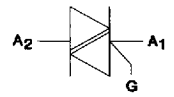
SGS-THOMSON MICROELECTRONICS

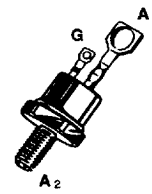
TRAL 1135D ---> 3835D

STANDARD TRIACS

FEATURES

- I_{GT} SPECIFIED IN FOUR QUADRANTS
- EXCELLENT THERMAL IMPEDANCE PACKAGE
- HIGH COMMUTATION, (dV/dt)c > 10 V/µs





TO 48
(Metal)

DESCRIPTION

The TRAL 1135D ---> 3835D use high performance passivated glass triac technology. These high power triacs on TO 48 package are well adapted for use on 220 V and 380 V main, suitable for applications such : motor control, heating control, light dimmer...

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	Tc = 80 °C	35	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	330	A
		tp = 10 ms	300	
I^2t	I^2t value	tp = 10 ms	450	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 1A di_G/dt = 1A/µs	Repetitive F = 50 Hz	20	A/µs
		Non Repetitive	100	
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
Tl	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		230	°C

Symbol	Parameter	TRAL				Unit
		1135D	2235D	3335D	3835D	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 125 °C	200	400	600	700	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (c-h)	Contact (case-heatsink) for recommended stud torque	0.4	°C/W
Rth (j-c) DC	Junction to case for DC	1.1	°C/W
Rth (j-c) AC	Junction to case for 360° conduction angle (F= 50 Hz)	0.8	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 1W P_{GM} = 40W (tp = 20 µs) I_{GM} = 6A (tp = 20 µs) V_{GM} = 16V (tp = 20 µs).

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions		Quadrant		Value	Unit
I_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III	MAX	100	mA
			IV	MAX	150	
V_{GT}	V_D=12V (DC) R_L=33Ω	Tj=25°C	I-II-III-IV	MAX	1.5	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ	Tj=110°C	I-II-III-IV	MIN	0.2	V
tgt	V_D=V_{DRM} I_G = 500mA dI_G/dt = 3A/µs	Tj=25°C	I-II-III-IV	TYP	3	µs
I_L	I_G=1.2 I_{GT}	Tj=25°C	I-III-IV	TYP	100	mA
			II		200	
I_H *	I_T= 500mA gate open	Tj=25°C		MAX	100	mA
V_{TM} *	I_{TM}= 53A tp= 380µs	Tj=25°C		MAX	2	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	Tj=25°C		MAX	0.02	mA
		Tj=110°C		MAX	4	
dV/dt *	Linear slope up to V_D=67%V_{DRM} gate open	Tj=110°C		MIN	250	V/µs
(dV/dt)c *	(dI/dt)c = 15.5A/ms	Tj=110°C		MIN	10	V/µs

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

Fig.1 : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).
(curves are cut off by (dI/dt)c limitation)

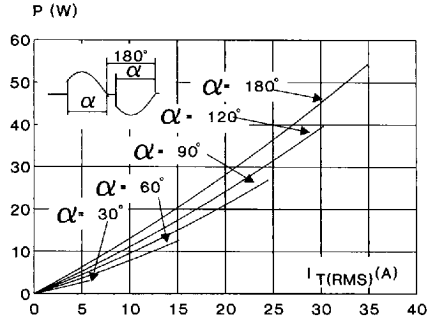


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

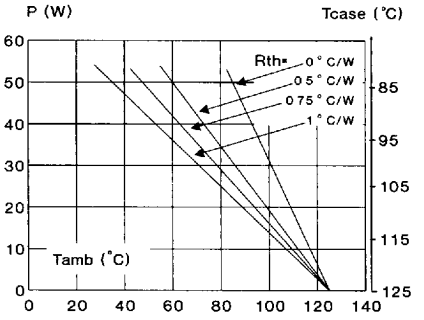


Fig.3 : RMS on-state current versus case temperature.

