SGS-THOMSON MICROELECTRONICS

TRAL 1135 D→3835 D

TRIACS

- GLASS PASSIVATED CHIP
- I_{GT} SPECIFIED IN FOUR QUADRANTS

ADVANTAGES

- EXCELLENT $(dv/dt)_c$: > 10 V/µs
- METALLIC ENCAPSULATION GIVES AN EXCELLENT THERMAL IMPEDANCE AND HIGH RELIABILITY CONSTRUCTION

APPLICATIONS

- MOTOR CONTROL
- HEATING CONTROL
- LIGHT DIMMER

DESCRIPTION

Power triacs suited for use on 220 V and 380 V main.

Thread : 1/4" -28 UNF : type N°
M6 on request : type N° + suffix M

TO 48
(Metal)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	T_C = 60 °C	35	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	330	A
		t = 10 ms	300	
I^2t	I^2t Value for Fusing	t = 10 ms	450	A^2s
di/dt	Critical Rate of Rise of on-state Current (1)	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 40 to 150 – 40 to 110	°C °C

Symbol	Parameter	TRAL				Unit
		1135D	2235D	3335D	3835D	
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	V

(1) I_G = 1.5 A dI_G/dt = 1 A/µs
(2) T_j = 110 °C.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (c-h)}$	Contact (case-heatsink) for Recommended Stud Torque	0.4	°C/W
$R_{th\ (j-c)}$ DC	Junction to Case for DC	1.12	°C/W
$R_{th\ (j-c)}$ AC	Junction to Case for 360 ° Conduction Angle (F = 50 Hz)	0.84	°C/W

GATE CHARACTERISTICS (maximum values)

P_{GM} = 40 W (t_p = 10 µs) I_{GM} = 6 A (t_p = 10 µs)

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

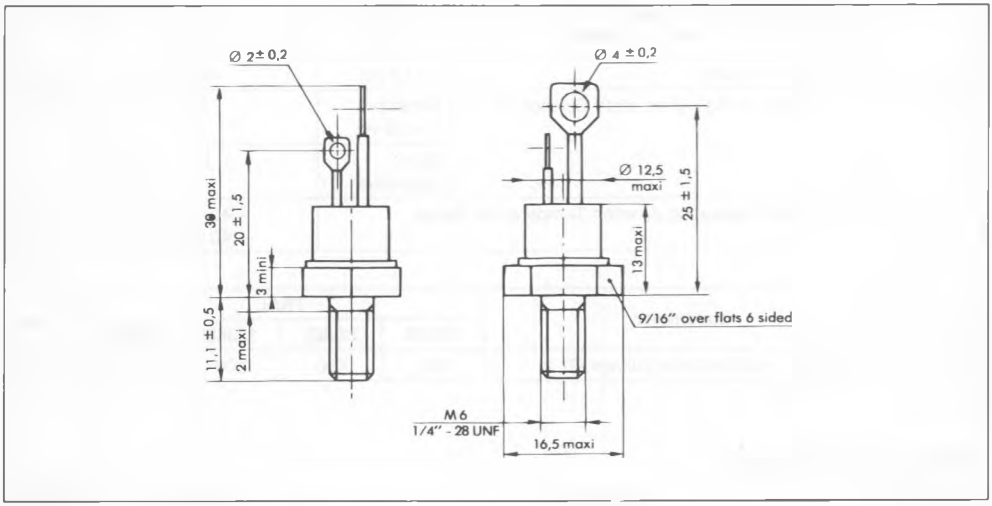
ELECTRICAL CHARACTERISTICS

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			100	mA
		IV			150	
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 = 500 mA Gate Open				100	mA
I_L	T_j = 25 °C V_D = 12 V I_G = 300 mA Pulse Duration > 20 µs	I-III-IV		60		mA
		II		120		
V_{TM}*	T_j = 25 °C I_{TM} = 53 A t_p = 10 ms				2	V
I_{DRM}*	T_j = 110 °C V_{DRM} Specified				4	mA
dv/dt*	T_j = 110 °C Gate Open Linear Slope up to V_D = 67 % V_{DRM}		250			V/µs
$(dv/dt)_c$*	T_C = 60 °C V_D = V_{DRM} I_T = 53 A $(di/dt)_c$ = 15.5 A/ms		10			V/µs
t_{gt}	T_j = 25 °C V_D = V_{DRM} I_T = 53 A I_G = 200 mA di_G/dt = 2 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

TO 48 Metal



Cooling method : by conduction (method C)
Marking : type number
Weight : 13.5 ± 1 g
Polarity : anode to case
Stud torque : 3.5 mΛN min - 3.8 mΛN max.

