

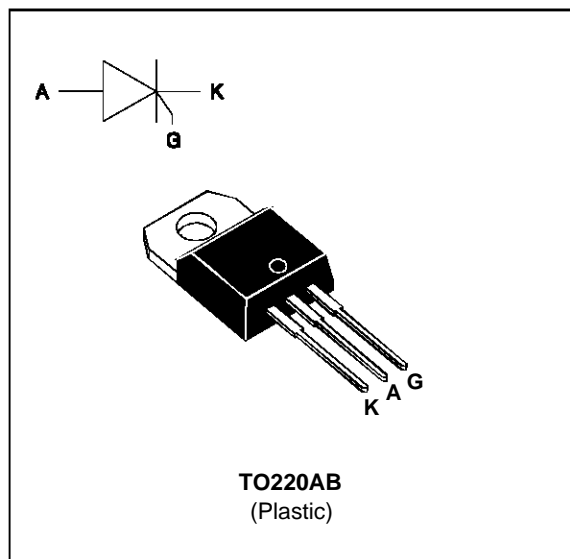
**FEATURES**

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

**DESCRIPTION**

The TYN 225 ---> TYN 1025 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)	$T_c = 95\text{ °C}$	25	A
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 95\text{ °C}$	16	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C )	$t_p = 8.3\text{ ms}$	260	A
		$t_p = 10\text{ ms}$	250	
$I^2t$	$I^2t$ value	$t_p = 10\text{ ms}$	310	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
		225	425	625	825	1025	1225	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	200	400	600	800	1000	1200	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	1.3	°C/W

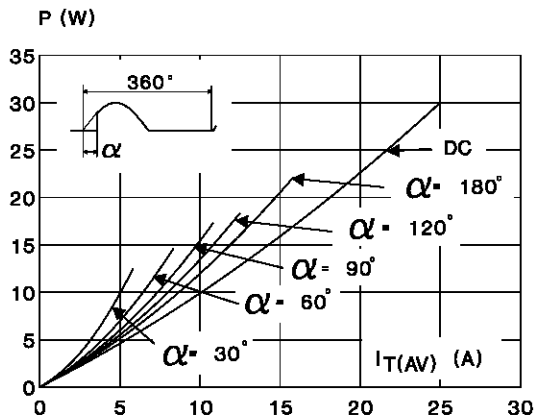
**GATE CHARACTERISTICS** (maximum values)

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

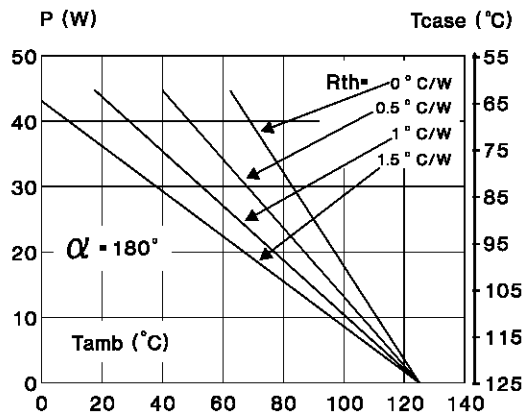
**ELECTRICAL CHARACTERISTICS**

Symbol	Test Conditions	Value	Unit
$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$ $T_j=25^\circ C$ MAX	40	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	$V_D=V_{DRM}$ $I_G = 200mA$ $dI_G/dt = 1.5A/\mu s$ $T_j=25^\circ C$ TYP	2	$\mu s$
$I_L$	$I_G= 1.2 I_{GT}$ $T_j=25^\circ C$ TYP	80	mA
$I_H$	$I_T= 100mA$ gate open $T_j=25^\circ C$ MAX	50	mA
$V_{TM}$	$I_{TM}= 50A$ $t_p= 380\mu s$ $T_j=25^\circ C$ MAX	1.6	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM}$ Rated $V_{RRM}$ Rated $T_j=25^\circ C$ MAX	0.01	mA
	$T_j= 125^\circ C$	4	
dV/dt	Linear slope up to $V_D=67\%V_{DRM}$ gate open $T_j= 125^\circ C$ MIN	500	V/ $\mu s$
tq	$V_D=67\%V_{DRM}$ $I_{TM}= 50A$ $V_R= 25V$ $T_j= 125^\circ C$ TYP $dI_{TM}/dt=30 A/\mu s$ $dV_D/dt= 50V/\mu s$	70	$\mu s$

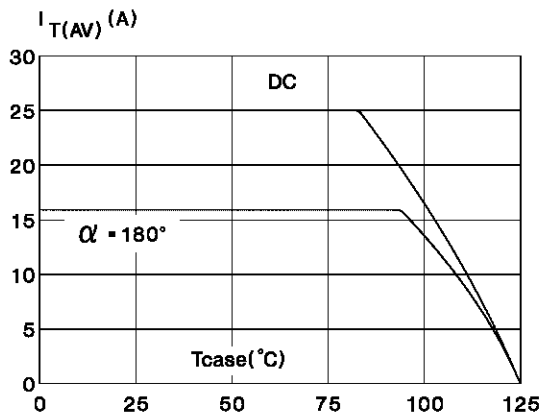
**Fig.1** : Maximum average power dissipation versus average on-state current.



