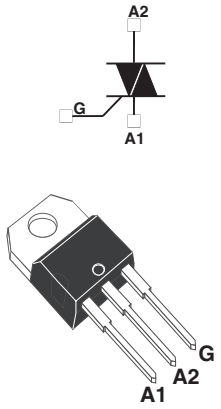
BTA06T-600CWRG

6 A Snubberless™ Triac

Features

- High static and dynamic commutation
- BTA series is UL1557 certified (File ref.: 81734)
- Package is RoHS (2002/95/EC) compliant
- I_{GT} = 35 mA



TO-220AB insulated
BTA06T-600CW

Applications

Specially designed for power tool applications, it can also be used to drive loads like motor speed controller, kitchen equipments such as electro valves, light dimmers and similar.

Description

Available in through-hole package, the Triac BTA06T-600CW is suitable for general purpose ac switching.

Being a fully insulated package, the BTA06T-600CW provides insulation rated at 2500 V rms.

TM: Snubberless is a trademark of STMicroelectronics

1 Characteristics

Table 1. Absolute maximum ratings (limiting values)

Symbol	Parameter			Value	Unit
$I_{T(RMS)}$	On-state rms current (full sine wave)		T_c = 100 °C	6	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle sine wave, T_j initial = 25 °C)	F = 60 Hz	t = 16.7 ms	47	A
		F = 50 Hz	t = 20 ms	45	
I^2t	I^2t Value for fusing	t_p = 10 ms		13	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT}, $t_r \leq$ 100 ns	F = 120 Hz	T_j = 125 °C	50	A/µs
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voiltage	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, Snubberless (3 quadrants) (T_j = 25 °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	35	mA
V_{GT}	V_D = 12 V R_L = 30 Ω	I - II - III	MAX	1.3	V
V_{GD}	V_D = V_{DRM} R_L = 3.3 kΩ	I - II - III	MIN	0.2	V
I_H (2)	I_T = 100 mA		MAX	35	mA
I_L	I_G = 1.2 x I_{GT}	I - III	MAX	50	mA
		II		80	
dV/dt (2)	V_D = 67% V_{DRM}, gate open, T_j = 125 °C		MIN	750	V/µs
(dI/dt)c (2)	Without snubber, T_j = 125 °C		MIN	8.0	A/ms

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

Table 3. Static electrical characteristics

Symbol	Test conditions			Value	Unit
V_{TM} (1)	I_{TM} = 8.5 A, t_p = 380 µs	T_j = 25 °C	MAX	1.6	V
V_{TO} (1)	Threshold voltage	T_j = 125 °C	MAX	0.85	V
R_D (1)	Dynamic resistance	T_j = 125 °C	MAX	80	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 pin referenced to A1 pin

Table 4. Thermal resistances

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case (ac)	3.4	°C/W
$R_{th(j-a)}$	Junction to ambient	60	

Figure 1. Maximum power dissipation versus rms on-state current (full cycle)

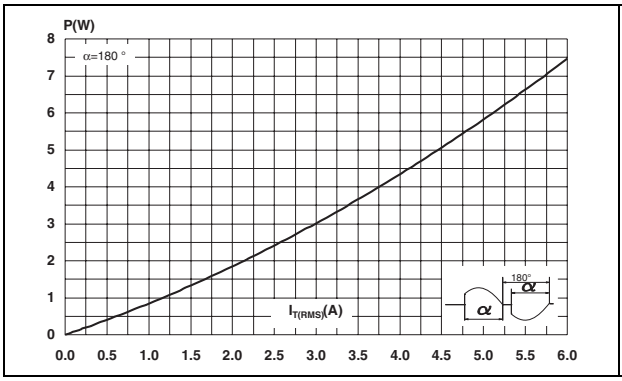


Figure 2. On-state current (rms) versus case temperature (full cycle)

