

6 A Snubberless™ Triac

Features

- $I_{T(RMS)} = 6\text{ A}$
- $V_{DRM} = V_{RRM} = 600\text{ and }800\text{ V}$

Description

The high commutation performance of this device is based on Snubberless technology from ST. The T630W is especially suited for high inductance loads. This device complies with UL standards (Ref. E81734).

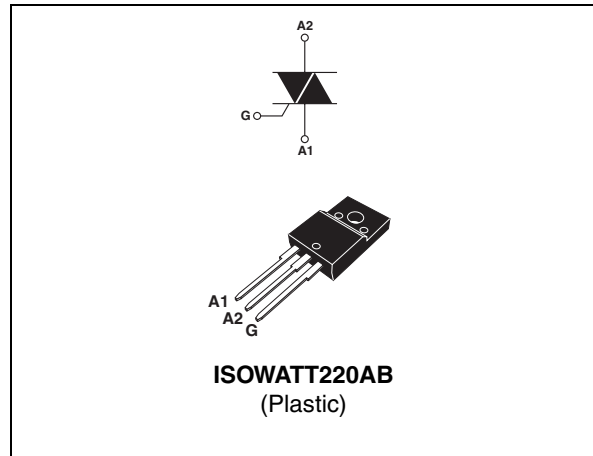


Table 1. Device summary

Symbol	Value	Unit
$I_{T(RMS)}$	6	A
V_{DRM}/V_{RRM}	600 and 800	V
I_{GT}	30	mA

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit		
$I_{T(RMS)}$	On-state rms current (full sine wave)		$T_c = 105^\circ\text{C}$	6	A	
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	F = 50 Hz	t = 20 ms	80	A	
		F = 60 Hz	t = 16.7 ms	84		
I^2t	I^2t Value for fusing		$t_p = 10$ ms	36	A ² s	
dl/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100$ ns		F = 120 Hz	50	A/ μ s	
I_{GM}	Peak gate current		$t_p = 20$ μ 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	$^\circ\text{C}$	

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

Symbol	Test conditions		Quadrant		Value	Unit
$I_{GT}^{(1)}$	$V_D = 12$ V $R_L = 30$ Ω		I - II - III	Max.	30	mA
V_{GT}			I - II - III	Max.	1.3	V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3$ k Ω	$T_j = 125^\circ\text{C}$	I - II - III	Min.	0.2	V
$I_H^{(2)}$	$I_T = 100$ mA			Max.	50	mA
I_L	$I_G = 1.2 I_{GT}$		I - III	Max.	70	mA
			II		80	
dV/dt ⁽²⁾	$V_D = 67\% V_{DRM}$ gate open	$T_j = 125^\circ\text{C}$		Min.	500	V/ μ s
(dl/dt) _c ⁽²⁾	Without snubber			Min.	4.5	A/ms

1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.
2. For both polarities of A2 referenced to A1

Table 4. Static characteristics

Symbol	Test conditions			Value	Unit	
$V_T^{(1)}$	$I_{TM} = 8.5$ A	$t_p = 380$ μ s	$T_j = 25^\circ\text{C}$	Max.	1.4	V
$V_{t0}^{(1)}$	Threshold voltage		$T_j = 125^\circ\text{C}$	Max.	0.85	V
$R_d^{(1)}$	Dynamic resistance		$T_j = 125^\circ\text{C}$	Max.	50	m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$		$T_j = 25^\circ\text{C}$	Max.	5	μ A
			$T_j = 125^\circ\text{C}$		1	mA

1. For both polarities of A2 referenced to A1

Table 5. Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (AC) (360° conduction angle)	3.4	°C/W
$R_{th(j-a)}$	Junction to ambient	50	°C/W

