

12 A SCR

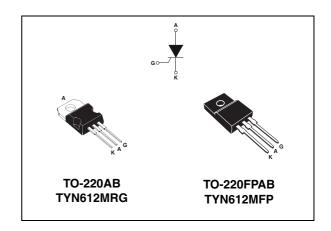
Main features

Symbol	Value	Unit
I _{T(RMS)}	12	Α
V _{DRM} /V _{RRM}	600	٧
I _{GT} (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	
	RMS on-state current	TO-220AB $T_c = 105^{\circ} \text{ C}$		12	Δ.	
I _{T(RMS)}	(180° conduction angle)	TO-220FPAB	T _c = 70° C	12	Α	
	Average on-state current	TO-220AB	T _c = 105° C	8	Α	
I _{T(AV)}	(180° conduction angle)	TO-220FPAB	T _c = 70° C	8		
	Non repetitive surge peak on-state	$t_p = 8.3 \text{ ms}$	T - 25° C	125	Α	
ITSM	current	t _p = 10 ms	$T_j = 25^{\circ} C$	120	Α	
l ² t	I ² t Value for fusing	t _p = 10 ms	T _j = 25° C	72	A ² s	
dI/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \le 100 \text{ ns}$	F = 60 Hz	T _j = 125° C	50	A/µs	
I _{GM}	Peak gate current	t _p = 20 μs	T _j = 125° C	4	Α	
P _{G(AV)}	Average gate power dissipation $T_j = 125^{\circ} C$		1	W		
T _{stg} T _j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	° C	
V _{RGM}	Maximum peak reverse gate voltage			5	V	

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

Symbol	Test Conditions			Value	Unit
	V 10 V P 140 O		MIN.	1.5	mΛ
I _{GT}	$V_D = 12 \text{ V}$ $R_L = 140 \Omega$ MAX.	MAX.	5	- mA	
			MIN.	0.5	V
V_{GT}	$V_D = 12 \text{ V}$ $R_L = 140 \Omega$		TYP.	0.7	
				1.3	
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$	T _j = 125° C	MIN.	0.2	V
I _H	I _T = 500 mA Gate open		MAX.	20	mA
ΙL	$I_G = 1.2 I_{GT}$		MAX.	40	mA
dV/dt	V _D = 67 % V _{DRM} Gate open	T _j =125° C	MIN.	50	V/µs
V _{TM}	$I_{TM} = 24 \text{ A}$ $t_p = 380 \mu\text{s}$	T _j = 25° 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	mΩ
I _{DRM}	V - V	T _j = 25° C	MAX.	5	μΑ
I _{RRM}	$V_{DRM} = V_{RRM}$	T _j = 125° C	2 NIAX.		mA

Table 3. Thermal resistance

Symbol	Parameter		Value	Unit	
В	lunction to coop (DC)	TO-220AB	1.3	° C/W	
R _{th(j-c)}	Junction to case (DC)	TO-220FPAB	4.5	C/VV	
R _{th(j-a)} Jun	lunction to ambient (DC)	TO-220AB	55	° C/W	
	Junction to ambient (DC)	TO-220FPAB	55	C/VV	

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

 $I_{T(AV)}(A)$

P(W)

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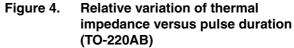
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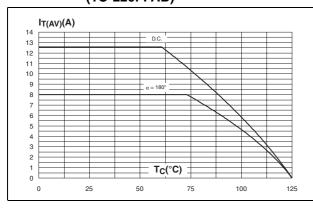
Figure 2. Average and D.C. on-state current versus case temperature (TO-220AB)

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TYN612M Characteristics

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





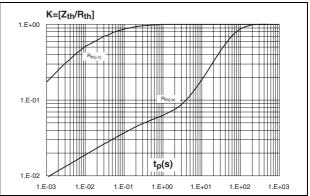
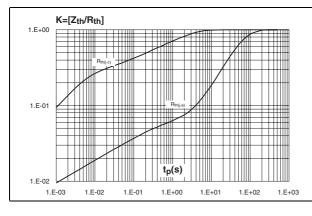


