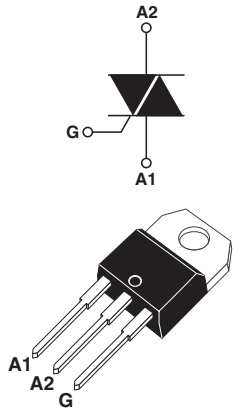
BTA10-600GP

10 A Triac

Features

- Low I_H:
  - 13 mA max
- High surge current:
  - I_{TSM} = 120 A
- I_{GT} specified in four quadrants
- Insulating voltage:
  - 2500 $V_{(RMS)}$ (UL Recognized: E81734)



TO-220AB

Description

The BTA10-600GP uses high performance, glass passivated chips.

The insulated TO-220AB package, the high surge current and low holding current make this product well adapted to CFL and LED dimmer applications.

1 Characteristics

Table 1. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit
V_{DRM} V_{RRM}	Repetitive peak off-state voltage T_j = 125° C		600	V
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	T_c = 90° C	10	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25° C)	t_p = 8.3 ms	126	A
		t_p = 10 ms	120	
I^2t	I^2t Value for fusing	t_p = 10 ms	72	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 500 mA di_G/dt = 1 A/µs	Repetitive F = 50 Hz	10	A/µs
		Non repetitive	50	
T_{stg} T_j	Storage junction temperature range Operating junction temperature range		-40 to +150 -40 to +125	° C

Table 2. Electrical characteristics

Symbol	Test conditions		Quadrant		Value	Unit
I_{GT} (1)	V_D = 12 V (DC) R_L = 33 Ω	T_j = 25° C	I - II- III	MAX	25	mA
			IV	MAX	100	
V_{GT}	V_D = 12 V (DC) R_L = 33 Ω	T_j = 25° C	I - II - III - IV	MAX	1.5	V
V_{GD}	$V_D = V_{DRM}$ R_L = 3.3 kΩ	T_j = 110° C	I - II - III - IV	MIN	0.2	V
t_{gt}	$V_D = V_{DRM}$ I_G = 500 mA dI_G/dt = 3 A/µs	T_j = 25° C	I - II - III - IV	TYP	2	µs
I_L	I_G = 1.2 I_{GT}	T_j = 25° C	I - II - III	TYP	20	mA
			IV		40	
I_H (1)	I_T = 100 mA gate open	T_j = 25° C		MAX	13	mA
V_{TM} (1)	I_{TM} = 14 A t_p = 380 µs	T_j = 25° C		MAX	1.5	V
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	T_j = 25° C		MAX	0.01	mA
		T_j = 110° C		MAX	0.5	
dV/dt (1)	Linear slope up to V_D = 67% V_{DRM} gate open	T_j = 110° C		MIN	30	V/µs
				TYP	100	
(dV/dt)c (1)	(dI/dt)c = 2.2 A/ms	T_j = 110° C		MIN	1	V/µs
				TYP	10	

1. For either polarity of electrode A_2 voltage with reference to electrode A_1.

Table 3. Gate characteristics (maximum values)

Symbol	Parameter		Value	Unit
$P_{G(AV)}$	Average gate power dissipation		1	W
P_{GM}	Peak gate power dissipation	t_p = 20 µs	10	W
I_{GM}	Peak gate current	t_p = 20 µs	4	A
V_{GM}	Peak positive gate voltage	t_p = 20 µs	16	V

Table 4. Thermal resistances

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	60	° C/W
$R_{th(j-c)}$ DC	Junction to case for DC	4	
$R_{th(j-c)}$ AC	Junction to case for 360° conduction angle (F = 50 Hz)	3	

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

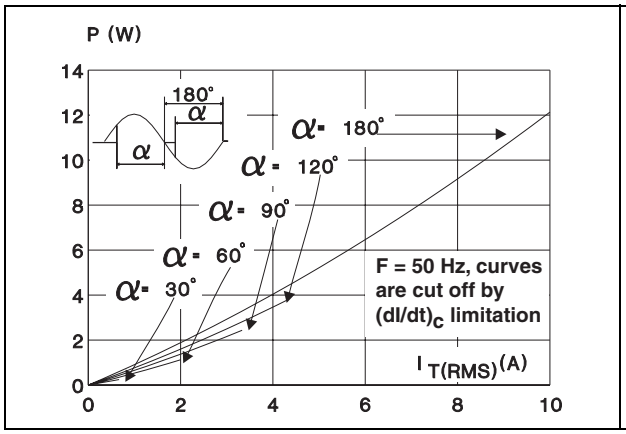


Figure 2. Maximum rms power dissipation and maximum allowable temperatures (T_{amb} and T_{case})

