

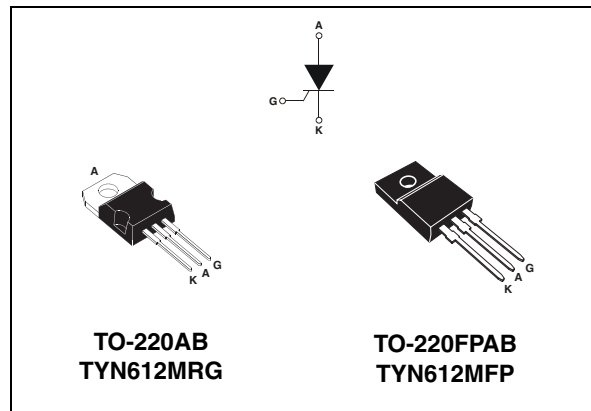
Main features

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM}/V_{RRM}	600	V
$I_{GT} \text{ (min / max)}$	1.5 / 5	mA

Description

The TYN612M SCR is suitable to fit modes of control found in applications such as voltage regulation circuits for motorbikes, overvoltage crowbar protection, motor control circuits in power tools and kitchen aids, inrush current limiting circuits, capacitive discharge ignition.

The insulated fullpack package allows a back to back configuration.



Order codes

Part Numbers	Marking
TYN612MRG	TYN612M
TYN612MFP	TYN612MFP

Table 1. Absolute ratings (limiting values)

Symbol	Parameter	Value	Unit		
$I_{T(RMS)}$	RMS on-state current (180° conduction angle)	TO-220AB $T_c = 105^\circ \text{ C}$	12	A	
		TO-220FPAB $T_c = 70^\circ \text{ C}$	12		
$I_{T(AV)}$	Average on-state current (180° conduction angle)	TO-220AB $T_c = 105^\circ \text{ C}$	8	A	
		TO-220FPAB $T_c = 70^\circ \text{ C}$	8		
I_{TSM}	Non repetitive surge peak on-state current	$t_p = 8.3 \text{ ms}$	$T_j = 25^\circ \text{ C}$	125	A
		$t_p = 10 \text{ ms}$		120	
I^2t	I^2t Value for fusing	$t_p = 10 \text{ ms}$	$T_j = 25^\circ \text{ C}$	72	A^2s
dI/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100 \text{ ns}$	F = 60 Hz	$T_j = 125^\circ \text{ C}$	50	A/ μs
I_{GM}	Peak gate current	$t_p = 20 \mu s$	$T_j = 125^\circ \text{ C}$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j = 125^\circ \text{ C}$	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	$^\circ \text{ C}$
V_{RGM}	Maximum peak reverse gate voltage			5	V

1 Characteristics

Table 2. Electrical characteristics ($T_j = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Test Conditions		Value	Unit	
I_{GT}	$V_D = 12\text{ V}$ $R_L = 140\ \Omega$	MIN.	1.5	mA	
		MAX.	5		
V_{GT}	$V_D = 12\text{ V}$ $R_L = 140\ \Omega$	MIN.	0.5	V	
		TYP.	0.7		
		MAX.	1.3		
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$	$T_j = 125^\circ\text{C}$	MIN.	0.2	V
I_H	$I_T = 500\text{ mA}$ Gate open		MAX.	20	mA
I_L	$I_G = 1.2 I_{GT}$		MAX.	40	mA
dV/dt	$V_D = 67\% V_{DRM}$ Gate open	$T_j = 125^\circ\text{C}$	MIN.	50	V/ μs
V_{TM}	$I_{TM} = 24\text{ A}$ $t_p = 380\ \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.6	V
V_{t0}	Threshold voltage	$T_j = 125^\circ\text{C}$	MAX.	0.85	V
R_d	Dynamic resistance	$T_j = 125^\circ\text{C}$	MAX.	30	m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX.	5	μA
		$T_j = 125^\circ\text{C}$		2	mA

Table 3. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	TO-220AB	1.3	$^\circ\text{C/W}$
		TO-220FPAB	4.5	
$R_{th(j-a)}$	Junction to ambient (DC)	TO-220AB	55	$^\circ\text{C/W}$
		TO-220FPAB	55	

