

ST **SGS-THOMSON** MICROELECTRONICS **TYN 204 ---> TYN 1004**

SCR

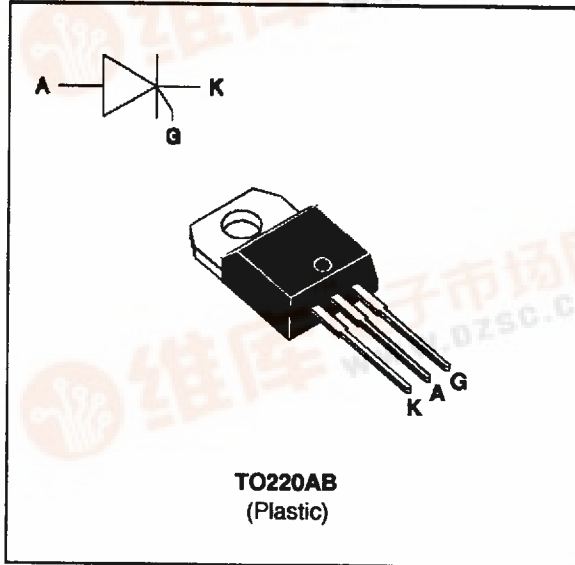
FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY

DESCRIPTION

The TYN 204 ---> TYN 1004 Family of Silicon Controlled Rectifiers uses a high performance glass passivated technology.

This general purpose Family of Silicon Controlled Rectifiers is designed for power supplies up to 400Hz on resistive or inductive load.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
$I_T(RMS)$	RMS on-state current (180° conduction angle)	$T_c = 115\text{ °C}$ 4	A	
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 115\text{ °C}$ 2.5	A	
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 8.3\text{ ms}$	63	A
		$t_p = 10\text{ ms}$	60	
i^2t	i^2t value	$t_p = 10\text{ ms}$ 18	A ² s	
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 100\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$	100	A/ μs	
T_{stg} T_j	Storage and operating junction temperature range	- 40 to + 150 - 40 to + 125	°C °C	
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	260	°C	

Symbol	Parameter	TYN					Unit
		204	404	604	804	1004	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	200	400	600	800	1000	V

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	2.5	°C/W

GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 1W$ $P_{GM} = 10W$ ($t_p = 20 \mu s$) $I_{FGM} = 4A$ ($t_p = 20 \mu s$) $V_{RGM} = 5V$.

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Value	Unit
I_{GT}	$V_D = 12V$ (DC) $R_L = 33\Omega$	$T_j = 25^\circ C$ MAX	15 mA
V_{GT}	$V_D = 12V$ (DC) $R_L = 33\Omega$	$T_j = 25^\circ C$ MAX	1.5 V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$	$T_j = 110^\circ C$ MIN	0.2 V
tgt	$V_D = V_{DRM}$ $I_G = 40mA$ $dI_G/dt = 0.5A/\mu s$	$T_j = 25^\circ C$ TYP	2 μs
I_L	$I_G = 1.2 I_{GT}$	$T_j = 25^\circ C$ TYP	50 mA
I_H	$I_T = 100mA$ gate open	$T_j = 25^\circ C$ MAX	30 mA
V_{TM}	$I_{TM} = 8A$ $t_p = 380\mu s$	$T_j = 25^\circ C$ MAX	1.8 V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	$T_j = 25^\circ C$ MAX $T_j = 110^\circ C$	0.01 mA 2
dV/dt	Linear slope up to $V_D = 67\%V_{DRM}$ gate open	$T_j = 110^\circ C$ MIN	200 V/ μs
tq	$V_D = 67\%V_{DRM}$ $I_{TM} = 8A$ $V_R = 25V$ $dI_{TM}/dt = 30 A/\mu s$ $dV_D/dt = 50V/\mu s$	$T_j = 110^\circ C$ TYP	70 μs

Fig.1 : Maximum average power dissipation versus average on-state current.

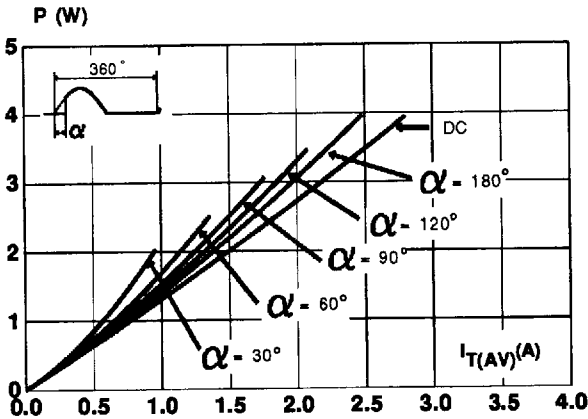


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact.

