

**SGS-THOMSON** MICROELECTRONICS **TYN 056 ---> TYN 1006**

SCR

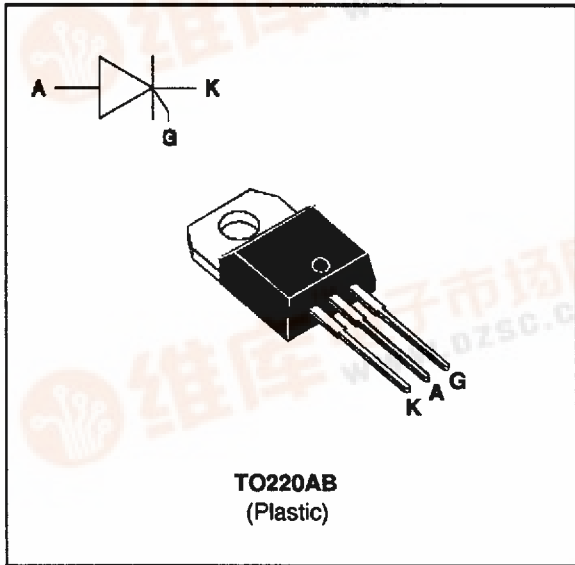
**FEATURES**

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

**DESCRIPTION**

The TYN 056 ---> TYN 1006 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)	$T_c = 110\text{ °C}$ 6	A
$I_T(AV)$	Average on-state current (180° conduction angle, single phase circuit)	$T_c = 110\text{ °C}$ 3.8	A
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)	$t_p = 8.3\text{ ms}$	73
		$t_p = 10\text{ ms}$	70
$i^2t$	$i^2t$ value	$t_p = 10\text{ ms}$	24.5
$di/dt$	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	°C °C
$T_l$	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	260	°C

Symbol	Parameter	TYN							Unit
		056	106	206	406	606	806	1006	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	50	100	200	400	600	800	1000	V

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**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

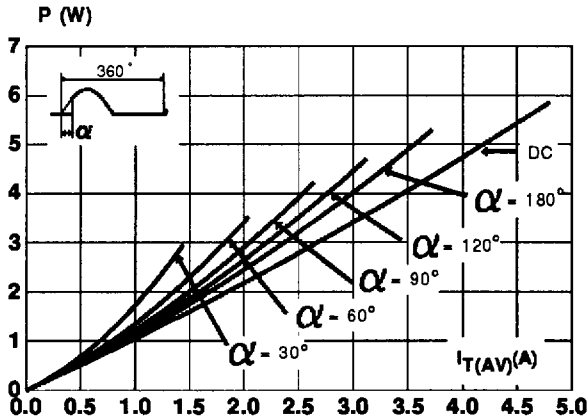
**GATE CHARACTERISTICS (maximum values)**

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

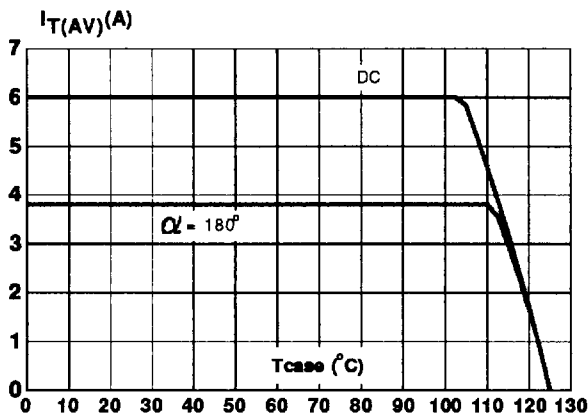
**ELECTRICAL CHARACTERISTICS**

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>D</sub> RM R <sub>L</sub> =3.3kΩ T <sub>j</sub> = 110°C	MIN 0.2	V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>D</sub> RM 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> = 12A t <sub>p</sub> = 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> = 110°C	2
dV/dt	Linear slope up to V <sub>D</sub> =67%V <sub>D</sub> RM gate open T <sub>j</sub> = 110°C	MIN 200	V/μs
t <sub>q</sub>	V <sub>D</sub> =67%V <sub>D</sub> RM I <sub>TM</sub> = 12A V <sub>R</sub> = 25V dI <sub>TM</sub> /dt=30 A/μs dV <sub>D</sub> /dt= 50V/μs T <sub>j</sub> = 110°C	TYP 70	μs

