

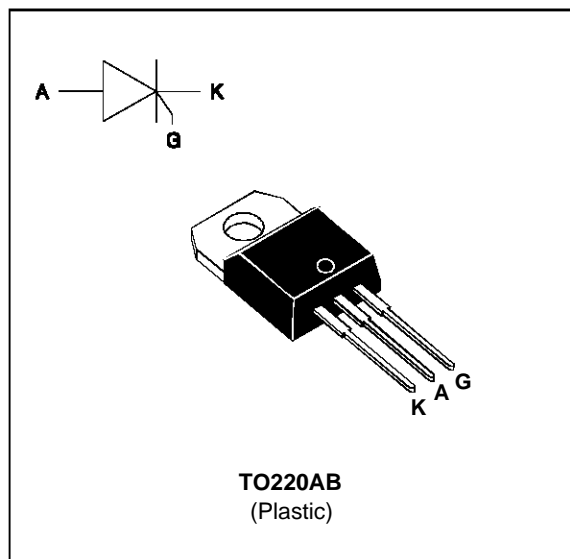
**FEATURES**

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

**DESCRIPTION**

The TYN 0516 ---> TYN 816 Family Silicon Controlled Rectifiers are high performance glass passivated chips technology.

This general purpose Family Silicon Controlled Rectifiers is designed for power supply 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)	$T_c = 95\text{ °C}$	16	A
$I_{T(AV)}$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 95\text{ °C}$	10	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C )	$t_p = 8.3\text{ ms}$	167	A
		$t_p = 10\text{ ms}$	160	
$I_2t$	$I_2t$ value	$t_p = 10\text{ ms}$	128	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 100\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$		100	A/ $\mu\text{s}$
$T_{stg}$ $T_j$	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
		0516	116	216	416	616	816	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	50	100	200	400	600	800	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	2.0	°C/W

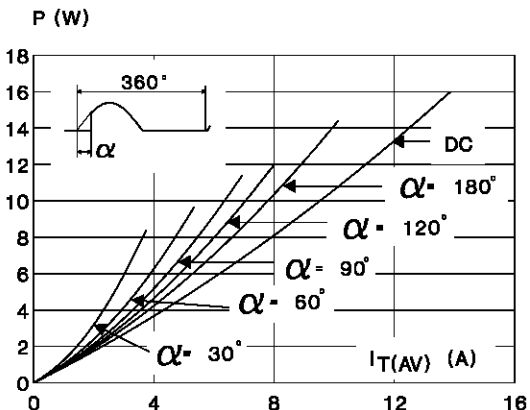
**GATE CHARACTERISTICS (maximum values)**

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

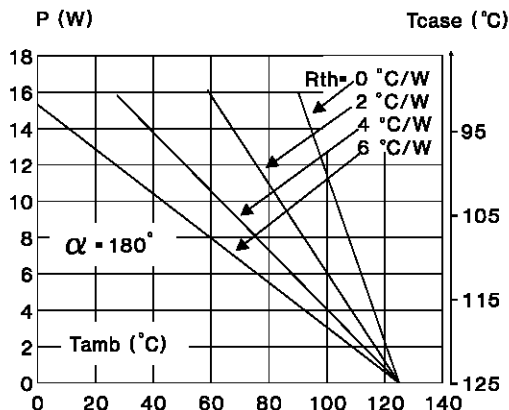
**ELECTRICAL CHARACTERISTICS**

Symbol	Test Conditions			Value	Unit
$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	MAX	25	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	$V_D=V_{DRM}$ $I_G = 90mA$ $di_G/dt = 0.8A/\mu s$	$T_j=25^\circ C$	TYP	2	$\mu s$
$I_L$	$I_G= 1.2 I_{GT}$	$T_j=25^\circ C$	TYP	70	mA
$I_H$	$I_T= 100mA$ gate open	$T_j=25^\circ C$	MAX	40	mA
$V_{TM}$	$I_{TM}= 32A$ $t_p= 380\mu s$	$T_j=25^\circ C$	MAX	1.6	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM}$ Rated $V_{RRM}$ Rated	$T_j=25^\circ C$	MAX	0.01	mA
		$T_j=125^\circ C$		2	
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open	$T_j=125^\circ C$	MIN	500	V/ $\mu s$
tq	$V_D=67\%V_{DRM}$ $I_{TM}= 32A$ $V_R= 25V$ $di_{TM}/dt=30 A/\mu s$ $dV_D/dt= 50V/\mu s$	$T_j=125^\circ C$	TYP	70	$\mu s$

