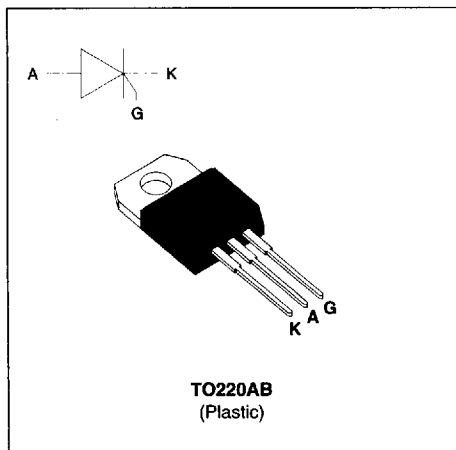


**FEATURES**

- 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
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	TXN Tc=80°C TYN Tc=90°C	12 A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	TXN Tc=80°C TYN Tc=90°C	8 A
$I_{TSM}$	Non repetitive surge peak on-state current ( Tj initial = 25°C )	tp=8.3 ms	125 A
		tp=10 ms	120 A
$I_{2t}$	$I_{2t}$ 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 °C - 40 to + 125 °C
TI	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	

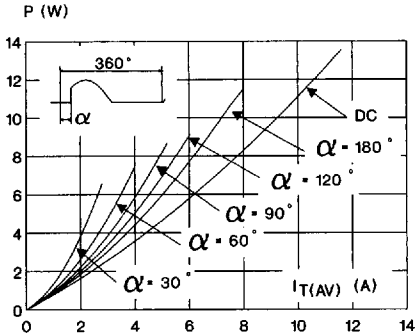
## GATE CHARACTERISTICS (maximum values)

PG (AV) = 1W PGM = 10W (tp = 20 μs) I\_FGM = 4A (tp = 20 μs) V\_RGM = 5 V.

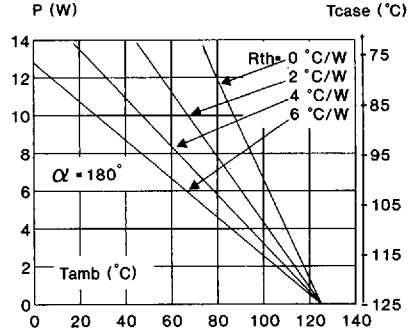
## ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Value	Unit
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>J</sub> =25°C	MAX	15	mA
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>J</sub> =25°C	MAX	1.5	V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>J</sub> = 125°C	MIN	0.2	V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 40mA dI <sub>G</sub> /dt = 0.5A/μs	T <sub>J</sub> =25°C	TYP	2	μs
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	T <sub>J</sub> =25°C	TYP	50	mA
I <sub>H</sub>	I <sub>T</sub> = 100mA gate open	T <sub>J</sub> =25°C	MAX	30	mA
V <sub>TM</sub>	I <sub>TM</sub> = 24A tp= 380μs	T <sub>J</sub> =25°C	MAX	1.6	V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> Rated V <sub>RRM</sub> Rated	T <sub>J</sub> =25°C	MAX	0.01	mA
		T <sub>J</sub> = 125°C			
dV/dt	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	T <sub>J</sub> = 125°C	MIN	200	V/μs
t <sub>q</sub>	V <sub>D</sub> =67%V <sub>DRM</sub> I <sub>TM</sub> = 24A V <sub>R</sub> = 25V dI <sub>TM</sub> /dt=30 A/μs dV <sub>D</sub> /dt= 50V/μs	T <sub>J</sub> = 125°C	TYP	70	μs

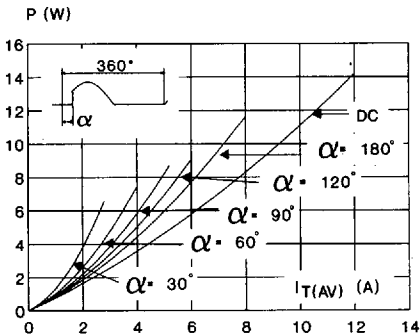
**Fig.1 :** Maximum average power dissipation versus average on-state current (TXN).



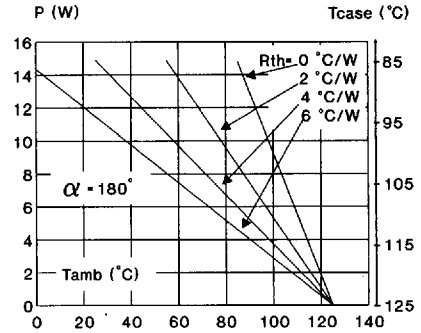
**Fig.2 :** Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact (TXN).