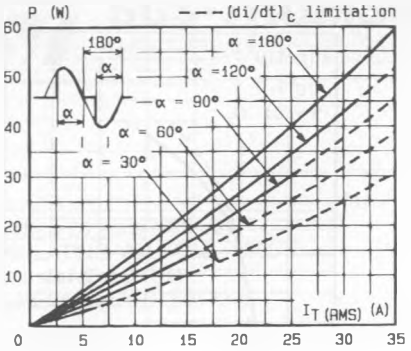


Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

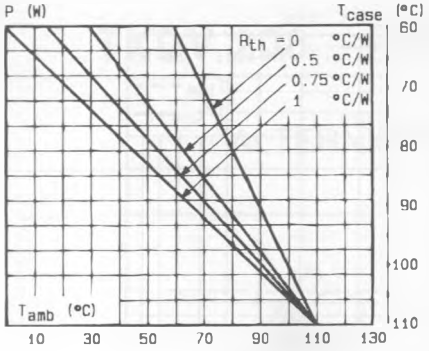


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

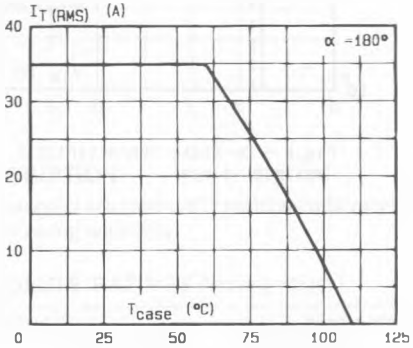


Fig.3 - RMS on-state current versus case temperature.

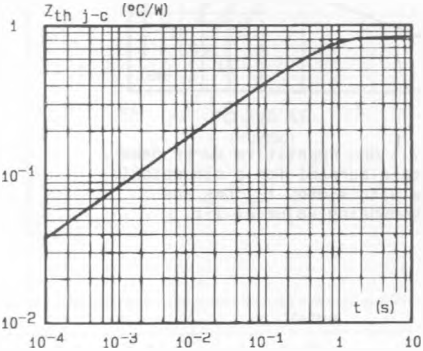


Fig.4 - Thermal transient impedance junction to case versus pulse duration.

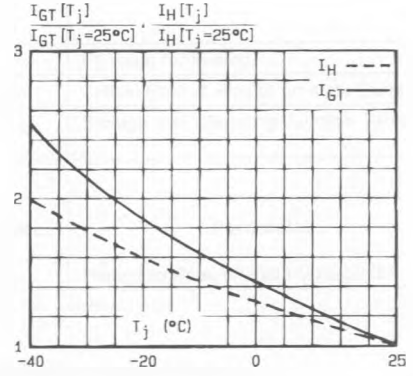


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

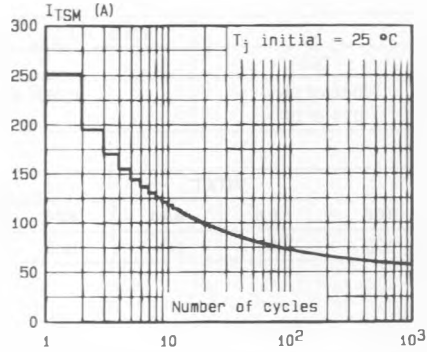


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

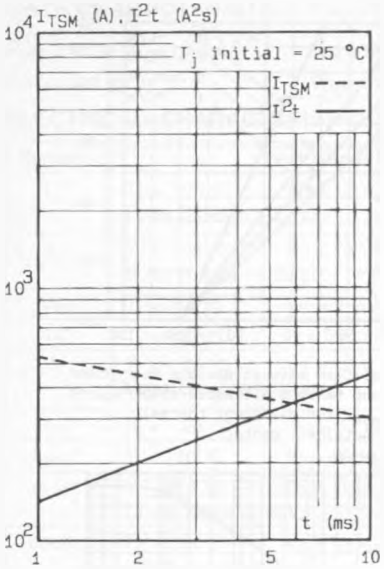


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width: $t \leq 10ms$, and corresponding value of I^2t.

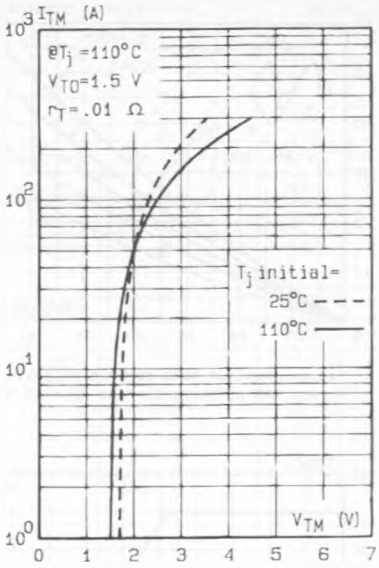


Fig.8 - On-state characteristic (maximum values).