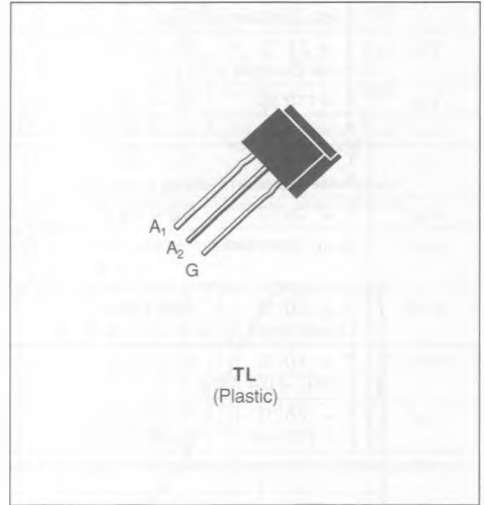# SENSITIVE GATE TRIACS

- GLASS PASSIVATED CHIP
- HIGH SURGE CURRENT

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

TL
(Plastic)

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}	Storage and Operating Junction Temperature Range		− 40 to 150	°C
T_j			− 40 to 110	°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) $T_j = 110$ °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)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Quadrants	Min.	Typ.	Max.	Unit
I_{GT}	$T_j = 25$ °C Pulse Duration > 20 µs	$V_D = 12$ V	$R_L = 33$ Ω	I-II-III-IV			10	mA
V_{GT}	$T_j = 25$ °C Pulse Duration > 20 µs	$V_D = 12$ V	$R_L = 33$ Ω	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 Pulse Duration > 20 µs	$V_D = 12$ V	$I_G = 20$ mA	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 $(di/dt)_c = 0.4$ A/ms	$V_D = V_{DRM}$	$I_T = 1.4$ A			5		V/µs
t_{gt}	$T_j = 25$ °C $I_G = 100$ mA	$V_D = V_{DRM}$ $di_G/dt = 1$ A/µs	$I_T = 1.4$ 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
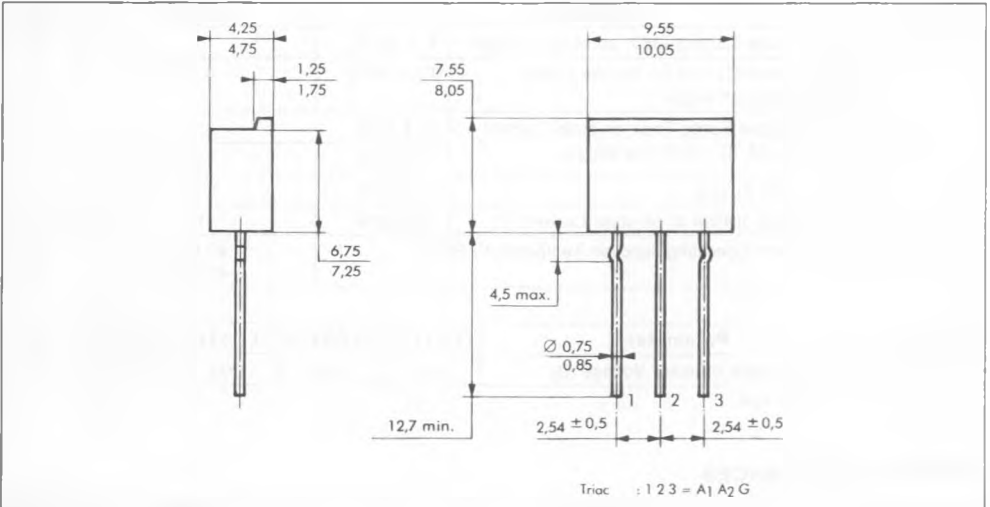
Cooling method : by convection (method A)
Marking : type number
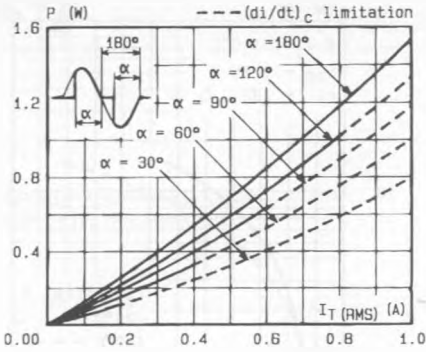Weight : 0.8 g.