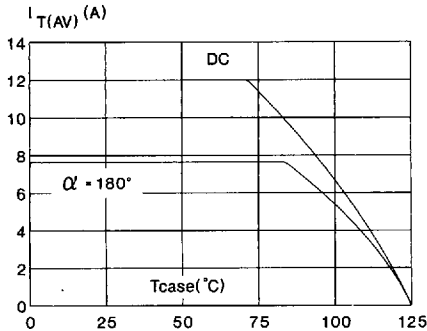
**Fig.3 :** Maximum average power dissipation versus average on-state current (TYN).



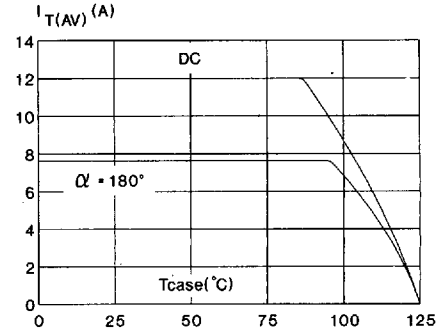
**Fig.4 :** Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact (TYN).



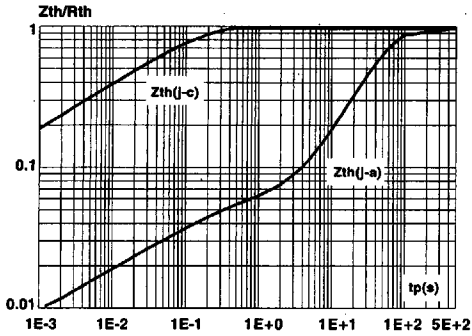
**Fig.5 :** Average on-state current versus case temperature (TXN).



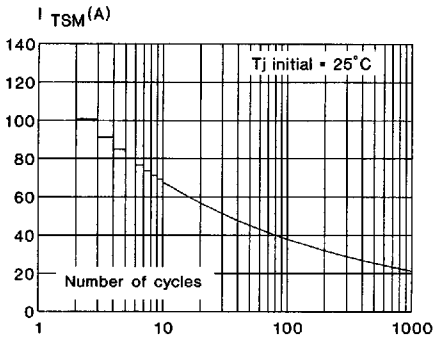
**Fig.6 :** Average on-state current versus case temperature (TYN).



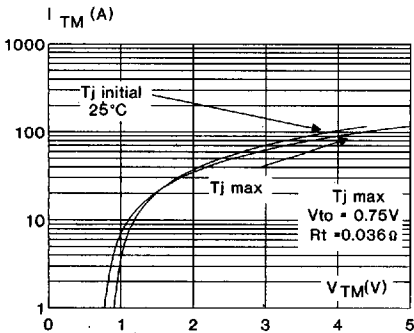
**Fig.7 :** Relative variation of thermal impedance versus pulse duration.



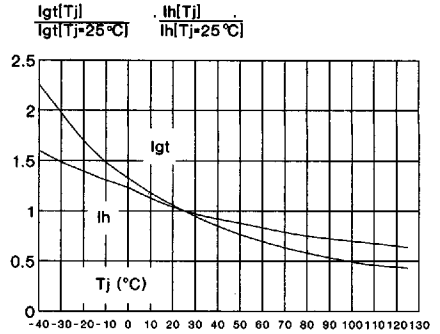
**Fig.9 :** Non repetitive surge peak on-state current versus number of cycles.



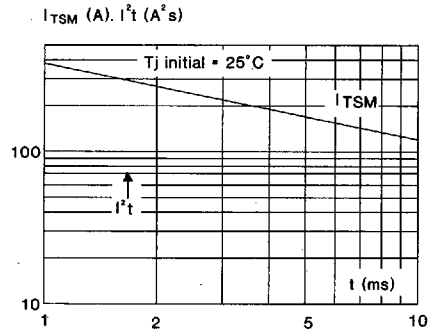
**Fig.11 :** On-state characteristics (maximum values).



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

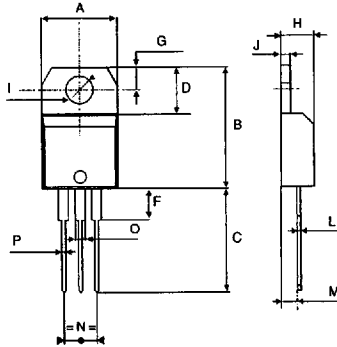


**Fig.10 :** Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .



## PACKAGE MECHANICAL DATA

TO220AB Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.00	10.40	0.393	0.409
B	15.20	15.90	0.598	0.625
C	13.00	14.00	0.511	0.551
D	6.20	6.60	0.244	0.259
F	3.50	4.20	0.137	0.165
G	2.65	2.95	0.104	0.116
H	4.40	4.60	0.173	0.181
I	3.75	3.85	0.147	0.151
J	1.23	1.32	0.048	0.051
L	0.49	0.70	0.019	0.027
M	2.40	2.72	0.094	0.107
N	4.80	5.40	0.188	0.212
O	1.14	1.70	0.044	0.066
P	0.61	0.88	0.024	0.034

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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