

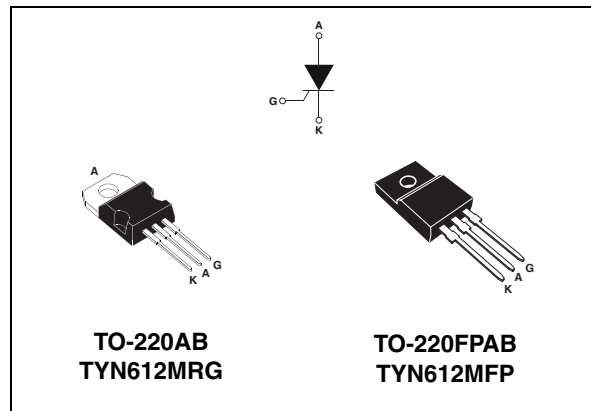
### Main features

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
			$t_p = 10 \text{ ms}$	
$I^2t$	$I^2t$ 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/ $\mu s$
$I_{GM}$	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		- 40 to + 150	$^\circ \text{ C}$
	Operating junction temperature range		- 40 to + 125	
$V_{RGM}$	Maximum peak reverse gate voltage		5	V

# 1 Characteristics

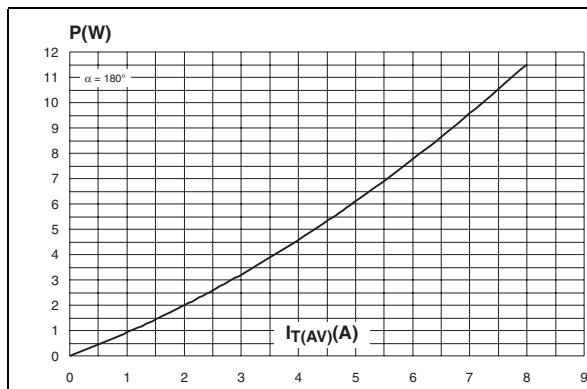
**Table 2. Electrical characteristics ( $T_j = 25^\circ\text{C}$ , unless otherwise specified)**

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/ $\mu\text{s}$
$V_{TM}$	$I_{TM} = 24\text{ A}$ $t_p = 380\ \mu\text{s}$	$T_j = 25^\circ\text{C}$	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 $\Omega$
$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM}$	$T_j = 25^\circ\text{C}$	MAX.	5	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$		2	mA

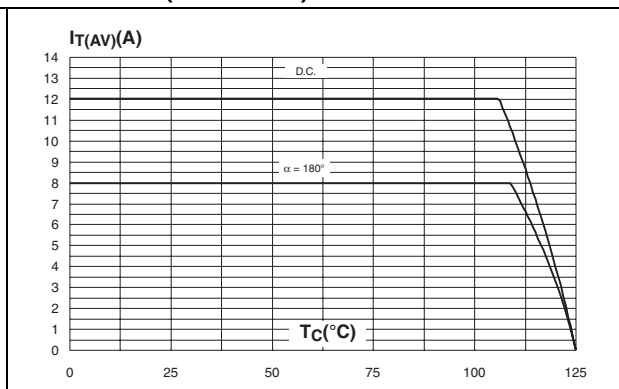
**Table 3. Thermal resistance**

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	

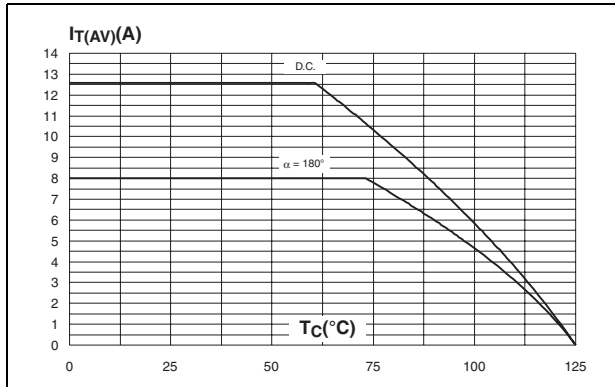
**Figure 1. Maximum average power dissipation versus average on-state current**



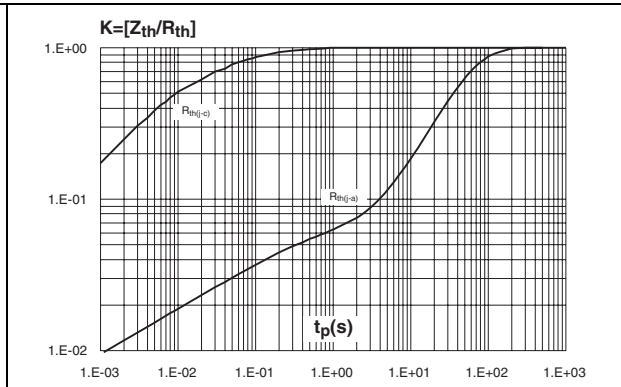
**Figure 2. Average and D.C. on-state current versus case temperature (TO-220AB)**



