

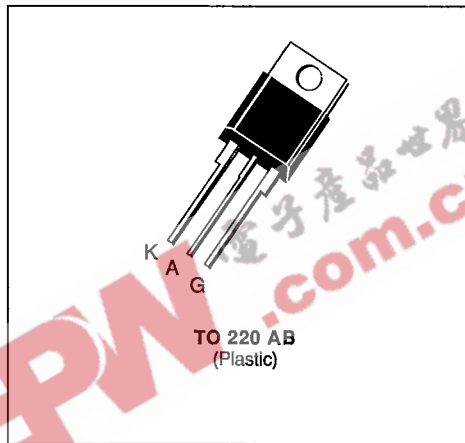
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ST **SGS-THOMSON**
MICROELECTRONICS

S G S-THOMSON
TXN/TYN 054 → 1004

T-25-13
THYRISTORS

- GLASS PASSIVATED CHIP
- POSSIBILITY OF MOUNTING ON PRINTED CIRCUIT
- AVAILABLE IN NON-INSULATED VERSION → TYN SERIES OR IN INSULATED VERSION → TXN SERIES (INSULATING VOLTAGE 2500 V_{RMS})
- UL RECOGNIZED FOR TXN SERIES (E81734)



DESCRIPTION

SCR's designed for motor control, heating controls, power supplies...

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
$I_{T(RMS)}$	RMS on-state Current (1)	$T_c = 90\text{ }^\circ\text{C}$ 4	A
$I_{T(AV)}$	Mean on-state Current (1)	$T_c = 90\text{ }^\circ\text{C}$ 2.5	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C) (2)	$t = 8.3\text{ ms}$	73
		$t = 10\text{ ms}$	70
I^2t	I^2t Value for Fusing	$t = 10\text{ ms}$ 24.5	A ² s
di/dt	Critical Rate of Rise of on-state Current (3)	50	A/ μ s
T_{stg} T_j	Storage and Operating Junction Temperature Range	- 40 to 110 - 40 to 110	$^\circ\text{C}$ $^\circ\text{C}$

Symbol	Parameter	TXN/TYN							Unit
		054	104	204	404	604	804	1004	
V_{DRM} V_{RRM}	Repetitive Peak off-state Voltage (4)	50	100	200	400	600	800	1000	V

(1) Single phase circuit, 180° conduction angle.

(2) Half sine wave.

(3) $I_G = 150\text{ mA}$ $di_e/dt = 1\text{ A}/\mu\text{s}$.

(4) $T_j = 110\text{ }^\circ\text{C}$.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case for D.C.	5	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	Junction-ambient	60	$^\circ\text{C}/\text{W}$

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GATE CHARACTERISTICS (maximum values)

