

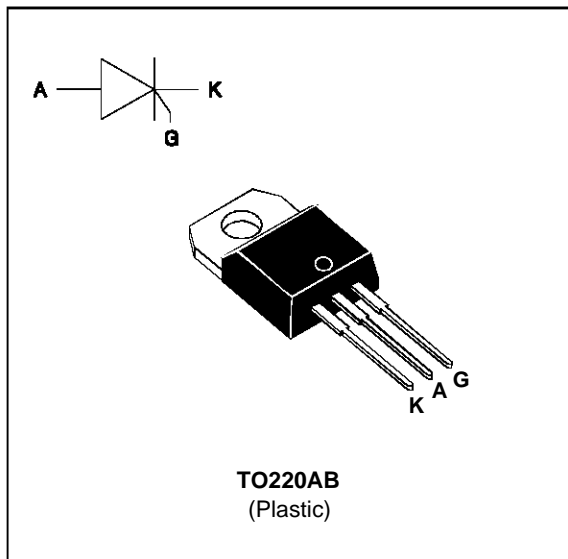
**FEATURES**

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

**DESCRIPTION**

The TYN 0510 ---> TYN 1010 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)	$T_c = 100\text{ }^\circ\text{C}$ 10	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 100\text{ }^\circ\text{C}$ 6.4	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)	$t_p = 8.3\text{ ms}$	105
		$t_p = 10\text{ ms}$	100
$I^2t$	$I^2t$ value	$t_p = 10\text{ ms}$ 50	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 100\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$	50	A/ $\mu\text{s}$
$T_{stg}$ $T_j$	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							Unit
		0510	110	210	410	610	810	1010	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ }^\circ\text{C}$	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	2.5	°C/W

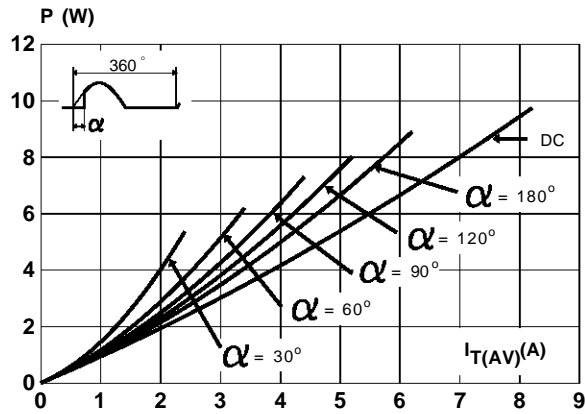
**GATE CHARACTERISTICS (maximum values)**

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

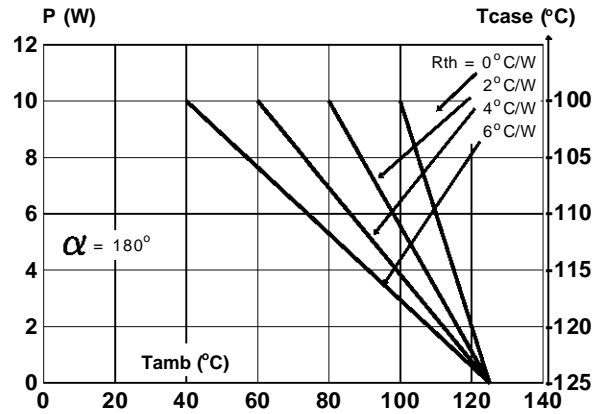
**ELECTRICAL CHARACTERISTICS**

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
$V_{GD}$	$V_D=V_{DRM}$ $R_L=3.3k\Omega$ $T_j=110^\circ C$ 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	$\mu s$
$I_L$	$I_G= 1.2 I_{GT}$ $T_j=25^\circ C$ TYP	50	mA
$I_H$	$I_T= 100mA$ gate open $T_j=25^\circ C$ MAX	30	mA
$V_{TM}$	$I_{TM}= 20A$ $t_p= 380\mu s$ $T_j=25^\circ C$ MAX	1.6	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM}$ Rated $V_{RRM}$ Rated $T_j=25^\circ C$ MAX	0.01	mA
	$T_j=110^\circ C$	2	
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open $T_j=110^\circ C$ MIN	200	V/ $\mu s$
tq	$V_D=67\%V_{DRM}$ $I_{TM}= 20A$ $V_R= 25V$ $di_{TM}/dt=30 A/\mu s$ $dV_D/dt= 50V/\mu s$ $T_j=110^\circ C$ TYP	70	$\mu s$