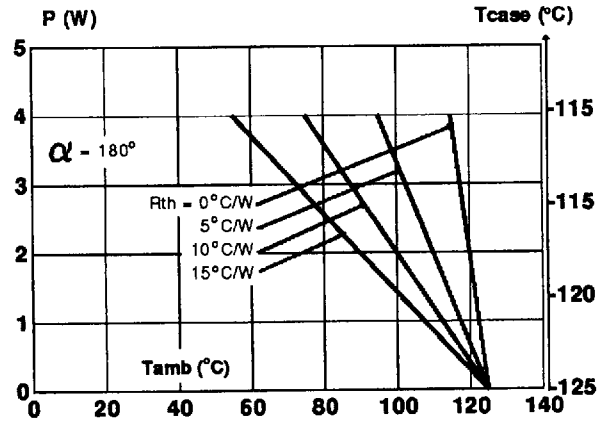


Fig.3 : Average on-state current versus case temperature.

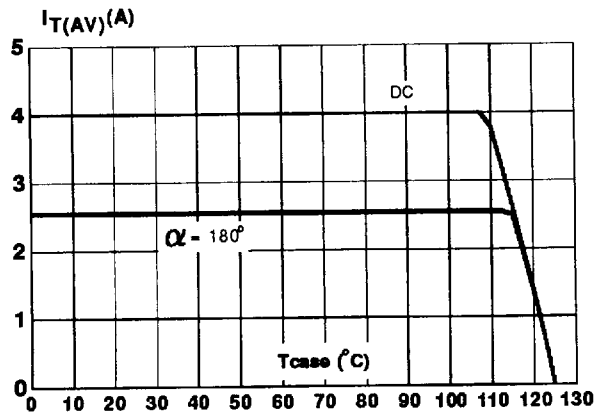


Fig.4 : Relative variation of thermal impedance versus pulse duration.

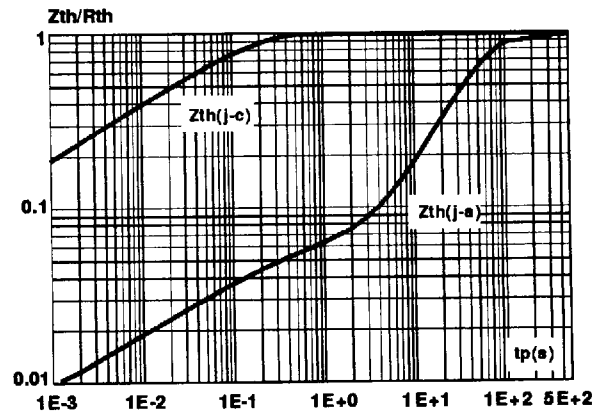


Fig.5 : Relative variation of gate trigger current versus junction temperature.

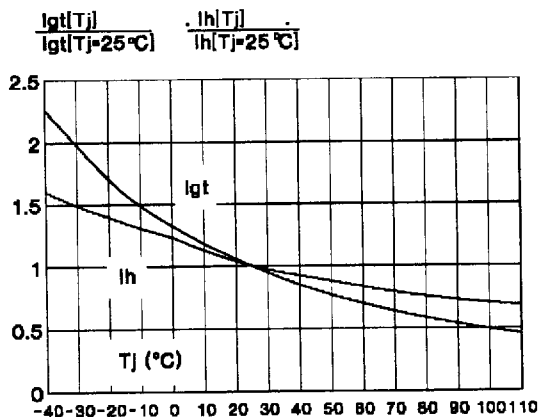
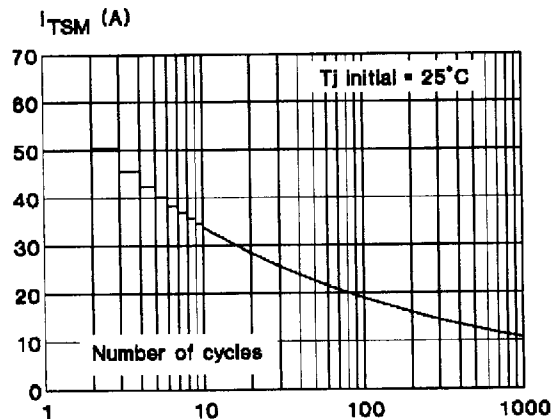


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



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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 .

