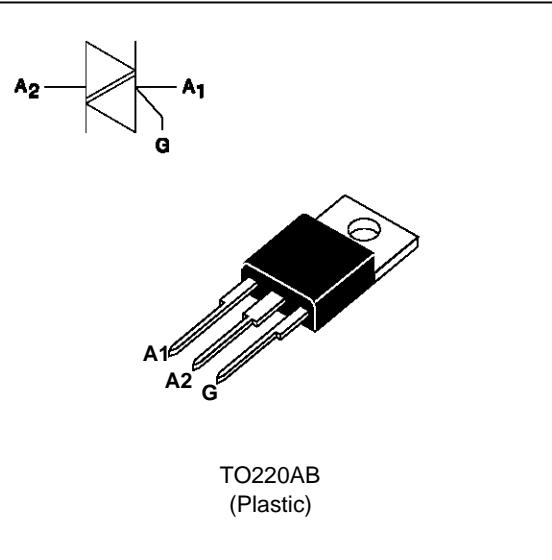


**LOGIC LEVEL TRIACS**
**FEATURES**

- LOW  $I_{GT}$  = 5mA max
- LOW  $I_H$  = 15mA max
- HIGH EFFICIENCY SWITCHING
- BTA Family :
  - INSULATING VOLTAGE = 2500V<sub>(RMS)</sub>
  - (UL RECOGNIZED : E81734)


**DESCRIPTION**

The BTA/BTB06 TW/SW use high performance products glass passivated chips.

The low  $I_{GT}$  /  $I_H$  level coupled with the high efficiency circuit make this family will adapted for low power trigger circuits (microcontrollers, microprocessors, integrated circuits ...)

**ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter			Value	Unit
$I_T$ (RMS)	RMS on-state current (360° conduction angle)	BTA	$T_c = 80 \text{ } ^\circ\text{C}$	6	A
		BTB	$T_c = 90 \text{ } ^\circ\text{C}$		
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C )		$t_p = 8.3 \text{ ms}$	63	A
			$t_p = 10 \text{ ms}$	60	
$I^2t$	$I^2t$ value	$t_p = 10 \text{ ms}$		18	$A^2\text{s}$
$dl/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 50\text{mA}$ $dI_G/dt = 0.1\text{A}/\mu\text{s}$		Repetitive $F = 50 \text{ Hz}$	20	$\text{A}/\mu\text{s}$
			Non Repetitive	100	
$T_{stg}$ $T_j$	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 110	$^\circ\text{C}$
					$^\circ\text{C}$
$T_l$	Maximum lead temperature for soldering during 10 s at 4.5 mm from case			260	$^\circ\text{C}$

Symbol	Parameter	BTA / BTB06-			Unit
		400 TW/SW	600 TW/SW	700 TW/SW	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 110 \text{ } ^\circ\text{C}$	400	600	700	V

# BTA06 TW/SW / BTB06 TW/SW

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## THERMAL RESISTANCES

Symbol	Parameter		Value		Unit
R <sub>th</sub> (j-a)	Junction to ambient		60		°C/W
R <sub>th</sub> (j-c) DC	Junction to case for DC		BTA	4.4	°C/W
	BTB	3.3			
R <sub>th</sub> (j-c) AC	Junction to case for 360° conduction angle ( F = 50 Hz)		BTA	3.3	°C/W
	BTB	2.5			

## GATE CHARACTERISTICS (maximum values)

P<sub>G</sub> (AV) = 1W    P<sub>GM</sub> = 10W (tp = 20 μs)    I<sub>GM</sub> = 4A (tp = 20 μs)    V<sub>GM</sub> = 16V (tp = 20 μs).

