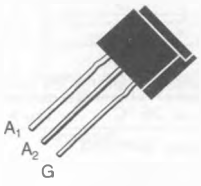
SGS-THOMSON MICROELECTRONICS

TLC 116 T→TLC 386 T

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	3	A
$I_{T(RMS)}$	RMS on-state Current on Printed Circuit (360° conduction angle)	T_a = 25 °C	1.3 (3)	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	31.5	A
		t = 10 ms	30	
I^2t	I^2t Value for Fusing	t = 10 ms	4.5	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	TLC116T	TLC226T	TLC336T	TLC386T	Unit
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	V

(1) I_G = 50 mA di_G/dt = 1 A/µs
(2) T_j = 110 °C.
(3) With Cu surface = 1 cm^2.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-a)}$	Junction to Ambient on Printed Circuit	50 (1)	°C/W
$R_{th\ (j-l)}$	Junction-leads for 360° Conduction Angle (F = 50 Hz)	15	°C/W

(1) With Cu surface = 1 cm^2.

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)

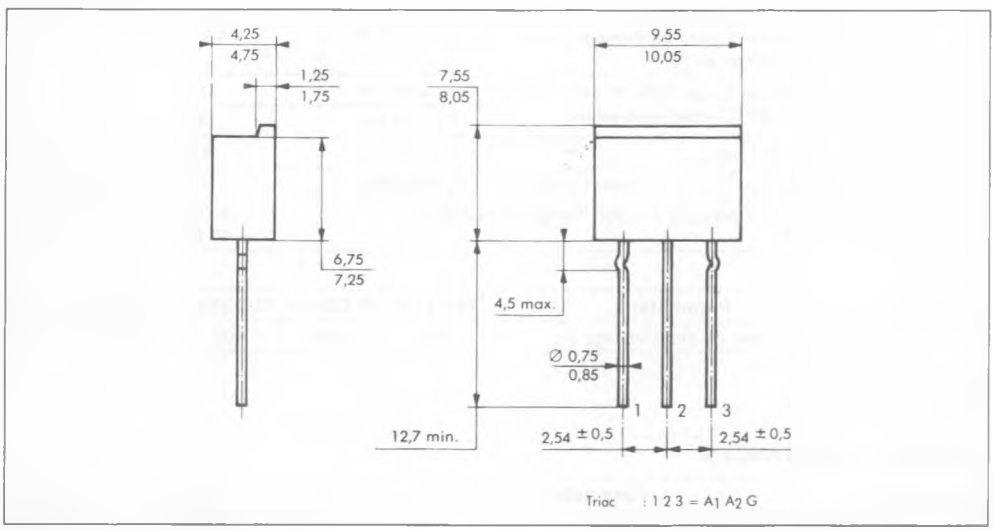
ELECTRICAL CHARACTERISTICS

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-IV			5	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				15	mA
I_L	T_j = 25 °C V_D = 12 V Pulse Duration > 20 µs		I_G = 10 mA	I-II-III-IV			15	mA
V_{TM}*	T_j = 25 °C	I_{TM} = 4 A	t_p = 10 ms				1.85	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}					10		V/µs
$(dv/dt)_c$*	T_j = 40 °C $V_D = V_{DRM}$ $(di/dt)_c$ = 1.3 A/ms		I_T = 4 A			1		V/µs
t_{gt}	T_j = 25 °C $V_D = V_{DRM}$ I_G = 100 mA di_G/dt = 1 A/µs		I_T = 4 A	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.

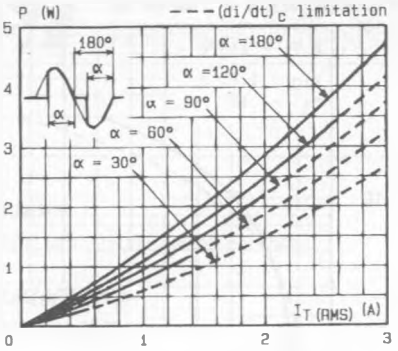


Fig.1 - Maximum mean power dissipation versus RMS on-state current.