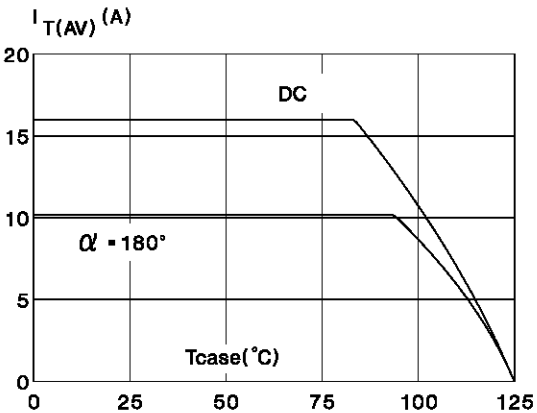
**Fig.1** : Maximum average power dissipation versus average on-state current.



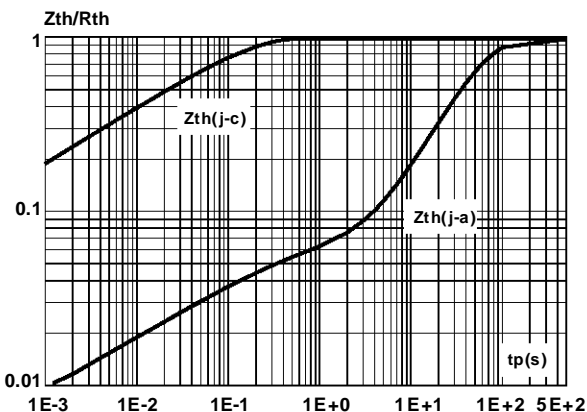
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.



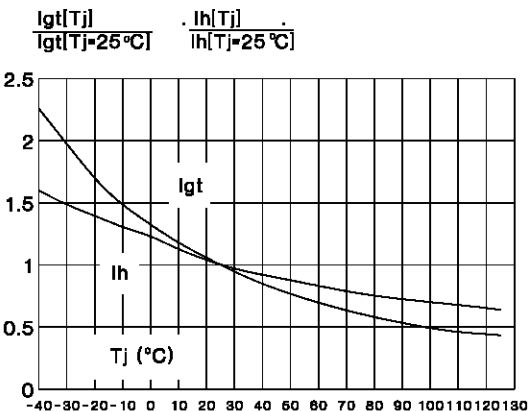
**Fig.3** : Average on-state current versus case temperature.



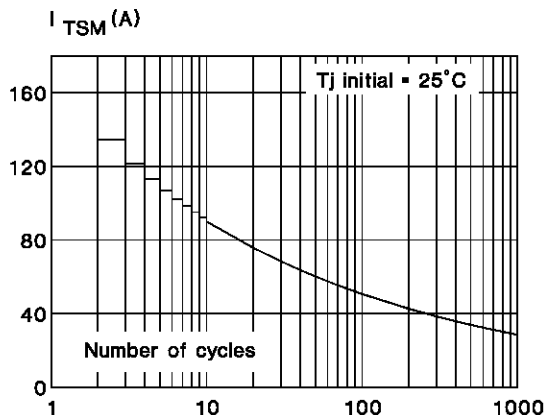
**Fig.4** : Relative variation of thermal impedance versus pulse duration.