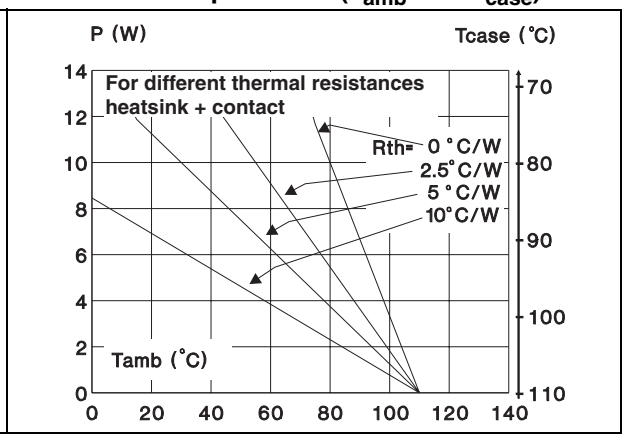


Figure 3. On-state rms current versus case temperature

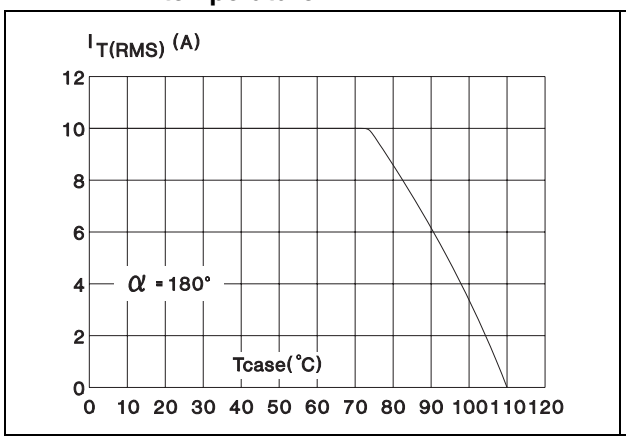


Figure 4. Relative variation of thermal impedance versus pulse duration

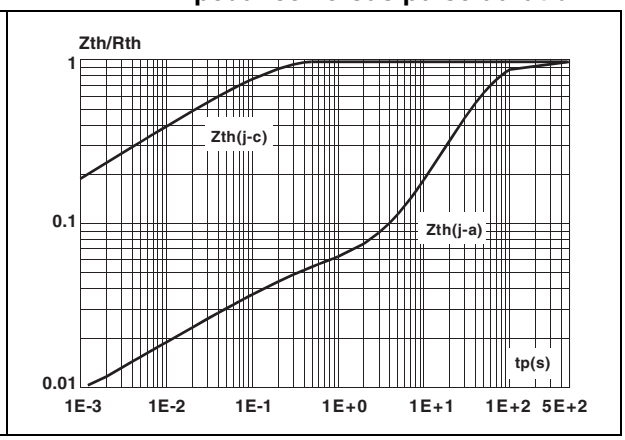


Figure 5. Relative variation of gate trigger current and holding current versus junction temperature

