

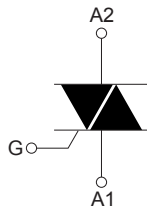
BTA06 and BTB06 Series

6 A Snubberless™, logic level and standard Triacs

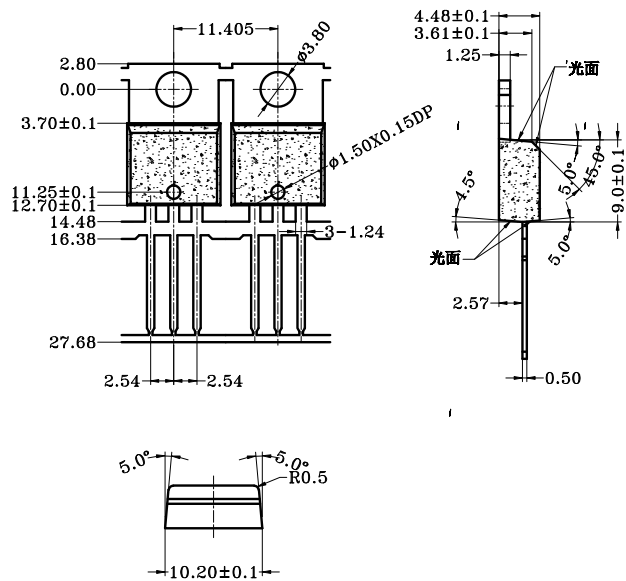
Features

Medium current Triac
 Low thermal resistance with clip bonding
 Low thermal resistance insulation ceramic for insulated BTA
 High commutation (4Q) or very high commutation (3Q, Snubberless™) capability

BTA series UL1557 certified (file ref: 81734)
 Packages are RoHS (2002/95/EC) compliant
 Insulated tab (BTA series, rated at 2500 V RMS)



TO-220



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

Symbol	Parameter	Value	Unit
V _{DRM}	Repetitive peak off-state voltage	600 / 800	V
V _{RPM}	Repetitive peak reverse voltage	600 / 800	V
I _{T(RMS)}	RMS on-state current (full sine wave)	TO-220AB T _c = 110°C TO-220AB Ins. T _c = 105°C	6 A
I _{TSM}	Non repetitive surge peak on-state current (full cycle, T _j initial = 25°C)	F = 50 Hz t = 20 ms F = 60 Hz t = 16.7 ms	60 63 A
I ² t	I ² t Value for fusing	t _p = 10 ms	21 A ² s
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
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

BTA06 and BTB06 Series

**Electrical characteristics ($T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)
- standard (4 quadrants)**

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

**Electrical characteristics ($T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)
- Snubberless and logic level (3 quadrants)**

Symbol	Test Conditions	Quadrant		BTA06 / BTB06				Unit
				TW	SW	CW	BW	
I_{GT} (1)	$V_D = 12\text{ V}$ $R_L = 30\ \Omega$	I - II - III	MAX.	5	10	35	50	mA
V_{GT}		I - II - III	MAX.	1.3				
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)	$I_T = 100\text{ mA}$		MAX.	10	15	35	50	mA
I_L	$I_G = 1.2 I_{GT}$	I - III	MAX.	10	25	50	70	
		II		15	30	60	80	
dV/dt (2)	$V_D = 67\%V_{DRM}$ gate open $T_j = 125\text{ }^\circ\text{C}$		MIN.	20	40	400	1000	V/ μs
$(dI/dt)_c$ (2)	$(dV/dt)_c = 0.1\text{ V}/\mu\text{s}$ $T_j = 125\text{ }^\circ\text{C}$		MIN.	2.7	3.5	-	-	A/ms
	$(dV/dt)_c = 10\text{ V}/\mu\text{s}$ $T_j = 125\text{ }^\circ\text{C}$			1.2	2.4	-	-	
	Without snubber $T_j = 125\text{ }^\circ\text{C}$			-	-	3.5	5.3	

