Tables 4: Electrical Characteristics ($T_j = 25$ °C, unless otherwise specified)

■ SNUBBERLESS and Logic Level (3 quadrants)

Symbol	Test Conditions	Quadrant		BTA06 / BTB06				Unit
Syllibol	rest Conditions			TW	SW	CW	BW	Oille
I _{GT} (1)	$V_D = 12 \text{ V } R_1 = 30 \Omega$	1 - 11 - 111	MAX.	5	10	35	50	mA
V _{GT}	VD = 12 V 11[= 00 22	1 - 11 - 111	MAX.		1.3			
V _{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$ $I - II - III$		MIN.	0.2			V	
I _H (2)	I _T = 100 mA		MAX.	10	15	35	50	mA
l _l	I _L I _G = 1.2 I _{GT}		MAX.	10	25	50	70	mA
IL IG - 1.2 IGT	- G - 1:2 · G	II	IVIAA.	15	30	60	80	ША
dV/dt (2)	$V_D = 67 \text{ %}V_{DRM}$ gate open $T_j = 125 \text{°}C$		MIN.	20	40	400	1000	V/µs
	$(dV/dt)c = 0.1 V/\mu s$ $T_j = 125^{\circ}C$			2.7	3.5	-	-	
(dl/dt)c (2)) $(dV/dt)c = 10 \text{ V/}\mu\text{s}$ $T_j = 125^{\circ}\text{C}$ Without snubber $T_j = 125^{\circ}\text{C}$		MIN.	1.2	2.4	-	-	A/ms
				-	-	3.5	5.3	

■ Standard (4 quadrants)

Symbol	Symbol Test Conditions Quadrant			BTA06 / BTB06		Unit
Syllibol				С	В	Oilit
I _{GT} (1)	$V_D = 12 \text{ V}$ $R_L = 30 \Omega$	I - II - III IV	MAX.	25 50	50 100	mA
V _{GT}	V _{GT}		MAX.	1.3		٧
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$ $T_j = 125^{\circ}\text{C}$ ALL		MIN.	0.2		٧
I _H (2)	I _T = 500 mA		MAX.	25	50	mA
I	I_L $I_G = 1.2 I_{GT}$		MAX.	40	50	mA
'L 'G - ' 'G'		II	IVIAA.	80	100	
dV/dt (2)	$V_D = 67 \text{ %}V_{DRM}$ gate open $T_j = 125 \text{°C}$		MIN.	200	400	V/µs
(dV/dt)c (2)	$(dI/dt)c = 2.7 \text{ A/ms}$ $T_j = 125^{\circ}$	C	MIN.	5	10	V/µs

Table 5: Static Characteristics

Symbol	Test Conditions			Value	Unit
V _{TM} (2)	$I_{TM} = 8.5 \text{ A}$ $t_p = 380 \mu\text{s}$	T _j = 25°C	MAX.	1.55	V
V _{t0} (2)	Threshold voltage	T _j = 125°C	MAX.	0.85	V
R _d (2)	Dynamic resistance	T _j = 125°C	MAX.	60	mΩ
I _{DRM}	V _{DRM} = V _{RRM}	T _j = 25°C	MAX. 5		μΑ
I_{RRM}	VDRM - VRRM	T _j = 125°C	IVIAA.	1	mA

Note 1: minimum I_{GT} is guaranted at 5% of I_{GT} max.

Note 2: for both polarities of A2 referenced to A1.

57

Table 6: Thermal resistance

Symbol	Parameter			Unit
B., a	lunction to case (AC)	TO-220AB	1.8	°C/W
R _{th(j-c)} Junction to case (AC)	TO-220AB Insulated	2.7	J 0/VV	
R _{th(j-a)}	Junction to ambient	TO-220AB TO-220AB Insulated	60	°C/W

Figure 1: Maximum power dissipation versus RMS on-state current (full cycle)

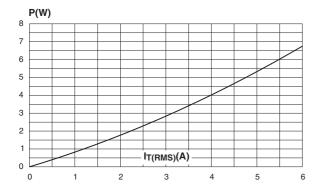


Figure 3: Relative variation of thermal impedance versus pulse duration

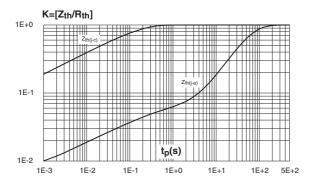


Figure 2: RMS on-state current versus case temperature (full cycle)

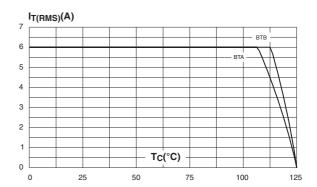
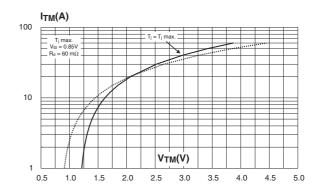


