

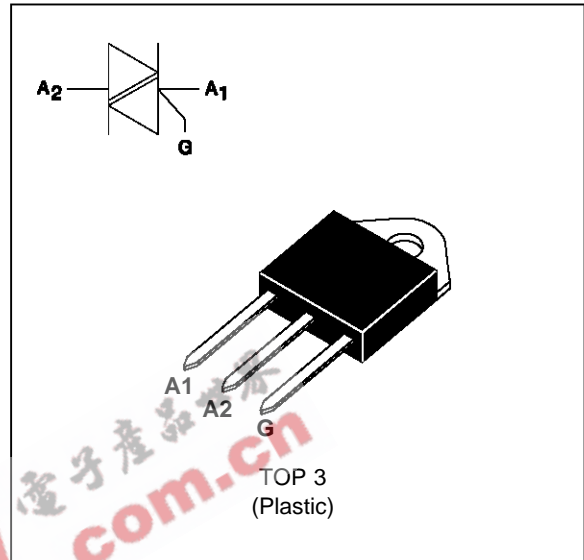
## STANDARD TRIACS

### FEATURES

- HIGH SURGE CURRENT CAPABILITY
- COMMUTATION :  $(dV/dt)_c > 10V/\mu s$
- BTA Family :  
INSULATING VOLTAGE =  $2500V_{(RMS)}$   
(UL RECOGNIZED : E81734)

### DESCRIPTION

The BTA41 A/B / BTB41 B triac family are high performance glass passivated PNP devices. These parts are suitable for general purpose applications where high surge current capability is required. Application such as phase control and static switching on inductive or resistive load.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit	
IT(RMS)	RMS on-state current (360° conduction angle)	BTA Tc = 75 °C	40	A
		BTB Tc = 85 °C	45	
ITSM	Non repetitive surge peak on-state current ( Tj initial = 25°C )	tp = 8.3 ms	315	A
		tp = 10 ms	300	
I <sup>2</sup> t	I <sup>2</sup> t value	tp = 10 ms	450	A <sup>2</sup> s
di/dt	Critical rate of rise of on-state current Gate supply : IG = 500mA diG/dt = 1A/μs	Repetitive F = 50 Hz	10	A/μs
		Non Repetitive	50	
Tstg Tj	Storage and operating junction temperature range	- 40 to + 150 - 40 to + 125	°C °C	
TI	Maximum lead temperature for soldering during 10 s at 4.5 mm from case	260	°C	

Symbol	Parameter	BTA41-...A/B / BTB41-... B				Unit
		400	600	700	800	
VDRM VRRM	Repetitive peak off-state voltage Tj = 125 °C	400	600	700	800	V

## BTA41 A/B / BTB41 B

### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-a)	Junction to ambient		50	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	1.2	°C/W
		BTB	0.8	
Rth (j-c) AC	Junction to case for 360° conduction angle ( F= 50 Hz)	BTA	0.9	°C/W
		BTB	0.6	

### GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 1W$     $P_{GM} = 40W$  (tp = 20  $\mu s$ )    $I_{GM} = 8A$  (tp = 20  $\mu s$ )    $V_{GM} = 16V$  (tp = 20  $\mu s$ ).