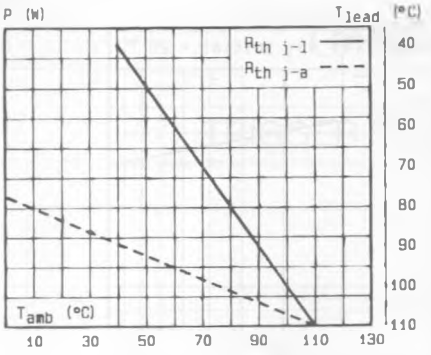


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).
resistances heatsink + contact.

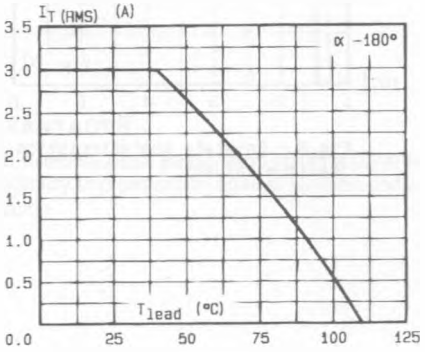


Fig.3 - RMS on-state current versus lead temperature.

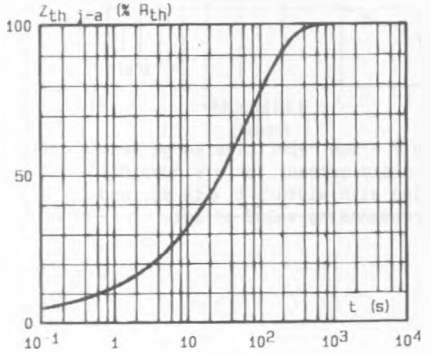


Fig.4 - Thermal transient impedance junction to ambient versus pulse duration.

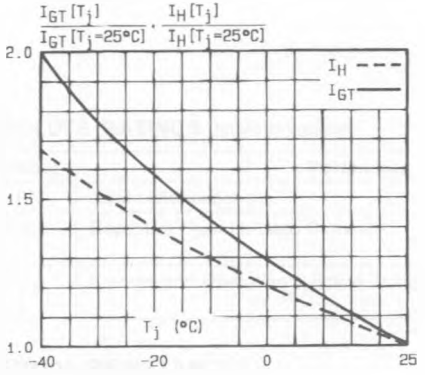


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

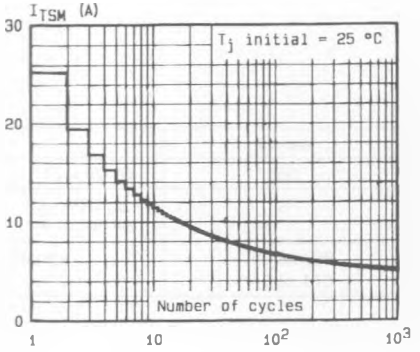


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

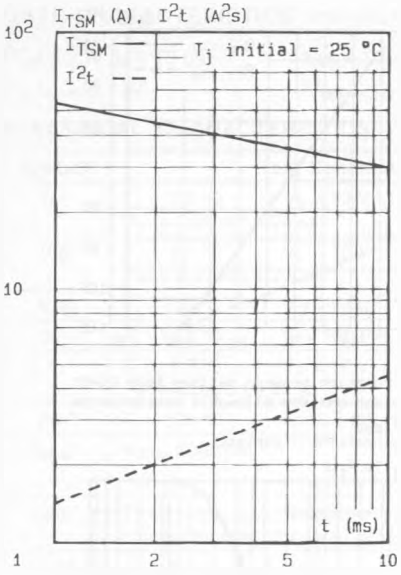


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leqslant 10$ ms, and corresponding value of I^2t.

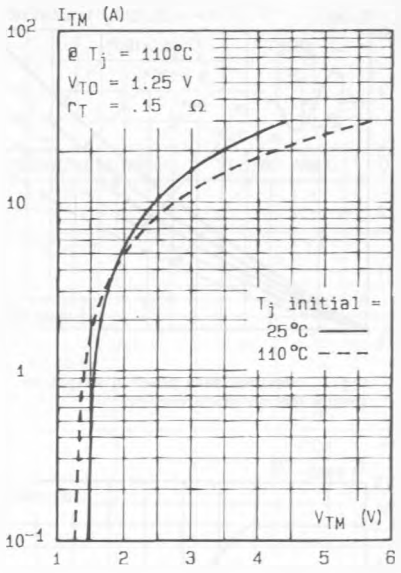


Fig.8 - On-state characteristics (maximum values).