Figure 4: On-state characteristics (maximum values)



5//

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

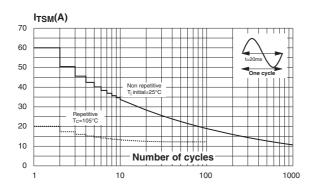


Figure 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values)

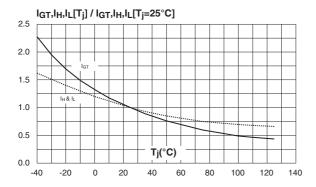


Figure 9: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values) (Standard types)

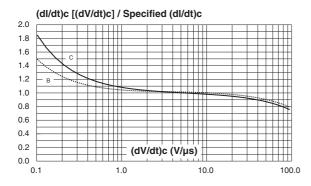


Figure 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10 \text{ ms}$ and corresponding value of l^2t

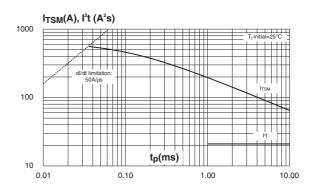


Figure 8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values) (Snubberless & logic level types)

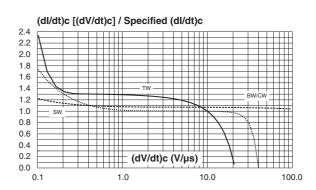


Figure 10: Relative variation of critical rate of decrease of main current versus junction temperature

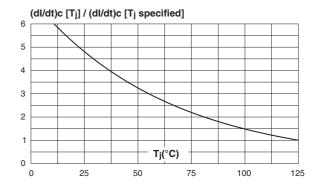


Figure 11: Ordering Information Scheme

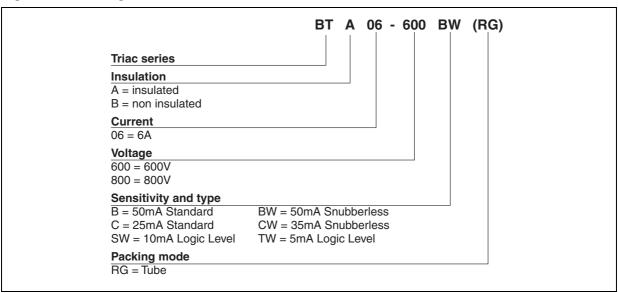


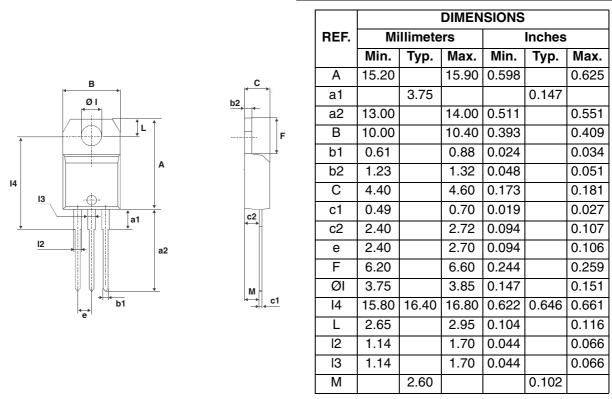
Table 7: Product Selector

Part Number	Voltage (xxx)		Sensitivity	Туре		
rait Number	600 V	800 V	- Sensitivity	туре	Package	
BTA/BTB06-xxxB	Х	Х	50 mA	Standard	TO-220AB	
BTA/BTB06-xxxBW	Х	Х	50 mA	Snubberless	TO-220AB	
BTA/BTB06-xxxC	Х	Х	25 mA	Standard	TO-220AB	
BTA/BTB06-xxxCW	Х	Х	35 mA	Snubberless	TO-220AB	
BTA/BTB06-xxxSW	Х	Х	10 mA	Logic level	TO-220AB	
BTA/BTB06-xxxTW	Х	Х	5 mA	Logic Level	TO-220AB	

BTB: non insulated TO-220AB package

577

Figure 12: TO-220AB (insulated and non insulated) Package Mechanical Data



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

Table 8: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BTA/BTB06-xxxyzRG	BTA/BTB06-xxxyz	TO-220AB	2.3 g	50	Tube

Note: xxx = voltage, yy = sensitivity, z = type

Table 9: Revision History

Date	Revision	Description of Changes
Apr-2002	5A	Last update.
13-Feb-2006	6	TO-220AB delivery mode changed from bulk to tube. ECOPACK statement added.

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