BTA06 and BTB06 Series

Static electrical characteristics

Symbol	Test Conditions			Value	Unit	
V_{TM} (2)	$I_{TM} = 8.5 \text{ A}$	$t_p = 380 \mu\text{s}$	$T_j = 25^\circ\text{C}$	MAX.	1.55	V
V_{t0} (2)	Threshold voltage		$T_j = 125^\circ\text{C}$	MAX.	0.85	V
R_d (2)	Dynamic resistance		$T_j = 125^\circ\text{C}$	MAX.	60	m Ω
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$		$T_j = 25^\circ\text{C}$	MAX.	5	μA
			$T_j = 125^\circ\text{C}$		1	mA

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

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

Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case (AC)	TO-220AB	1.8	$^\circ\text{C/W}$
		TO-220AB Insulated	2.7	
$R_{th(j-a)}$	Junction to ambient	TO-220AB	60	$^\circ\text{C/W}$
		TO-220AB Insulated		

RATING AND CHARACTERISTIC CURVES (BTA06 AND BTB06 SERIES)

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

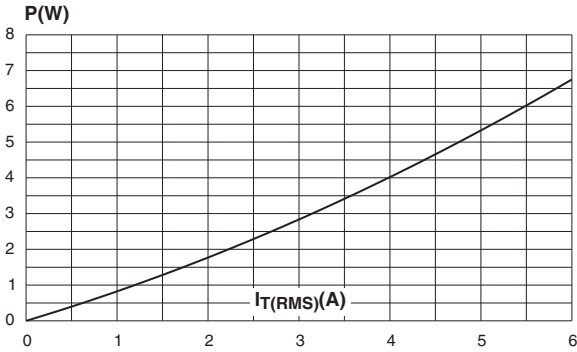


Figure 2: RMS on-state current versus case temperature (full cycle)

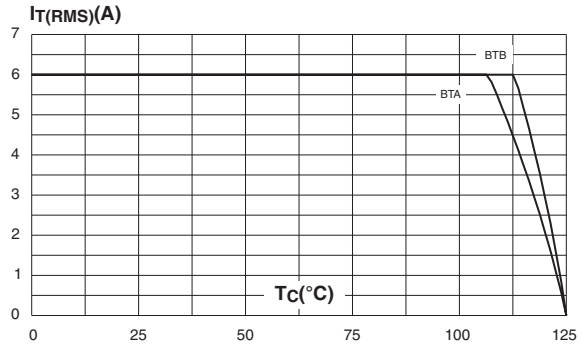


Figure 3: Relative variation of thermal impedance versus pulse duration

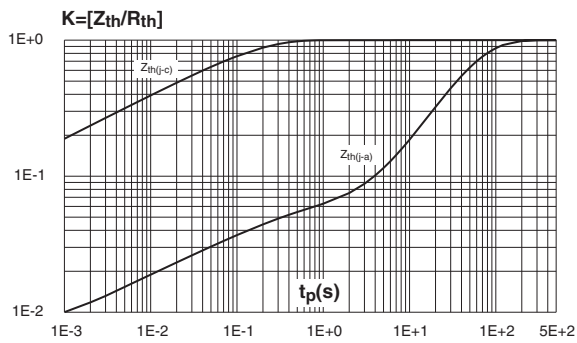


Figure 4: On-state characteristics (maximum values)

