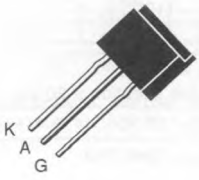
SGS-THOMSON MICROELECTRONICS

TL 1006 → TL 8006

THYRISTORS

- GLASS PASSIVATED CHIP
- HIGH STABILITY AND RELIABILITY
- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT



TL
(Plastic)

DESCRIPTION

General purpose SCR suited for power supplies up to 400 Hz on resistive or inductive loads.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (1)	T_l = 50 °C	3	A
$I_{T(AV)}$	Mean on-state Current (1)	T_l = 50 °C	2	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C) (2)	t = 8.3 ms	73	A
		t = 10 ms	70	
I^2t	I^2t Value for Fusing	t = 10 ms	25	A^2s
di/dt	Critical Rate of Rise of on-state Current (3)		100	A/µs
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 40 to 150 – 40 to 110	°C °C

Symbol	Parameter	TL1006	TL2006	TL4006	TL6006	TL8006	Unit
V_{DRM} V_{RRM}	Repetitive Peak off-state Voltage (4)	100	200	400	600	800	V

(1) Single phase circuit, 180° conduction angle.
(2) Half sine wave.
(3) I_G = 150 mA di_G/dt = 1 A/µs.
(4) T_j = 110 °C.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction-leads	15	°C/W
$R_{th\ (j-a)}$	Junction-ambient on Printed Circuit (with Cu 1 cm^2)	50	°C/W

GATE CHARACTERISTICS (maximum values)

P_{GM} = 20 W (t_p = 10 µs) I_{FGM} = 1 A (t_p = 10 µs) V_{RGM} = 5 V

$P_{G(AV)}$ = 0.1 W V_{FGM} = 15 V (t_p = 10 µs)

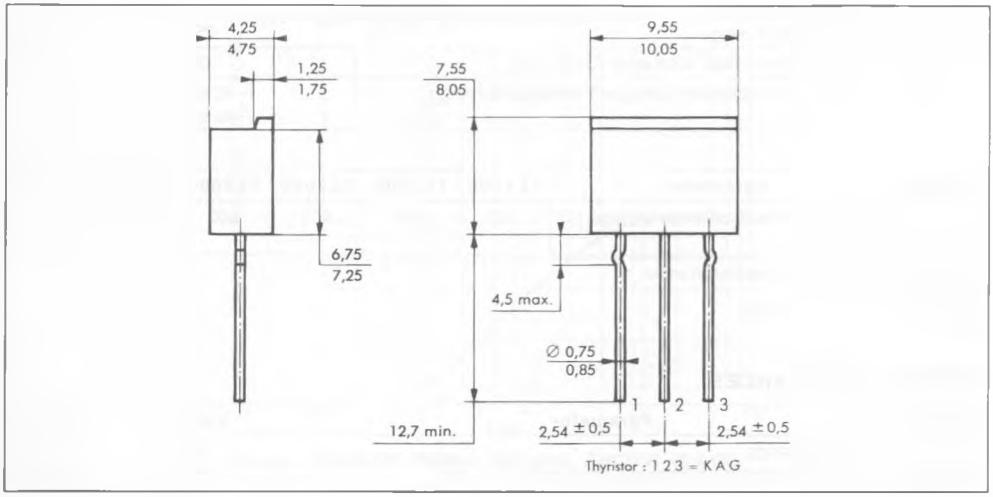
ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
I_{GT}	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	R_L = 33 Ω			15	mA
V_{GT}	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	R_L = 33 Ω		1	1.5	V
V_{GD}	T_j = 110 °C	V_D = V_{DRM}	R_L = 3.3 kΩ	0.2			V
I_H	T_j = 25 °C	I_T = 100 mA	Gate Open		20		mA
I_L	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	I_G = 30 mA		40		mA
V_{TM}	T_j = 25 °C	I_{TM} = 6 A	t_p = 10 ms			1.9	V
I_{DRM}	V_{DRM} Specified		T_j = 25 °C			0.01	mA
			T_j = 110 °C			0.75	
I_{RRM}	V_{RRM} Specified		T_j = 25 °C			0.01	mA
			T_j = 110 °C			0.75	
t_{gt}	T_j = 25 °C I_G = 100 mA	V_D = V_{DRM} di_G/dt = 1 A/µs	I_T = 6 A		1.5		µs
t_q	T_j = 110 °C V_D = 67 % V_{DRM} Gate Open	I_T = 6 A di/dt = 10 A/µs	V_R = 10 V dv/dt = 20 V/µs		70		µs
dv/dt*	T_j = 110 °C Linear Slope up to V_D = 67 % V_{DRM}	Gate Open		200			V/µs