### ELECTRICAL CHARACTERISTICS

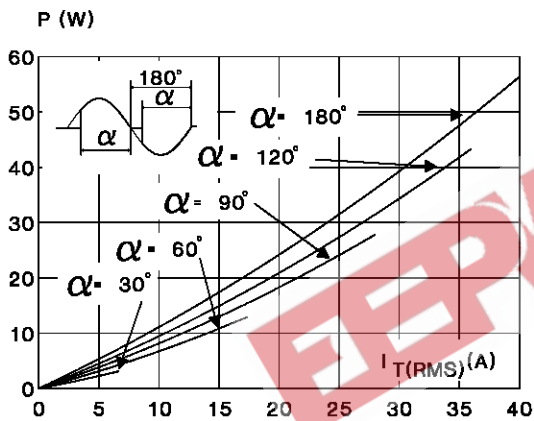
Symbol	Test Conditions	Quadrant		Suffix		Unit	
				A	B		
I <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33 $\Omega$	T <sub>j</sub> =25°C	I-II-III	MAX	100	50	mA
			IV	MAX	150	100	
V <sub>GT</sub>	V <sub>D</sub> =12V (DC) R <sub>L</sub> =33 $\Omega$	T <sub>j</sub> =25°C	I-II-III-IV	MAX	1.5		V
V <sub>GD</sub>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3k $\Omega$	T <sub>j</sub> =125°C	I-II-III-IV	MIN	0.2		V
t <sub>gt</sub>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 500mA dI <sub>G</sub> /dt = 3A/ $\mu s$	T <sub>j</sub> =25°C	I-II-III-IV	TYP	2.5		$\mu s$
I <sub>L</sub>	I <sub>G</sub> =1.2 I <sub>GT</sub>	T <sub>j</sub> =25°C	I-III-IV	TYP	70	60	mA
			II		200	180	
I <sub>H</sub> *	I <sub>T</sub> = 500mA gate open	T <sub>j</sub> =25°C		MAX	100	80	mA
V <sub>TM</sub> *	I <sub>TM</sub> = 60A tp= 380 $\mu s$	T <sub>j</sub> =25°C		MAX	1.8		V
I <sub>DRM</sub> I <sub>R</sub> RM	V <sub>DRM</sub> Rated V <sub>R</sub> RM Rated	T <sub>j</sub> =25°C		MAX	0.01		mA
		T <sub>j</sub> =125°C		MAX	6		
dV/dt *	Linear slope up to V <sub>D</sub> =67%V <sub>DRM</sub> gate open	T <sub>j</sub> =125°C		MIN	250	250	V/ $\mu s$
(dV/dt) <sub>c</sub> *	(dI/dt) <sub>c</sub> = 18A/ms      BTA (dI/dt) <sub>c</sub> = 20A/ms      BTB	T <sub>j</sub> =125°C		MIN	10		V/ $\mu s$

\* For either polarity of electrode A2 voltage with reference to electrode A1.

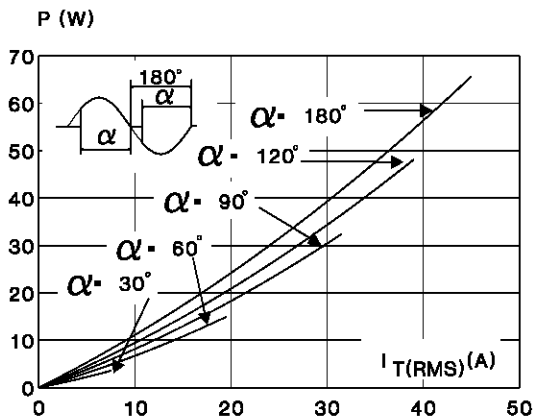
ORDERING INFORMATION

Package	IT(RMS)	VDRM / VRRM	Sensitivity Specification	
	A	V	A	B
BTA (Insulated)	41	400	X	X
		600	X	X
		700	X	X
		800	X	X
BTB (Uninsulated)	45	400		X
		600		X
		700		X
		800		X

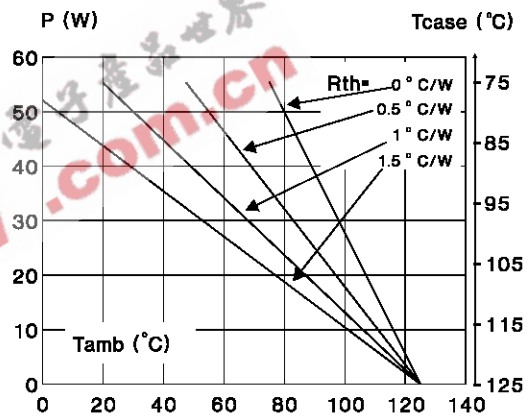
**Fig.1** : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).  
(Curves are cut off by (di/dt)c limitation) (BTA)



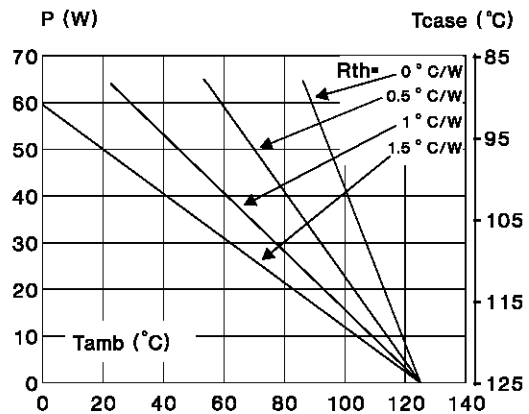
**Fig.3** : Maximum RMS power dissipation versus RMS on-state current (F=50Hz).  
(Curves are cut off by (di/dt)c limitation) (BTB)



