

SCR

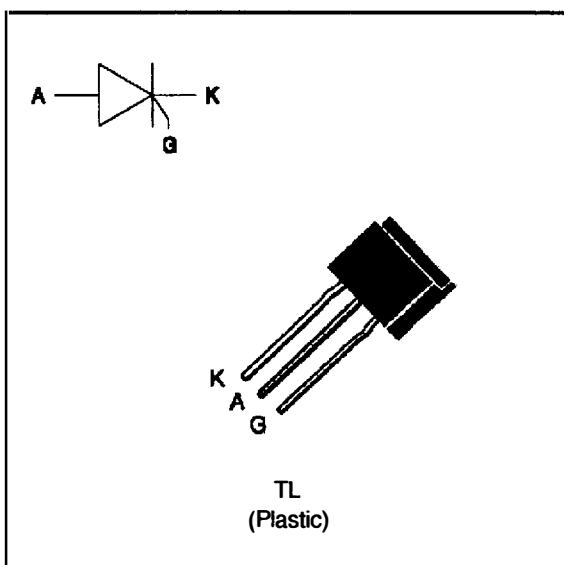
FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY

DESCRIPTION

The TL 1006 ---> TL 8006 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.

This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_T(RMS)$	RMS on-state current (180° conduction angle)	$T_I = 55\text{ °C}$	3	A
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_I = 55\text{ °C}$	2	A
I_{TSM}	Non repetitive surge peak on-state current (T_J initial = 25°C)	$t_p = 8.3\text{ ms}$	73	A
		$t_p = 10\text{ ms}$	70	
I^2_t	I^2_t value	$t_p = 10\text{ ms}$	25	A ² s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 100\text{ mA}$ $di_G/dt = 1\text{ A/}\mu\text{s}$		100	A/ μs
T_{stg} T_J	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C °C
T_I	Maximum lead temperature for soldering during 4 s at 4.5 mm from case		230	°C

Symbol	Parameter	TL					Unit
		1006	2006	4006	6006	8006	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_J = 110\text{ °C}$	100	200	400	600	800	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
$R_{th(j-l)} \text{ DC}$	Junction to leads for DC	15	°C/W

GATE CHARACTERISTICS (maximum values)

$P_G \text{ (AV)} = 1W$ $P_{GM} = 10W$ ($t_p = 20 \mu s$) $I_{FGM} = 4A$ ($t_p = 20 \mu s$) $V_{RGM} = 5V$.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I_{GT}	$V_D=12V$ (DC) $R_L=33\Omega$	$T_J=25^\circ C$	MAX	15	mA
V_{GT}	$V_D=12V$ (DC) $R_L=33\Omega$	$T_J=25^\circ C$	MAX	1.5	V
V_{GD}	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_J=110^\circ C$	MIN	0.2	V
t_{gt}	$V_D=V_{DRM}$ $I_G = 40mA$ $dI_G/dt = 0.5A/\mu s$	$T_J=25^\circ C$	TYP	1.5	μs
I_L	$I_G = 1.2 I_{GT}$	$T_J=25^\circ C$	TYP	40	mA
I_H	$I_T = 100mA$ gate open	$T_J=25^\circ C$	TYP	20	mA
V_{TM}	$I_{TM} = 6A$ $t_p = 380\mu s$	$T_J=25^\circ C$	MAX	1.9	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	$T_J=25^\circ C$	MAX	0.01	mA
		$T_J=110^\circ C$		1	
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_J=110^\circ C$	MIN	200	V/ μs
t_q	$V_D=67\%V_{DRM}$ $I_{TM}=6A$ $V_R=10V$ $dI_{TM}/dt=10 A/\mu s$ $dV_D/dt=20V/\mu s$	$T_J=110^\circ C$	TYP	70	μs