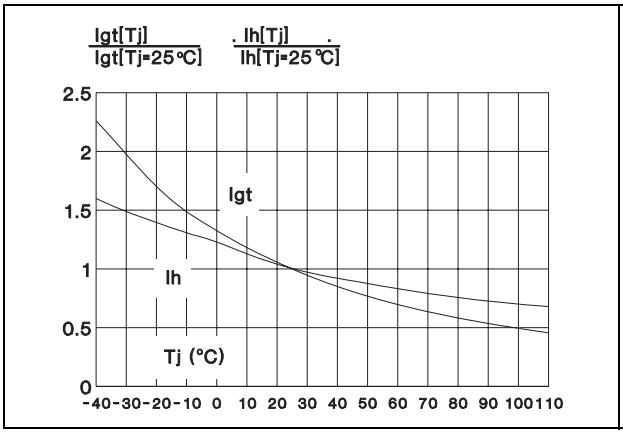


Figure 6. Non repetitive surge peak on-state current versus number of cycles

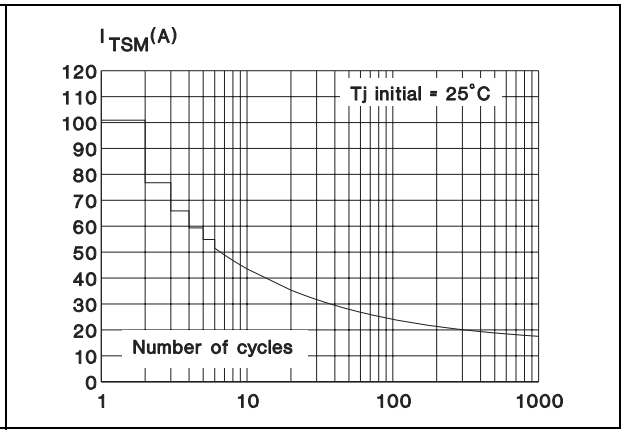


Figure 7. Non repetitive surge peak on-state current and corresponding value of I^2t

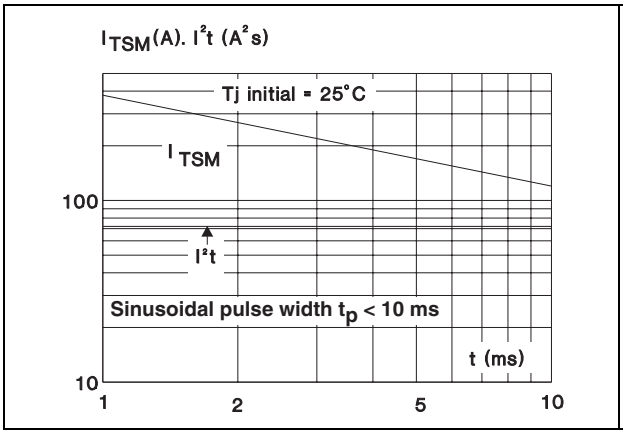
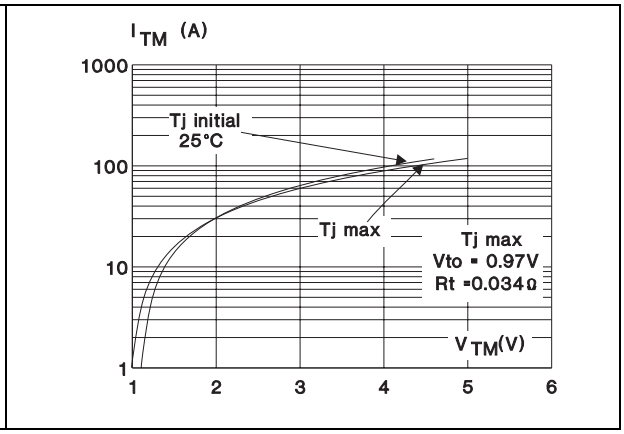


Figure 8. On-state characteristics (maximum values)



2 Package information

- Epoxy meets UL94,V0
- Cooling method: Conduction
- Recommended torque value: 0.4 to 0.6 N·m

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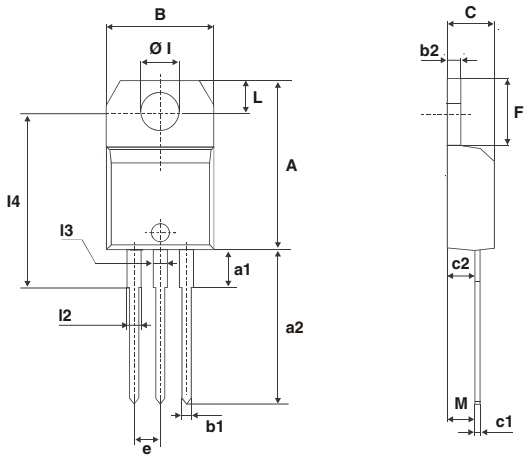
Table 5. TO-220AB dimensions



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
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	

3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
BTA10-600GPRG	BTA10 600GP	TO-220AB	2.3 g	50	Tube

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
13-Sep-2011	1	Initial release

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