SGS-THOMSON MICROELECTRONICS

TSP 225 → 1025

THYRISTORS FOR OVERVOLTAGE PROTECTION

- GLASS PASSIVATED CHIP
- HIGH STABILITY AND RELIABILITY
- HIGH SURGE CAPABILITY

Thread : 1/4" -28 UNF : type N°
M6 on request : type N° + suffix M

TO 48
(Metal)

DESCRIPTION

SCR designed for overvoltage protection in crowbar circuits.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (1)	T_c = 75 °C	25	A
$I_{T(AV)}$	Mean on-state Current (1)	T_c = 75 °C	16	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C) (2)	t = 8.3 ms	733	A
		t = 10 ms	700	
I^2t	I^2t Value for Fusing	t = 10 ms	2450	A^2s
I_{TM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C) (5)	t = 250 ms	145	A
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 125	°C °C

Symbol	Parameter	TSP225	TSP525	TSP1025	Unit
V_{DRM} V_{RRM}	Repetitive Peak off-state Voltage (4)	25	50	100	V

(1) Single phase circuit, 180° conduction angle.
(2) Half sine wave.
(3) I_G = 500 mA di_G/dt = 1 A/µs
(4) T_j = 125 °C.
(5) Rectangular pulse.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th\ (j-c)}$	Junction-case for D.C.	2.92	°C/W
$R_{th\ (c-h)}$	Contact (case to heatsink)	0.40	°C/W

GATE CHARACTERISTICS (maximum values)

P_{GM} = 60 W (t_p = 500 µs) I_{FGM} = 10 A (t_p = 500 µs) V_{RGM} = 5 V

$P_{G(AV)}$ = 1 W V_{FGM} = 15 V (t_p = 500 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			50	mA
V_{GT}	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	R_L = 33 Ω			1.5	V
V_{GD}	T_j = 125 °C	V_D = V_{DRM}	R_L = 3.3 kΩ	0.2			V
I_H	T_j = 25 °C	I_T = 500 mA	Gate Open			50	mA
I_L	T_j = 25 °C Pulse Duration > 20 µs	V_D = 12 V	I_G = 100 mA		50		mA
V_{TM}	T_j = 25 °C	I_{TM} = 140 A	t_p = 10 ms			1.5	V
	T_j = 25 °C	I_{TM} = 700 A	t = 10 ms		4		
I_{DRM}	V_{DRM} Specified		T_j = 25 °C			0.01	mA
			T_j = 125 °C			10	
I_{RRM}	V_{RRM} Specified		T_j = 25 °C			0.01	mA
			T_j = 125 °C			10	
t_{gt}	T_j = 25 °C I_G = 200 mA	V_D = V_{DRM} di_G/dt = 1.5 A/µs	I_T = 140 A		1		µs
t_q	T_j = 125 °C V_D = 67 % V_{DRM} Gate Open	I_T = 140 A di/dt = 30 A/µs	V_R = 25 V dv/dt = 50 V/µs		50		µs
dv/dt*	T_j = 125 °C Linear Slope up to V_D = 67 % V_{DRM}	Gate Open		200			V/µs

* For higher guaranteed values, please consult us.

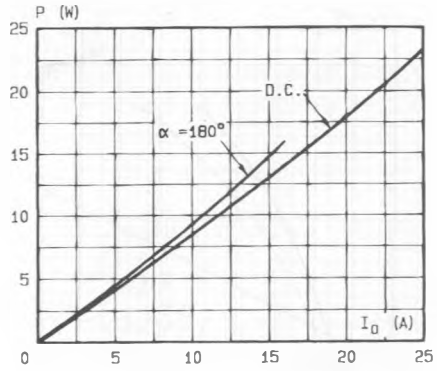


Fig.1 - Maximum average power dissipation versus average on-state current (half sine wave 50 Hz and D.C).

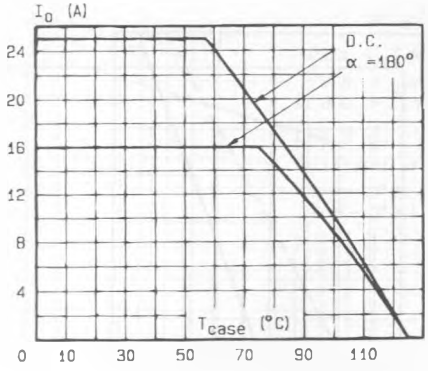


Fig.2 - Maximum average on-state current versus case temperature (half sine wave 50 Hz and D.C).