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

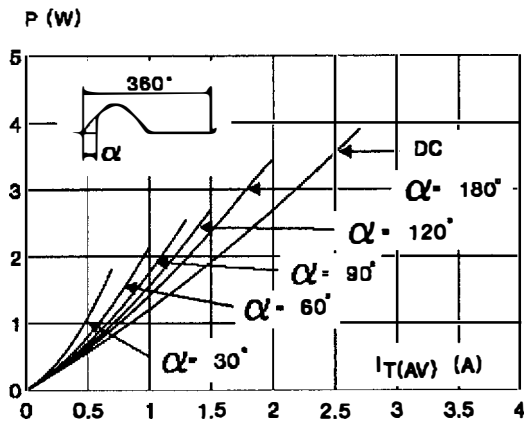


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

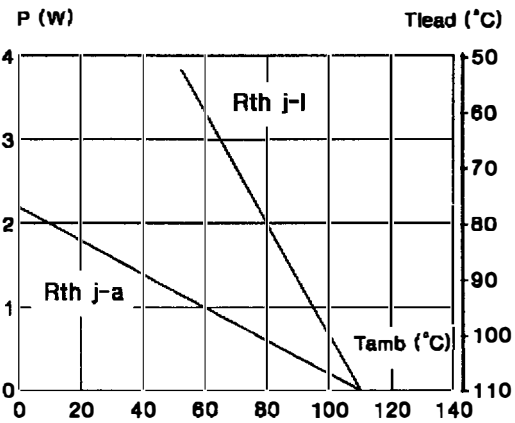


Fig.3 : Average on-state current versus leads temperature.

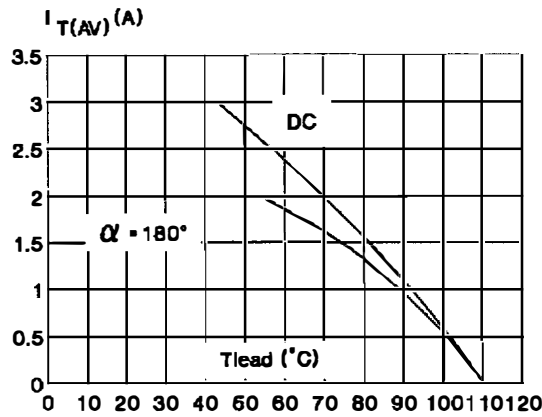


Fig.4 : Thermal transient impedance junction to ambient versus pulse duration.

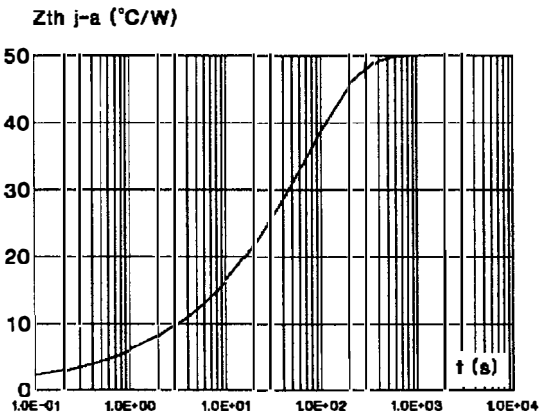


Fig.5 : Relative variation of gate trigger current versus junction temperature.

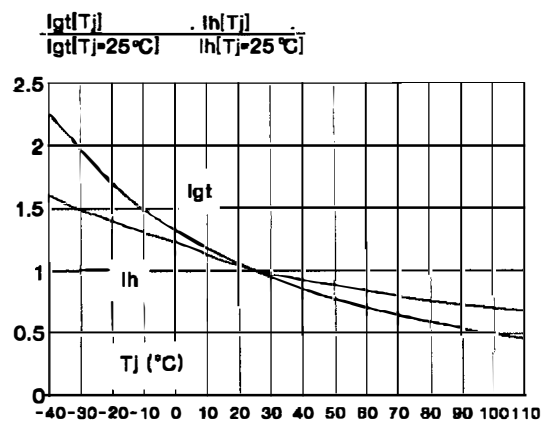


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.