**Fig.2** : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTA).

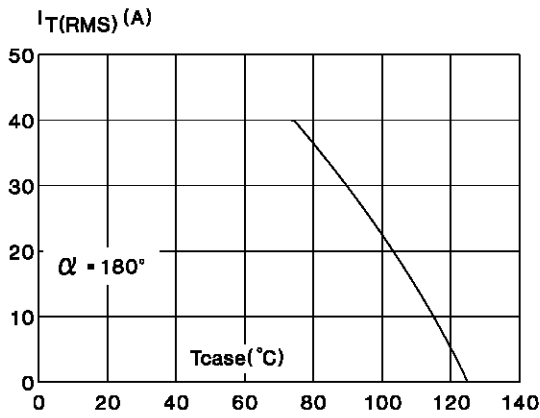


**Fig.4** : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTB).

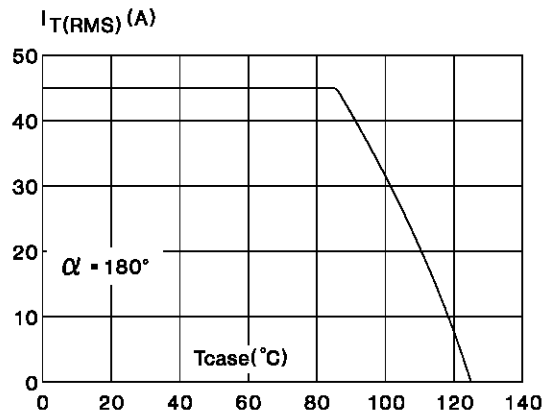


# BTA41 A/B / BTB41 B

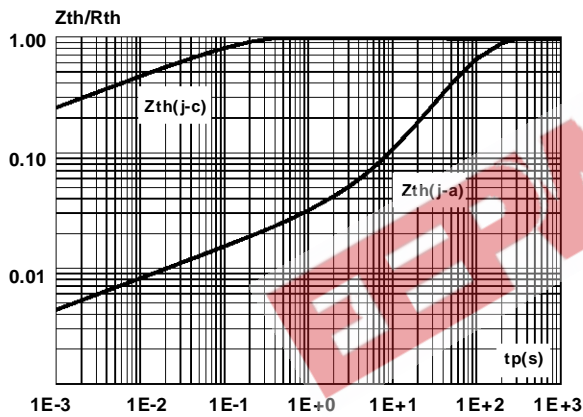
**Fig.5 :** RMS on-state current versus case temperature. (BTA)



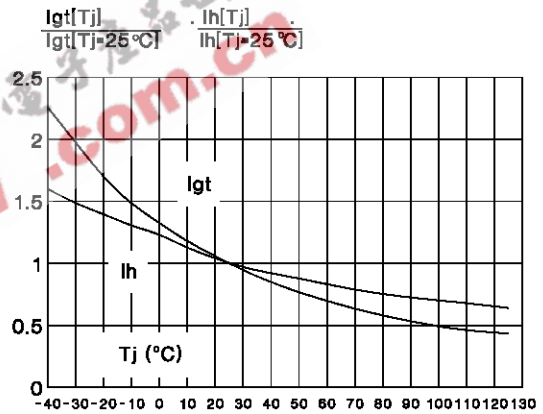
**Fig.6 :** RMS on-state current versus case temperature. (BTB)



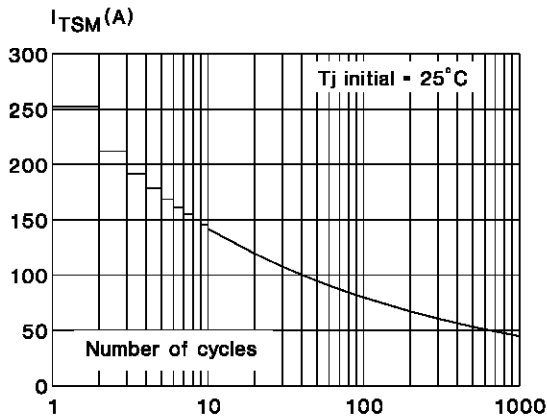
**Fig.7 :** Relative variation of thermal transient impedance pulse duration.



