

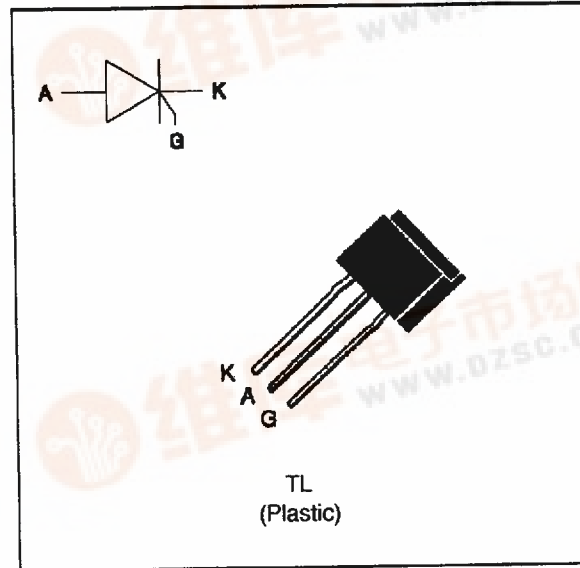
SENSITIVE GATE SCR

FEATURES

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

DESCRIPTION

The TLS 106 Silicon Controlled Rectifiers are high performance MESA diffused PNP 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)	$T_I = 25^\circ C$	4	A
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_I = 25^\circ C$	2.5	A
I_{TSM}	Non repetitive surge peak on-state current (T_J initial = $25^\circ C$)	$t_p = 8.3 \text{ ms}$	37	A
		$t_p = 10 \text{ ms}$	35	
I^2_t	I^2_t value	$t_p = 10 \text{ ms}$	6	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 10 \text{ mA}$ $di_G/dt = 0.1 \text{ A}/\mu s$		100	$A/\mu s$
T_{stg} T_J	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	$^\circ C$ $^\circ C$
T_I	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	$^\circ C$

Symbol	Parameter	TLS 106-					Unit
		05	1	2	4	6	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_J = 110^\circ C$ $R_{GK} = 1 \text{ K}\Omega$	50	100	200	400	600	V

THERMAL RESISTANCES

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

GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 0.2W$ $P_{GM} = 3W$ ($t_p = 20 \mu s$) $I_{FGM} = 1.2A$ ($t_p = 20 \mu s$) $V_{RGM} = 5V$.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	$V_D = 12V$ (DC) $R_L = 140\Omega$	$T_J = 25^\circ C$	MAX	0.2	mA
V_{GT}	$V_D = 12V$ (DC) $R_L = 140\Omega$	$T_J = 25^\circ C$	MAX	1	V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$ $R_{GK} = 1k\Omega$	$T_J = 110^\circ C$	MIN	0.1	V
t_{gt}	$V_D = V_{DRM}$ $I_G = 10mA$ $dI_G/dt = 0.1A/\mu s$	$T_J = 25^\circ C$	TYP	1.5	μs
I_L	$I_G = 1mA$ $R_{GK} = 1k\Omega$	$T_J = 25^\circ C$	MAX	7	mA
I_H	$I_T = 50mA$ $R_{GK} = 1k\Omega$	$T_J = 25^\circ C$	MAX	5	mA
V_{TM}	$I_{TM} = 4A$ $t_p = 380\mu s$	$T_J = 25^\circ C$	MAX	1.9	V
I_{DRM} I_{RRM}	V_{DRM} Rated $R_{GK} = 1k\Omega$ V_{RRM} Rated $R_{GK} = 1k\Omega$	$T_J = 25^\circ C$	MAX	0.01	mA
		$T_J = 110^\circ C$		0.3	
dV/dt	Linear slope up to $V_D = 67\%V_{DRM}$ $R_{GK} = 1k\Omega$ $C_{GK} = 0.1\mu F$	$T_J = 110^\circ C$	MIN	10	V/ μs
t_q	$V_D = 67\%V_{DRM}$ $I_{TM} = 4A$ $V_R = 10V$ $dI_{TM}/dt = 10A/\mu s$ $dV_D/dt = 2V/\mu s$ $R_{GK} = 1k\Omega$	$T_J = 110^\circ C$	TYP	100	μs