## ELECTRICAL CHARACTERISTICS

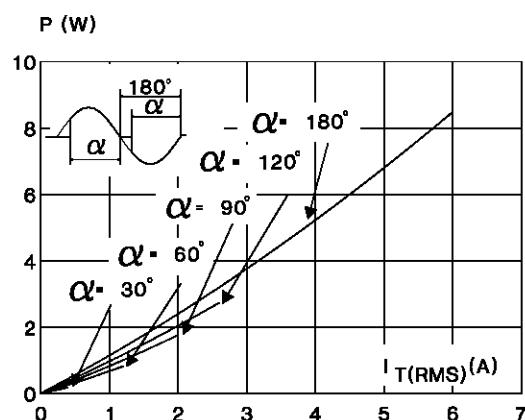
Symbol	Test Conditions	Quadrant		Suffix		Unit	
				TW	SW		
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> =25°C	I-II-III	MAX	5	10	mA
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33Ω	T <sub>j</sub> =25°C	I-II-III	MAX	1.5		V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ	T <sub>j</sub> =110°C	I-II-III	MIN	0.2		V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 40mA dI <sub>G</sub> /dt = 0.5A/μs	T <sub>j</sub> =25°C	I-II-III	TYP	2		μs
I <sub>L</sub>	I <sub>G</sub> =1.2 I <sub>GT</sub>	T <sub>j</sub> =25°C	I-III	TYP	8	15	mA
			II		15	25	
I <sub>H</sub> *	I <sub>T</sub> = 100mA gate open	T <sub>j</sub> =25°C		MAX	15	25	mA
V <sub>TM</sub> *	I <sub>TM</sub> = 8.5A tp= 380μs	T <sub>j</sub> =25°C		MAX	1.75		V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> Rated V <sub>RRM</sub> Rated	T <sub>j</sub> =25°C		MAX	0.01		mA
		T <sub>j</sub> =110°C		MAX	1		
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	T <sub>j</sub> =110°C		MIN	20	50	V/μs
(dI/dt) <sub>C</sub> *	dV/dt= 0.1V/μs	T <sub>j</sub> =110°C		MIN	2.7	3.5	A/ms
	dV/dt= 20V/μs			MIN	1.3	2.7	

\* For either polarity of electrode A<sub>2</sub> voltage with reference to electrode A<sub>1</sub>.

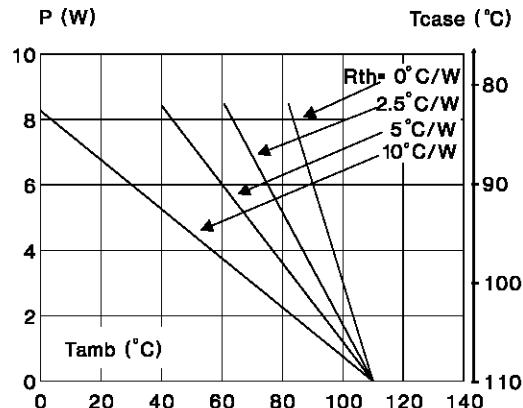
## ORDERING INFORMATION

Package	$I_T(\text{RMS})$	V <sub>DRM</sub> / V <sub>RDM</sub>	Sensitivity Specification			
			A	V	TW	SW
BTA (Insulated)	6	400	X		X	
		600		X		X
		700		X		X
BTB (Uninsulated)	400			X		X
		600		X		X
		700		X		X

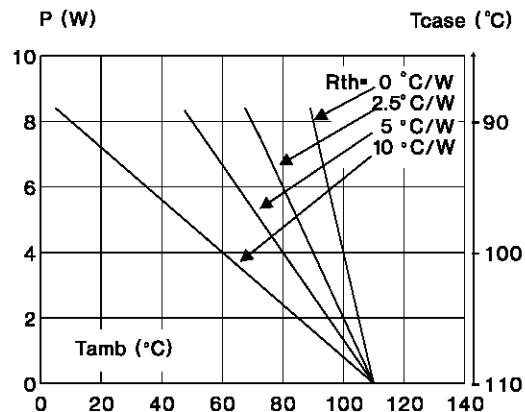
**Fig.1** : Maximum RMS power dissipation versus RMS on-state current ( $F=50\text{Hz}$ ).  
(Curves are cut off by  $(dI/dt)_c$  limitation)