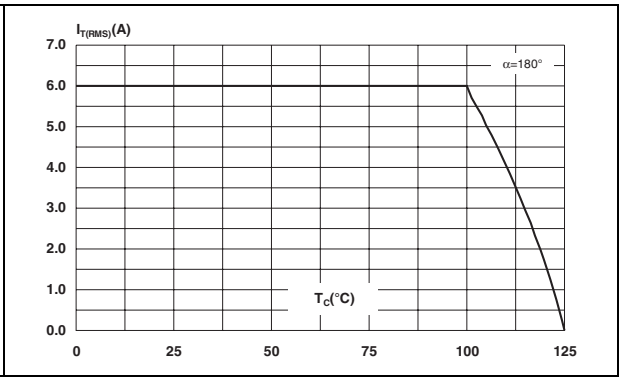


Figure 3. On-state current (rms) versus ambient temperature (free air convection)

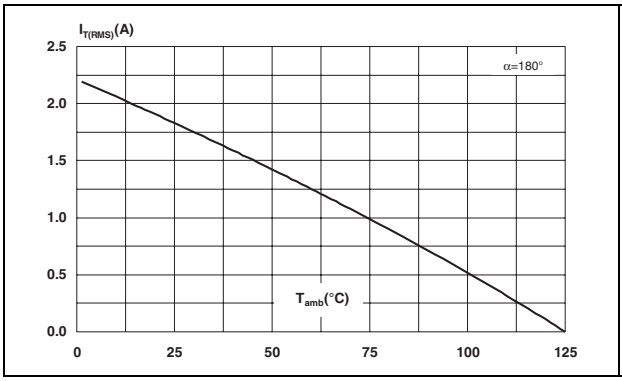


Figure 4. Relative variation of thermal impedance versus pulse duration

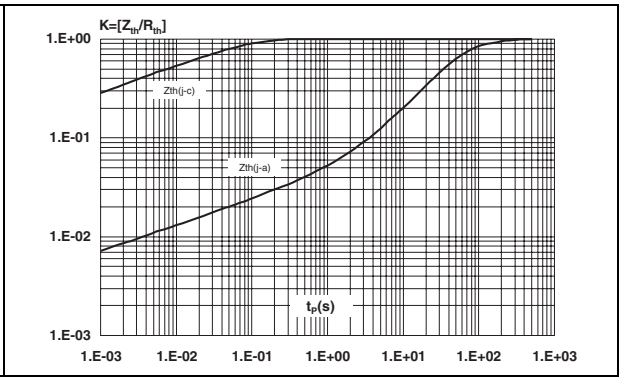


Figure 5. Relative variation of gate trigger current, and gate trigger voltage versus junction temperature

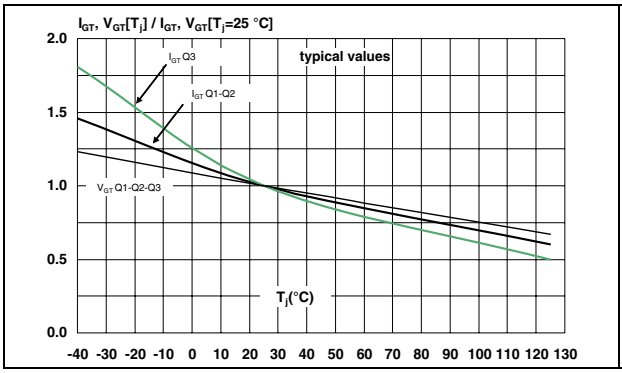


Figure 6. Relative variation of holding current and latching current versus junction temperature