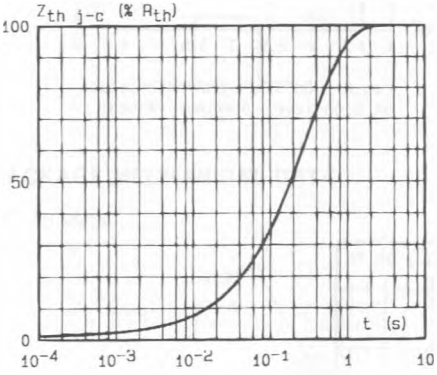


Fig.3 - Thermal transient impedance junction to case versus pulse duration.

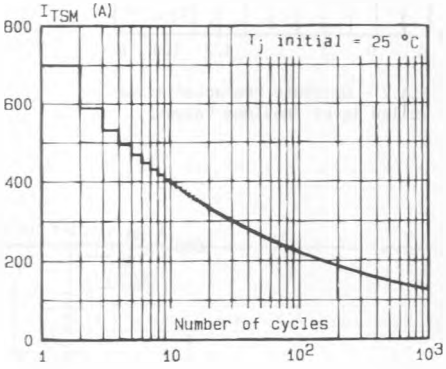


Fig.4 - Non repetitive surge peak on-state current versus number of cycles.

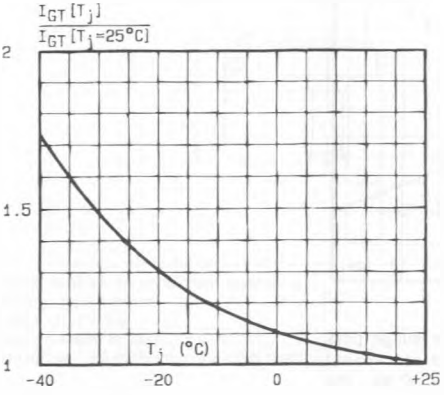


Fig.5 - Relative variation of gate trigger current versus junction temperature.

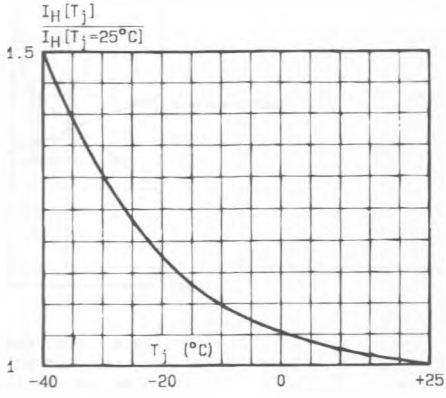


Fig.6 - Relative variation of holding current versus junction temperature.

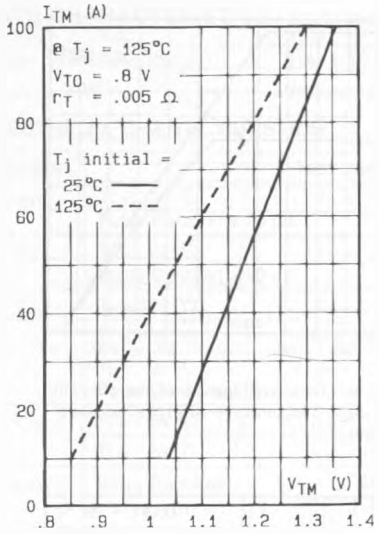


Fig.7 - On-state characteristics at low level (maximum values).

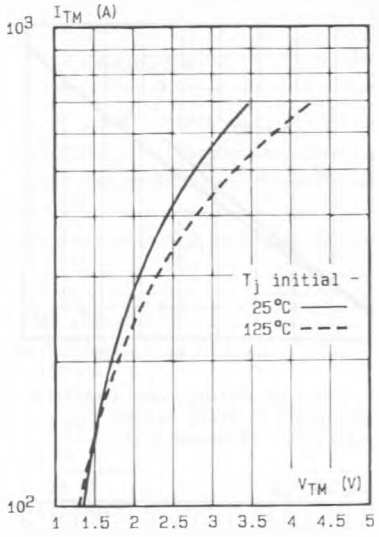


Fig.8 - On-state characteristics at high level (maximum values).

