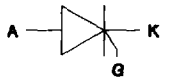
SGS-THOMSON MICROELECTRONICS

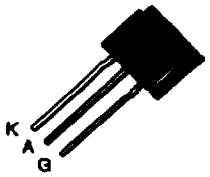
TLS 106

SENSITIVE GATE SCR

FEATURES

- LOW $I_{GT} \leq 200\ \mu A$
- LOW $I_H \leq 5\ mA$
- $I_{T(RMS)} = 4\ A$





TL
(Plastic)

DESCRIPTION

The TLS 106 Silicon Controlled Rectifiers are high performance MESA diffused PNPN devices glass passivated sensitive gate technology.
These parts are intended to general purpose switching and phase control application.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	Tl = 25 °C	4	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	Tl = 25 °C	2.5	A
I_{TSM}	Non repetitive surge peak on-state current (Tj initial = 25°C)	tp = 8.3 ms	37	A
		tp = 10 ms	35	
I^2t	I^2t value	tp = 10 ms	6	A^2s
dI/dt	Critical rate of rise of on-state current Gate supply : I_G = 5 mA di_G/dt = 1 A/µs		100	A/µs
Tstg Tj	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
Tl	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TLS 106-					Unit
		05	1	2	4	6	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage Tj = 110 °C R_{GK} = 1 KΩ	50	100	200	400	600	V

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient on printed circuit with Cu surface 1cm^2	50	°C/W
Rth (j-l) DC	Junction to leads for DC	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G\ (AV)}$ = 0.5W P_{GM} = 20W (tp = 20 µs) I_{FGM} = 1A (tp = 20 µs) V_{FGM} = 16V (tp = 20 µs) V_{RGM} = 5 V.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	0.2	mA
V_{GT}	V_D=12V (DC) R_L=140Ω	Tj=25°C	MAX	1	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ R_{GK} =1kΩ	Tj= 110°C	MIN	0.1	V
tgt	V_D=V_{DRM} I_G = 12.5mA dI_G/dt = 0.12A/µs	Tj=25°C	TYP	1.5	µs
I_L	I_G= 1.2 I_{GT} R_{GK} =1kΩ	Tj=25°C	MAX	7	mA
I_H	I_T= 50mA R_{GK} =1kΩ	Tj=25°C	MAX	5	mA
V_{TM}	ITM= 4A tp= 380µs	Tj=25°C	MAX	1.9	V
I_{DRM} I_{RRM}	V_{DRM} Rated R_{GK} =1kΩ V_{RRM} Rated R_{GK} =1kΩ	Tj=25°C	MAX	0.01	mA
		Tj= 110°C		0.3	
dV/dt	Linear slope up to V_D=67%V_{DRM} R_{GK} =1kΩ C_{GK} =0.1µF	Tj= 110°C	MIN	10	V/µs
Tq	V_D=67%V_{DRM} I_{TM}= 4A V_R= 10V dI_{TM}/dt=10 A/µs dV_D/dt= 2V/µs R_{GK} =1kΩ	Tj= 110°C	TYP	100	µs

Fig.1 : Maximum average power dissipation versus average on-state current.

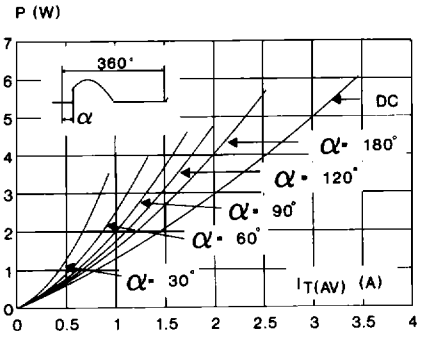


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

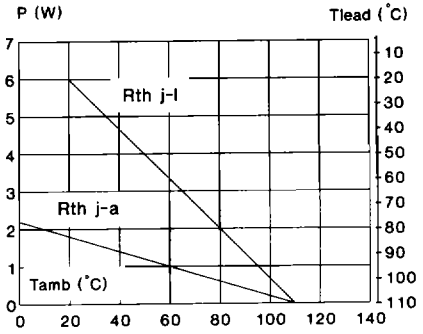


Fig.3 : Average on-state current versus leads temperature.