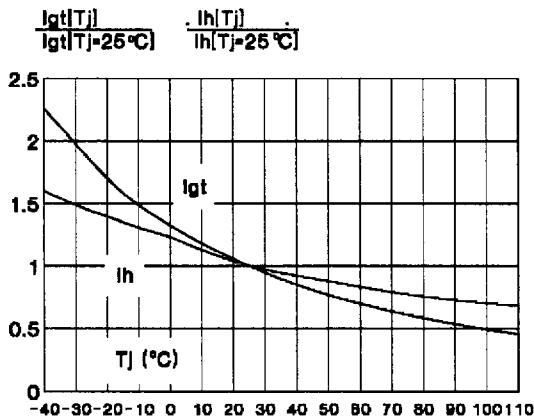
**Fig.1** : Maximum average power dissipation versus average on-state current.



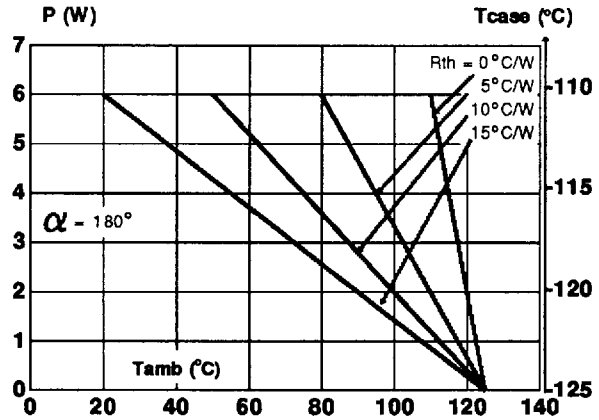
**Fig.3** : Average on-state current versus case temperature.



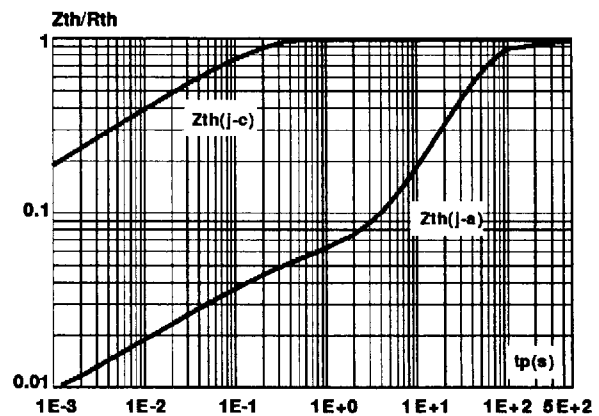
**Fig.5** : Relative variation of gate trigger current versus junction temperature.



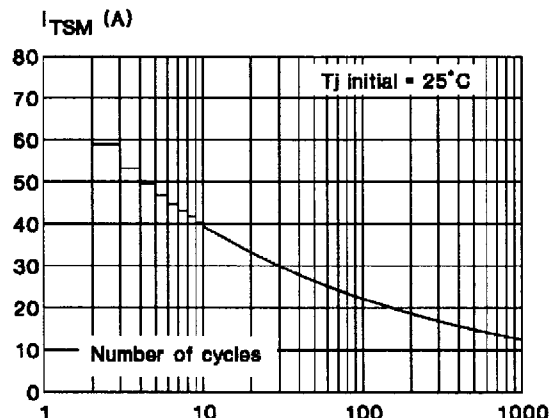
**Fig.2** : Correlation between maximum average power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact.



