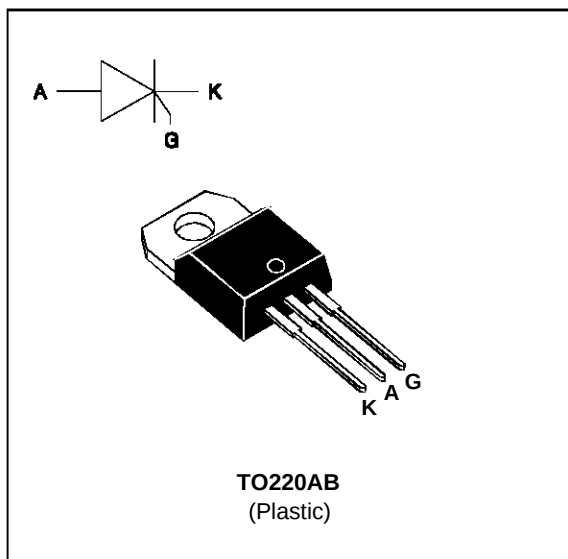


FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- TXN Serie :
INSULATED VOLTAGE = 2500V_(RMS)
(UL RECOGNIZED : E81734)

DESCRIPTION

The TYN/TXN 0512 ---> TYN/TXN 1012 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)	TXN TYN	$T_c=80^{\circ}\text{C}$ $T_c=90^{\circ}\text{C}$	12	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	TXN TYN	$T_c=80^{\circ}\text{C}$ $T_c=90^{\circ}\text{C}$	8	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)		$t_p=8.3\text{ ms}$	125	A
			$t_p=10\text{ ms}$	120	
I_2t	I_2t value		$t_p=10\text{ ms}$	72	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	$^{\circ}\text{C}$ $^{\circ}\text{C}$
T_l	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	$^{\circ}\text{C}$

Symbol	Parameter	TYN/TXN							Unit
		0512	112	212	412	612	812	1012	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^{\circ}\text{C}$	50	100	200	400	600	800	1000	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		60	°C/W
Rth (j-c) DC	Junction to case for DC	TXN	3.5	°C/W
		TYN	2.5	

GATE CHARACTERISTICS (maximum values)

P_G (AV) = 1W P_{GM} = 10W (tp = 20 μ s) I_{FGM} = 4A (tp = 20 μ s) V_{RGM} = 5 V.

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}	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_j=125^\circ C$	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}	$I_{TM}=24A$ tp= 380 μs	$T_j=25^\circ C$	MAX	1.6	V
I_{DRM} I_{RRM}	V_{DRM} Rated V_{RRM} Rated	$T_j=25^\circ C$	MAX	0.01	mA
		$T_j=125^\circ C$		3	
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_j=125^\circ C$	MIN	200	V/ μs
tq	$V_D=67\%V_{DRM}$ $I_{TM}=24A$ $V_R=25V$ $dI_{TM}/dt=30 A/\mu s$ $dV_D/dt=50V/\mu s$	$T_j=125^\circ C$	TYP	70	μs

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

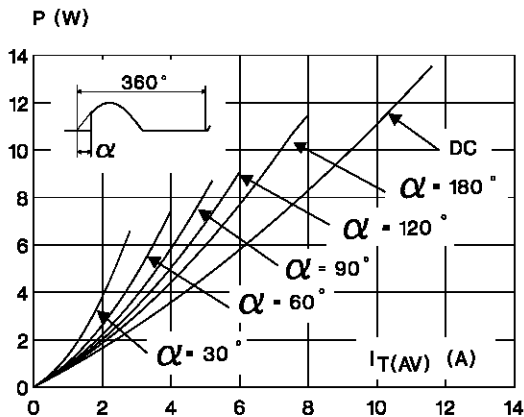


Fig.2 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TXN).

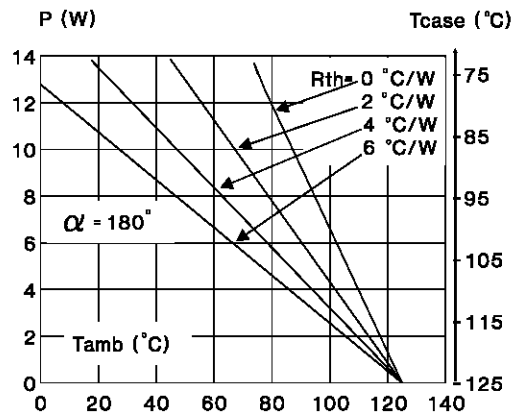


Fig.3 : Maximum average power dissipation versus average on-state current (TYN).