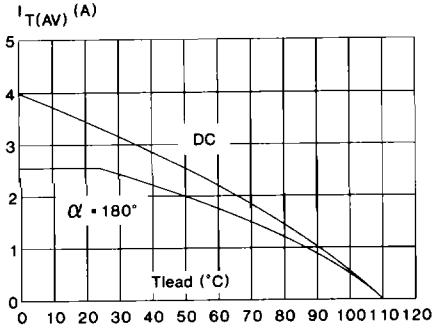


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

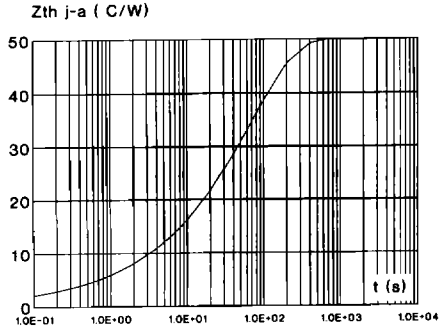


Fig.5 : Relative variation of gate trigger current versus junction temperature.

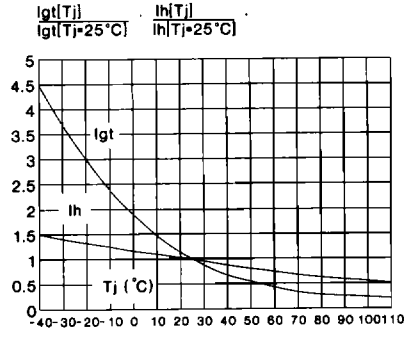


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

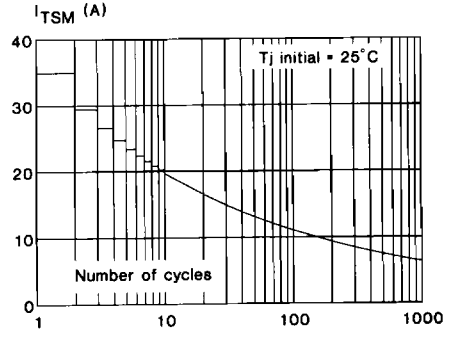


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

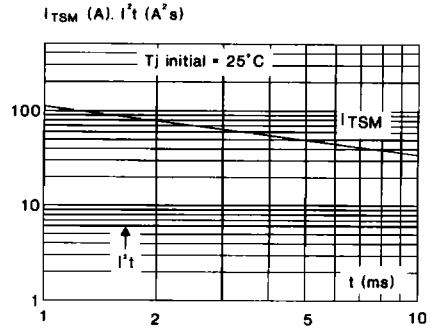
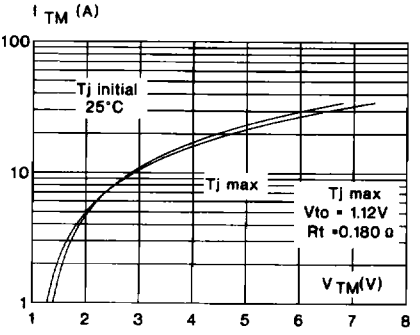
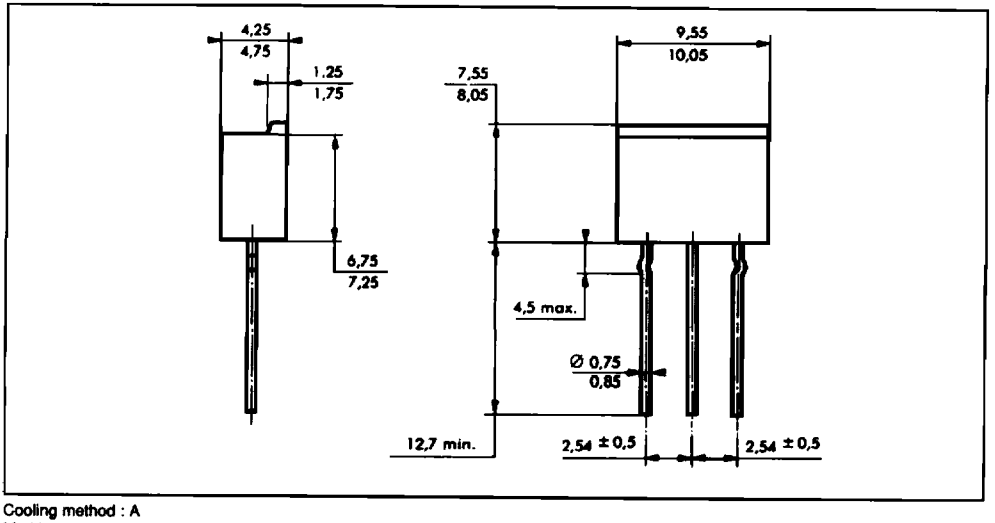


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA (in millimeters)

TL Plastic



Cooling method : A
Marking : type number
Weight : 0.8 g
Polarity : N A
Stud torque : N A