Figure 1. Maximum average power dissipation versus average on-state current

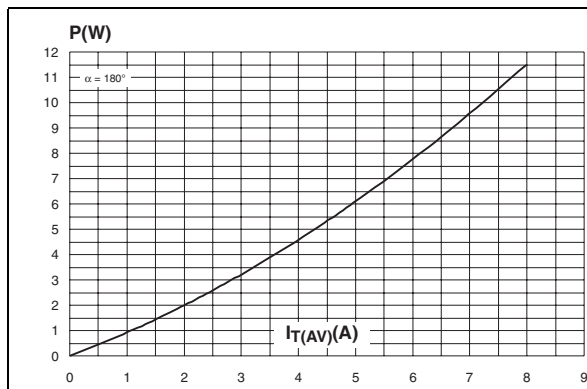


Figure 2. Average and D.C. on-state current versus case temperature (TO-220AB)

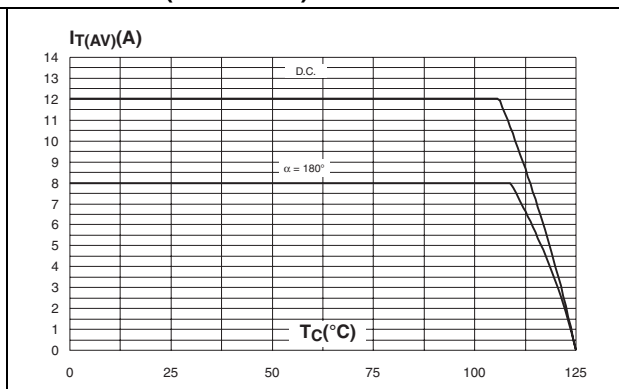


Figure 3. Average and D.C. on-state current versus case temperature (TO-220FPAB)

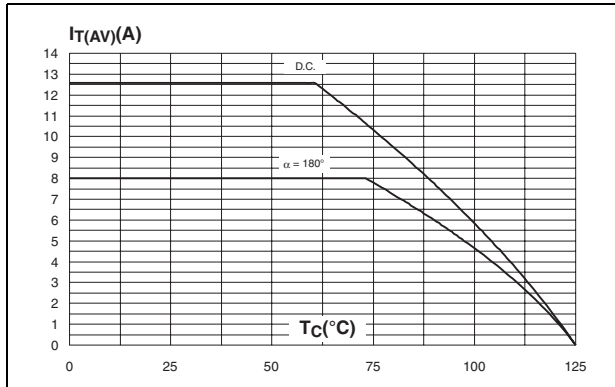


Figure 4. Relative variation of thermal impedance versus pulse duration (TO-220AB)

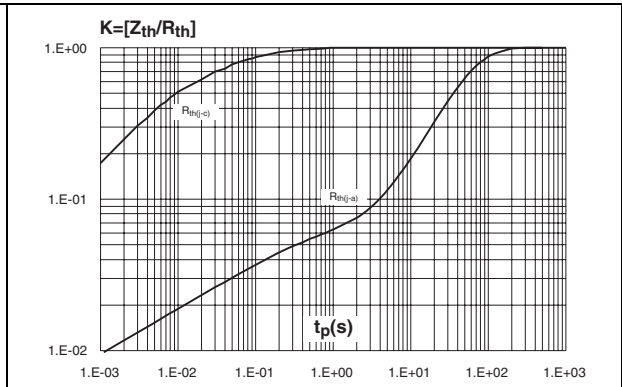


Figure 5. Relative variation of thermal impedance versus pulse duration (TO-220FPAB)