Figure 5. Relative variation of thermal impedance versus pulse duration (TO-220FPAB)

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



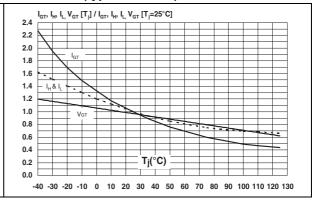
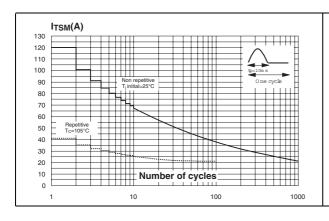
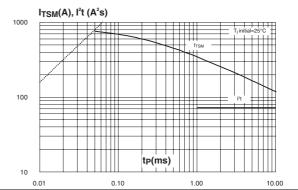


Figure 7. Surge peak on-state current versus Figure 8. number of cycles

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





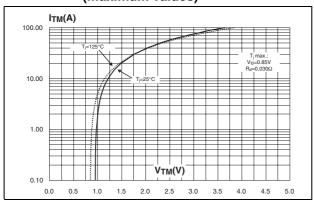
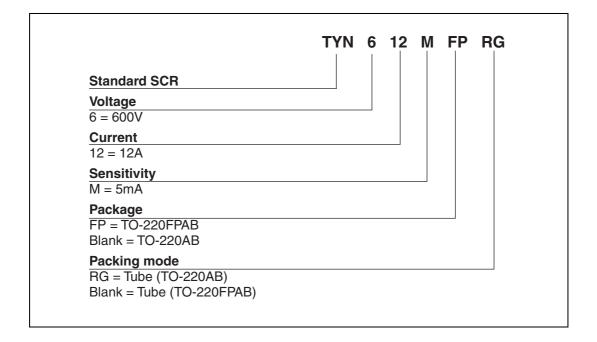


Figure 9. On-state characteristics (maximum values)

2 Ordering information scheme



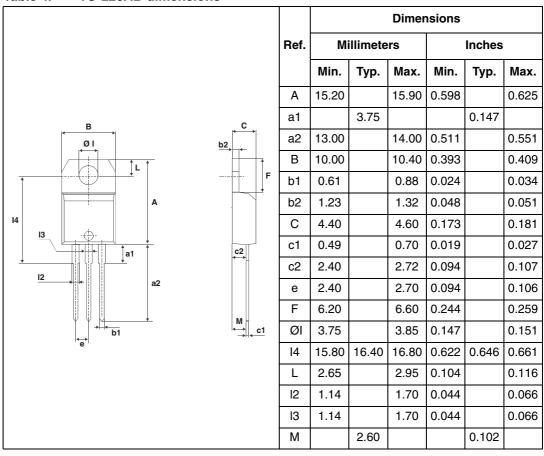
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TYN612M Package information

3 Package information

Epoxy meets UL94, V0

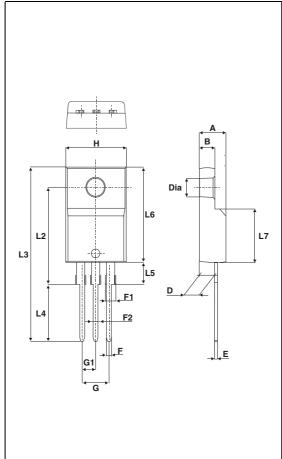
Table 4. TO-220AB dimensions



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Package information TYN612M

Table 5. TO-220FPAB Dimensions



	Dimensions			
Ref.	Millimeters		Inc	hes
	Min.	Max.	Min.	Max.
Α	4.4	4.6	0.173	0.181
В	2.5	2.7	0.098	0.106
D	2.5	2.75	0.098	0.108
Е	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
Н	10	10.4	0.393	0.409
L2	16	Тур.	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.

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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 $V_{\rm GT}$ in <i>Table 2</i> .
17-Apr-2007	4	Added V _{GT} curve in <i>Figure 6</i> .



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