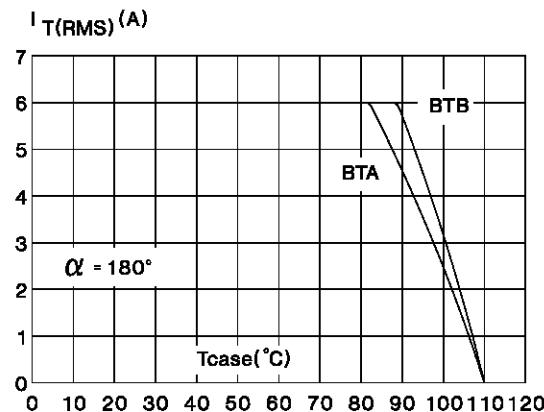
**Fig.2** : Correlation between maximum RMS power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTA).



**Fig.3** : Correlation between maximum RMS power dissipation and maximum allowable temperatures ( $T_{\text{amb}}$  and  $T_{\text{case}}$ ) for different thermal resistances heatsink + contact (BTB).

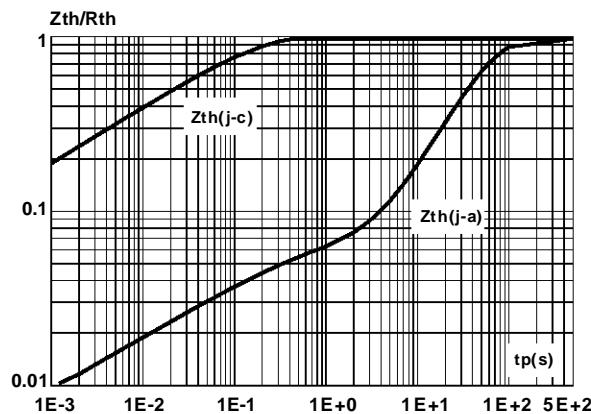


**Fig.4** : RMS on-state current versus case temperature.

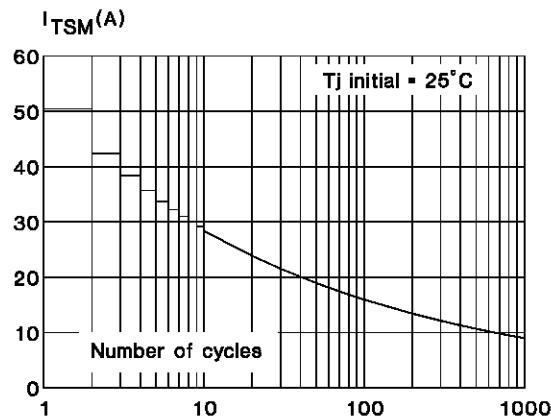


## BTA06 TW/SW / BTB06 TW/SW

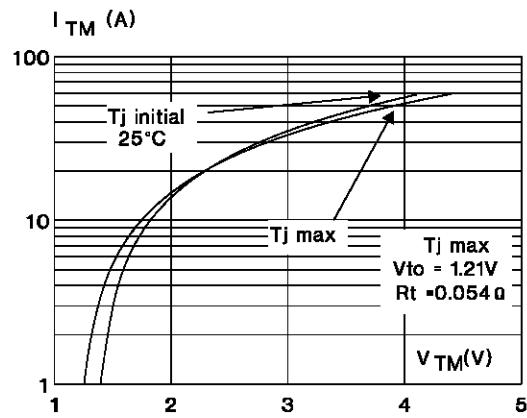
**Fig.5 :** Relative variation of thermal transient impedance versus pulse duration.



