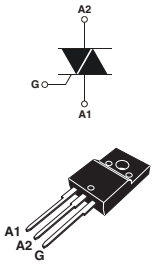
T1620W, T1630W

Snubberless™ 16A Triacs

Features

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



ISOWATT220AB

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 °C	16	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25 °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 ms		220	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , t_r ≤ 100 ns	F = 120 Hz	T_j = 125 °C	50	A/µs
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voltage	t_p = 10 ms	T_j = 25 °C	V_{DRM}/V_{RRM} + 100	V
I_{GM}	Peak gate current	t_p = 20 µs	T_j = 125 °C	4	A
$P_{G(AV)}$	Average gate power dissipation		T_j = 125 °C	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C

Table 2. Electrical characteristics (T_j = 25 °C, unless otherwise specified)

Symbol	Test conditions	Quadrant		Value		Unit
				T1620	T1630	
I_{GT} (1)	V_D = 12 V R_L = 30 Ω	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 kΩ, T_j = 125 °C	I - II - III	MIN.	0.2		V
I_H (2)	I_T = 250 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 °C		MIN.	300	500	V/µs
(dI/dt)c (2)	Without snubber, T_j = 125 °C		MIN.	8.5	11	A/ms

1. minimum I_{GT} is guaranted 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 A, t_p = 380 µs	T_j = 25 °C	MAX.	1.4	V
V_{TO} (1)	Threshold voltage	T_j = 125 °C	MAX.	0.85	V
R_D (1)	Dynamic resistance	T_j = 125 °C	MAX.	250	mΩ
I_{DRM} I_{RRM}	V_{DRM} = V_{RRM}	T_j = 25 °C	MAX.	5	µA
		T_j = 125 °C		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

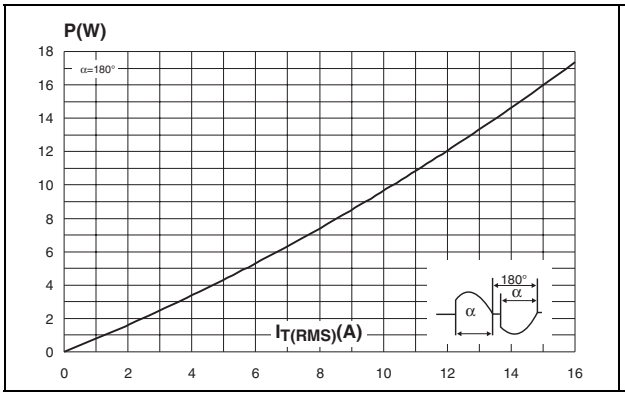


Figure 2. On-state rms current versus case temperature

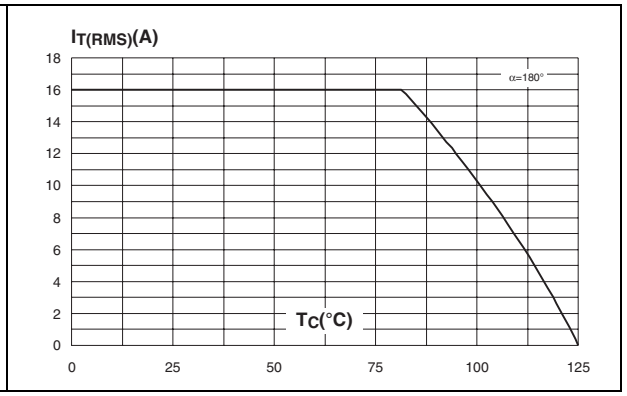


Figure 3. Relative variation of thermal impedance versus pulse duration

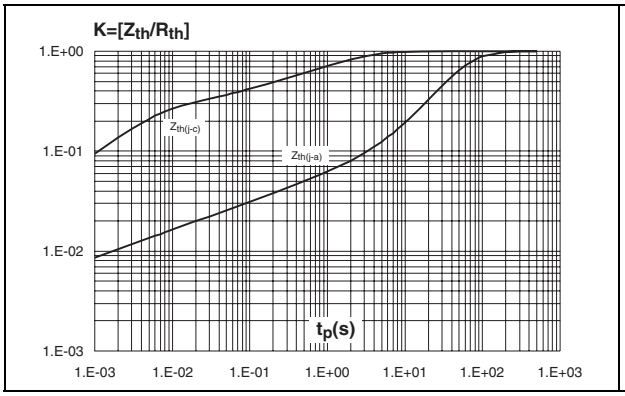


Figure 4. On-state characteristics (maximum values)

