

**DESCRIPTION:**

With high ability to withstand the shock loading of large current, BTA420X-800BT series triacs provide high dv/dt rate with strong resistance to electromagnetic interference. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.



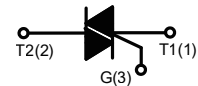
TO-3P



TO-220F



TO-220A


**MAIN FEATURES**

Symbol	Value	Unit
$I_{T(RMS)}$	20	A
$V_{DRM}/V_{RRM}$	600/800/1200	V

**ABSOLUTE MAXIMUM RATINGS**

Parameter		Symbol	Value	Unit
Storage junction temperature range		$T_{stg}$	-40-150	°C
Operating junction temperature range		$T_j$	-40-125	°C
Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )		$V_{DRM}$	600/800/1200	V
Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )		$V_{RRM}$	600/800/1200	V
Non repetitive surge peak Off-state voltage		$V_{DSM}$	$V_{DRM} + 100$	V
Non repetitive peak reverse voltage		$V_{RSM}$	$V_{RRM} + 100$	V
RMS on-state current	TO-220A(Ins) ( $T_C=70^\circ\text{C}$ )	$I_{T(RMS)}$	20	A
	TO-220A(Non-Ins) ( $T_C=90^\circ\text{C}$ )			
	TO-220F(Ins) ( $T_C=65^\circ\text{C}$ )			
	TO-3P(Ins) ( $T_C=105^\circ\text{C}$ )			

Non repetitive surge peak on-state current (full cycle, F=50Hz)	$I_{TSM}$	200	A
$I^2t$ value for fusing ( $t_p=10ms$ )	$I^2t$	200	$A^2s$
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ )	$di/dt$	100	$A/\mu s$
Peak gate current	$I_{GM}$	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	$P_{GM}$	10	W

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^\circ C$  unless otherwise specified)

## 3 Quadrants

Symbol	Test Condition	Quadrant		Value		Unit
				BW	CW	
$I_{GT}$	$V_D=12V R_L=33\Omega$	I - II -III	MAX	50	35	mA
$V_{GT}$		I - II -III	MAX	1.3		V
$V_{GD}$	$V_D=V_{DRM} T_j=125^\circ C$ $R_L=3.3K\Omega$	I - II -III	MIN	0.2		V
$I_L$	$I_G=1.2I_{GT}$	I -III	MAX	70	60	mA
		II		90	70	
$I_H$	$I_T=100mA$		MAX	60	50	mA
$dV/dt$	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ C$		MIN	1000	500	$V/\mu s$