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

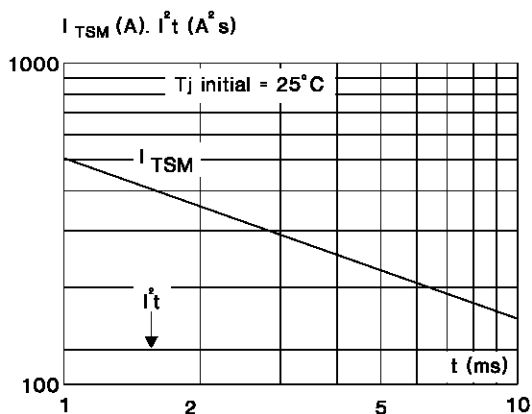


**Fig.6** : Non repetitive surge peak on-state current versus number of cycles.

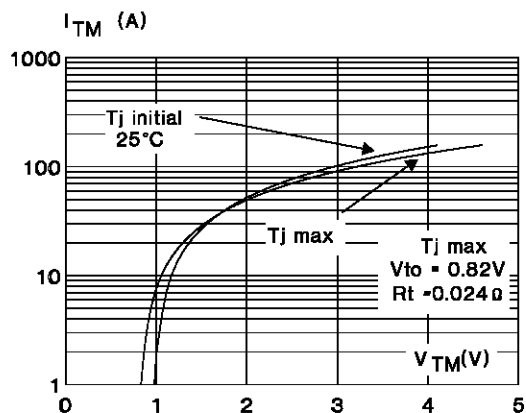


## TYN 0516 ---> TYN 816

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

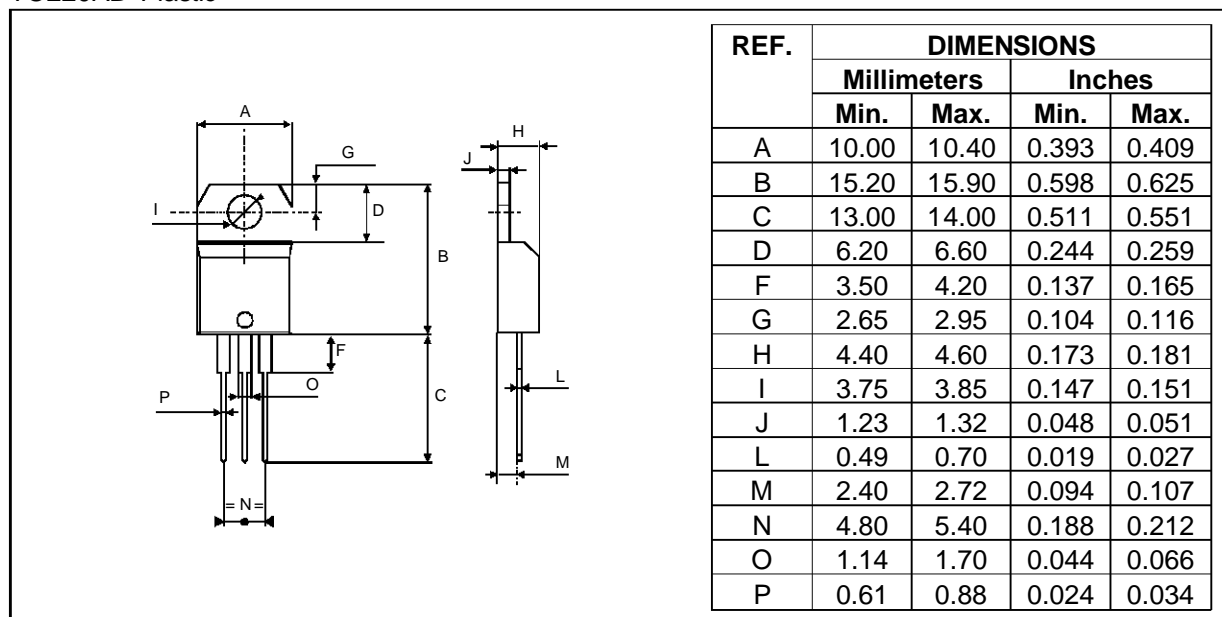


**Fig.8** : On-state characteristics (maximum values).



## 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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