

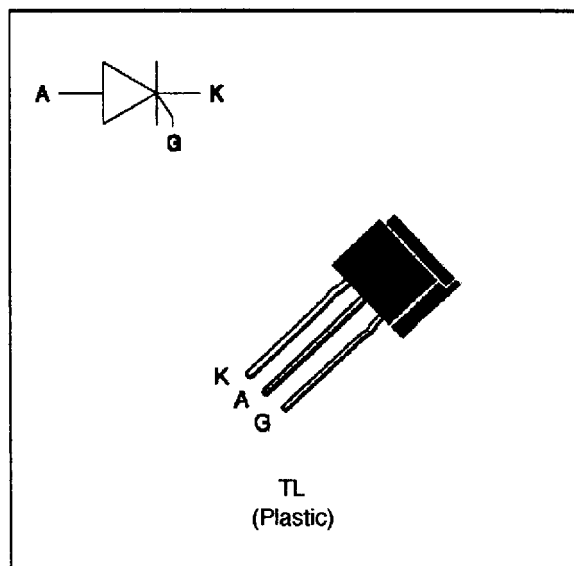
**FEATURES**

- 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	
$i^2t$	$i^2t$ value	$t_p = 10\text{ ms}$	25	A <sup>2</sup> 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/ $\mu\text{s}$
$T_{stg}$ $T_J$	Storage and operating junction temperature range		- 40 to + 150	°C
			- 40 to + 110	
$T_I$	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
Rth (j-a)	Junction to ambient on printed circuit with Cu surface 1cm <sup>2</sup>	50	°C/W
Rth (j-l) DC	Junction to leads for DC	15	°C/W

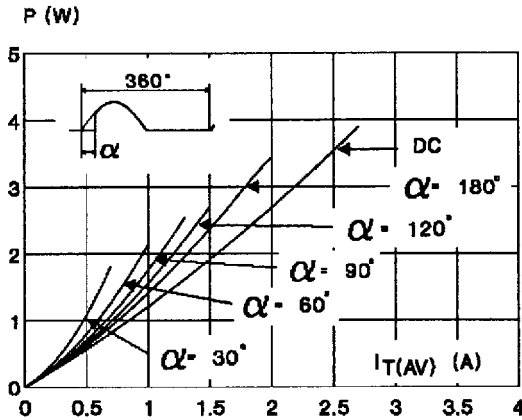
**GATE CHARACTERISTICS (maximum values)**

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

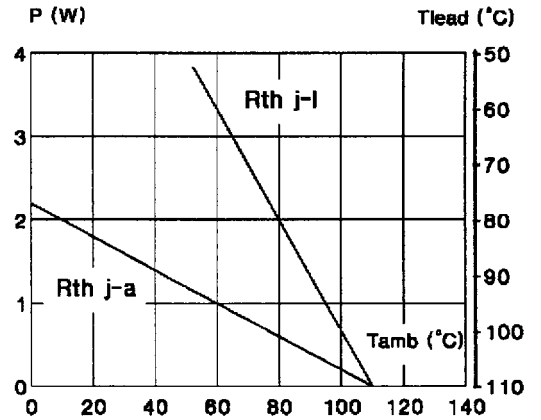
**ELECTRICAL CHARACTERISTICS**

Symbol	Test Conditions		Value	Unit
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>J</sub> =25°C MAX	15	mA
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>J</sub> =25°C MAX	1.5	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>J</sub> = 110°C MIN	0.2	V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 40mA dI <sub>G</sub> /dt = 0.5A/μs	T <sub>J</sub> =25°C TYP	1.5	μs
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	T <sub>J</sub> =25°C TYP	40	mA
I <sub>H</sub>	I <sub>T</sub> = 100mA gate open	T <sub>J</sub> =25°C TYP	20	mA
V <sub>TM</sub>	I <sub>TM</sub> = 6A t <sub>p</sub> = 380μs	T <sub>J</sub> =25°C MAX	1.9	V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> Rated V <sub>RRM</sub> Rated	T <sub>J</sub> =25°C MAX T <sub>J</sub> = 110°C	0.01 1	mA
dV/dt	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	T <sub>J</sub> = 110°C MIN	200	V/μs
t <sub>q</sub>	V <sub>D</sub> =67%V <sub>DRM</sub> I <sub>TM</sub> = 6A V <sub>R</sub> = 10V dI <sub>TM</sub> /dt=10 A/μs dV <sub>D</sub> /dt= 20V/μs	T <sub>J</sub> = 110°C TYP	70	μs