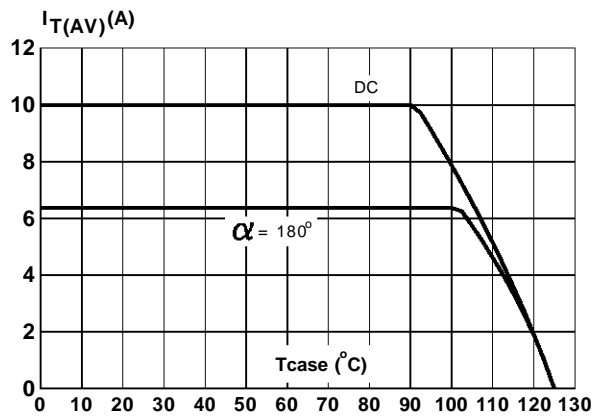
**Fig.1** : Maximum average power dissipation versus average on-state current.



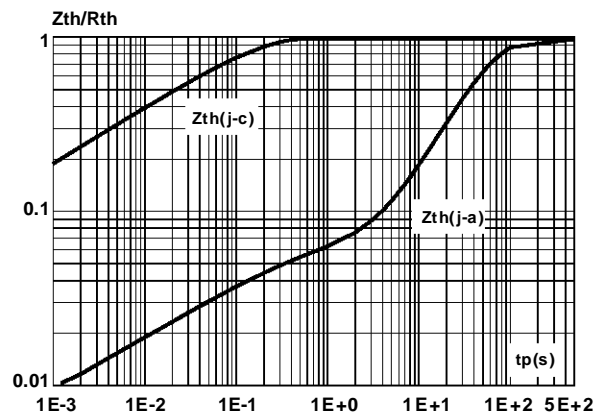
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.



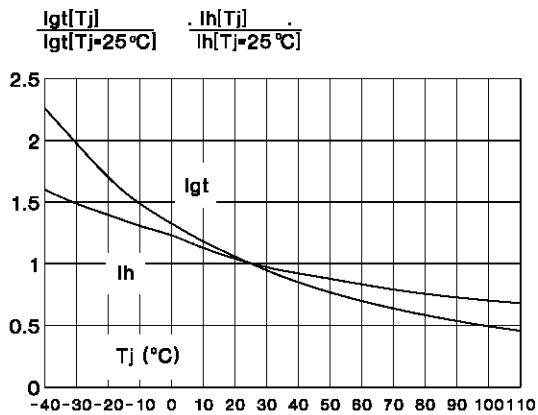
**Fig.3** : Average on-state current versus case temperature.



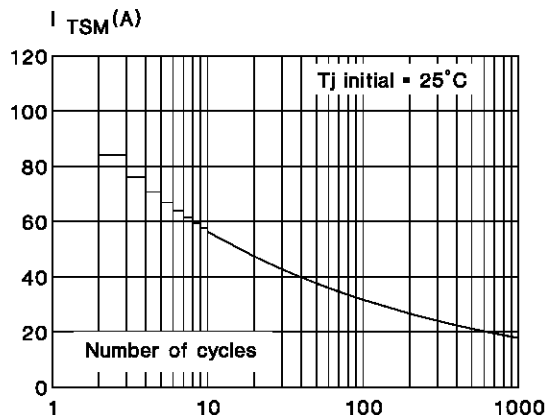
**Fig.4** : Relative variation of thermal impedance versus pulse duration.



