THOMSON SEMICONDUCTORS

TL 1003 → TL 8003
THYRISTORS

T-25-11

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

- $V_{DRM} = V_{RRM}$ up to 800 V.
- Glass passivated chip - High stability and reliability.
- High surge capability.

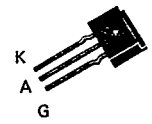
Thyristors à usage général pour des alimentations jusqu'à 400 Hz sur charges résistives ou inductives.

- *$V_{DRM} = V_{RRM}$ jusqu'à 800 V.*
- *Pastille glassivée - Grande stabilité des caractéristiques.*
- *Courant de surcharge élevé.*

$I_{T(RMS)}$ = 1,6 A / T_L = 50 °C

V_{DRM}
100 V ≤ = ≤ 800 V
V_{RRM}

Case
Boîtier : TL (CB-274) plastic



ABSOLUTE RATINGS (LIMITING VALUES) *VALEURS LIMITES ABSOLUES D'UTILISATION*	Symbol	Value	Unit
RMS on-state current* *Courant efficace à l'état passant**	$I_{T(RMS)}$	1,6 @ T_L = 50°C	A
Mean on-state current* *Courant moyen à l'état passant**	$I_{T(AV)}$	1 @ T_L = 50°C	A
Non repetitive surge peak on-state current** *Courant non répétitif de surcharge crête accidentelle à l'état passant***	I_{TSM} I_{TSM}	73 (t = 8,3 ms) 70 (t = 10 ms) @ T_j ≤ 110°C	A A
I^2t for fusing *Valeur de la constante I^2t*	I^2t	25 (t = 10 ms) @ T_j ≤ 110°C	A^2s
Critical rate of rise of on-state current*** *Vitesse critique de croissance du courant à l'état passant****	di/dt	100	A/µs
Storage and operating junction temperatures *Températures extrêmes de stockage et de jonction en fonctionnement*	T_{stg} T_j	− 40, + 150 − 40, + 110	°C °C

@ T_j = 110°C	TL 1003	TL 2003	TL 4003	TL 6003	TL 8003
$V_{DRM} = V_{RRM}$ (V)	100	200	400	600	800

Thermal resistances *Résistances thermiques*	Symbol	Value	Unit
— Junction-leads *Jonction-connexions*	$R_{th(j-l)}$	35	°C/W
— Junction-ambient on printed circuit (with Cu 1 cm^2) *Jonction-ambiante sur circuit imprimé (avec Cu 1 cm^2)*	$R_{th(j-a)}$	50	°C/W

*Single phase circuit, 180° conduction angle
**Circuit monophasé, angle de conduction 180°*

**Half-sine wave
***Demi-onde sinusoïdale*

***I_{GT} = 100 mA dI_G/dt = 1 A/µs

THOMSON SEMICONDUCTORS
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THOMSON COMPONENTS

GATE CHARACTERISTICS (Maximum values)
CARACTERISTIQUES DE GACHETTE (Valeurs maximales)

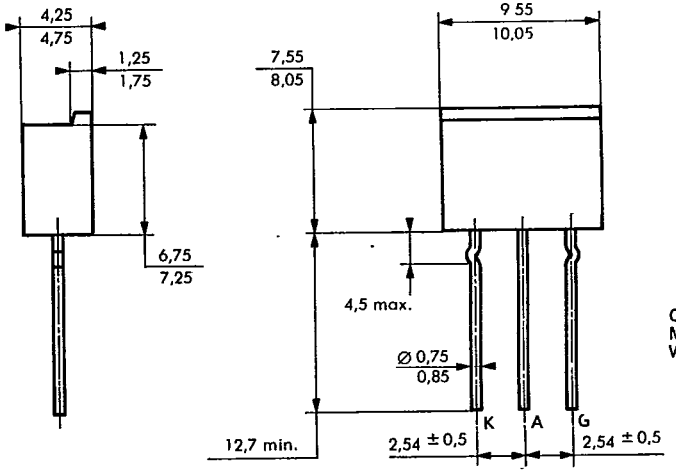
P_{GM} = 20 W (t = 10 µs)
$P_{G(AV)}$ = 0,1 W
I_{FGM} = 1 A (t = 10 µs)
V_{FGM} = 15 V (t = 10 µs)
V_{RGM} = 5 V

