



T1620W, T1630W

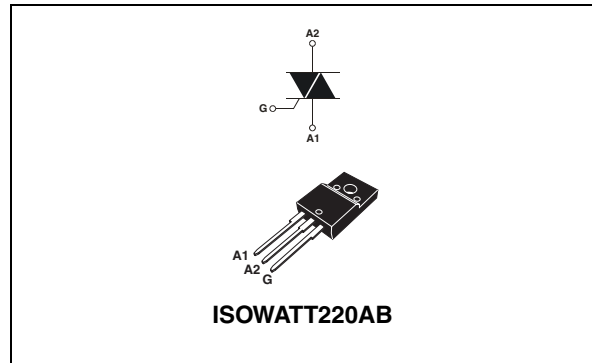
Snubberless™ 16A Triacs

Features

- $I_{T(RMS)} = 16\text{ A}$
- $V_{DRM} / V_{RRM} = 600, 700\text{ and }800\text{ V}$
- $I_{GT} = 20\text{ to }30\text{ mA}$

Description

Based on ST's Snubberless technology providing high commutation performances, the T1620-600W/700W/800W and T1630-600W are especially recommended for use with inductive loads such as rice cookers. They comply with UL standards (ref. E81734).



TM: Snubberless is a trademark of STMicroelectronics

1 Characteristics

Table 1. Absolute maximum ratings

Symbol	Parameter		Value	Unit	
$I_{T(RMS)}$	On-state rms current (full sine wave)		$T_c = 80\text{ }^\circ\text{C}$	16	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = $25\text{ }^\circ\text{C}$)	F = 50 Hz	t = 20 ms	200	A
		F = 60 Hz	t = 16.7 ms	218	
I^2t	I^2t Value for fusing	$t_p = 10\text{ ms}$		220	A ² s
dI/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$	F = 120 Hz	$T_j = 125\text{ }^\circ\text{C}$	50	A/ μs
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voltage	$t_p = 10\text{ ms}$	$T_j = 25\text{ }^\circ\text{C}$	$V_{DRM}/V_{RRM} + 100$	V
I_{GM}	Peak gate current	$t_p = 20\text{ }\mu\text{s}$	$T_j = 125\text{ }^\circ\text{C}$	4	A
$P_{G(AV)}$	Average gate power dissipation	$T_j = 125\text{ }^\circ\text{C}$		1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	$^\circ\text{C}$

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

Symbol	Test conditions	Quadrant		Value		Unit
				T1620	T1630	
$I_{GT}^{(1)}$	$V_D = 12\text{ V}$ $R_L = 30\text{ }\Omega$	I - II - III	MAX.	20	30	mA
V_{GT}		I - II - III	MAX.	1.3		V
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3\text{ k}\Omega$, $T_j = 125\text{ }^\circ\text{C}$	I - II - III	MIN.	0.2		V
$I_H^{(2)}$	$I_T = 250\text{ mA}$		MAX.	35	50	mA
I_L	$I_G = 1.2 I_{GT}$	I - III	MAX.	70	80	mA
		II		80	100	
dV/dt ⁽²⁾	$V_D = 67\% V_{DRM}$, gate open, $T_j = 125\text{ }^\circ\text{C}$		MIN.	300	500	V/ μs
(dI/dt) _c ⁽²⁾	Without snubber, $T_j = 125\text{ }^\circ\text{C}$		MIN.	8.5	11	A/ms

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

Table 3. Static characteristics

Symbol	Test conditions	Value	Unit
$V_T^{(1)}$	$I_{TM} = 22.5 \text{ A}$, $t_p = 380 \text{ } \mu\text{s}$	$T_j = 25 \text{ }^\circ\text{C}$	MAX. 1.4 V
$V_{TO}^{(1)}$	Threshold voltage	$T_j = 125 \text{ }^\circ\text{C}$	MAX. 0.85 V
$R_D^{(1)}$	Dynamic resistance	$T_j = 125 \text{ }^\circ\text{C}$	MAX. 250 mΩ
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25 \text{ }^\circ\text{C}$	MAX. 5 μA
		$T_j = 125 \text{ }^\circ\text{C}$	MAX. 1 mA

1. for both polarities of A2 referenced to A1.