SGS-THOMSON
MICROELECTRONICS

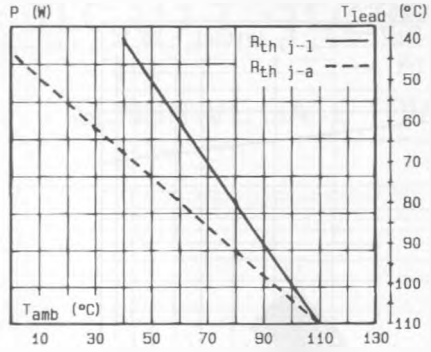Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

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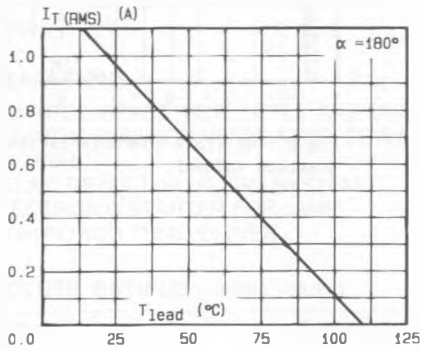

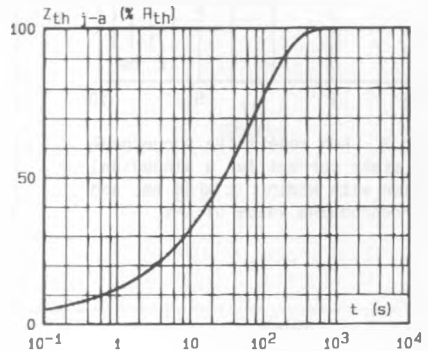
Fig.3 - RMS on-state current versus lead temperature.

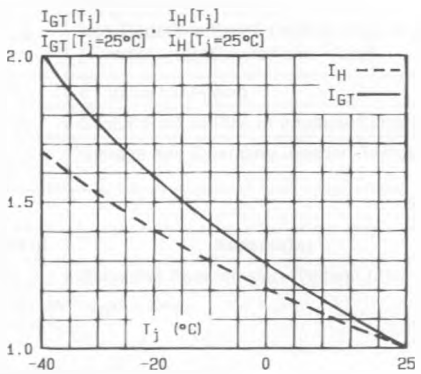Fig.4 - Thermal transient impedance junction to ambient versus pulse duration.

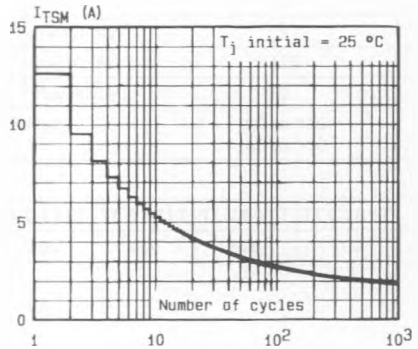Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

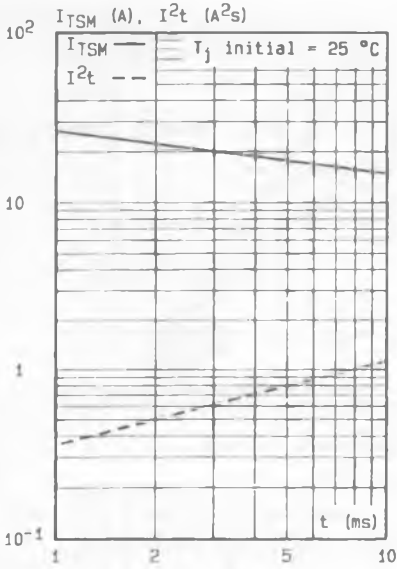Fig.6 - Non repetitive surge peak on state current versus number of cycles.

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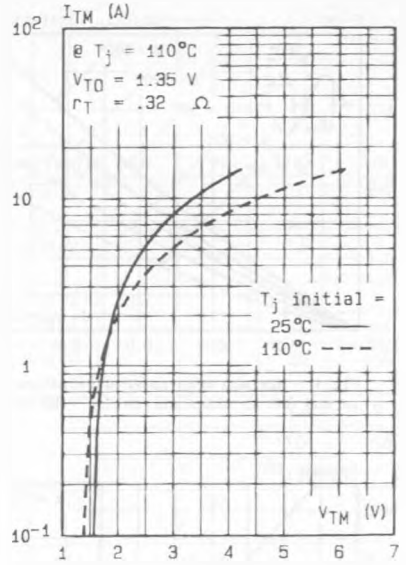pulse with width : t ⩽ 10 ms, and
corresponding value of I^2t.

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

SGS-THOMSON
MICROELECTRONICS