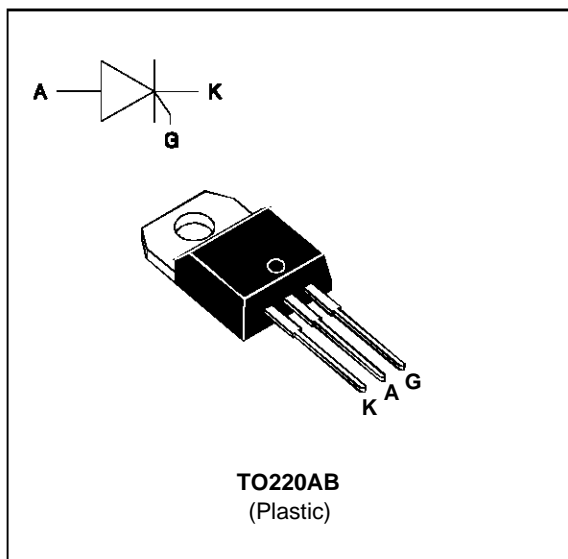


**FEATURES**

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY
- TXN Serie :  
 INSULATED VOLTAGE = 2500V<sub>(RMS)</sub>  
 (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 <sub>T(RMS)</sub>	RMS on-state current (180° conduction angle)	TXN Tc=80°C TYN Tc=90°C	12	A
I <sub>T(AV)</sub>	Average on-state current (180° conduction angle, single phase circuit)	TXN Tc=80°C TYN Tc=90°C	8	A
I <sub>TSM</sub>	Non repetitive surge peak on-state current ( T <sub>j</sub> initial = 25°C )	tp=8.3 ms	125	A
		tp=10 ms	120	
I <sup>2</sup> t	I <sup>2</sup> t value	tp=10 ms	72	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current Gate supply : I <sub>G</sub> = 100 mA di <sub>G</sub> /dt = 1 A/μs		100	A/μs
T <sub>stg</sub> T <sub>j</sub>	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 125	°C °C
T <sub>l</sub>	Maximum lead temperature for soldering during 10 s at 4.5 mm from case		260	°C

Symbol	Parameter	TYN/TXN							Unit
		0512	112	212	412	612	812	1012	
V <sub>DRM</sub> V <sub>RRM</sub>	Repetitive peak off-state voltage T <sub>j</sub> = 125 °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	

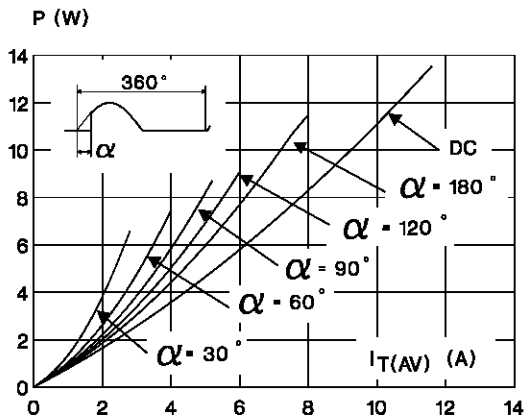
**GATE CHARACTERISTICS** (maximum values)

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

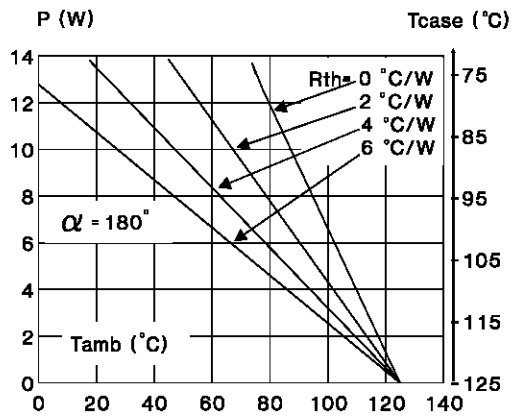
**ELECTRICAL CHARACTERISTICS**

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= 380μs	$T_j=25^\circ C$	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

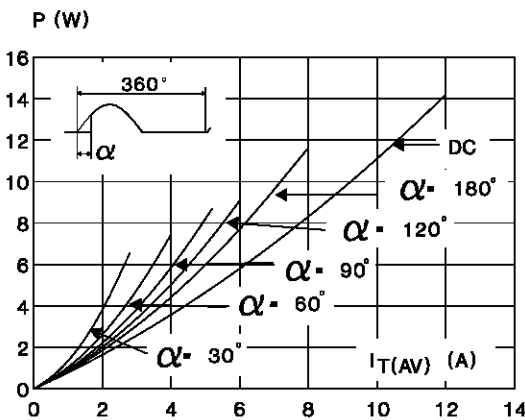
**Fig.1** : Maximum average power dissipation versus average on-state current (TXN).