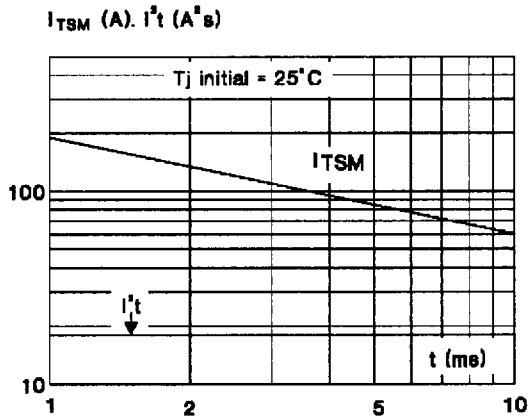
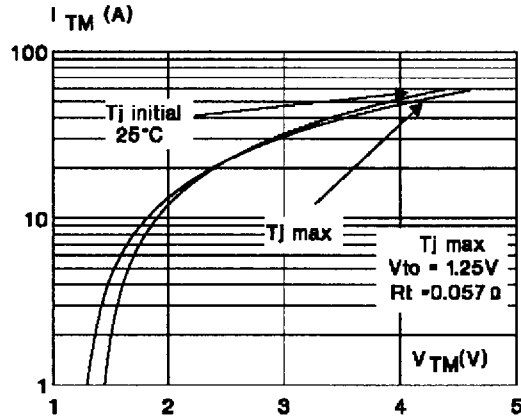
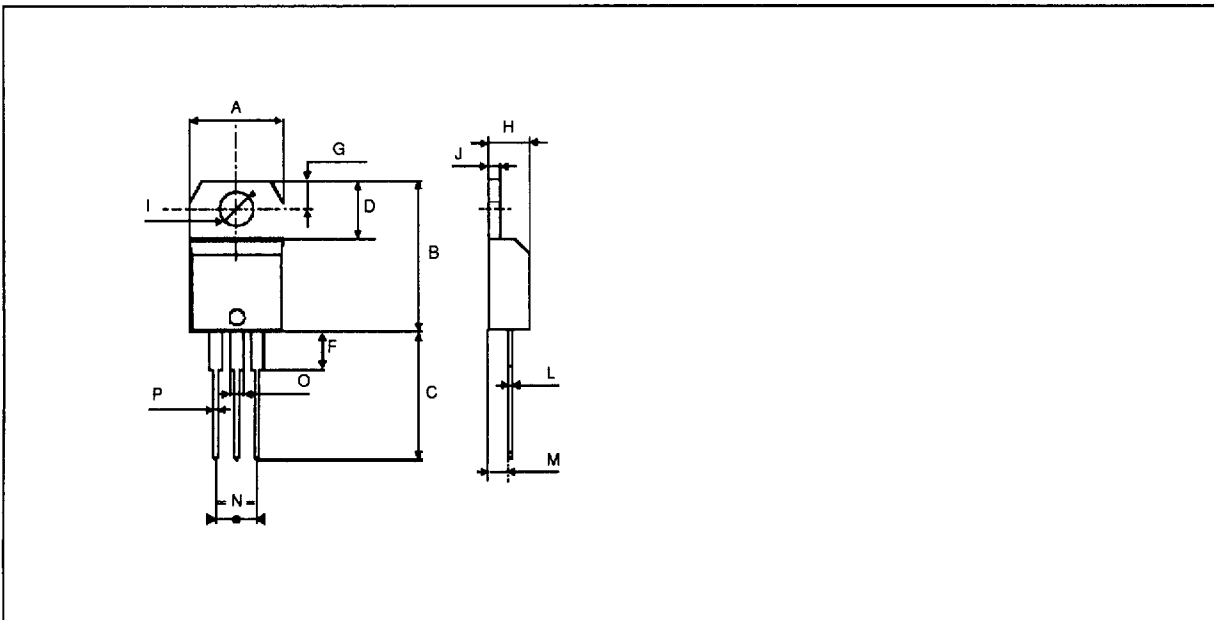


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220AB Plastic



Cooling method : C
 Marking : type number
 Weight : 2.3 g

Recommended torque value : 0.8 m.N.
 Maximum torque value : 1 m.N.

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