SGS-THOMSON
MICROELECTRONICS

S G S-THOMSON

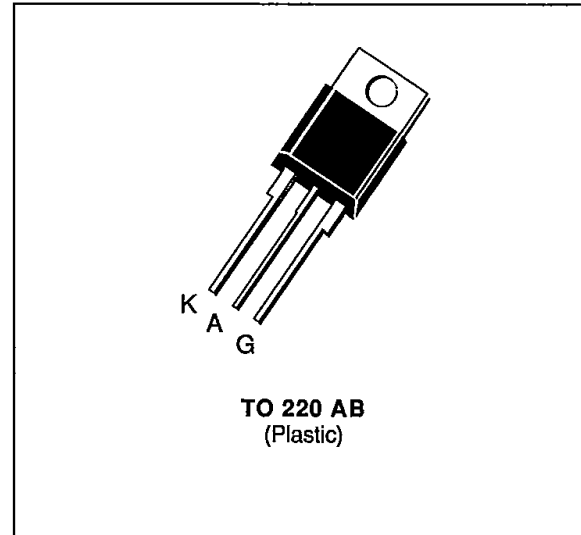# TXN/TYN 054 → 1004

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)

TO 220 AB
(Plastic)

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)	$T_c = 90 °C$	4	A
$I_{T(AV)}$	Mean on-state Current (1)	$T_c = 90 °C$	2.5	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	24.5	A^2s
di/dt	Critical Rate of Rise of on-state Current (3)		50	A/µs
T_{stg} T_j	Storage and Operating Junction Temperature Range		− 40 to 110 − 40 to 110	°C °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) $I_G = 150$ mA $di_G/dt = 1$ A/µs.
(4) $T_j = 110$ °C.

THERMAL RESISTANCES

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

February 1989

GATE CHARACTERISTICS (maximum values)

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

$P_{G\,(AV)} = 0.5\ W$ $V_{FGM} = 15\ V\ (t_p = 20\ \mu s)$

ELECTRICAL CHARACTERISTICS

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

* For higher guaranteed values, please consult us.

PACKAGE MECHANICAL DATA : TO 220 AB Plastic

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

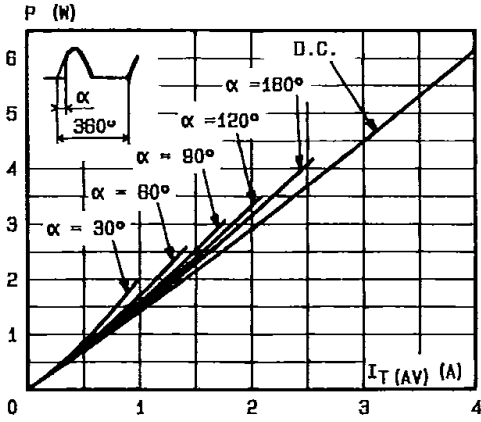**SGS-THOMSON MICROELECTRONICS**

S G S-THOMSON

T-25-13

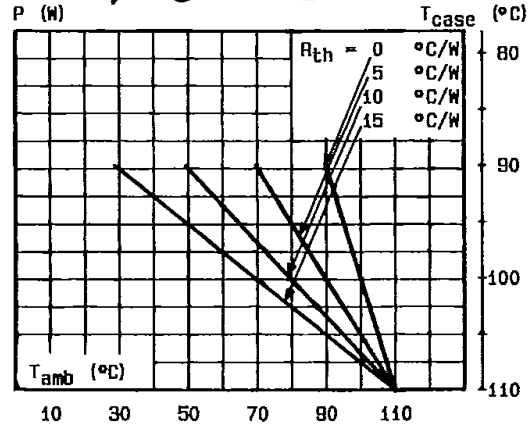Fig.1 – Maximum mean power dissipation versus mean on-state current.

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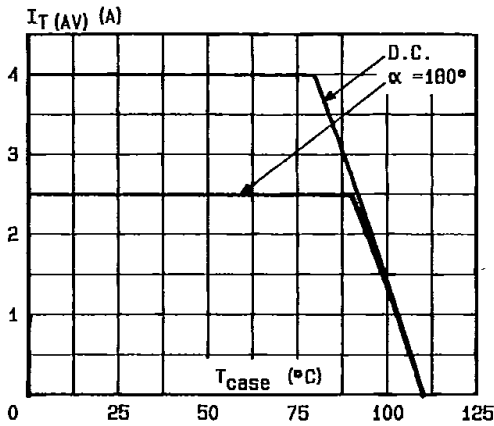

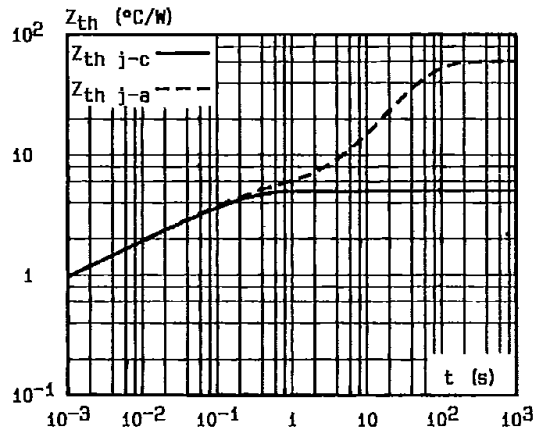Fig.3 – Mean on-state current versus case temperature.