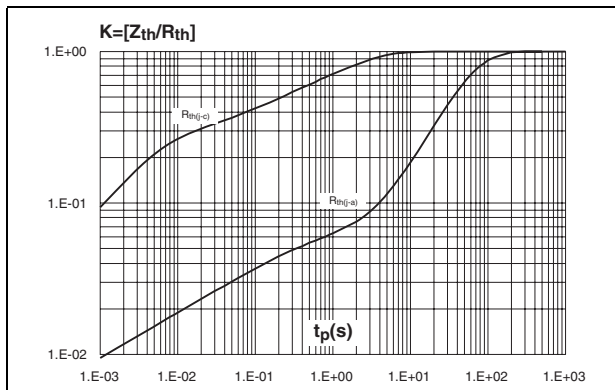
**Figure 3. Average and D.C. on-state current versus case temperature (TO-220FPAB)**



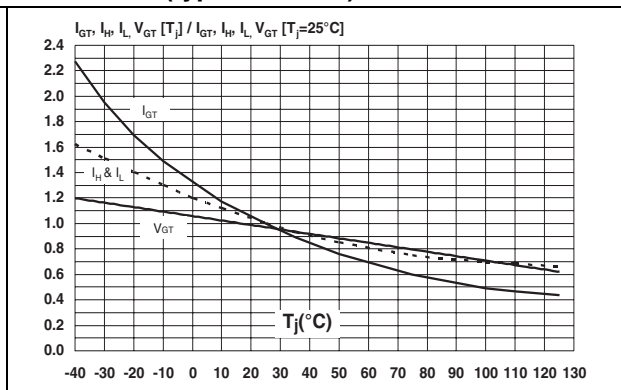
**Figure 4. Relative variation of thermal impedance versus pulse duration (TO-220AB)**



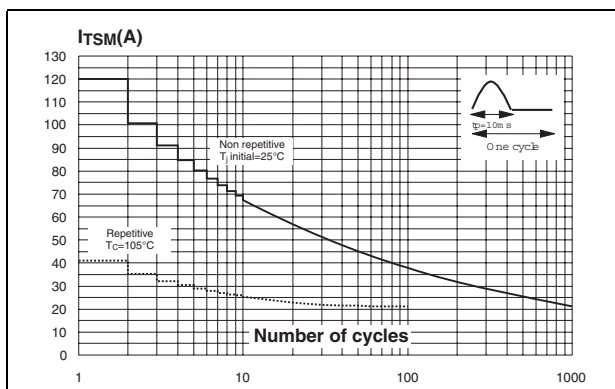
**Figure 5. Relative variation of thermal impedance versus pulse duration (TO-220FPAB)**



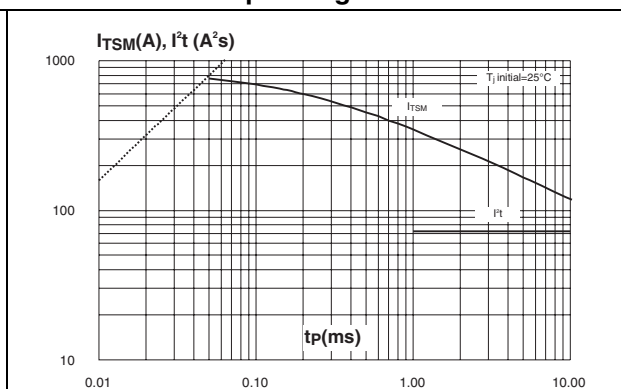
**Figure 6. Relative variation of gate trigger current, holding current, latching current and gate trigger voltage versus junction temperature (typical values)**



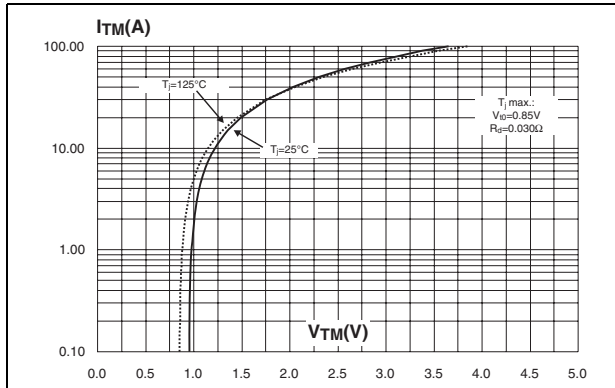
**Figure 7. Surge peak on-state current versus number of cycles**