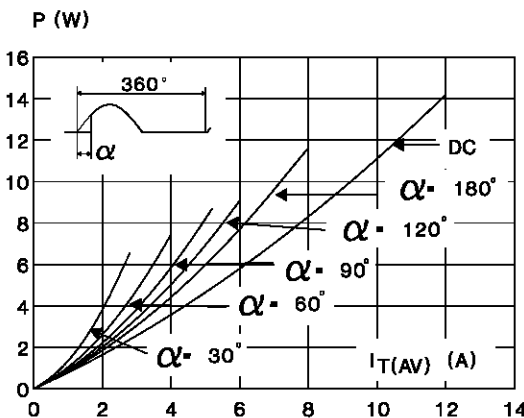


Fig.4 : Correlation between maximum average power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (TYN).

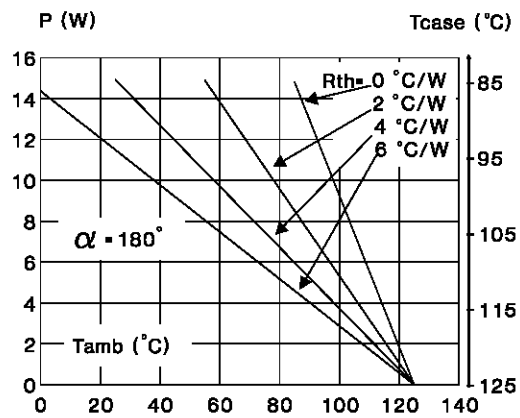


Fig.5 : Average on-state current versus case temperature (TXN).

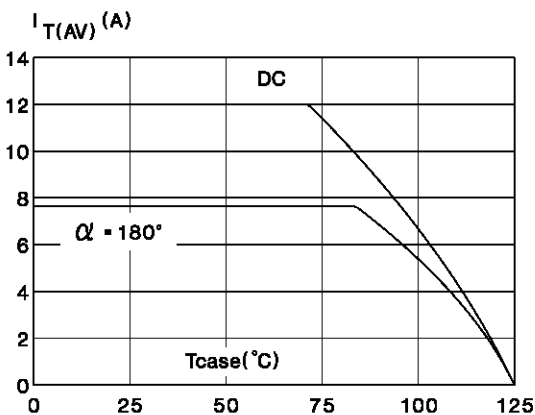


Fig.6 : Average on-state current versus case temperature (TYN).

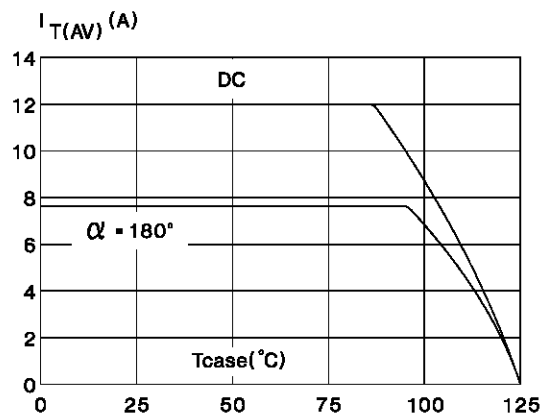


Fig.7 : Relative variation of thermal impedance versus pulse duration.

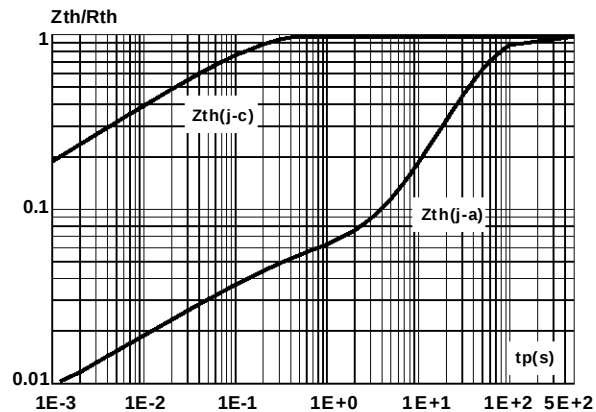


Fig.8 : Relative variation of gate trigger current versus junction temperature.