* For higher guaranteed values, please consult us.

PACKAGE MECHANICAL DATA

TL Plastic



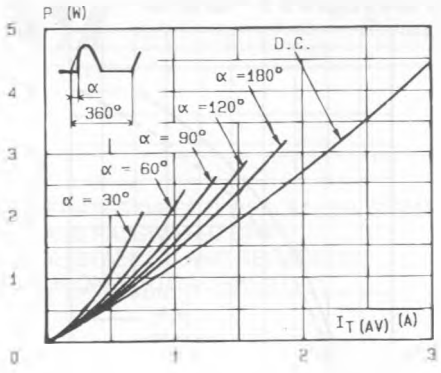


Fig.1 - Maximum mean power dissipation versus mean on-state current.

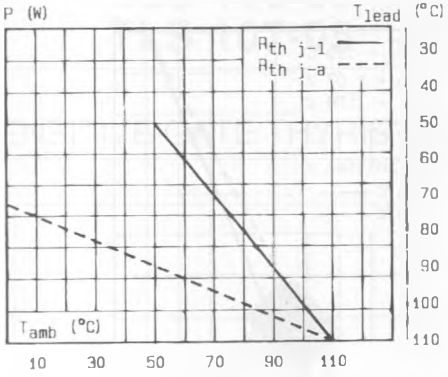


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

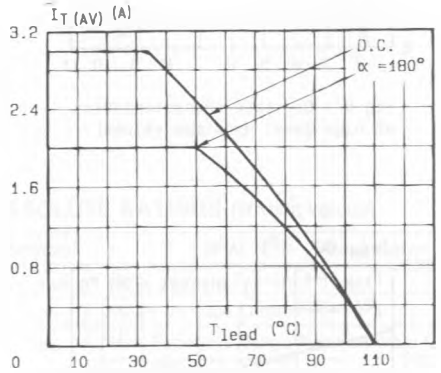


Fig.3 - Mean on-state current versus leads temperature.

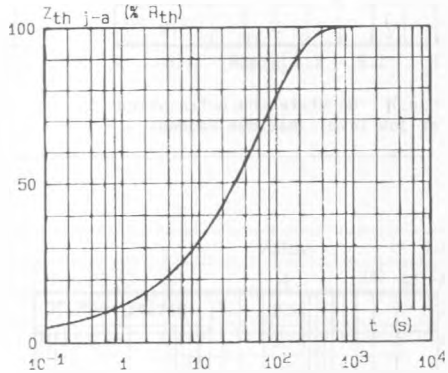


Fig.4 - Thermal transient impedance junction to ambient versus pulse duration.

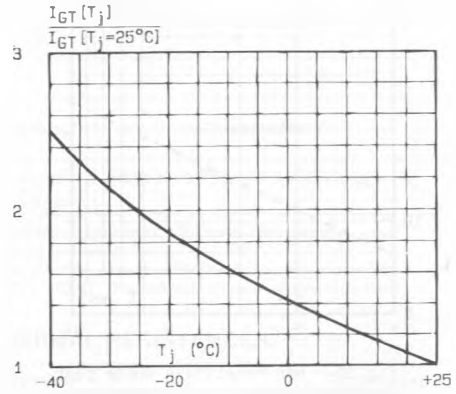


Fig.5 - Relative variation of gate trigger current versus junction temperature.