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

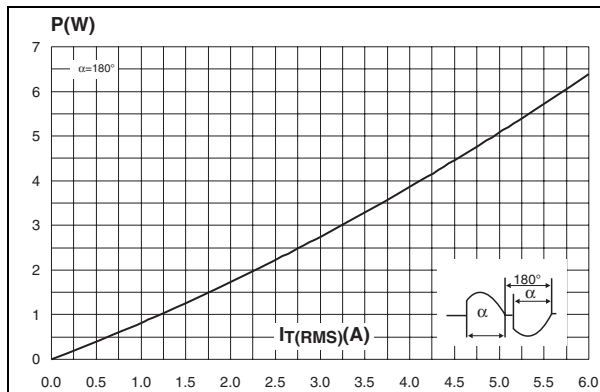


Figure 2. On-state rms current versus case temperature

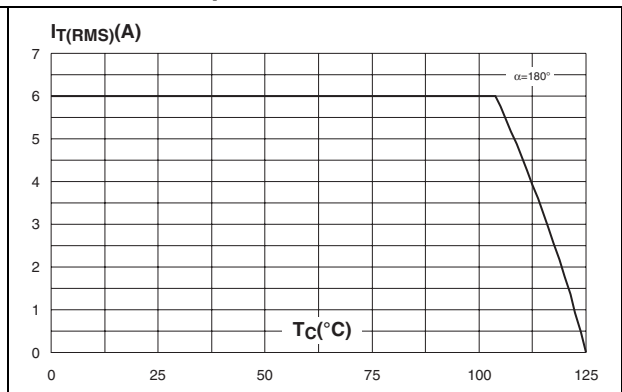


Figure 3. Relative variation of thermal impedance versus pulse duration

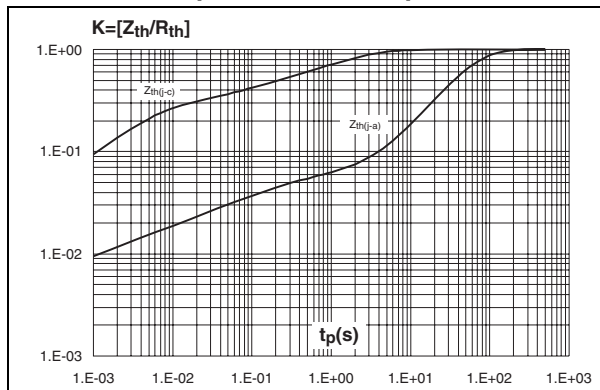


Figure 4. On-state characteristics (maximum values)