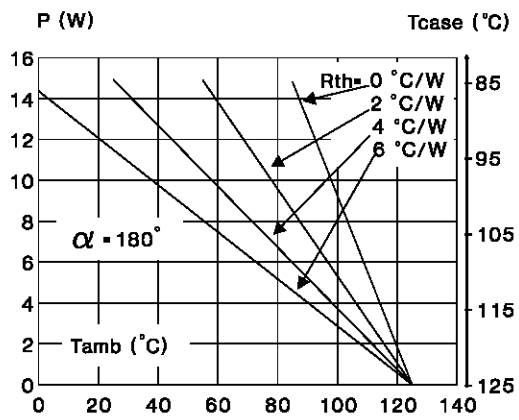
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact (TXN).



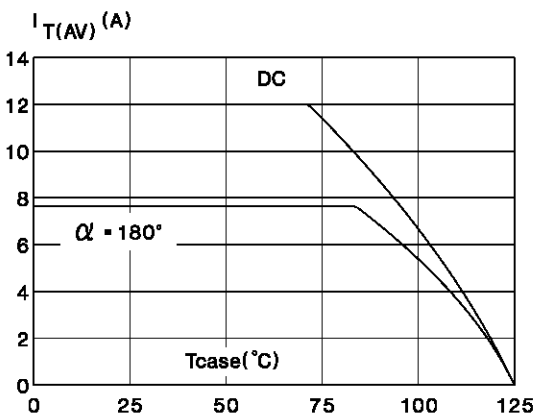
**Fig.3** : Maximum average power dissipation versus average on-state current (TYN).



**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).

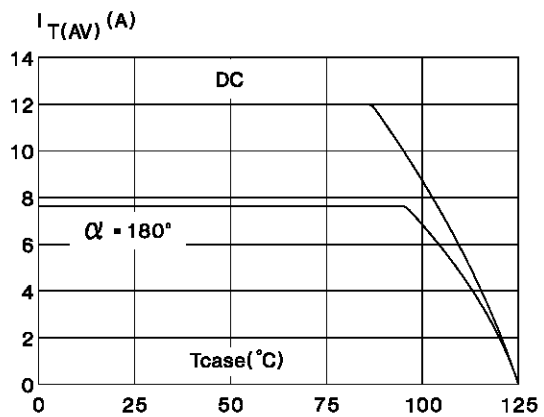


Fig.7 : Relative variation of thermal impedance versus pulse duration.

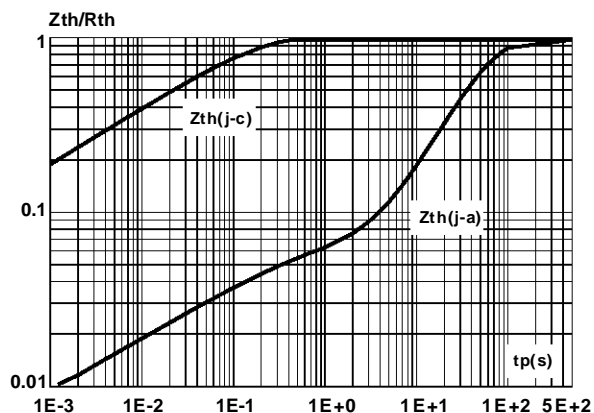


Fig.8 : Relative variation of gate trigger current versus junction temperature.

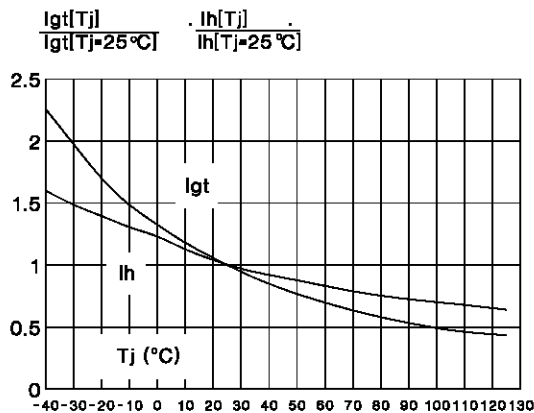


Fig.9 : Non repetitive surge peak on-state current versus number of cycles.