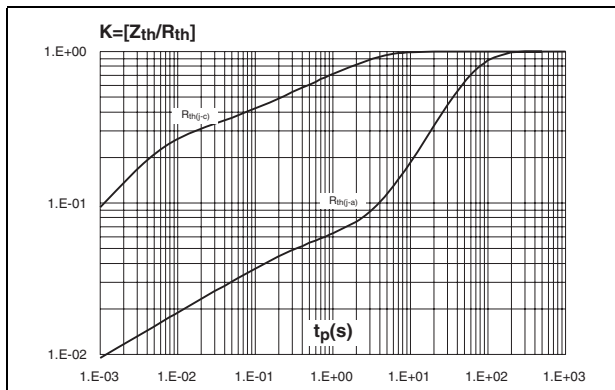


Figure 6. Relative variation of gate trigger current, holding current, latching current and gate trigger voltage versus junction temperature (typical values)

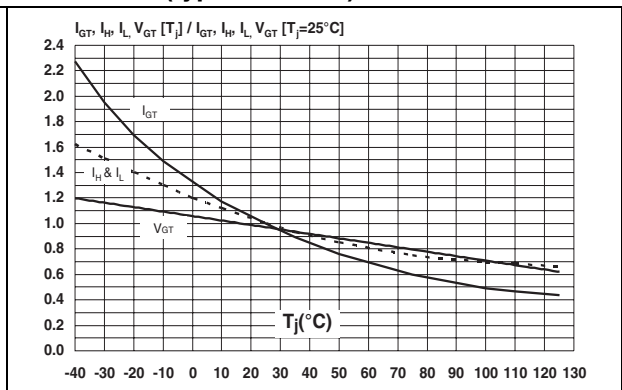


Figure 7. Surge peak on-state current versus number of cycles

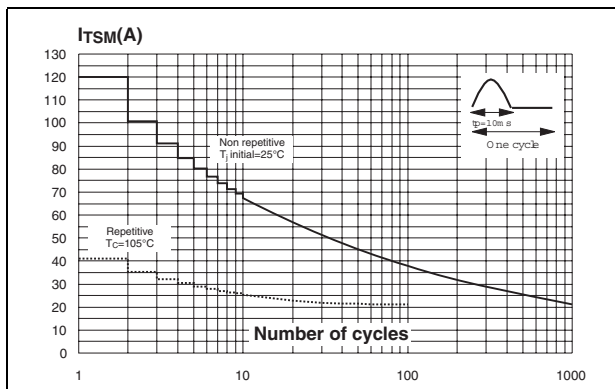


Figure 8. Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding values of I^2t