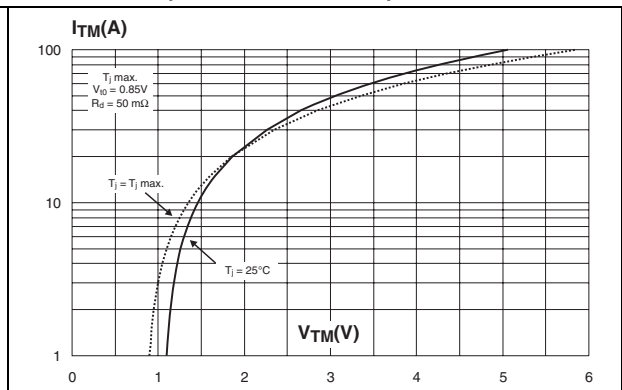


Figure 5. Surge peak on-state current versus number of cycles

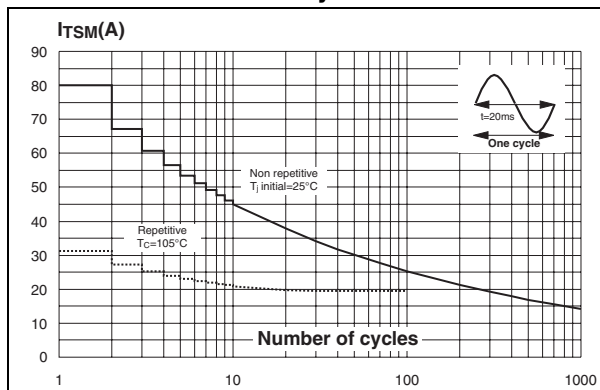


Figure 6. Non-repetitive surge peak on-state current for a sinusoidal

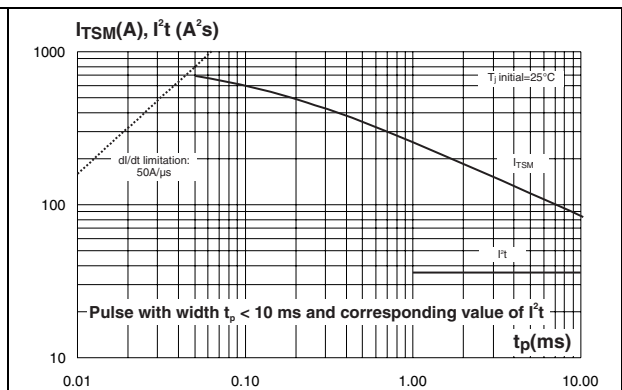


Figure 7. Relative variation of gate trigger current, holding current and latching

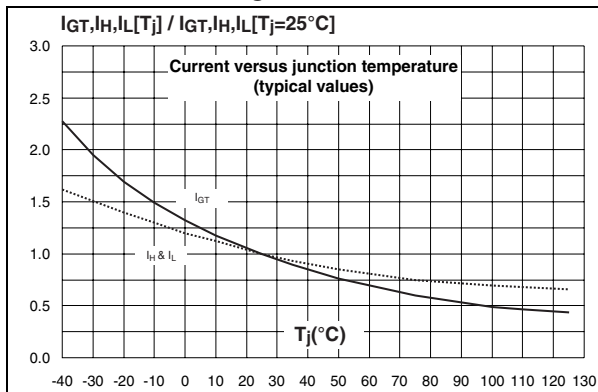


Figure 8. Relative variation of critical rate of decrease of main current versus reapplied (dV/dt)_c (typical value)

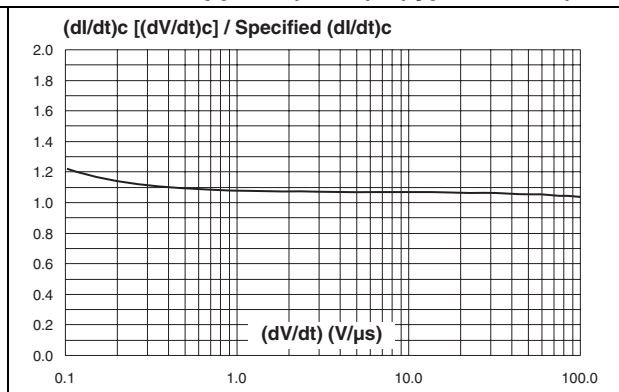
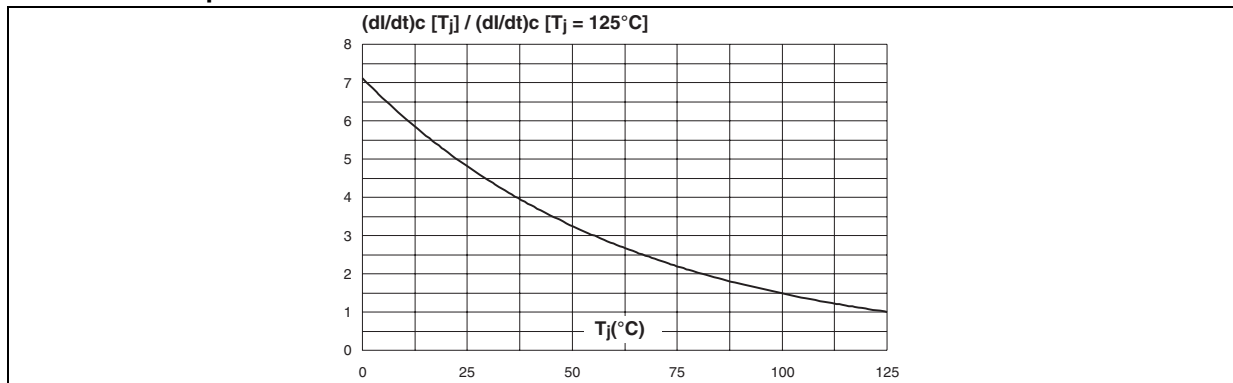
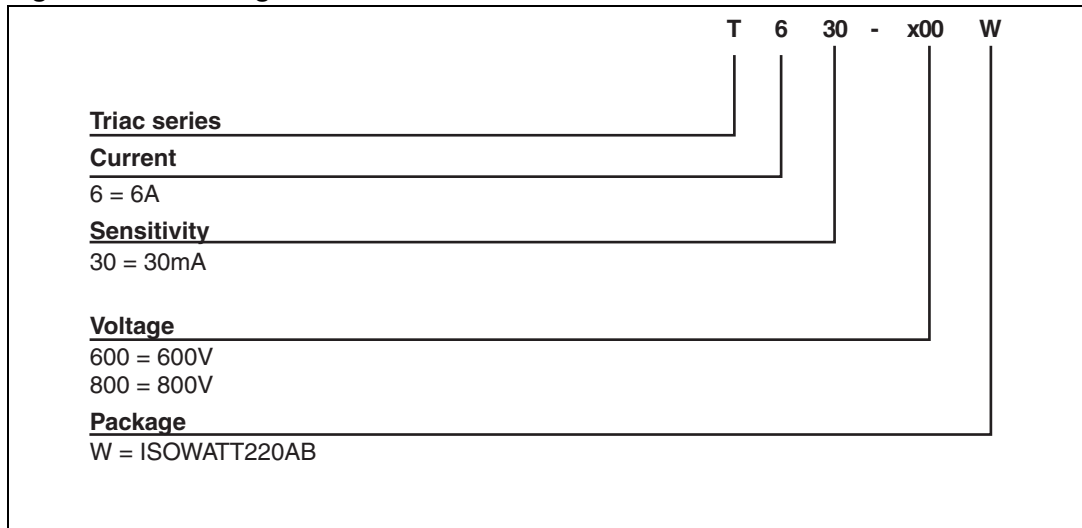