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

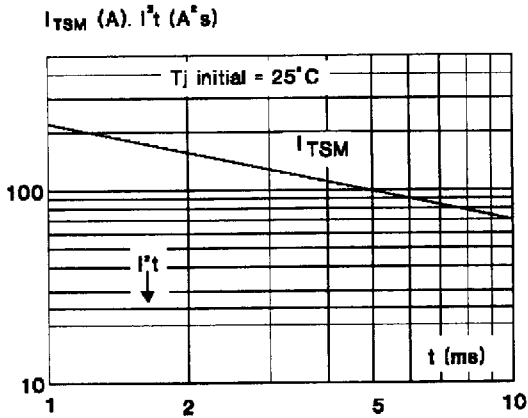


**Fig.6** : Non repetitive surge peak on-state current versus number of cycles.

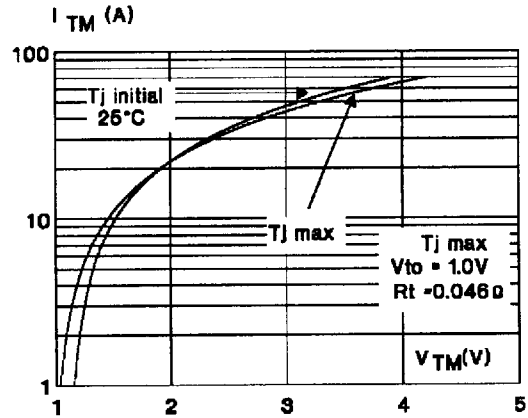


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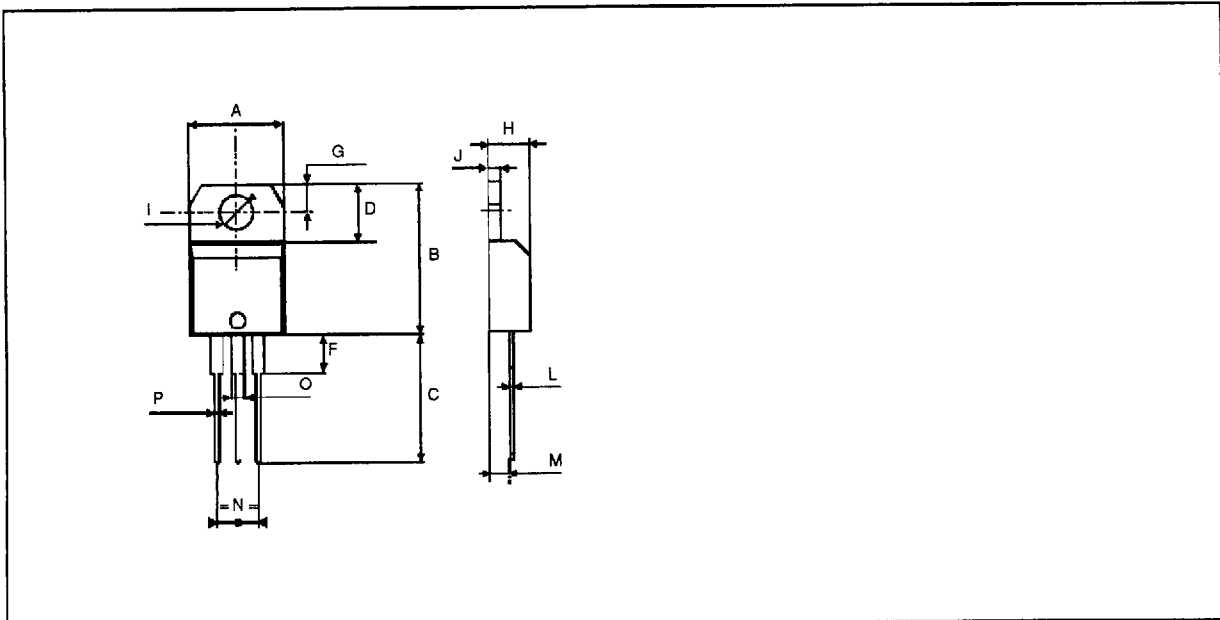
**Fig.7** : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .



**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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