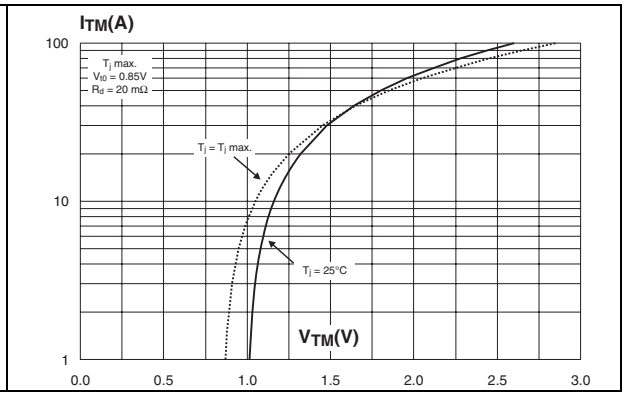


Figure 5. Surge peak on-state current versus number of cycles

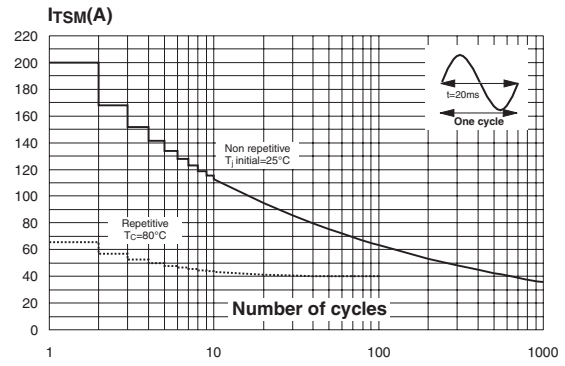


Figure 6. Non-repetitive surge peak on-state current for a sinusoidal

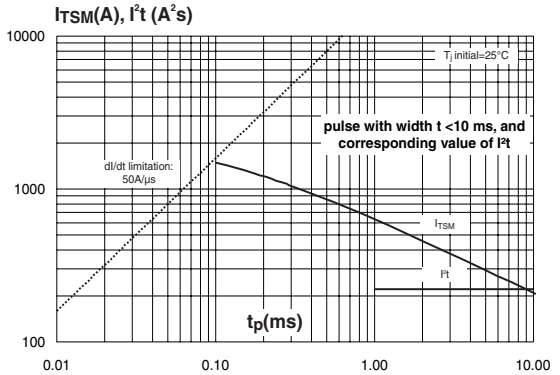


Figure 7. Relative variation of I_{GT},I_H, I_L vs junction temperature (typical values)