Table 4. Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (AC) (360° conduction angle)	3.1	°C/W
$R_{th(j-a)}$	Junction to ambient	60	°C/W

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

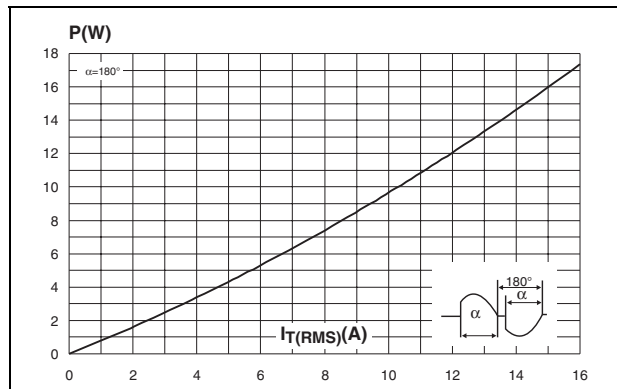


Figure 2. On-state rms current versus case temperature

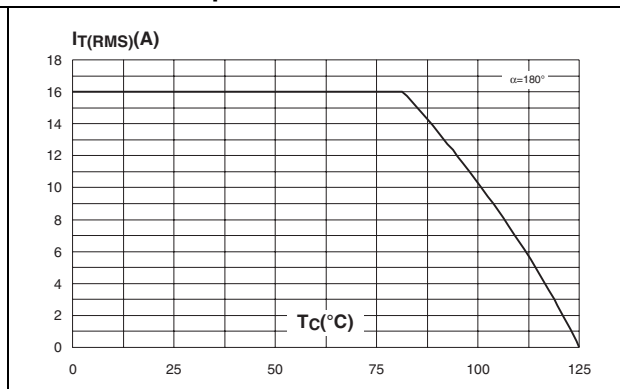


Figure 3. Relative variation of thermal impedance versus pulse duration

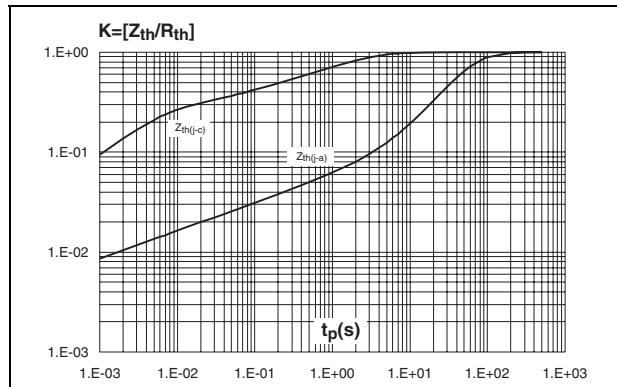


Figure 4. On-state characteristics (maximum values)