**Fig.8 :** Relative variation of gate trigger current and holding current versus junction temperature.



**Fig.9 :** Non Repetitive surge peak on-state current versus number of cycles.



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

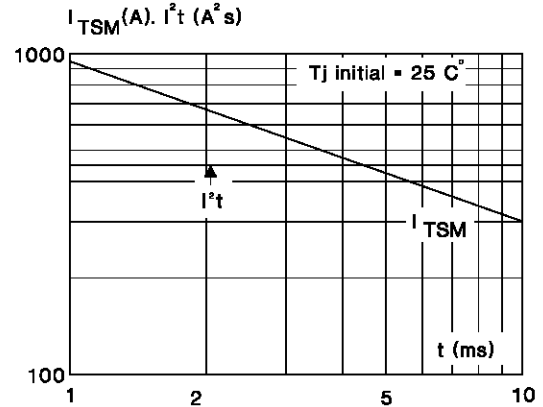
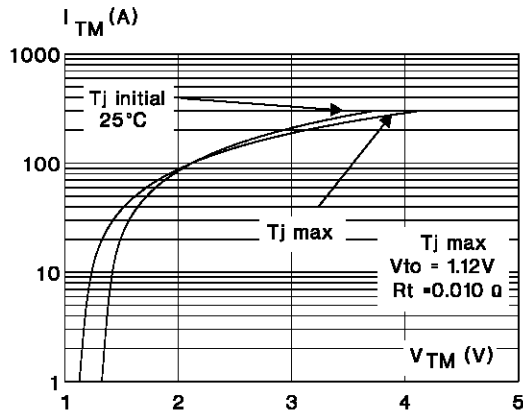
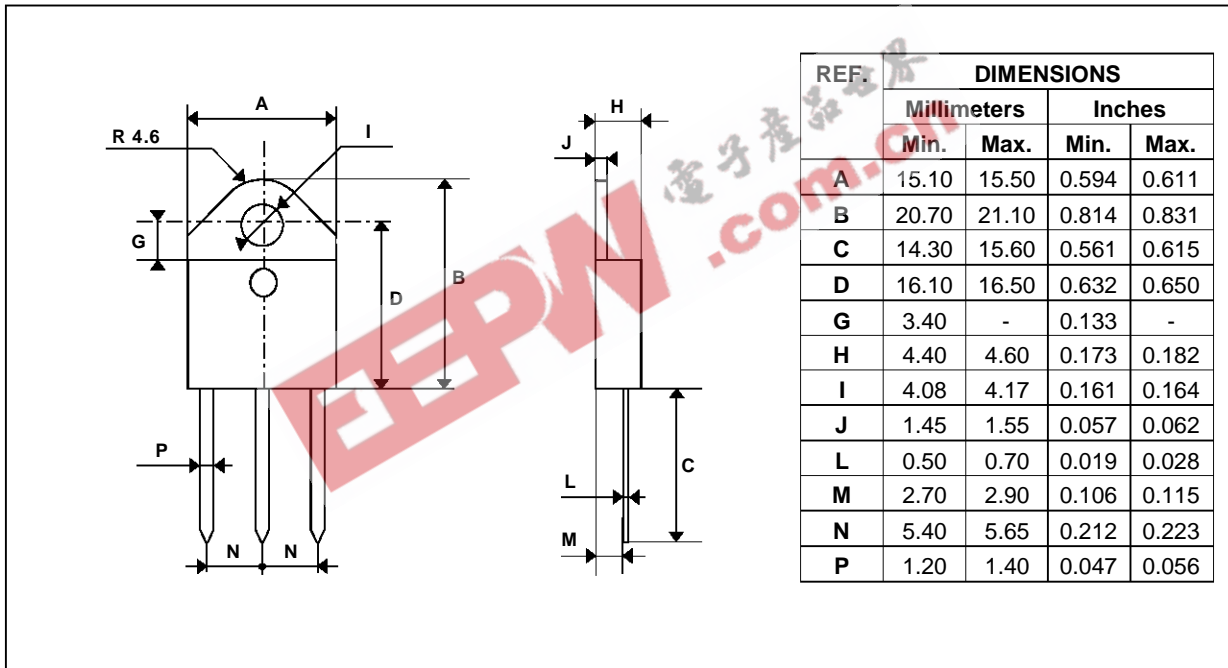


Fig.11 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA

TOP 3 Plastic



Cooling method : C  
 Marking : type number  
 Weight : 4.7 g

Recommended torque value : 0.8 m.N.  
 Maximum torqur value : 1 m.N.

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