Figure 9. Relative variation of critical rate of decrease of main current versus junction temperature



2 Ordering information scheme

Figure 10. Ordering information scheme



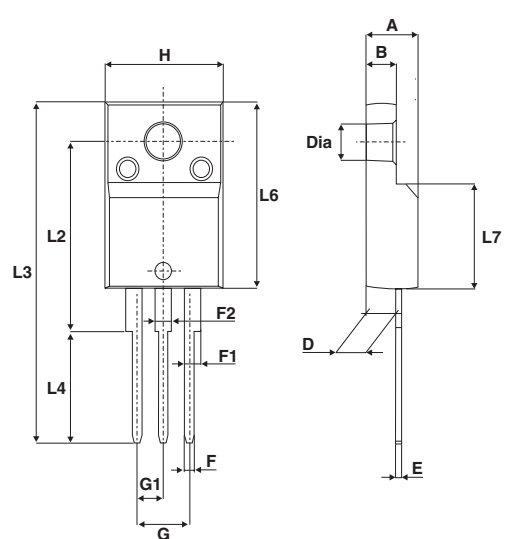
3 Package information

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)
- Recommended torque: 0.4 to 0.6 N·m

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. ECOPACK® is an ST trademark.

Table 6. ISOWATT220AB dimensions

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
B	2.50	2.70	0.098	0.106
D	2.50	2.75	0.098	0.108
E	0.40	0.70	0.016	0.028
F	0.75	1.00	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	2.40	2.70	0.094	0.106
H	10.00	10.40	0.394	0.409
L2	16.00 typ.		0.630 typ.	
L3	28.60	30.60	1.125	1.205
L4	9.80	10.60	0.386	0.417
L6	15.90	16.40	0.626	0.646
L7	9.00	9.30	0.354	0.366
Diam	3.00	3.20	0.118	0.126



4 Ordering information

Table 7. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
T630-600W	T630600W	ISOWATT220AB	2.3 g	50	Tube
T630-800W	T630800W				

5 Revision history

Table 8. Document revision history

Date	Revision	Changes
March-2004	2	Last release.
09-Feb-2010	3	Document split into T620W and T630W. This document provides information for the T630W.

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.

© 2010 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