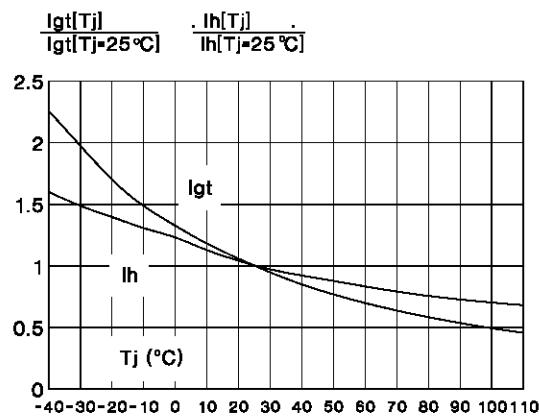
**Fig.7 :** Non Repetitive surge peak on-state current versus number of cycles.



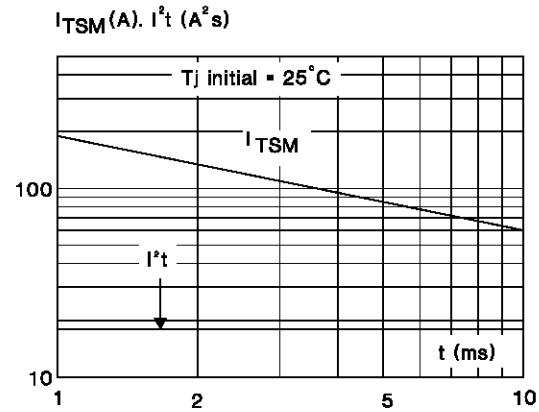
**Fig.9 :** On-state characteristics (maximum values).



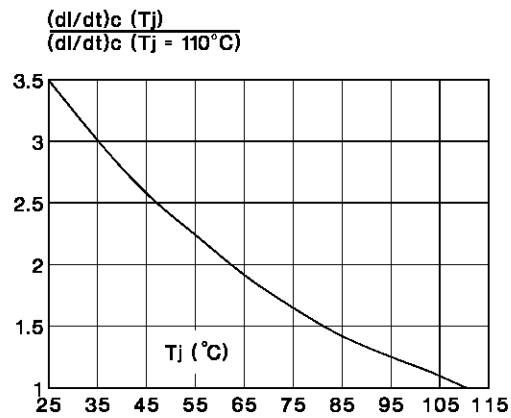
**Fig.6 :** Relative variation of gate trigger current and holding current versus junction temperature.



**Fig.8 :** Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10\text{ms}$ , and corresponding value of  $I^2t$ .

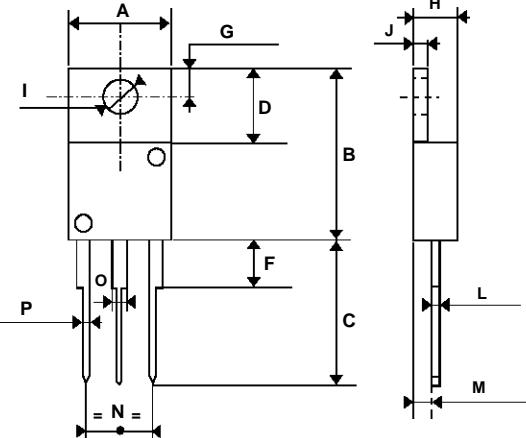


**Fig.10 :** Relative variation of  $(dl/dt)c$  versus junction temperature.



## PACKAGE MECHANICAL DATA

TO220AB Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.20	10.50	0.401	0.413
B	14.23	15.87	0.560	0.625
C	12.70	14.70	0.500	0.579
D	5.85	6.85	0.230	0.270
F			4.50	0.178
G	2.54	3.00	0.100	0.119
H	4.48	4.82	0.176	0.190
I	3.55	4.00	0.140	0.158
J	1.15	1.39	0.045	0.055
L	0.35	0.65	0.013	0.026
M	2.10	2.70	0.082	0.107
N	4.58	5.58	0.18	0.22
O	0.80	1.20	0.031	0.048
P	0.64	0.96	0.025	0.038

Cooling method : C

Marking : type number

Weight : 2.3 g

Recommended torque value : 0.8 m.N.

Maximum torque value : 1 m.N.

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