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

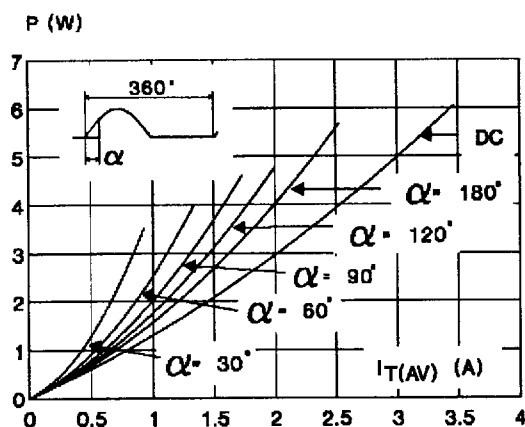


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

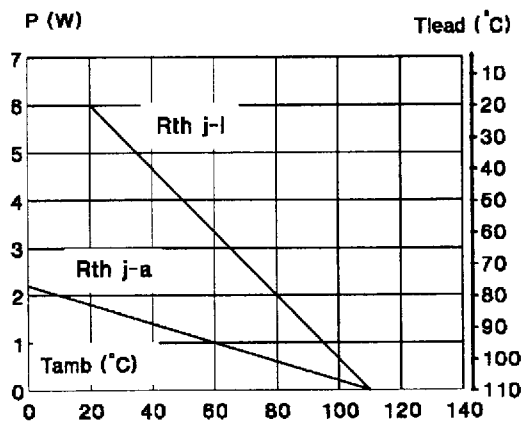


Fig.3 : Average on-state current versus leads temperature.

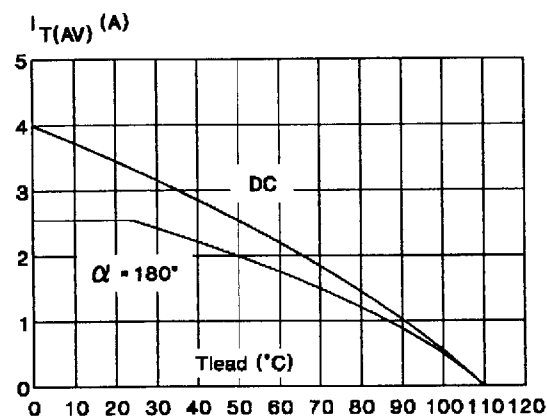


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

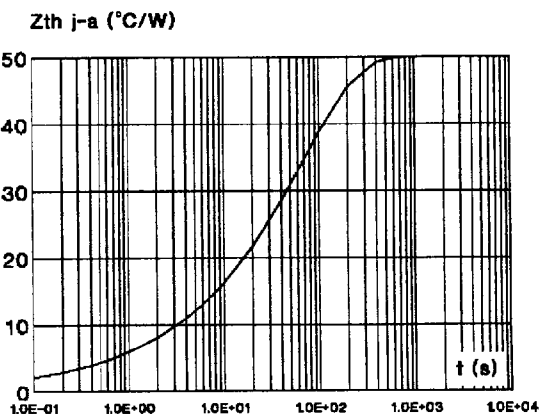


Fig.5 : Relative variation of gate trigger current versus junction temperature.

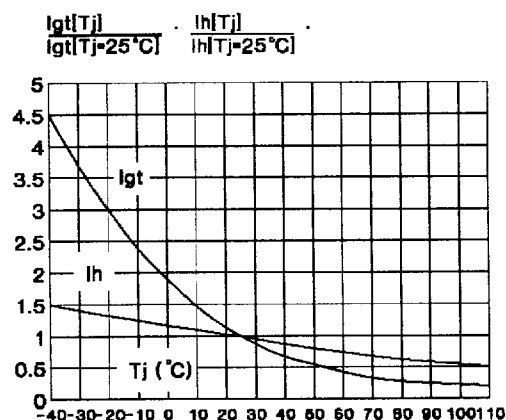
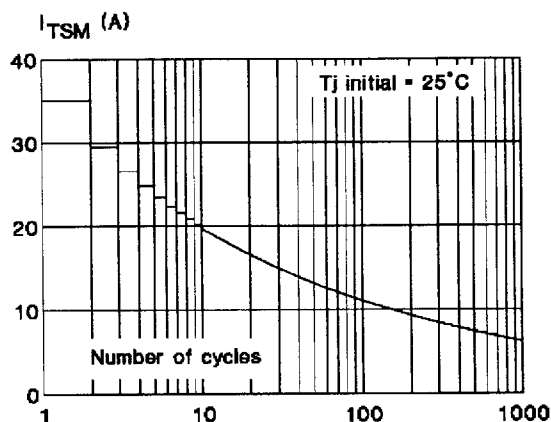