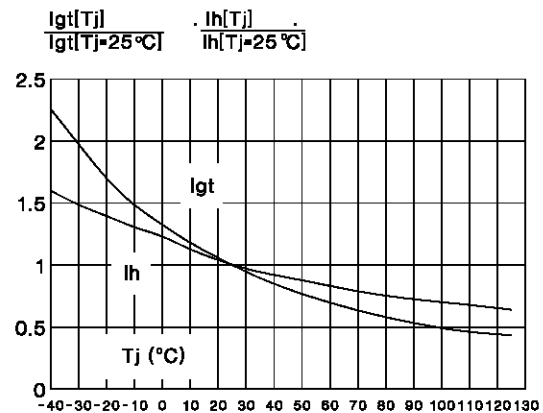


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

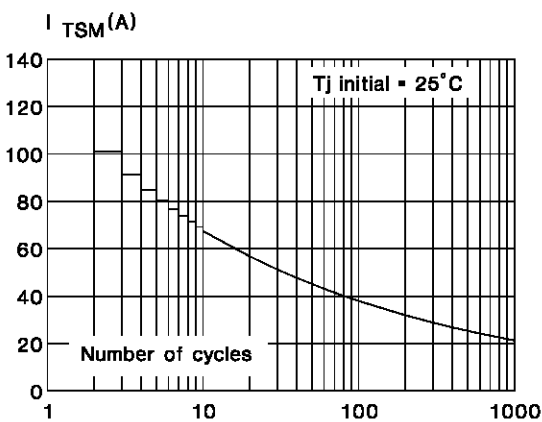


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

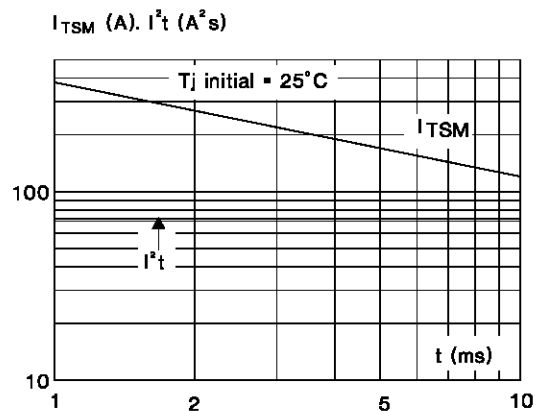
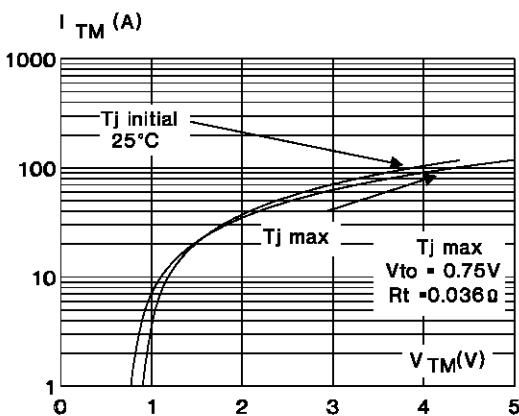
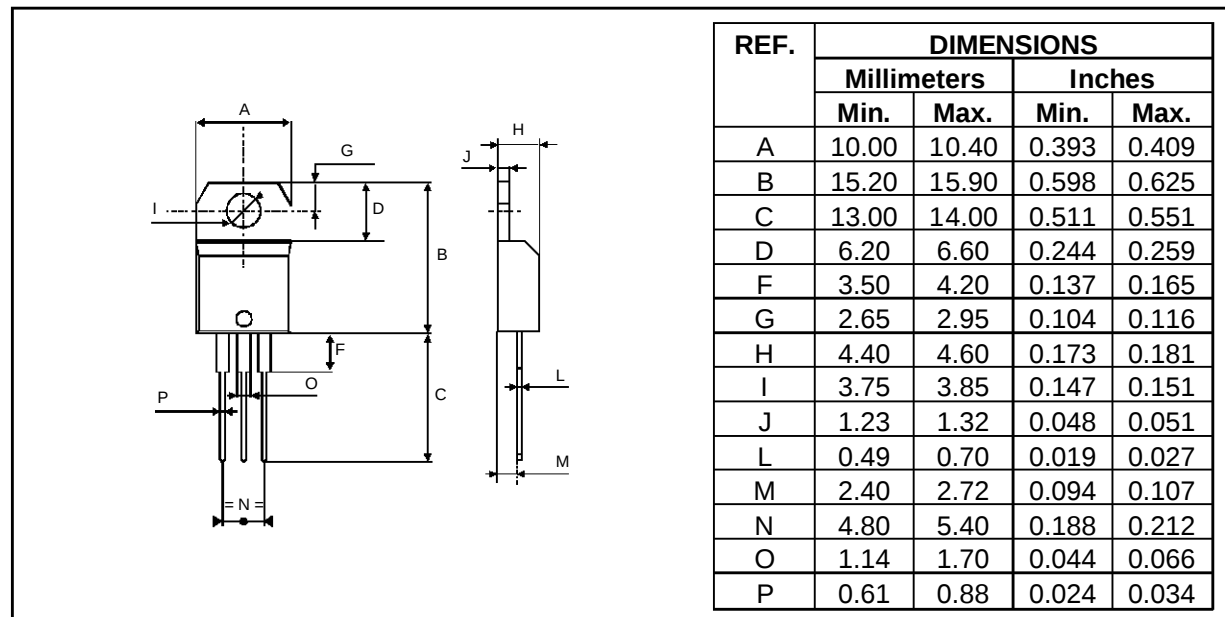


Fig.11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TO220AB Plastic



Cooling method : by conduction (method C)

Marking : type number

Weight : 2.3 g

Recommended torque value : 0.8 m.N.

Maximum torque value : 1 m.N.

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied.

SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1995 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - France - Germany - Hong Kong - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.