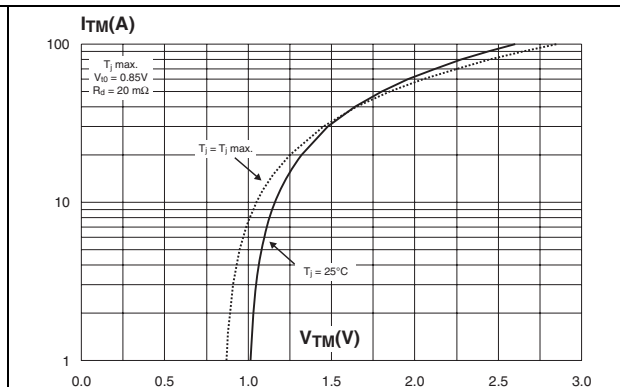


Figure 5. Surge peak on-state current versus number of cycles

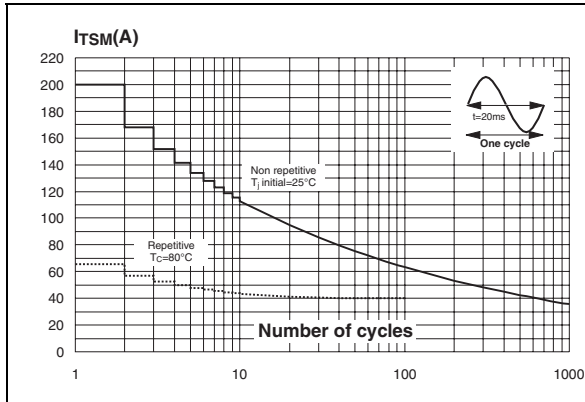


Figure 6. Non-repetitive surge peak on-state current for a sinusoidal

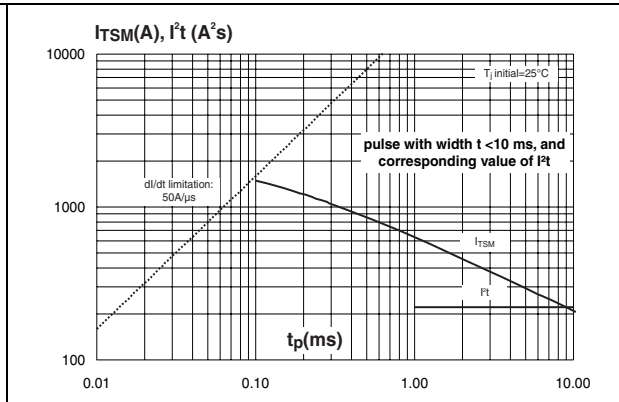


Figure 7. Relative variation of I_{GT}, I_H, I_L vs junction temperature (typical values)

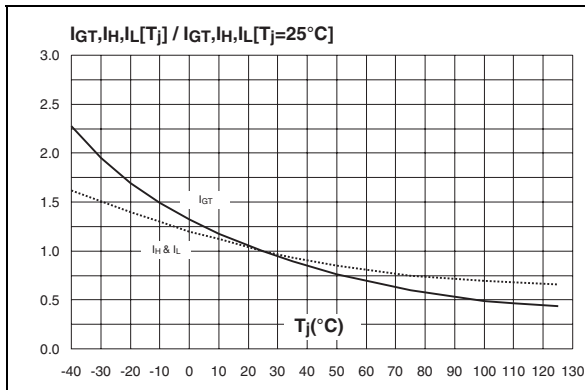


Figure 8. Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values)

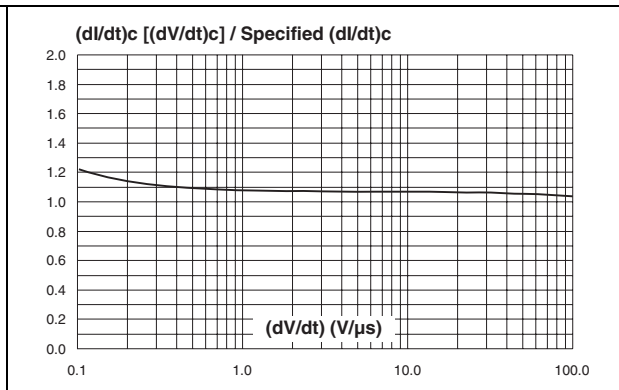
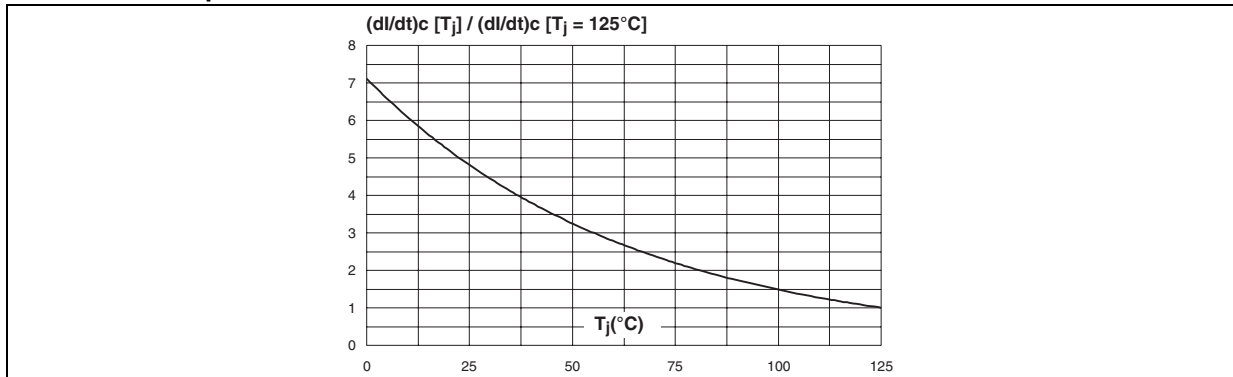


