



# BTA16-xxxSW BTB16-xxxSW

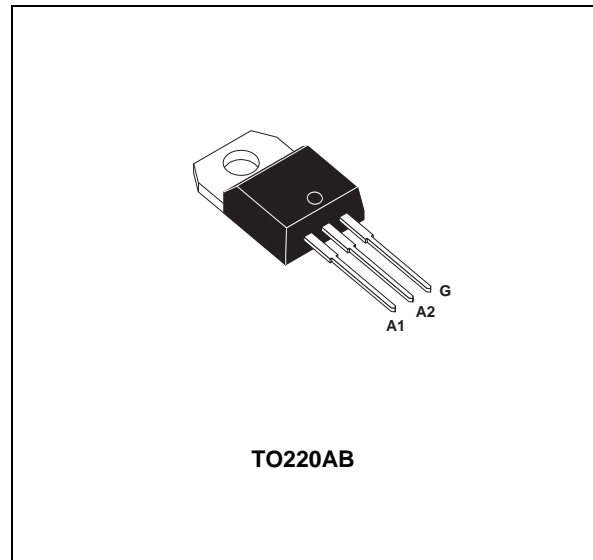
## HIGH PERFORMANCE LOGIC LEVEL TRIACS

### FEATURES

- $I_{T(RMS)} = 16A$
- LOGIC LEVEL TRIGGERING:  $I_{GT} \leq 10mA$
- HIGH SURGE CAPABILITY

### DESCRIPTION

The BTA/BTB16-xxxSW triacs are using a high performance glass passivated technology. These triacs are designed for applications requiring high inrush current performances such as fridge motor control, magnetron supply of microwave ovens, halogen range cookers, etc...). The high gate sensitivity makes them perfectly suited for direct gate triggering by microcontrollers and other logic circuits.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit	
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	BTA	$T_c = 85\text{ °C}$	16	A
		BTB	$T_c = 105\text{ °C}$		
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j$ initial = 25°C)		$t_p = 8.3\text{ ms}$	170	A
			$t_p = 10\text{ ms}$	160	
$I^2t$	$I^2t$ value for fusing		$t_p = 10\text{ ms}$	128	A <sup>2</sup> s
$di/dt$	Critical rate of rise of on-state current Gate supply : $I_G = 20mA$ , $t_r \leq 100ns$		Repetitive $F = 100\text{ Hz}$	50	A/ $\mu s$
$T_{stg}$ $T_j$	Storage and operating junction temperature range			- 40 to + 150 - 40 to + 125	°C °C
$T_l$	Maximum lead temperature for soldering during 10s at 4.5mm from case			260	°C

Symbol	Parameter	BTA / BTB16-xxxSW		Unit
		600	700	
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltage $T_j = 125\text{ °C}$	600	700	V
$V_{DSM}$	Non repetitive surge peak off-state voltage $T_j = 125\text{ °C}$ $T_p \leq 50\text{ }\mu s$	700	800	V

## BTA/BTB16-xxxSW

### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-a)	Junction to ambient	60	°C/W
Rth (j-c) DC	Junction to case for DC	BTA	2.8
		BTB	1.6
Rth (j-c) AC	Junction to case for AC 360° conduction angle (F= 50 Hz)	BTA	2.1
		BTB	1.2

### GATE CHARACTERISTICS (maximum values)

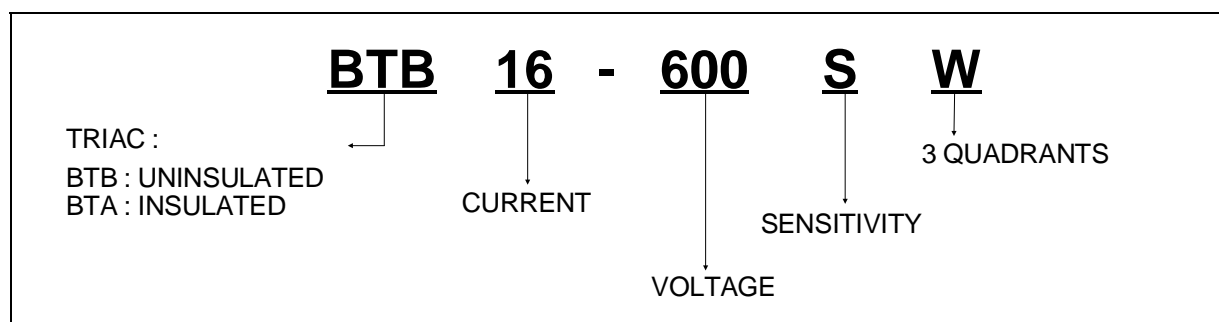
$P_{G(AV)} = 1W$   $P_{GM} = 10W$  ( $t_p = 20 \mu s$ )  $I_{GM} = 4A$  ( $t_p = 20 \mu s$ ).

### ELECTRICAL CHARACTERISTICS

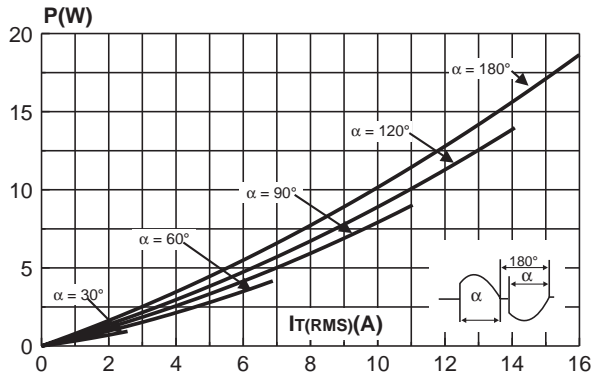
Symbol	Test Conditions	Quadrant		BTA/BTB16-xxxSW		Unit
					Value	
$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	I-II-III	MAX	10	mA
$V_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$	$T_j=25^\circ C$	I-II-III	MAX	1.3	V
$V_{GD}$	$V_D=V_{DRM}$ $R_L=3.3k\Omega$	$T_j=125^\circ C$	I-II-III	MIN	0.2	V
$I_L$	$I_G=1.2 I_{GT}$	$T_j=25^\circ C$	I-III	MAX	30	mA
			II	MAX	40	
$I_H^*$	$I_T=100mA$ gate open	$T_j=25^\circ C$		MAX	15	mA
$V_{TM}^*$	$I_{TM}=22.5A$ $t_p=380\mu s$	$T_j=25^\circ C$		MAX	1.5	V
$I_{DRM}$ $I_{RRM}$	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j=25^\circ C$		MAX	5	$\mu A$
		$T_j=125^\circ C$		MAX	2	mA
$dV/dt^*$	$V_D=67\%V_{DRM}$ gate open	$T_j=125^\circ C$		MIN	20	V/ $\mu s$
$(dI/dt)_c^*$	$(dV/dt)_c = 0.1V/\mu s$	$T_j=125^\circ C$		MIN	3.5	A/ms
	Without snubber	$T_j=125^\circ C$		MIN	1	

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

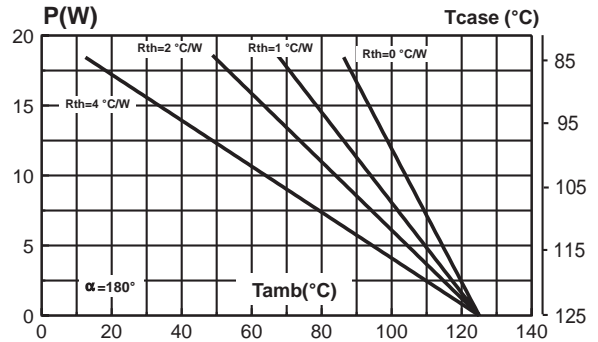
### ORDERING INFORMATION



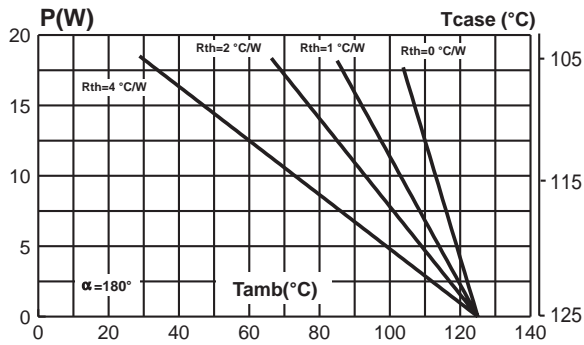
**Fig.1 :** Maximum power dissipation versus RMS on-state current (resistive load).