ELECTRICAL CHARACTERISTICS
CARACTERISTIQUES ELECTRIQUES

Symbol	Value			Unit	Test conditions			
	min	typ	max					
I_{GT}			15	mA	T_j = 25°C	V_D = 12 V	R_L = 33 Ω	$t_p \geq 20$ µs
V_{GT}		1,2	3	V	T_j = 25°C	V_D = 12 V	R_L = 33 Ω	$t_p \geq 20$ µs
V_{GD}	0,2			V	T_j = 110°C	$V_D = V_{DRM}$	R_L = 3,3 kΩ	
I_H		20		mA	T_j = 25°C	I_T = 100 mA	Gate open	
V_{TM}			1,8	V	T_j = 25°C	I_{TM} = 3,2 A	t_p = 10 ms	
I_{DRM}			2	mA	T_j = 110°C	V_{DRM} specified		
I_{RRM}			2	mA	T_j = 110°C	V_{RRM} specified		
t_{gt}		1,5		µs	T_j = 25°C I_G = 100 mA	I_T = 3,2 A dI_G/dt = 1 A/µs	$V_D = V_{DRM}$	
t_q		80		µs	T_j = 110°C dI_R/dt = 10 A/µs	I_T = 1 A dv/dt = 20 V/µs	V_R = 10 V	V_D = 0,67 V_{DRM} Gate open
dv/dt*		100		V/µs	T_j = 110°C	Linear slope up to 0,67 V_{DRM} specified Gate open		

*For higher guaranted values, please consult us.

CASE DESCRIPTION
DESCRIPTION DU BOITIER



Cooling method : by convection (method A)
Marking : type number
Weight : 0,8 g

TL (CB-274) plastic

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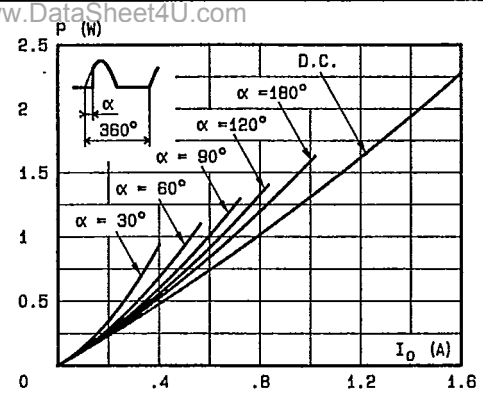

Fig.1 - Maximum mean power dissipation versus mean on-state current.

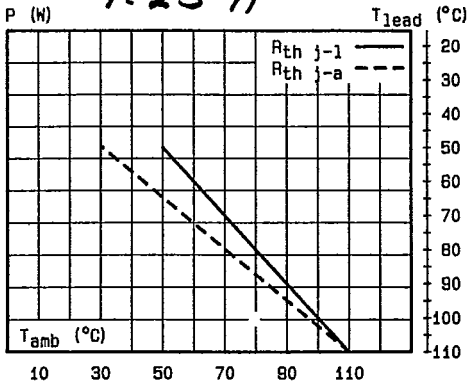

Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{lead}).

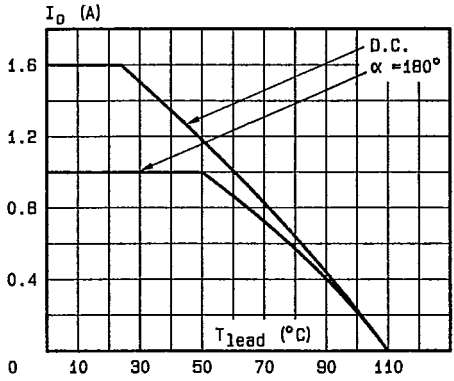

Fig.3 - Mean on-state current versus leads temperature.

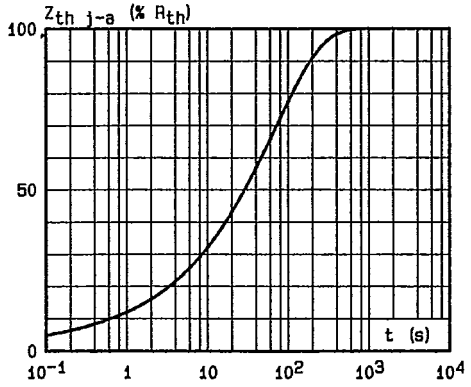

Fig.4 - Thermal transient impedance junction to ambient versus pulse duration.