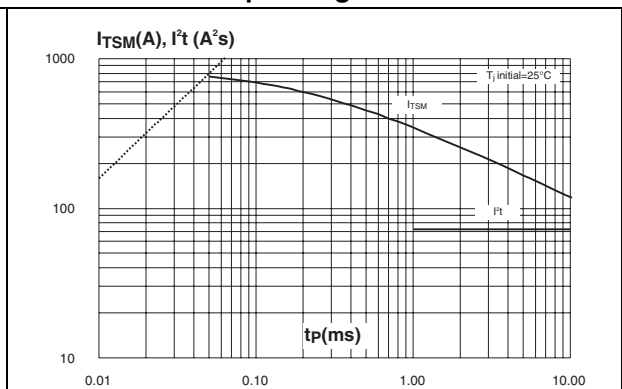
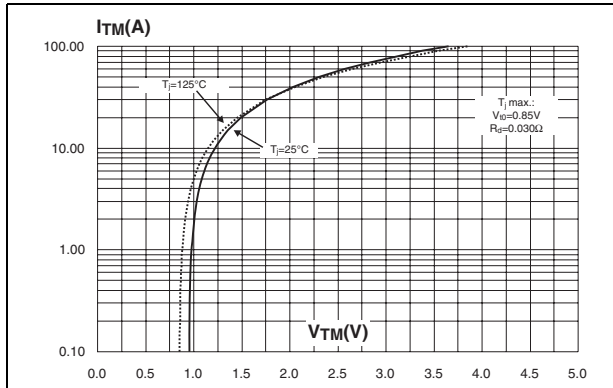
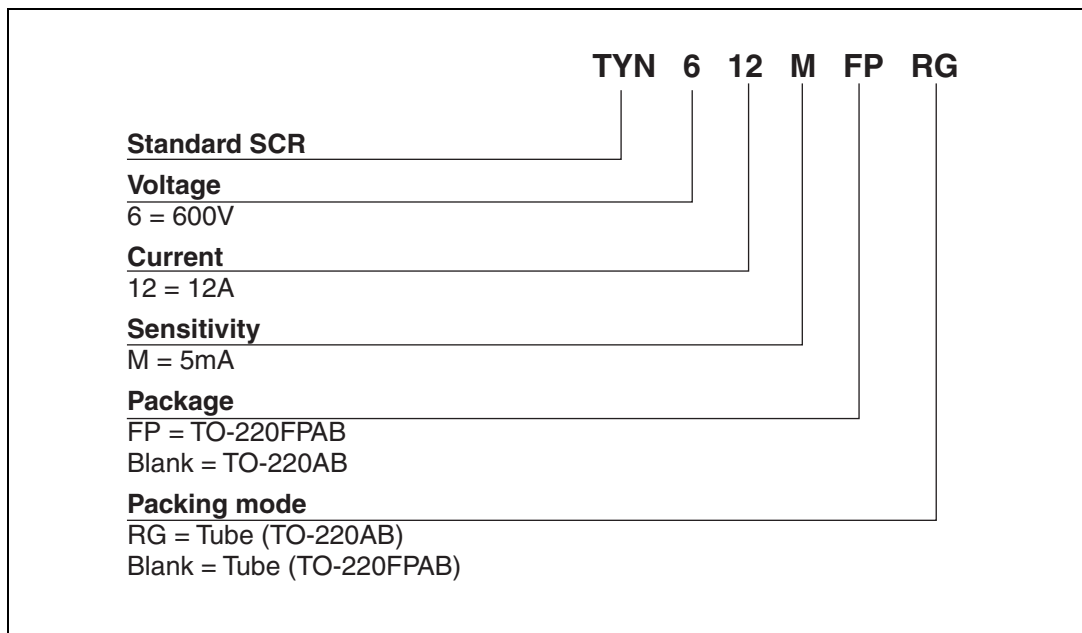


Figure 9. On-state characteristics (maximum values)



2 Ordering information scheme



3 Package information

- Epoxy meets UL94, V0

Table 4. TO-220AB dimensions

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	10.00		10.40	0.393		0.409
b1	0.61		0.88	0.024		0.034
b2	1.23		1.32	0.048		0.051
C	4.40		4.60	0.173		0.181
c1	0.49		0.70	0.019		0.027
c2	2.40		2.72	0.094		0.107
e	2.40		2.70	0.094		0.106
F	6.20		6.60	0.244		0.259
ØI	3.75		3.85	0.147		0.151
I4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
I2	1.14		1.70	0.044		0.066
I3	1.14		1.70	0.044		0.066
M		2.60			0.102	

Table 5. TO-220FPAB Dimensions

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.4	4.6	0.173	0.181
B	2.5	2.7	0.098	0.106
D	2.5	2.75	0.098	0.108
E	0.45	0.70	0.018	0.027
F	0.75	1	0.030	0.039
F1	1.15	1.70	0.045	0.067
F2	1.15	1.70	0.045	0.067
G	4.95	5.20	0.195	0.205
G1	2.4	2.7	0.094	0.106
H	10	10.4	0.393	0.409
L2	16 Typ.		0.63 Typ.	
L3	28.6	30.6	1.126	1.205
L4	9.8	10.6	0.386	0.417
L5	2.9	3.6	0.114	0.142
L6	15.9	16.4	0.626	0.646
L7	9.00	9.30	0.354	0.366
Dia.	3.00	3.20	0.118	0.126

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

4 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
TYN612MRG	TYN612M	TO-220AB	2.3 g	50	Tube
TYN612MFP	TYN612MFP	TO-220AB	2.0 g	50	Tube

5 Revision history

Date	Revision	Description of Changes
Sep-2002	1A	Last update.
10-Fev-2005	2	TO-220FPAB package added.
11-Apr-2007	3	Reformatted to current standards. Added typical and minimum values for V_{GT} in Table 2 .
17-Apr-2007	4	Added V_{GT} curve in Figure 6 .

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2007 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А