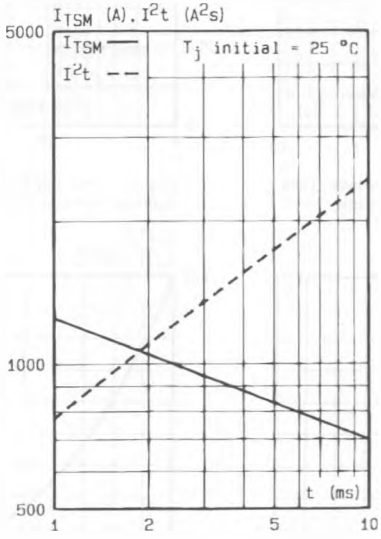


Fig.9 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ⩽ 10 ms, and corresponding value of I^2t.

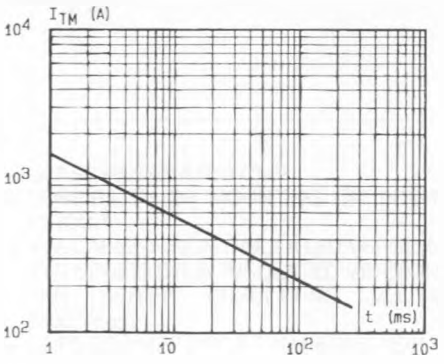


Fig.10 - Peak capacitor discharge current versus pulse width.

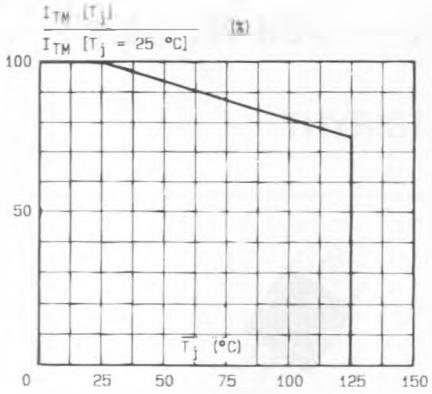
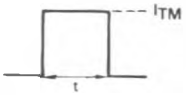
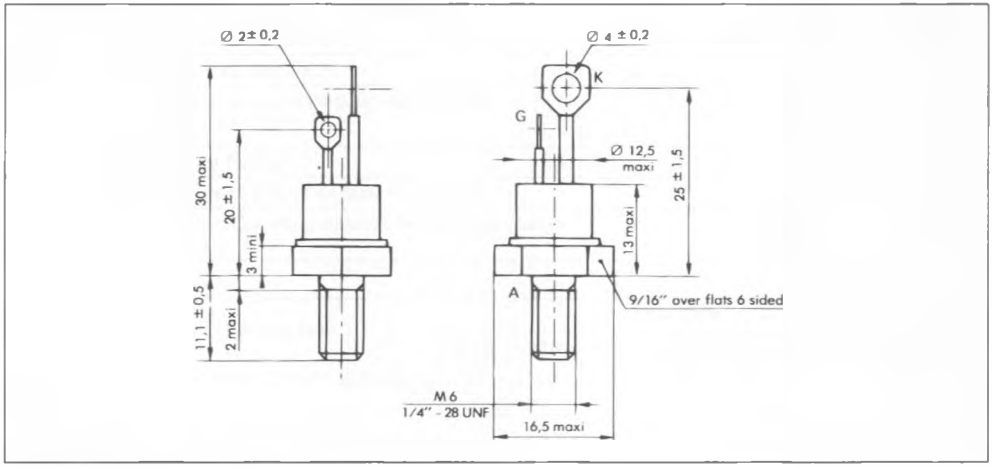


Fig.11 Allowable peak capacitor discharge current versus initial junction temperature.



PACKAGE MECHANICAL DATA

TO 48 Metal



Cooling method : by conduction (method C)
Marking : type number
Weight : 13.5 ± 1 g
Polarity : anode to case
Stud torque : 3.5 mΛN min - 3.8 mΛN max