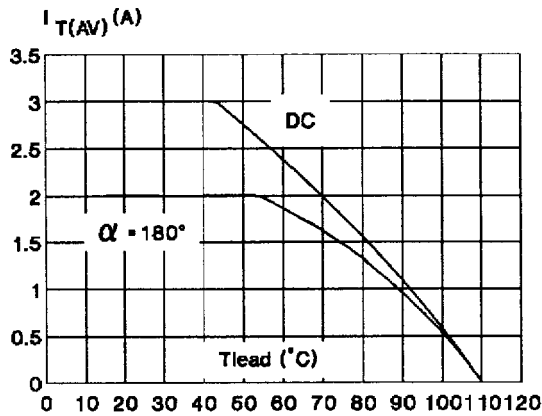
**Fig.1 :** Maximum average power dissipation versus average on-state current.



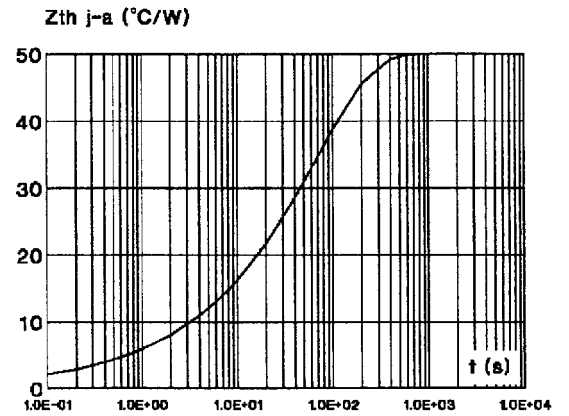
**Fig.2 :** Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{lead}$ ).



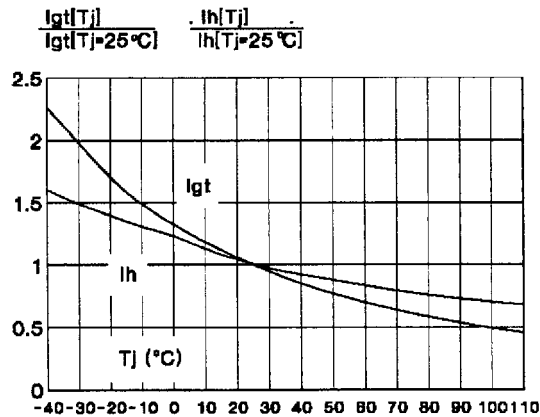
**Fig.3 :** Average on-state current versus leads temperature.



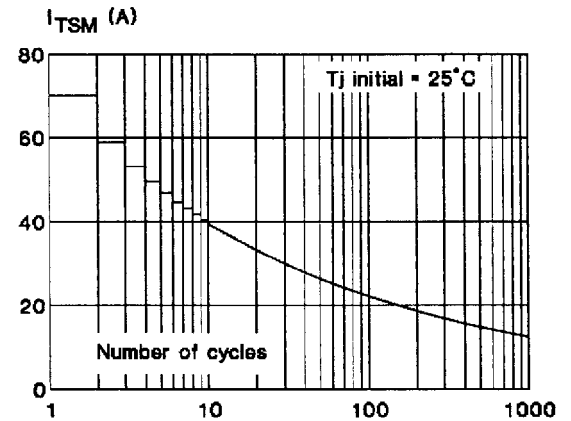
**Fig.4 :** Thermal transient impedance junction to ambient versus pulse duration.