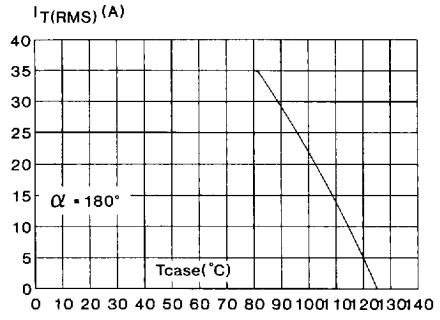


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

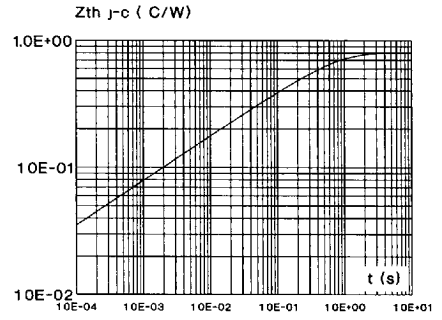


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

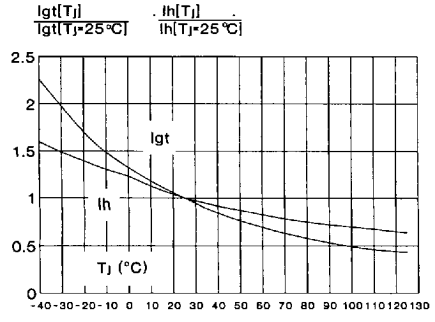


Fig.6 : Non Repetitive surge peak on-state current versus number of cycles.

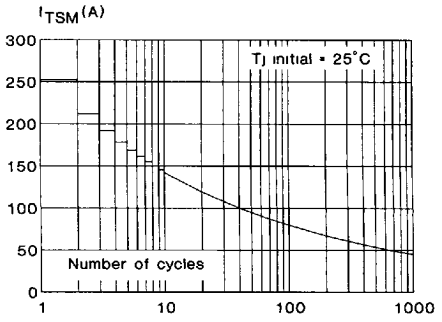


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10ms, and corresponding value of I^2t.

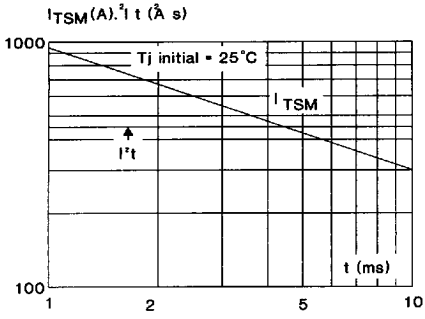
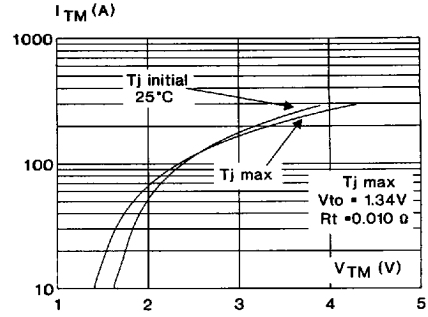
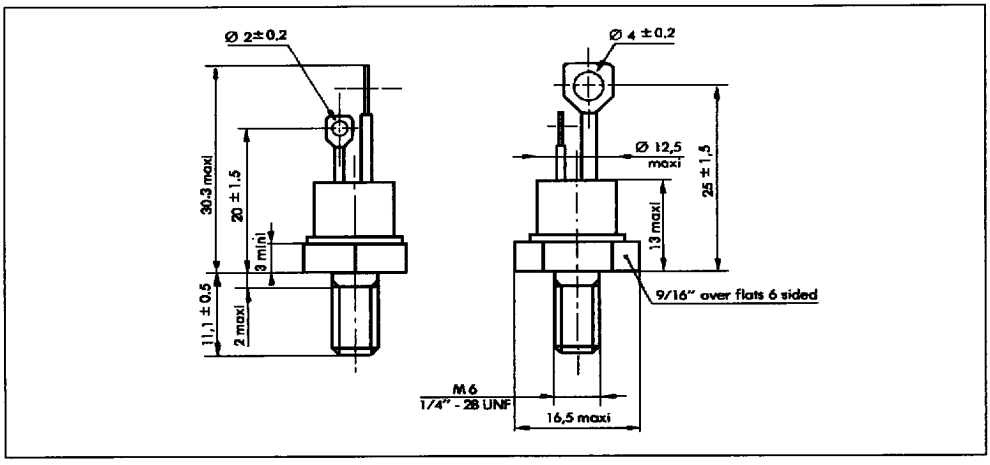


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TO 48 Metal



Cooling method : A
Marking : type number
Weight : 13.5 g
Polarity : ANODE (or A_2) to case