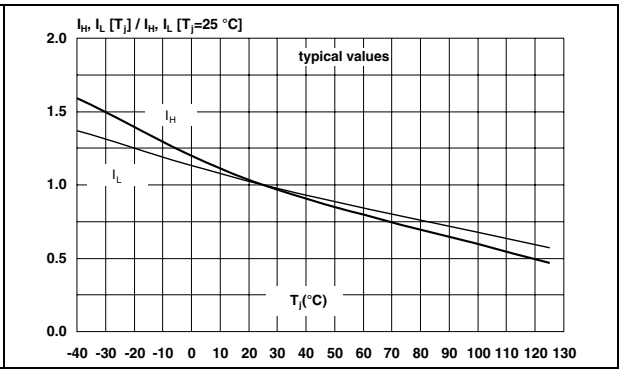


Figure 7. Surge peak on-state current versus number of cycles

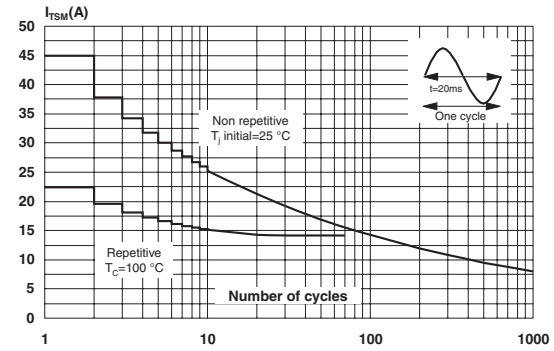


Figure 8. Non-repetitive surge peak on-state current for sinusoidal

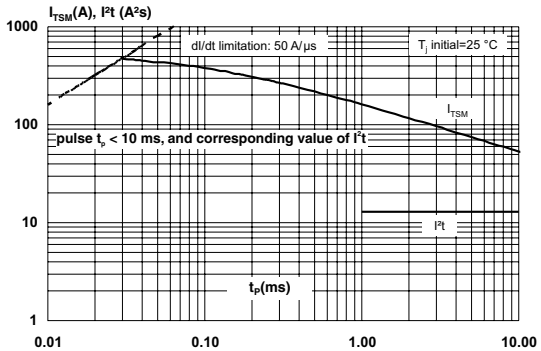


Figure 9. On-state characteristics (maximum values)

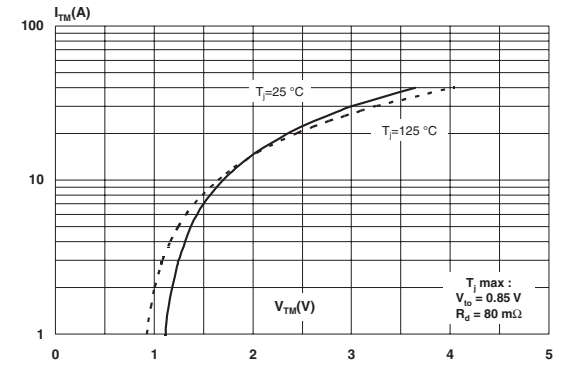


Figure 10. Relative variation of critical rate of decrease of main current (di/dt)c versus junction temperature

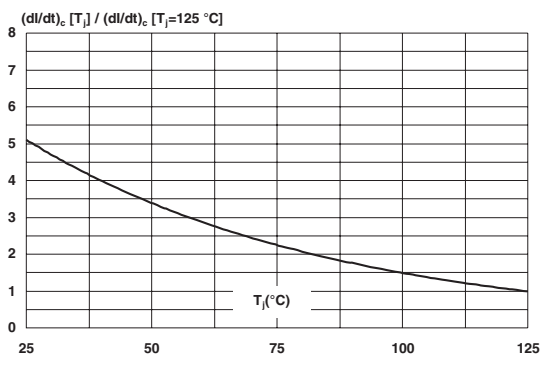


Figure 11. Relative variation of critical rate of decrease of main current (di/dt)c versus reapplied (dV/dt)c

