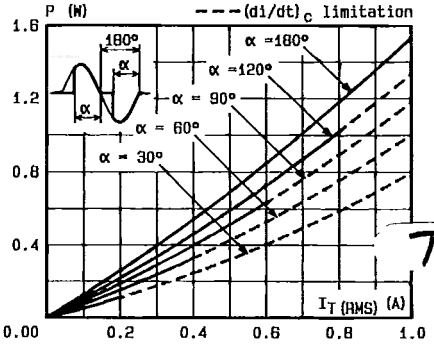


Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

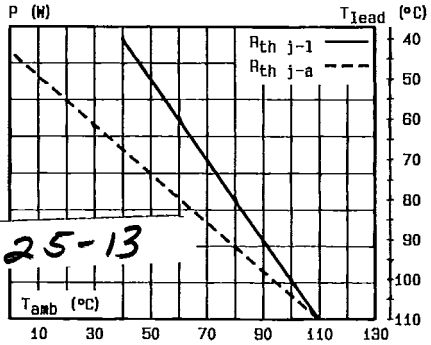


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).
resistances heatsink + contact.

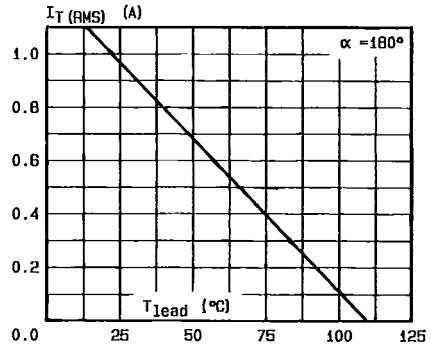


Fig.3 - RMS on-state current versus lead temperature.

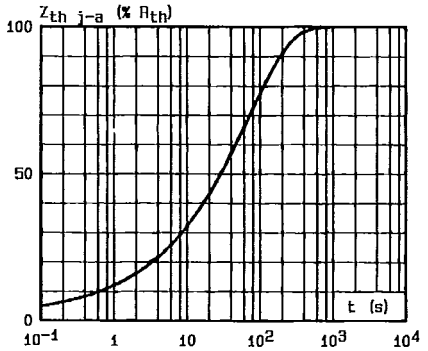


Fig.4 - Thermal transient impedance junction to ambient versus pulse duration.

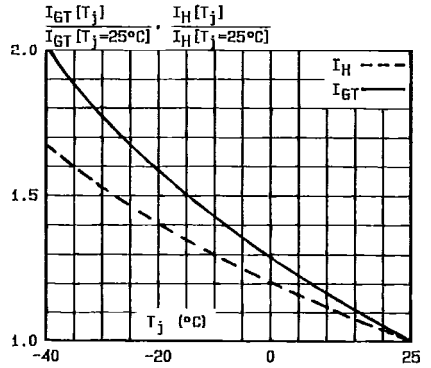


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

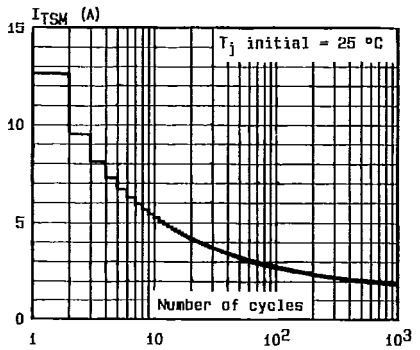


Fig.6 - Non repetitive surge peak on state current versus number of cycles.

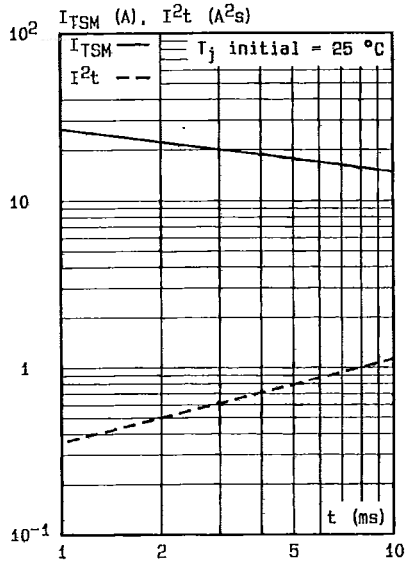


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

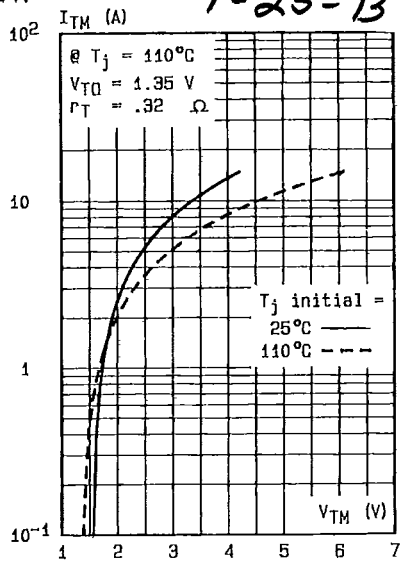


Fig.8 - On-state characteristics (maximum values).