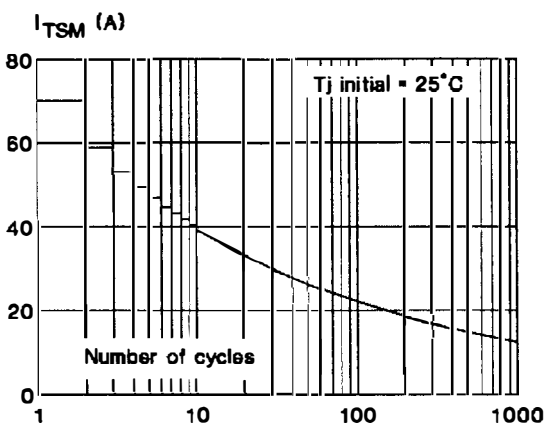


Fig.7 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t

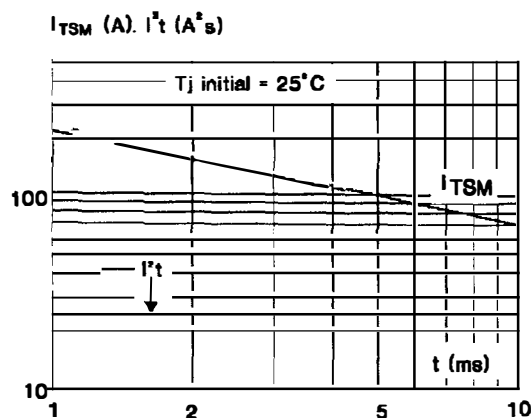
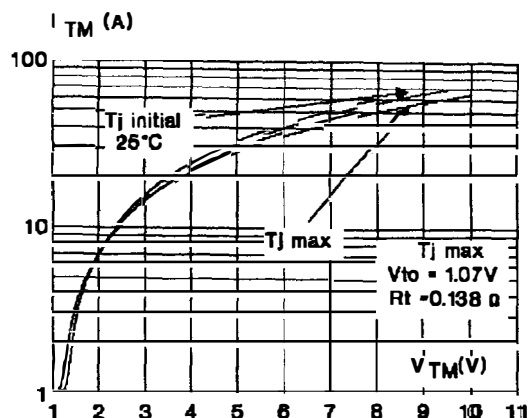
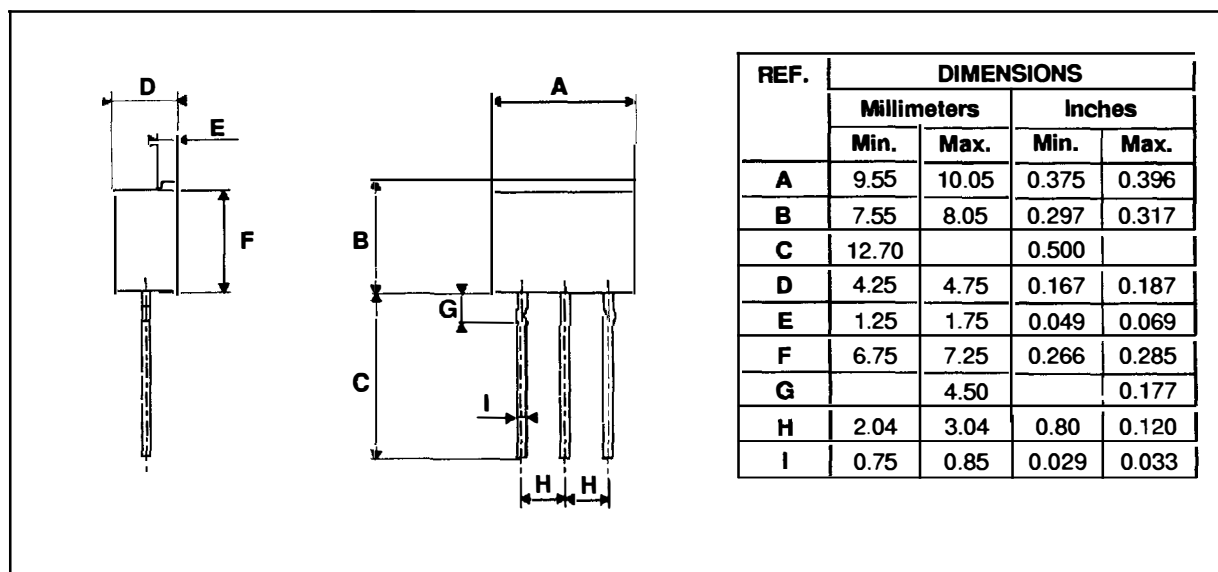


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TL Plastic



Marking : type number
Weight : 0.8 g

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.