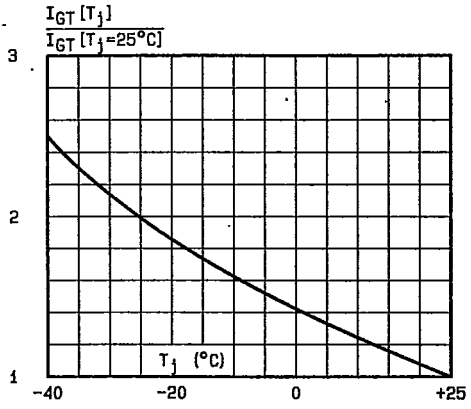

Fig.5 - Relative variation of gate trigger current versus junction temperature.

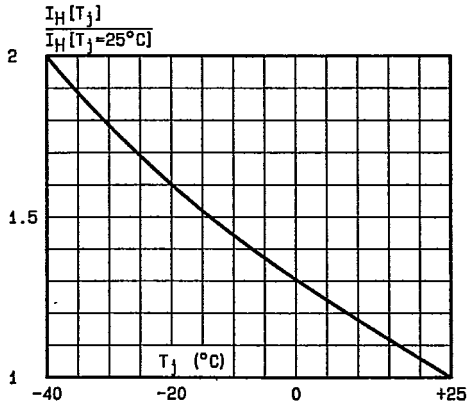

Fig.6 - Relative variation of holding current versus junction temperature.

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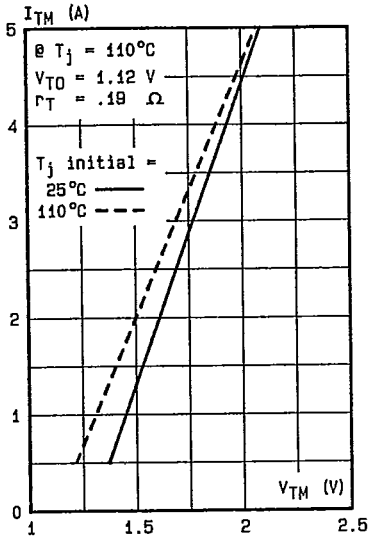

Fig.7 - On-state characteristics at low level (maximum values).

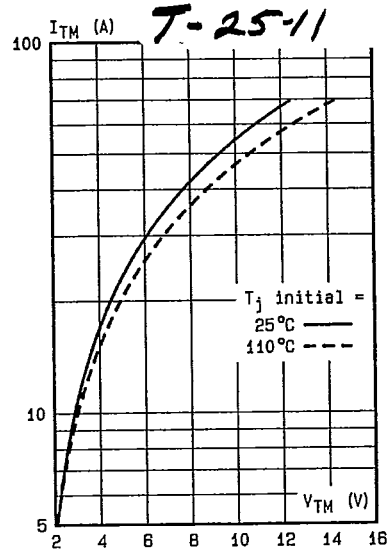

Fig.8 - On-state characteristics at high level (maximum values).

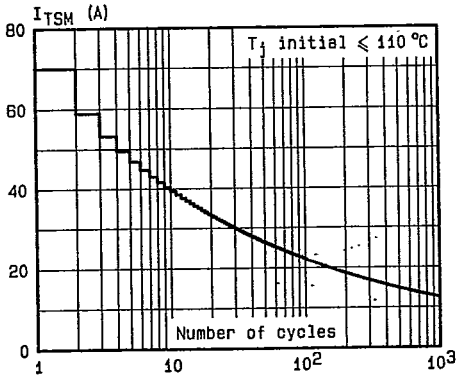

Fig.9 - Non repetitive surge peak on-state current versus number of cycles.

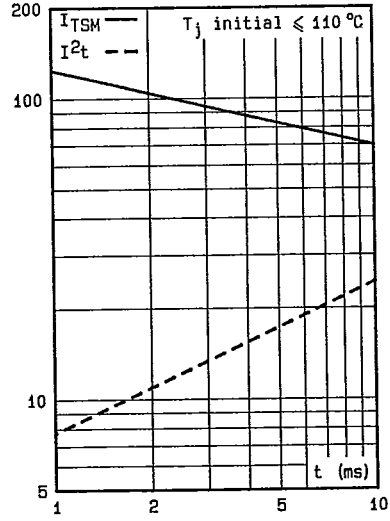

Fig.10 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I²t.