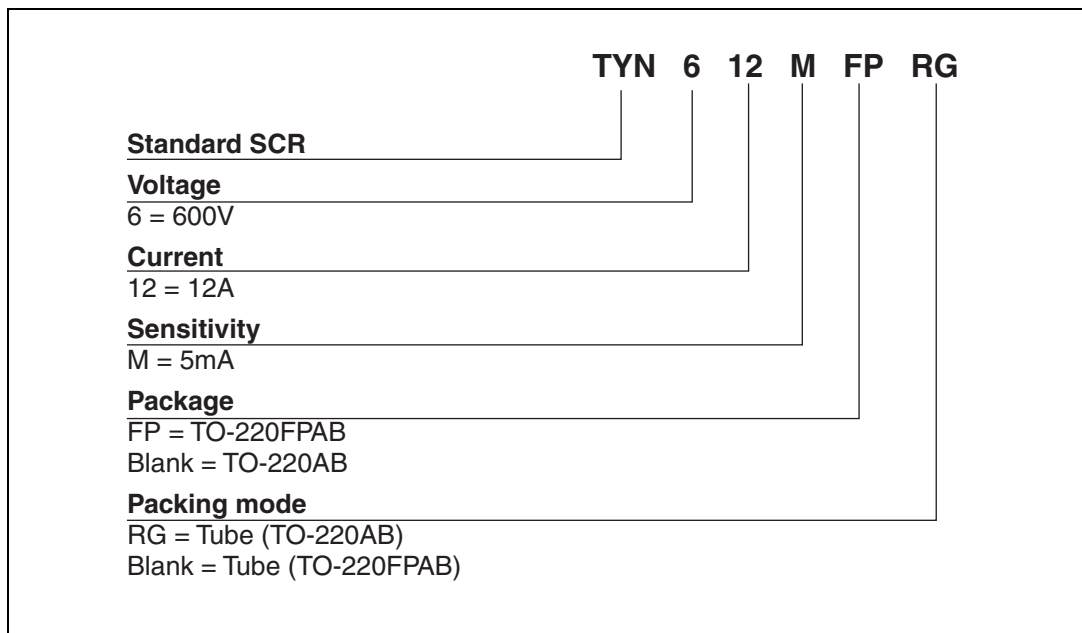
**Figure 8. Non-repetitive surge peak on-state current for a sinusoidal pulse with width t\_p < 10 ms, and corresponding values of I²t**



**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	

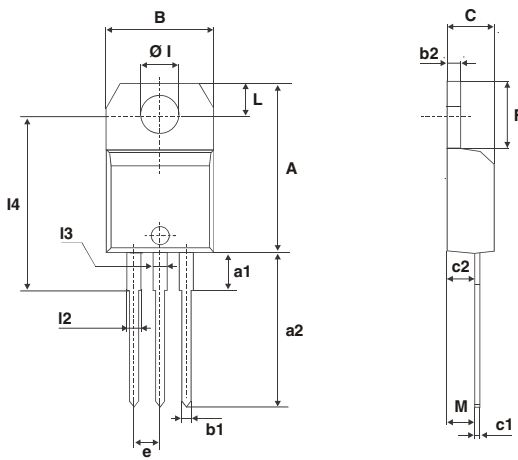
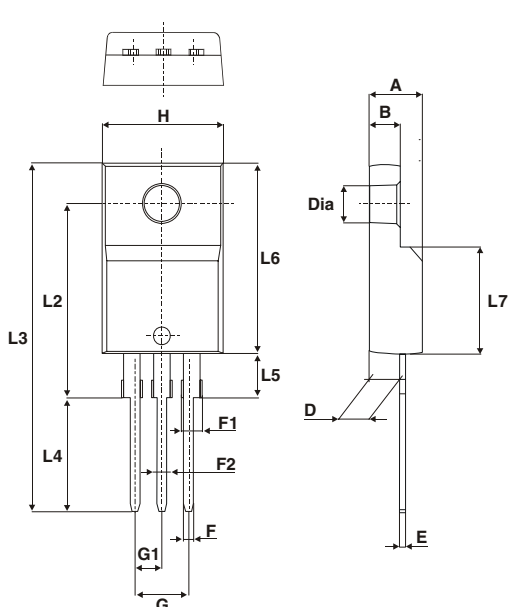


Table 5. TO-220FPAB Dimensions



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](http://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 <a href="#">Table 2</a> .
17-Apr-2007	4	Added $V_{GT}$ curve in <a href="#">Figure 6</a> .

**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](http://www.st.com)



Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкуренспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)