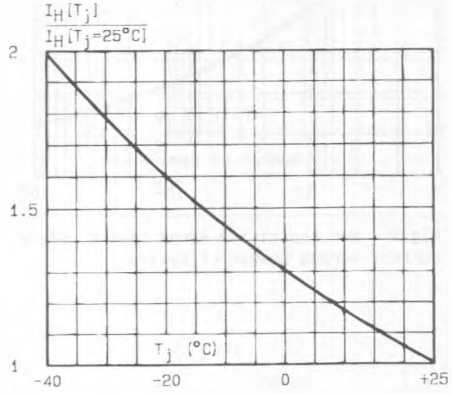


Fig.6 - Relative variation of holding current versus junction temperature.

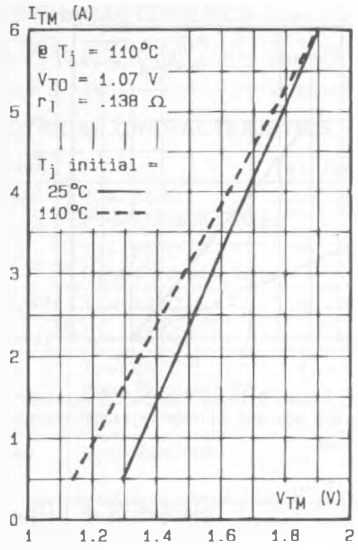


Fig.7 - On-state characteristics at low level (maximum values).

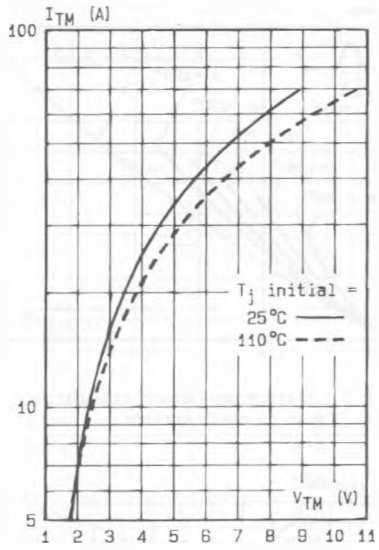


Fig.8 - On-state characteristics at high level (maximum values).

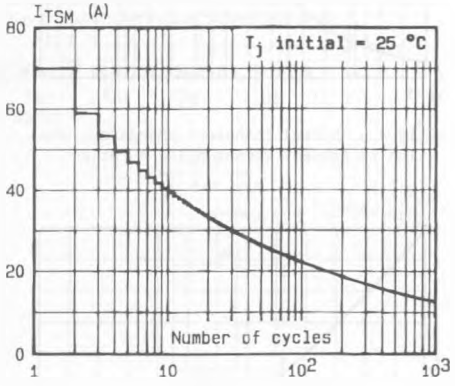


Fig.9 - Non repetitive surge peak on-state current versus number of cycles.

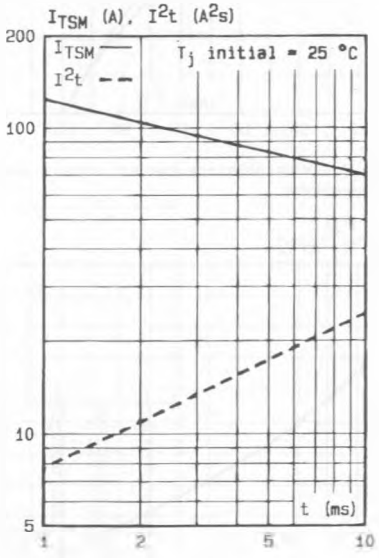


Fig.10 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.