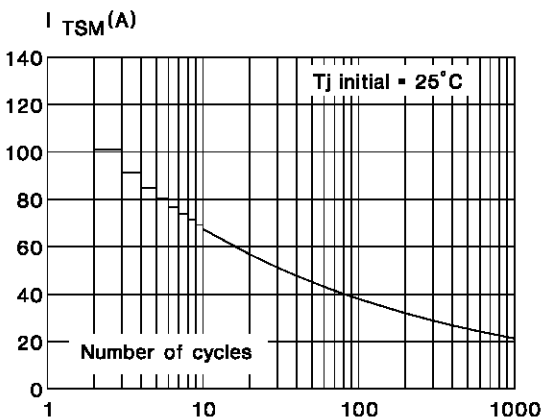


Fig.10 : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .

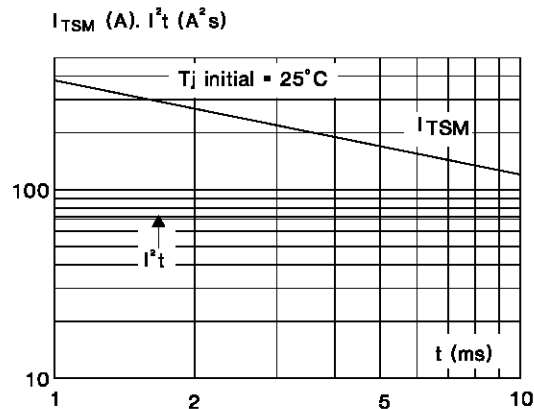
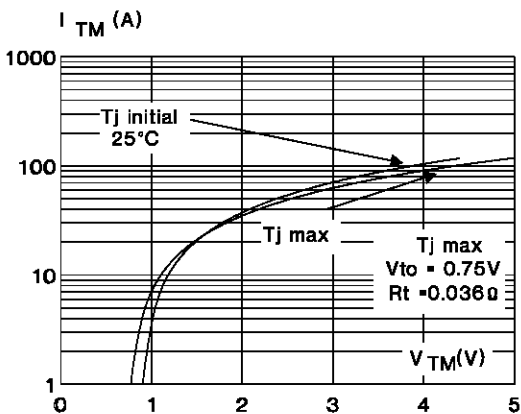
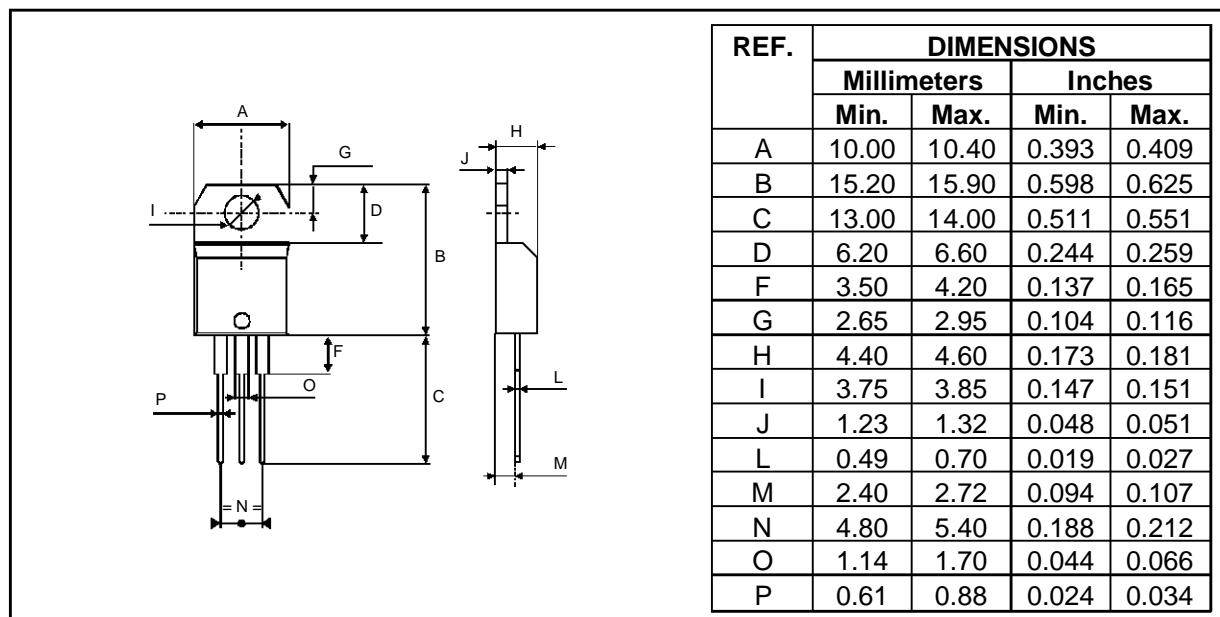


Fig.11 : On-state characteristics (maximum values).



## 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.

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