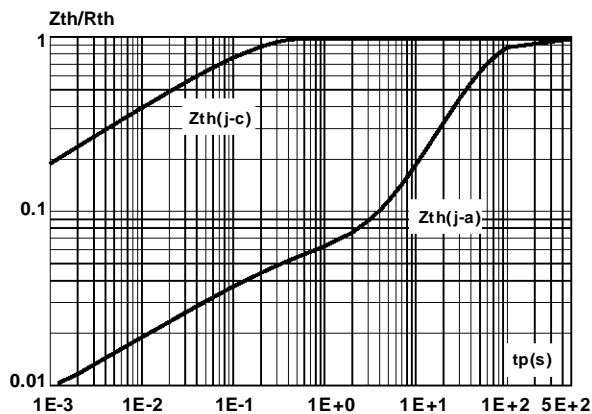
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.



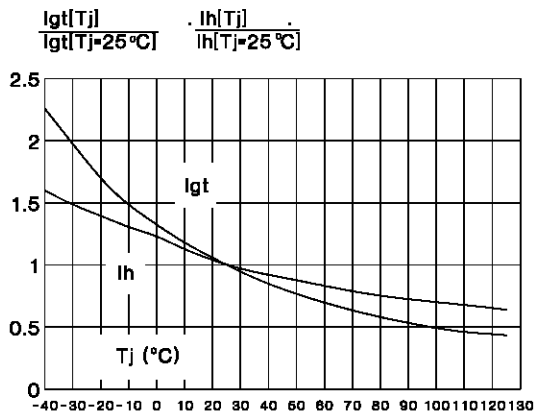
**Fig.3** : Average on-state current versus case temperature.



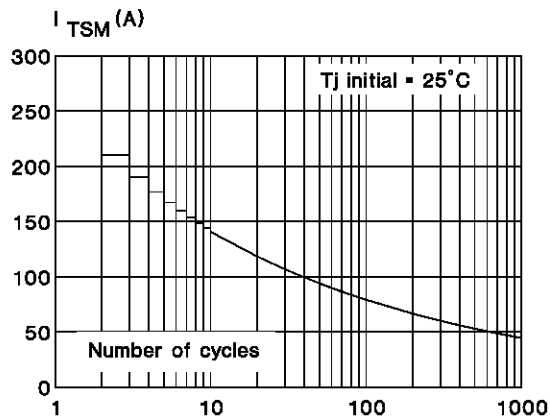
**Fig.4** : Relative variation of thermal impedance versus pulse duration.



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

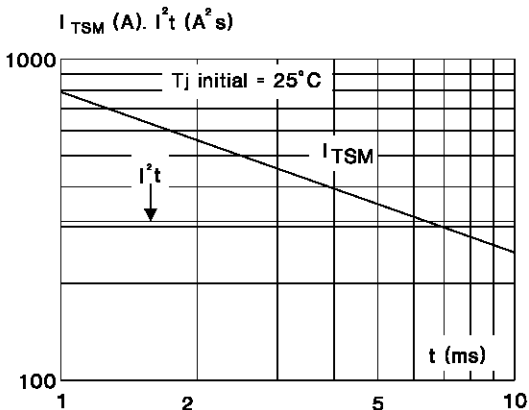


**Fig.6** : Non repetitive surge peak on-state current versus number of cycles.

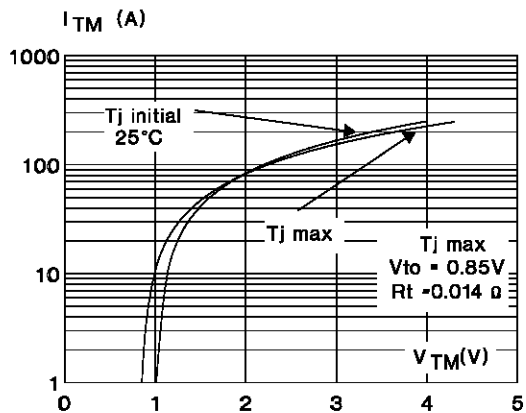


# TYN 225 ---> TYN 1225

**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

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 : 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.