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



TLS 106

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

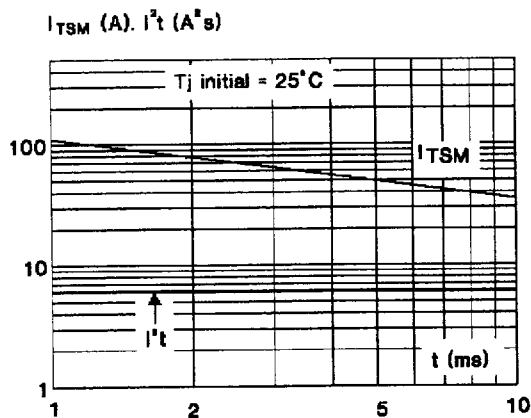
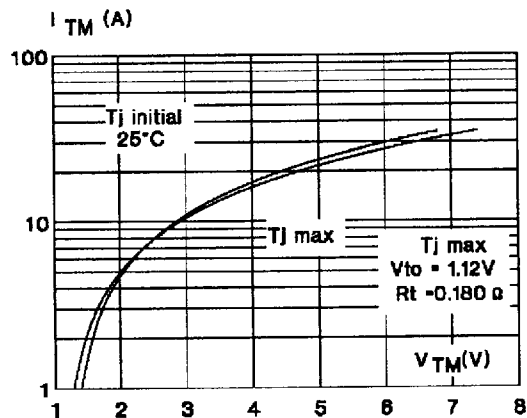
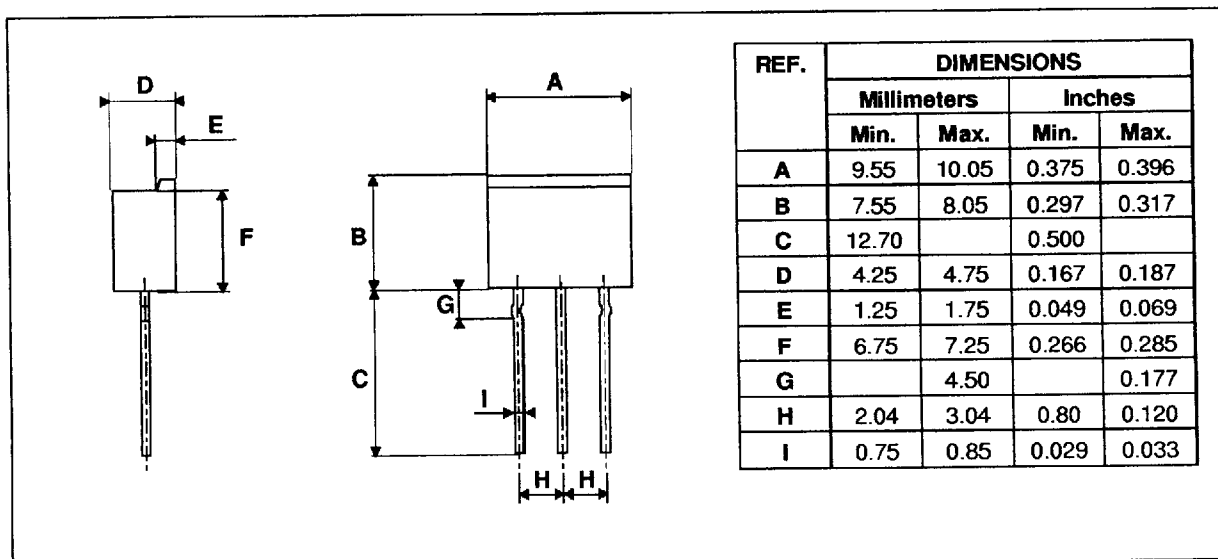


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TL Plastic



Marking : type number

Weight : 0.8 g

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