## 4 Quadrants

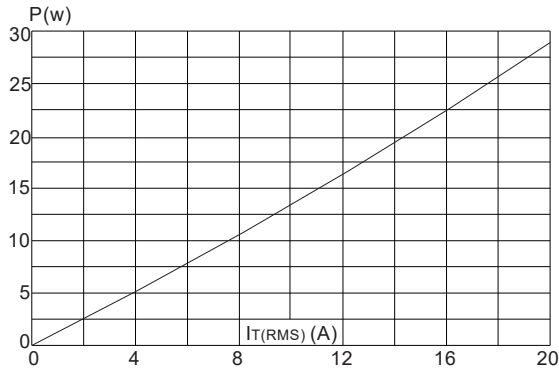
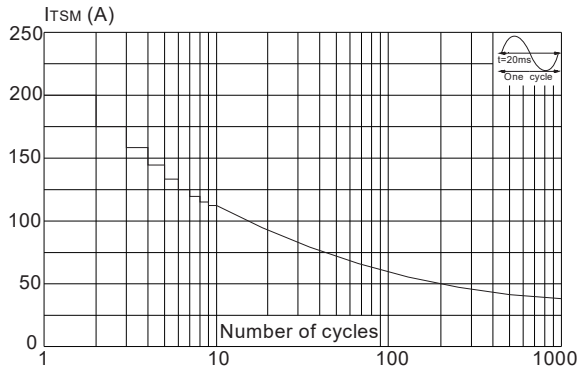
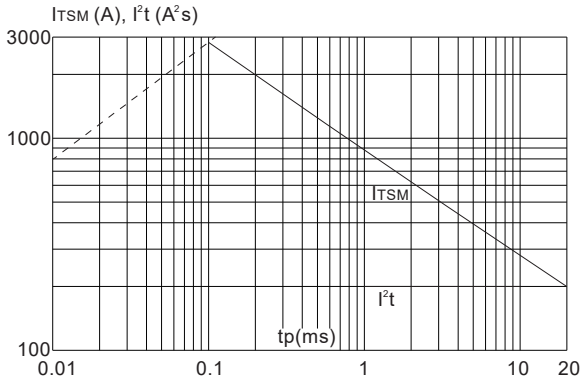
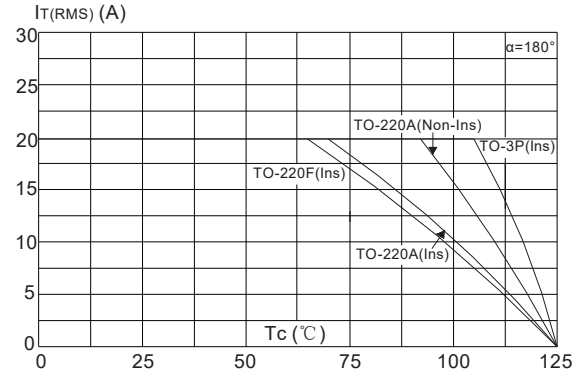
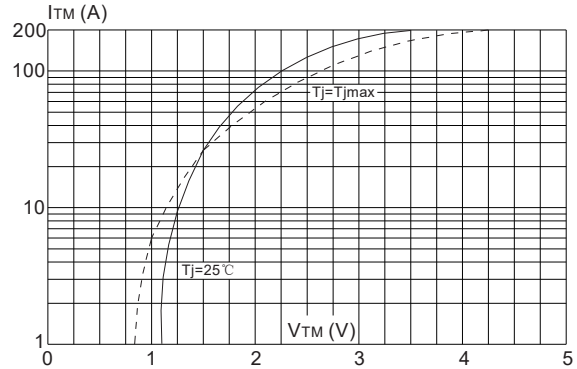
Symbol	Test Condition	Quadrant		Value	Unit
$I_{GT}$	$V_D=12V R_L=33\Omega$	I - II -III	MAX	50	mA
		IV		70	
$V_{GT}$		ALL	MAX	1.3	V
$V_{GD}$	$V_D=V_{DRM} T_j=125^\circ C$ $R_L=3.3K\Omega$	ALL	MIN	0.2	V
$I_L$	$I_G=1.2I_{GT}$	I -III-IV	MAX	70	mA
		II		90	
$I_H$	$I_T=100mA$		MAX	60	mA
$dV/dt$	$V_D=2/3V_{DRM}$ Gate Open $T_j=125^\circ C$		MIN	500	$V/\mu s$

**STATIC CHARACTERISTICS**

Symbol	Parameter		Value(MAX)	Unit
$V_{TM}$	$I_{TM} = 28A$ $t_p = 380\mu s$	$T_j = 25^\circ C$	1.5	V
$I_{DRM}$	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j = 25^\circ C$	5	$\mu A$
$I_{RRM}$		$T_j = 125^\circ C$	2.5	mA

**THERMAL RESISTANCES**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	1.9	$^\circ C/W$
		TO-220A(Non-Ins)	1.1	
		TO-220F(Ins)	2.1	
		TO-3P	0.7	

**FIG.1** Maximum power dissipation versus RMS on-state current

**FIG.3:** Surge peak on-state current versus number of cycles

**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20ms$ , and corresponding value of  $I^2t$  ( $di/dt < 100A/\mu s$ )

**FIG.2:** RMS on-state current versus case temperature

**FIG.4:** On-state characteristics (maximum values)

**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature