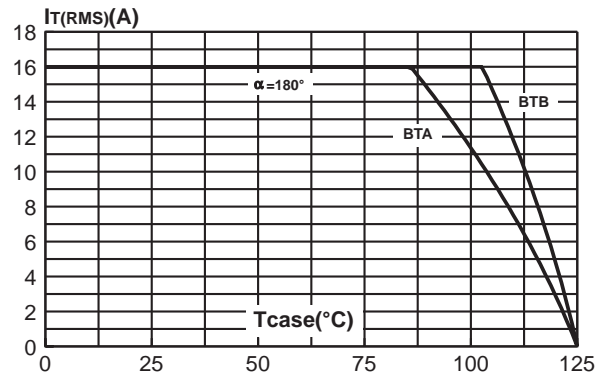
**Fig.2-1 :** Correlation between maximum power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances (BTA).



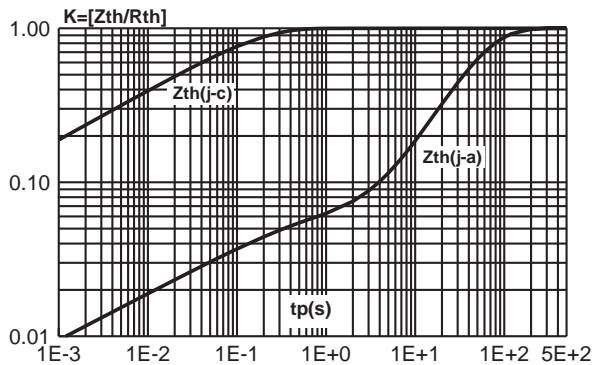
**Fig.2-2 :** Correlation between maximum power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact (BTB).



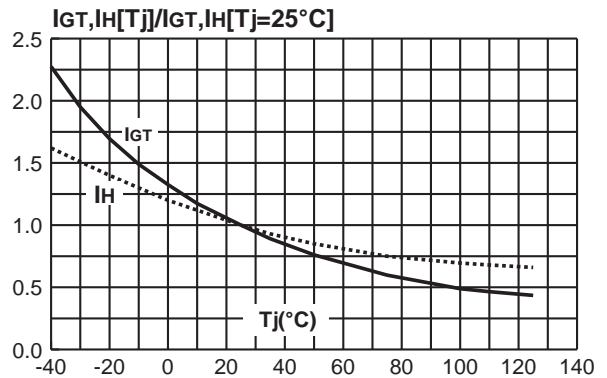
**Fig.3 :** RMS on-state current versus case temperature.



**Fig.4 :** Relative variation of thermal impedance versus pulse duration.

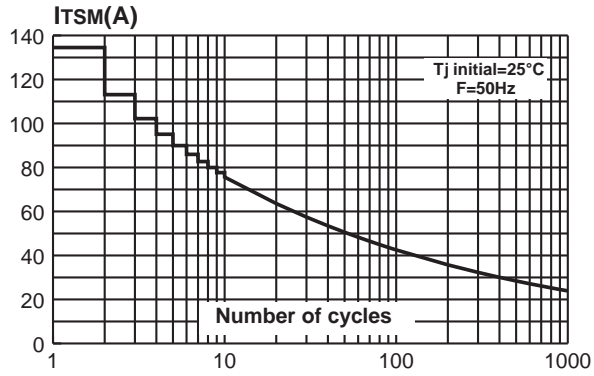


**Fig.5 :** Relative variation of gate trigger current and holding current versus junction temperature (typical values).

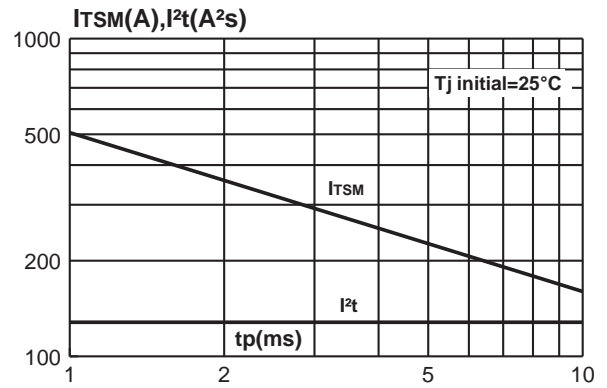


## BTA/BTB16-xxxSW

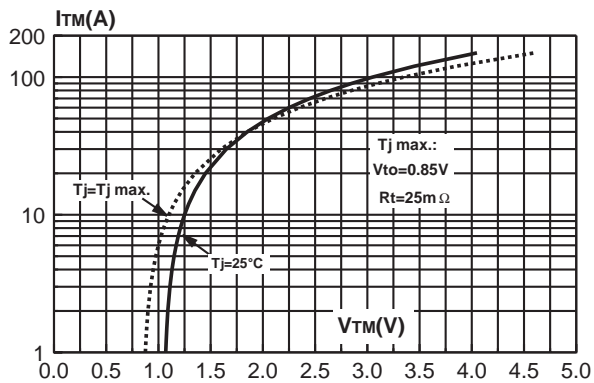
**Fig.6** : Non Repetitive surge peak on-state current versus number of cycles.