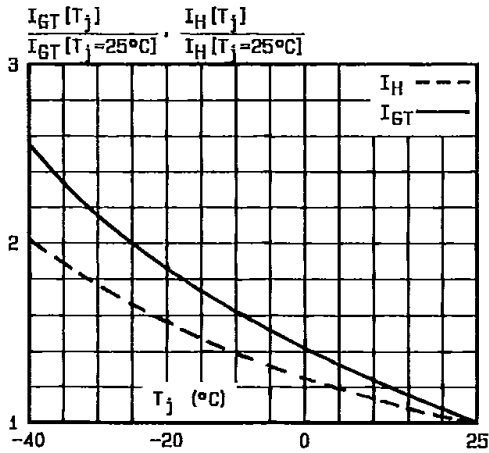Fig.4 – Thermal transient impedance junction to case and junction to ambient versus pulse duration.

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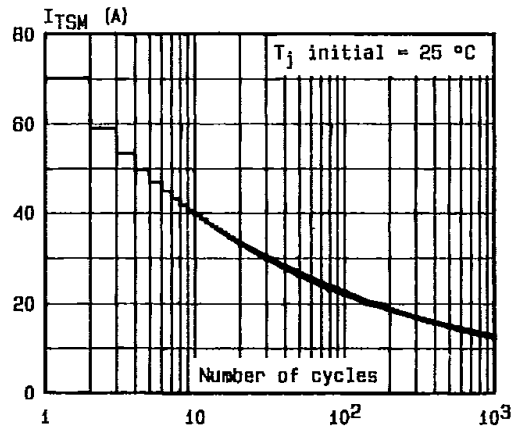

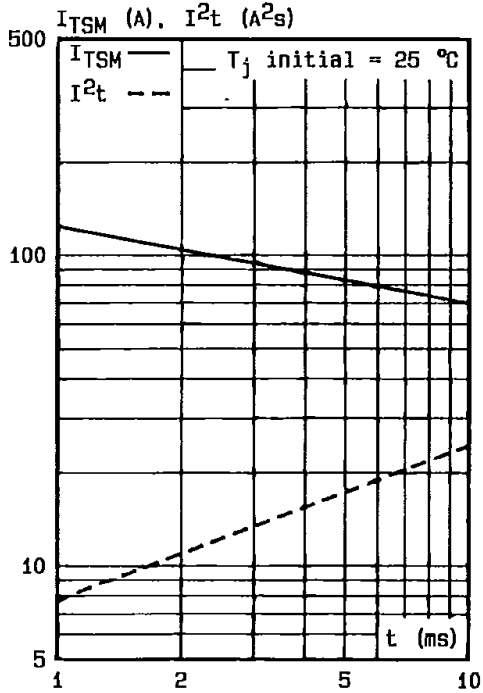Fig.6 – Non repetitive surge peak on-state current versus number of cycles.

SGS-THOMSON
MICROELECTRONICS

3/4

153

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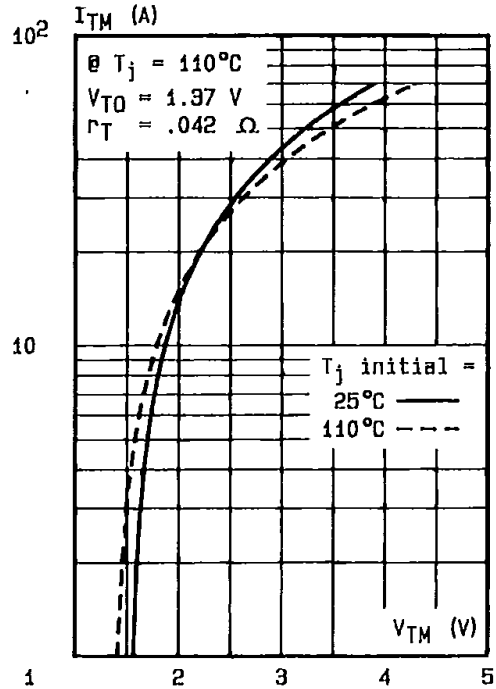pulse with width : t ⩽ 10 ms. and
corresponding value of I^2t.

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

SGS-THOMSON
MICROELECTRONICS