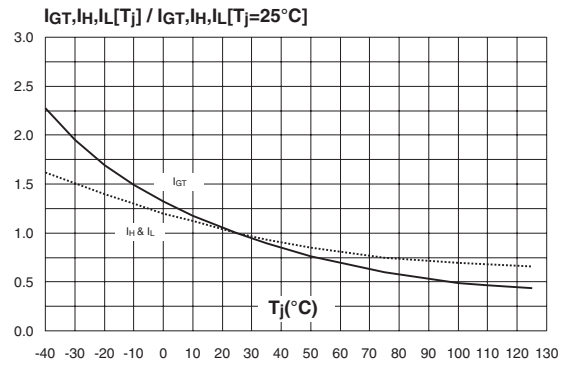


Figure 8. Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

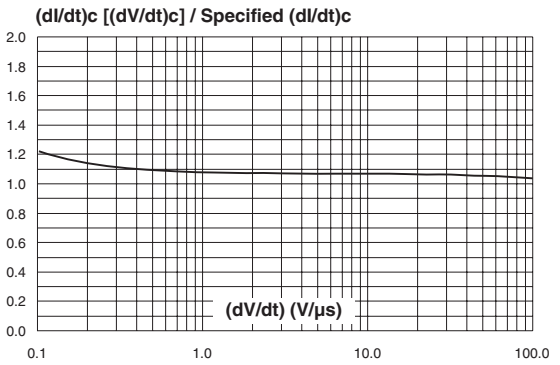
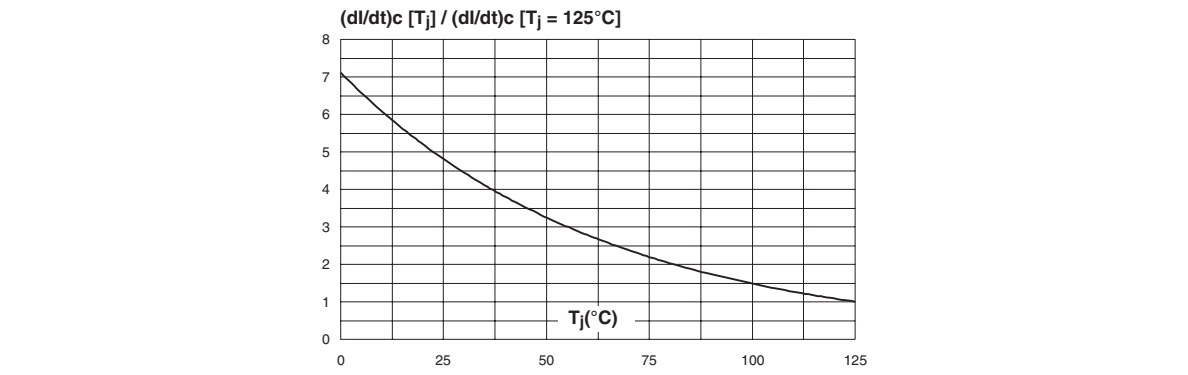


Figure 9. Relative variation of critical rate of decrease of main current versus junction temperature



2 Ordering information scheme

Figure 10. Ordering information scheme

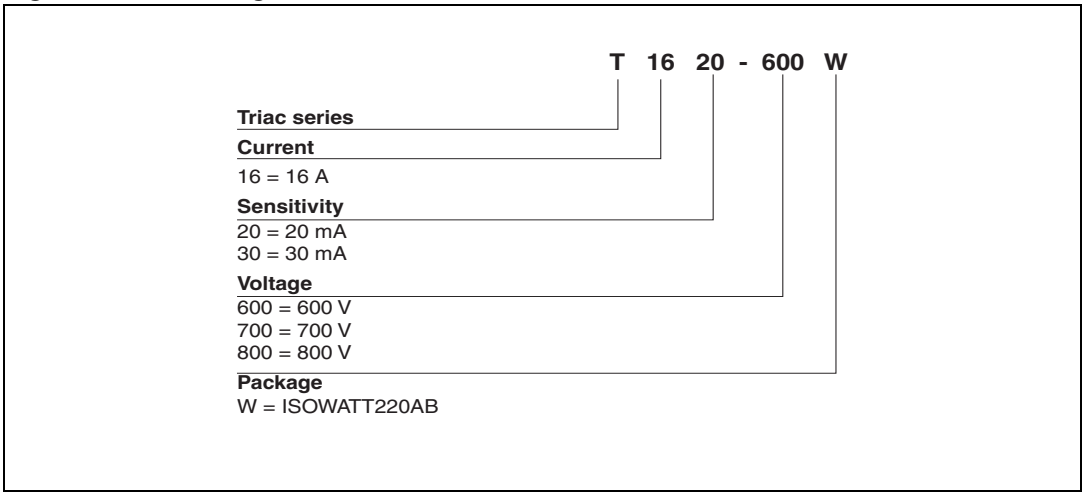


Table 5. Product Selector

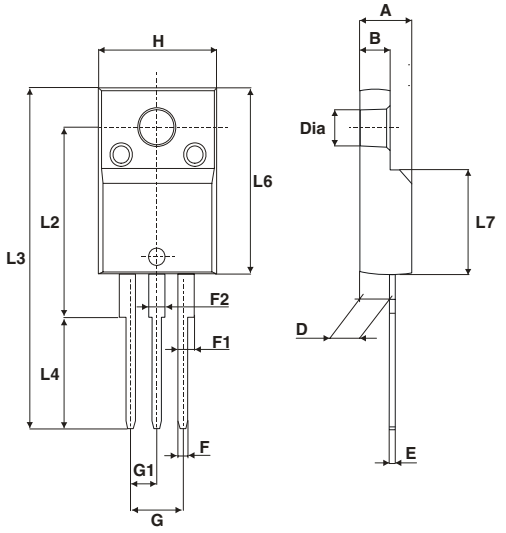
Part Numbers	Voltage (xxx)			Sensitivity	Type	Package
	600 V	700 V	800 V			
T1620-600W	X			20 mA	Snubberless	ISOWATT220AB
T1620-700W		X				
T1620-800W			X			
T1630-600W	X			30 mA		

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.

Mouser Electronics

Authorized Distributor

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STMicroelectronics:

T1620-700W T1620-600W