Figure 9. Relative variation of critical rate of decrease of main current versus junction temperature



2 Ordering information scheme

Figure 10. Ordering information scheme

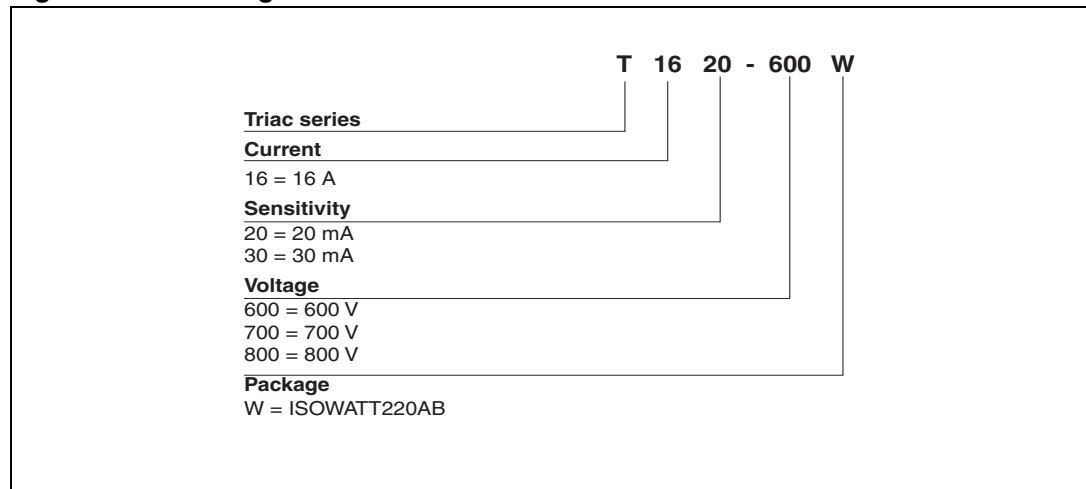


Table 5. Product Selector

Part Numbers	Voltage (xxx)			Sensitivity	Type	Package
	600 V	700 V	800 V			
T1620-600W	X			20 mA	Snubberless	ISOWATT220AB
T1620-700W		X				
T1620-800W			X			
T1630-600W	X			30 mA		

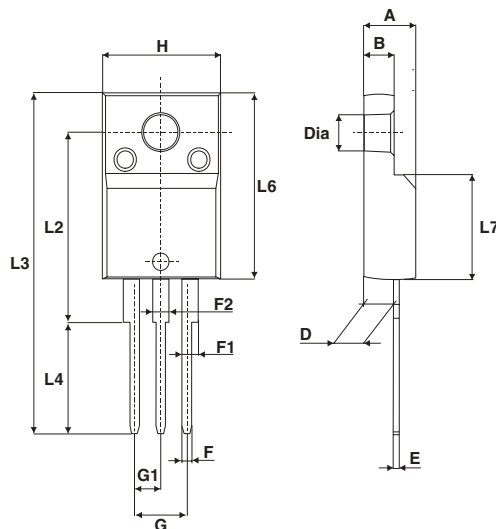
3 Package mechanical data

- Epoxy meets UL94, V0
- 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
T1620-600W	T1620600W	ISOWATT220AB	2.3 g	50	Tube
T1620-700W	T1620700W				
T1620-800W	T1620800W				
T1630-600W	T1630600W				

5 Revision history

Table 8. Document revision history

Date	Revision	Changes
Mar-2004	2	Last update.
18-Oct-2011	3	Insert T1620-700W, Insert 700 V in fig.10,deleted T1630-800W.

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