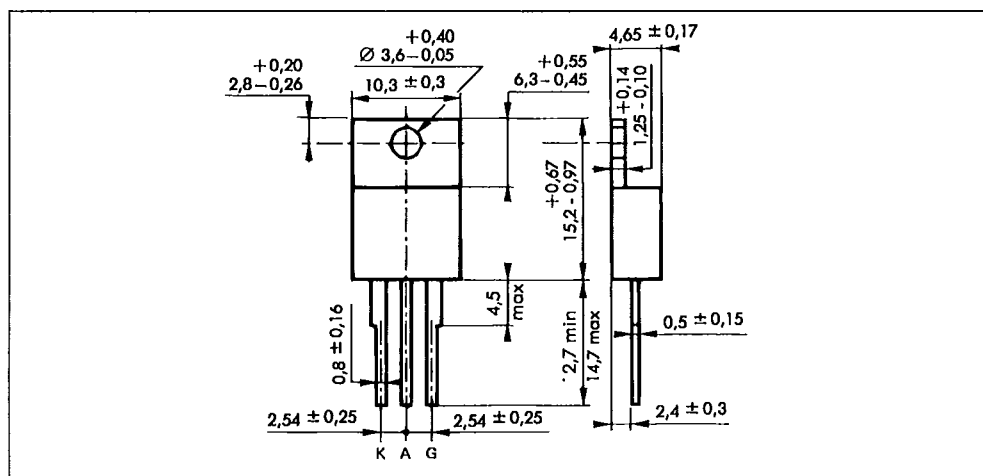
$P_{GM} = 20 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{FGM} = 2 \text{ A}$ ($t_p = 20 \mu\text{s}$) $V_{RGM} = 5 \text{ V}$
 $P_{G(AV)} = 0.5 \text{ W}$ $V_{FGM} = 15 \text{ V}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
I_{GT}	$T_j = 25 \text{ }^\circ\text{C}$ Pulse Duration > 20 μs	$V_D = 12 \text{ V}$	$R_L = 33 \text{ } \Omega$			15	mA
V_{GT}	$T_j = 25 \text{ }^\circ\text{C}$ Pulse Duration > 20 μs	$V_D = 12 \text{ V}$	$R_L = 33 \text{ } \Omega$			1.5	V
V_{GD}	$T_j = 110 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$R_L = 3.3 \text{ k}\Omega$	0.2			V
I_H	$T_j = 25 \text{ }^\circ\text{C}$	$I_T = 100 \text{ mA}$	Gate Open			30	mA
I_L	$T_j = 25 \text{ }^\circ\text{C}$ Pulse Duration > 20 μs	$V_D = 12 \text{ V}$	$I_G = 30 \text{ mA}$		50		mA
V_{TM}	$T_j = 25 \text{ }^\circ\text{C}$	$I_{TM} = 8 \text{ A}$	$t_p = 10 \text{ ms}$			1.8	V
I_{DRM}	V_{DRM} Specified		$T_j = 25 \text{ }^\circ\text{C}$			0.01	mA
			$T_j = 110 \text{ }^\circ\text{C}$			1	mA
I_{RRM}	V_{RRM} Specified		$T_j = 25 \text{ }^\circ\text{C}$			0.01	mA
			$T_j = 110 \text{ }^\circ\text{C}$			1	mA
t_{gt}	$T_j = 25 \text{ }^\circ\text{C}$ $I_G = 40 \text{ mA}$	$V_D = V_{DRM}$ $di_G/dt = 0.45 \text{ A}/\mu\text{s}$	$I_T = 8 \text{ A}$		2		μs
t_q	$T_j = 110 \text{ }^\circ\text{C}$ $V_D = 67 \% V_{DRM}$ Gate Open	$I_T = 8 \text{ A}$ $di/dt = 30 \text{ A}/\mu\text{s}$	$V_R = 25 \text{ V}$ $dv/dt = 50 \text{ V}/\mu\text{s}$		70		μs
dv/dt^*	$T_j = 110 \text{ }^\circ\text{C}$ Linear Slope up to $V_D = 67 \% V_{DRM}$	Gate Open		200			$\text{V}/\mu\text{s}$

* For higher guaranteed values, please consult us.

PACKAGE MECHANICAL DATA : TO 220 AB Plastic



Cooling method : by conduction (method C)
 Marking : type number
 Weight : 2 g

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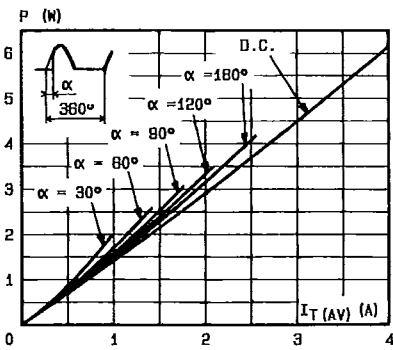


Fig.1 - Maximum mean power dissipation versus mean on-state current.