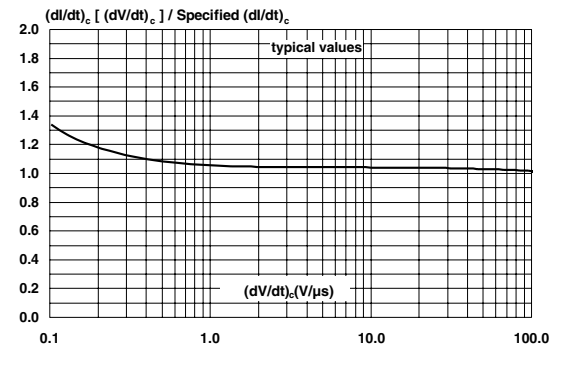
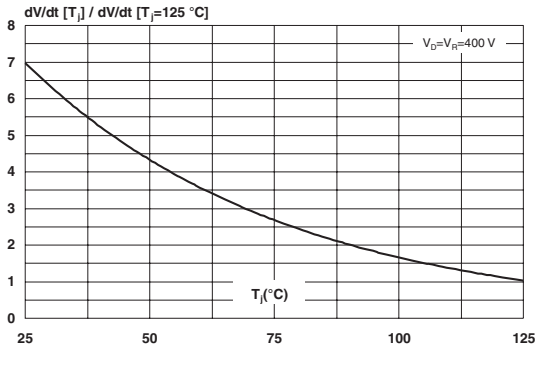
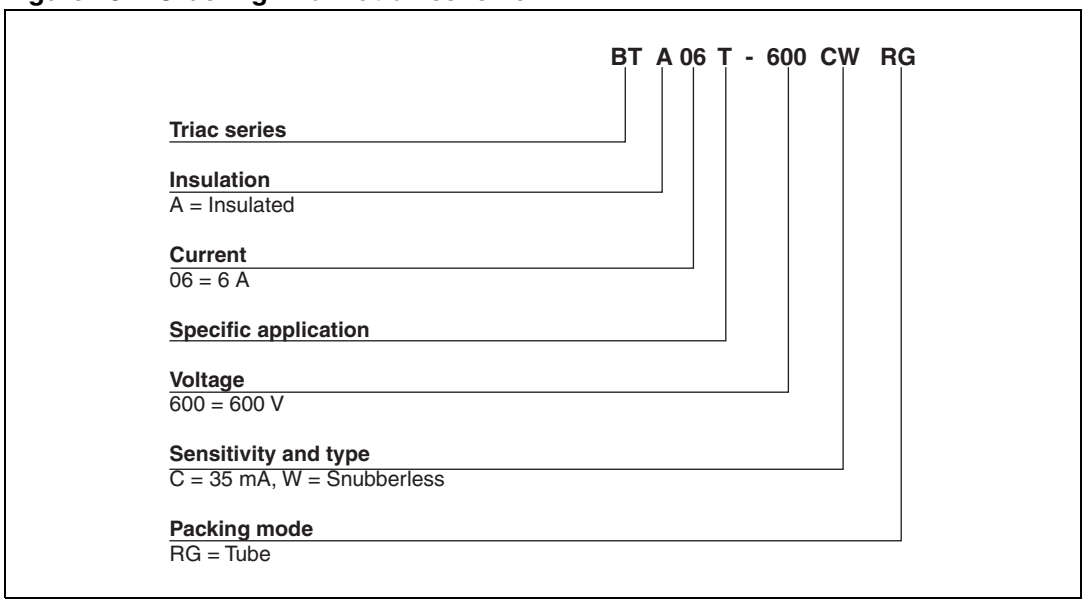


Figure 12. Relative variation of static dV/dt immunity versus junction temperature



2 Ordering information

Figure 13. Ordering information scheme

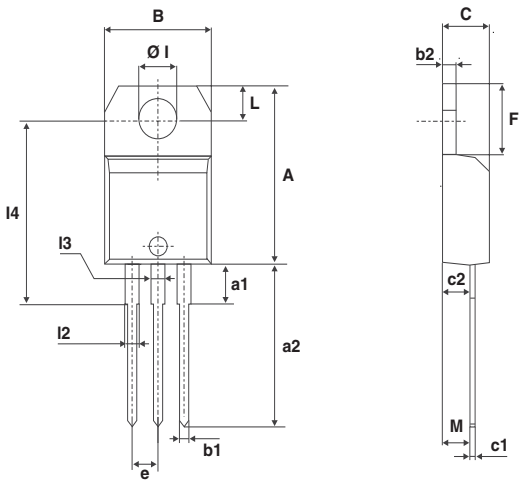


3 Package information

- Epoxy meets UL94, V0
- Lead-free packages

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 5. TO-220AB insulated 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
l4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
l2	1.14		1.70	0.044		0.066
l3	1.14		1.70	0.044		0.066
M		2.60			0.102	

4 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Packing mode
BTA06T-600CWRG	BTA06T-600CW	TO-220AB ins	2.3 g	50	Tube

5 Revision history

Table 7. Document revision history

Date	Revision	Changes
15-Nov-2007	1	Initial release.
17-Jun-2010	2	Updated title *on page 1*. Updated ECOPACK statement.

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