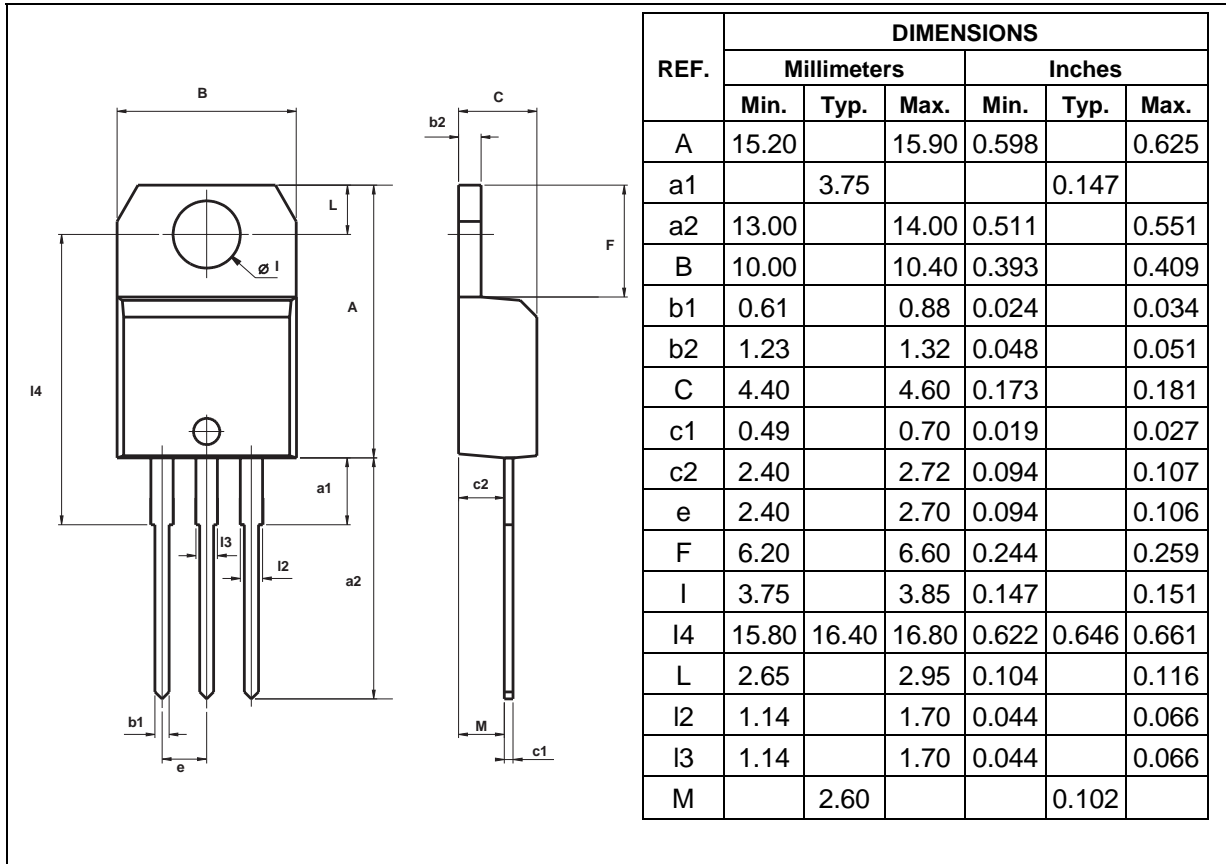
**Fig 7** : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t_p \leq 10$ ms, and corresponding value of  $I^2t$ .



**Fig.8** : On-state characteristics (maximum values).



**PACKAGE MECHANICAL DATA**  
TO220AB Plastic



**MARKING**

Type	Marking
BTA16-600SW	BTA16 600SW
BTA16-700SW	BTA16 700SW
BTB16-600SW	BTB16 600SW
BTB16-700SW	BTB16 700SW

Weight : 2.1g

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