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

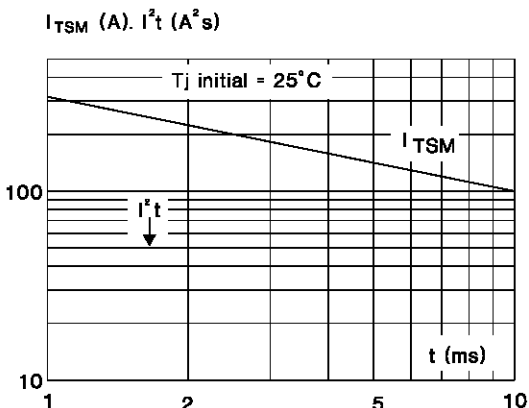


**Fig.6** : Non repetitive surge peak on-state current versus number of cycles.

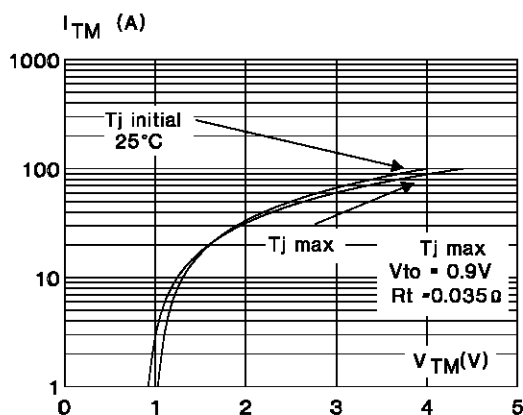


## TYN 0510 ---> TYN 1010

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

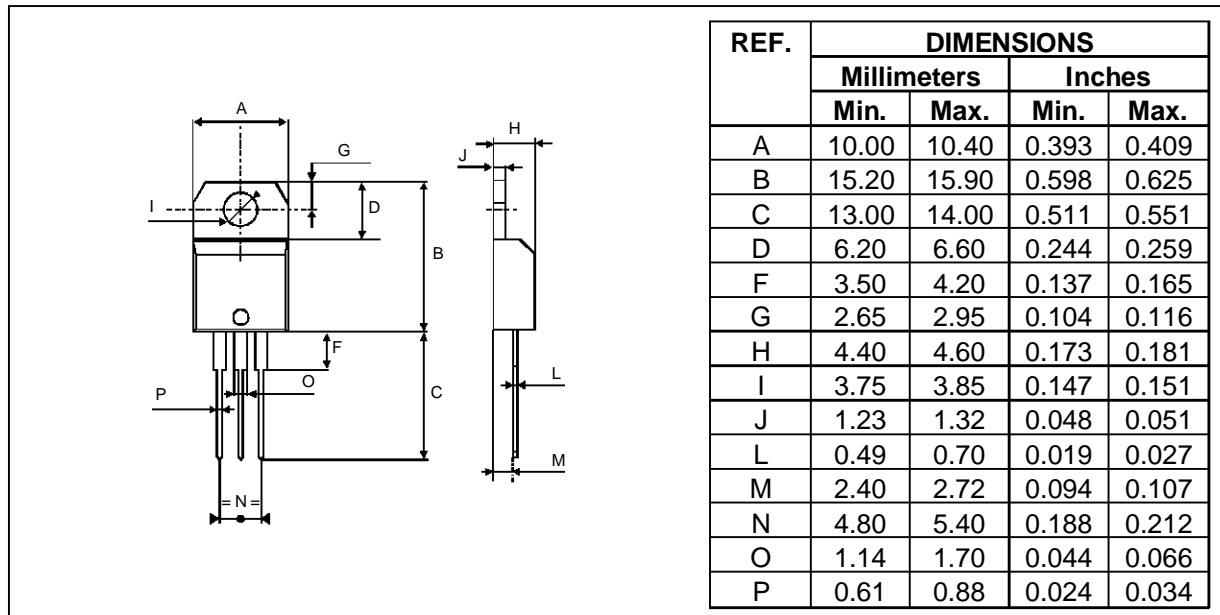


**Fig.8** : On-state characteristics (maximum values).



## 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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