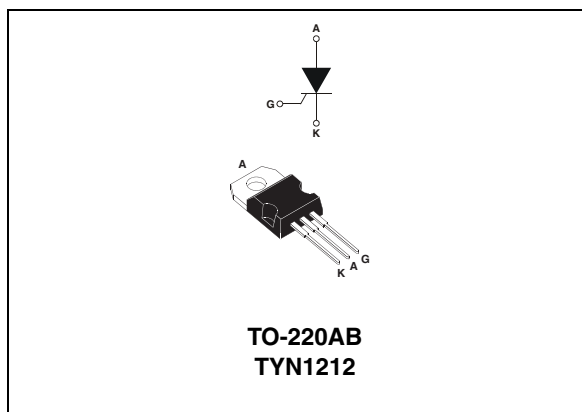


### Features

- On-state rms current 12 A
- Gate trigger current <15 mA
- Repetitive peak voltage 1200 V

### Description

The TYN1212 is suitable for state relays and high power motor control.



**Table 1. Device summary**

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
$V_{DRM}/V_{RRM}$	1200	V
$I_{GT}$ (min. / max)	<15	mA

# 1 Characteristics

**Table 2. Absolute ratings (limiting values)**

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	On-state rms current (180 °C conduction angle)	$T_c = 80\text{ °C}$	12	A
$I_{TSM}$	Non repetitive surge peak on-state current	$t_p = 10\text{ ms}$ $T_j = 25\text{ °C}$	120	A
$I^2t$	$I^2t$ Value for fusing	$t_p = 10\text{ ms}$	72	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current		100	A/μs
$V_{DRM}/V_{RRM}$	Repetitive peak off-state voltage		1200	V
$T_{stg}$ $T_j$	Storage junction temperature range Operating junction temperature range		- 40 to + 125 - 40 to + 125	°C

**Table 3. Electrical characteristics ( $T_j = 25\text{ °C}$ , unless otherwise specified)**

Symbol	Test conditions			Value	Unit
$I_{GT}$	$V_D = 12\text{ V}$ , $R_L = 33\text{ }\Omega$ pulse duration >20 μs	$T_j = 25\text{ °C}$	MAX.	15	mA
$V_{GT}$	$V_D = 12\text{ V}$ , $R_L = 33\text{ }\Omega$ pulse duration >20 μs	$T_j = 25\text{ °C}$	MAX.	1.5	V
$V_{GD}$	$V_D = V_{DRM}$ , $R_L = 3.3\text{ k}\Omega$ pulse duration >20	$T_j = 125\text{ °C}$	MIN.	0.2	V
$I_H$	$I_T = 100\text{ mA}$ Gate open	$T_j = 25\text{ °C}$	MAX.	30	mA
dV/dt	Linear slope $V_D = 67\% V_{DRM}$ Gate open	$T_j = 125\text{ °C}$	MIN.	200	V/μs
$V_{TM}$	$I_{TM} = 24\text{ A}$ $t_p = 10\text{ ms}$	$T_j = 25\text{ °C}$	MAX.	1.6	V
$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM} = 1200\text{ V}$ gate open	$T_j = 25\text{ °C}$	MAX.	10	μA
		$T_j = 125\text{ °C}$		3	mA
$t_{gt}$	Turn-on time $I_G = 40\text{ mA}$ , $dI_G/dt = 0.45\text{ A}/\mu\text{s}$ , $I_T = 24\text{ A}$ $V_{DRM}$	$T_j = 25\text{ °C}$	TYP.	2	μs
$t_q$	Circuit commutated turn-off time $I_T = 10\text{ A}$ , $V_R = 25\text{ V}$ , $dI_R/dt = 30\text{ A}/\mu\text{s}$ $dV/dt = 50\text{ V}/\mu\text{s}$	$T_j = 125\text{ °C}$	TYP.	50	μs

**Table 4. Thermal resistance**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (DC)	3.8	°C/W

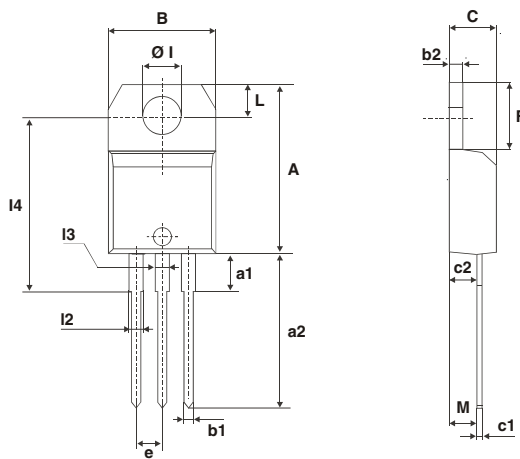
## 2 Package information

- Epoxy meets UL94, V0
- Recommended torque value: 0.4 to 0.6 N·m
- Lead-free package

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK® is an ST trademark.

**Table 5. 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	



### 3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
TYN1212RG	TYN1212	TO-220AB	2.3 g	50	Tube

### 4 Revision history

Table 7. Document revision history

Date	Revision	Changes
25-Nov-2011	1	First issue.

**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 TWO AUTHORIZED ST REPRESENTATIVES, 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.

© 2011 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 - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

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