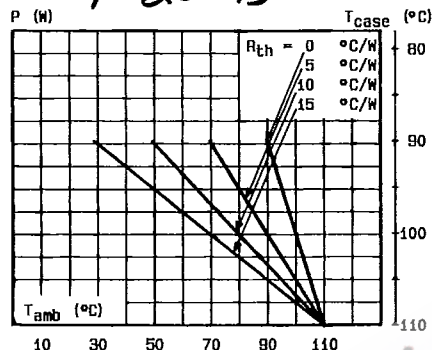


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

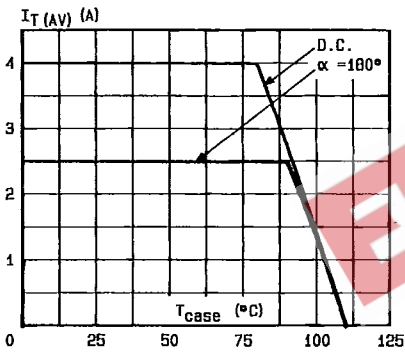


Fig.3 - Mean on-state current versus case temperature.

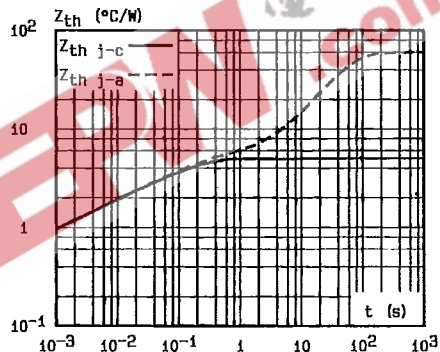


Fig.4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

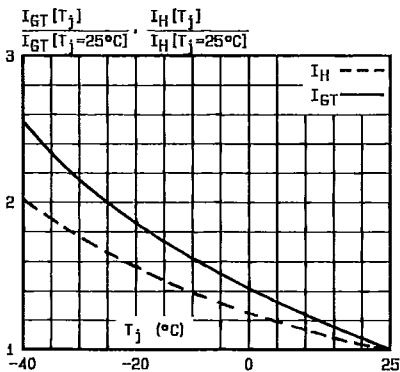


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

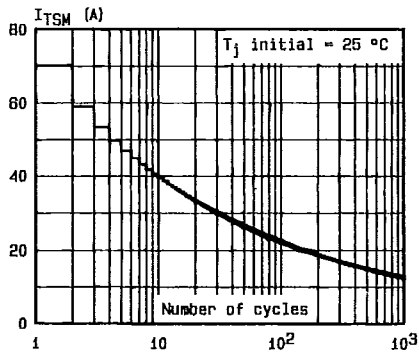


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

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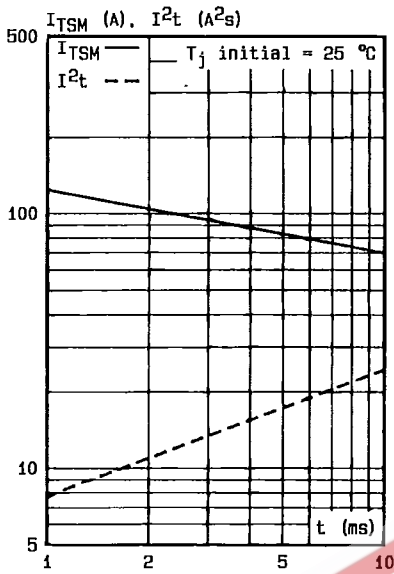


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

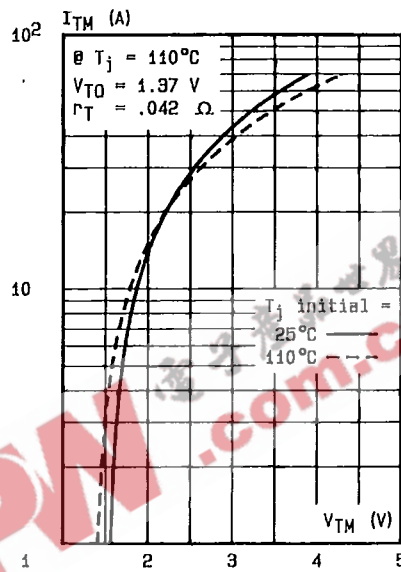


Fig.8 - On-state characteristics (maximum values).