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



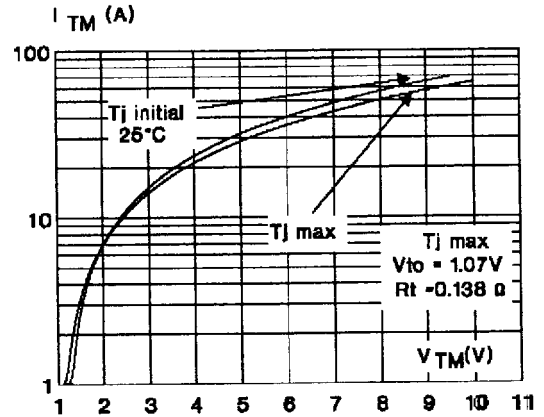
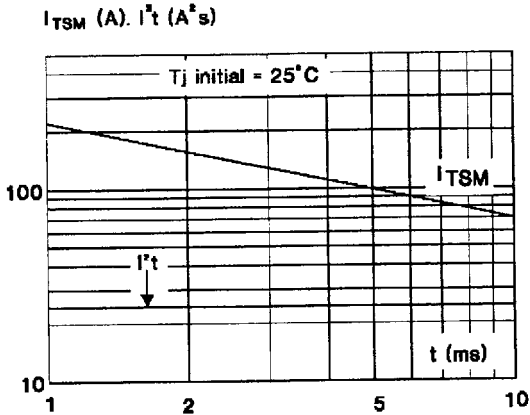
**Fig.6 :** Non repetitive surge peak on-state current versus number of cycles.



## TL 1006 ---&gt; TL 8006

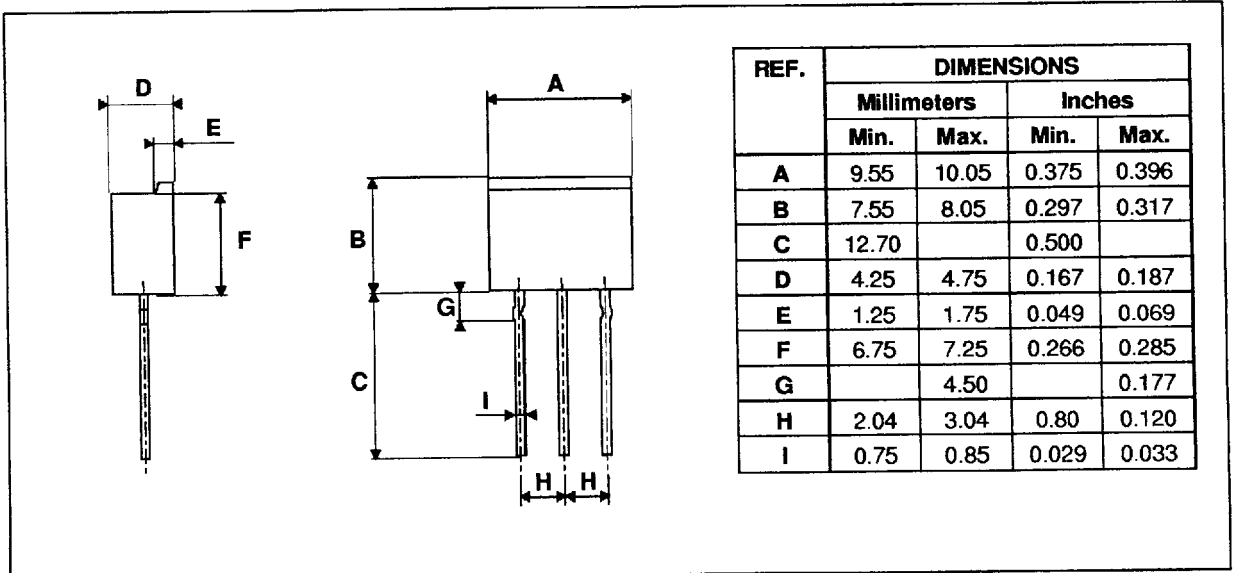
**Fig.7** : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .

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



## PACKAGE MECHANICAL DATA

TL Plastic



Marking : type number

Weight : 0.8 g

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