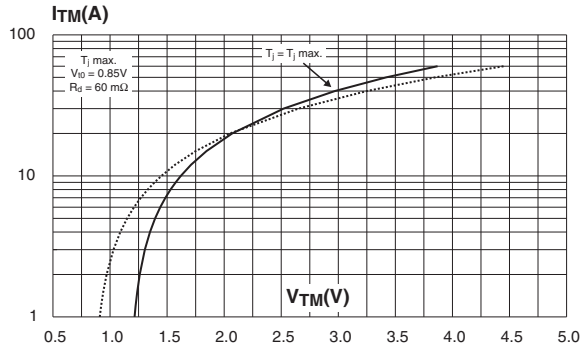


Figure 5: Surge peak on-state current versus number of cycles

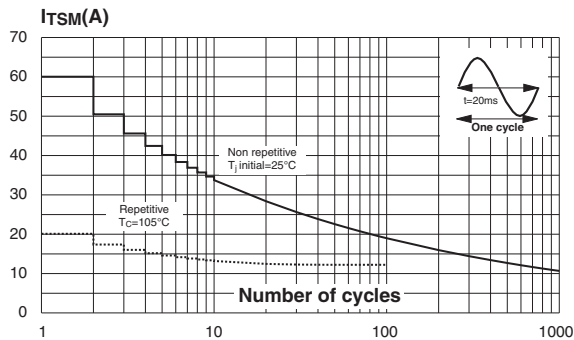
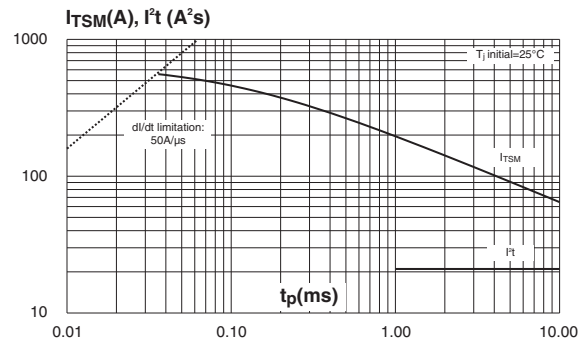


Figure 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms and corresponding value of I^2t



RATING AND CHARACTERISTIC CURVES (BTA06 AND BTB06 SERIES)

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

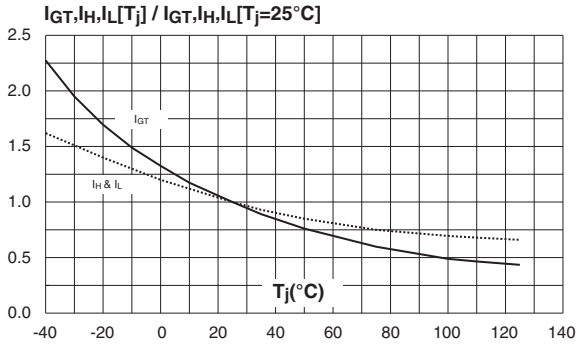


Figure 8: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values) (Snubberless & logic level types)

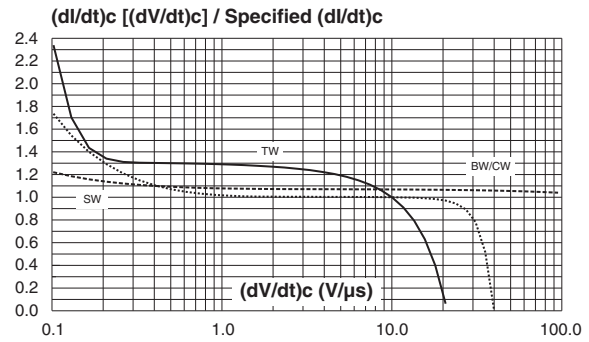


Figure 9: Relative variation of critical rate of decrease of main current versus $(dV/dt)_c$ (typical values) (Standard types)

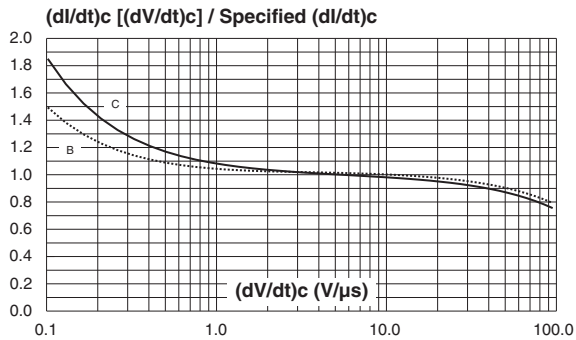


Figure 10: Relative variation of critical rate of decrease of main current versus junction temperature

