

**Product Summary**

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
$V_{DRM} V_{RRM}$	600 / 800	V
$V_{TM}$	1.55	V

**Feature**

With high ability to withstand the shock loading of large current, With high commutation performances, 3 quadrants products especially recommended for use on inductive load.

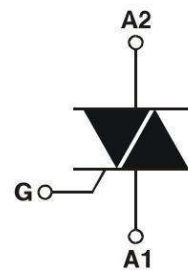
**Application**

Washing machine, vacuums, massager, solid state relay, AC Motor speed regulation and so on.

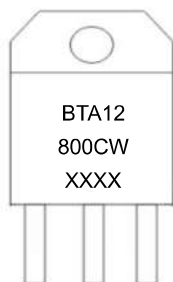
**Package**



**Circuit diagram**



**Marking**



### Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Repetitive peak off-state voltage	$V_{DRM}$	600 / 800	V
Repetitive peak reverse voltage	$V_{RRM}$	600 / 800	V
RMS on-state current	$I_{T(RMS)}$	12	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	$I_{TSM}$	120	A
$I^2t$ value for fusing (tp=10ms)	$I^2t$	78	A <sup>2</sup> s
Critical rate of rise of on-state current ( $I_G = 2 \times I_{GT}$ )	$di_T/dt$	I - II - III   50	A/ $\mu$ s
Peak gate current	$I_{GM}$	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Junction Temperature	$T_J$	-40 ~ +125	°C
Storage Temperature	$T_{STG}$	-40 ~ +150	°C

### Electrical characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Value		Unit	
			SW	CW		
Gate trigger current	$I_{GT}$	$V_D = 12V$ $R_L = 33\Omega$	I - II - III	$\leq 10$	$\leq 35$	mA
Gate trigger voltage	$V_{GT}$	$T_J = 25^\circ C$	I - II - III	$\leq 1.3$		V
Gate non-trigger voltage	$V_{GD}$	$V_D = V_{DRM}$ $T_J = 125^\circ C$		$\geq 0.2$		V
latching current	$I_L$	$I_G = 1.2I_{GT}$	I - III	$\leq 25$	$\leq 50$	mA
			II	$\leq 30$	$\leq 60$	
Holding current	$I_H$	$I_T = 100mA$		$\leq 15$	$\leq 35$	mA
Critical-rate of rise of commutation voltage	$dV_D/dt$	$V_D = 2/3V_{DRM}$ Gate Open $T_J = 125^\circ C$		$\geq 40$	$\geq 500$	V/ $\mu$ s
<b>STATIC CHARACTERISTICS</b>						
Forward "on" voltage	$V_{TM}$	$I_{TM} = 17A$ $tp = 380\mu s$		$\leq 1.55$		V
Repetitive Peak Off-State Current	$I_{DRM}$	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_J = 25^\circ C$	$\leq 5$		$\mu A$
Repetitive Peak Reverse Current	$I_{RRM}$		$T_J = 125^\circ C$	$\leq 1$		mA
<b>THERMAL RESISTANCES</b>						
Thermal resistance	Rth(j-c)	Junction to case(AC)		2.3		°C/W
	Rth(j-a)	Junction to ambient		60		°C/W

**Typical Characteristics**

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

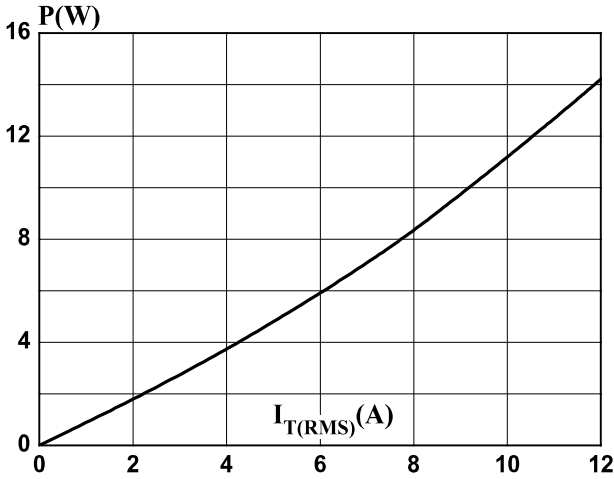


FIG.2: RMS on-state current versus case temperature (full cycle)

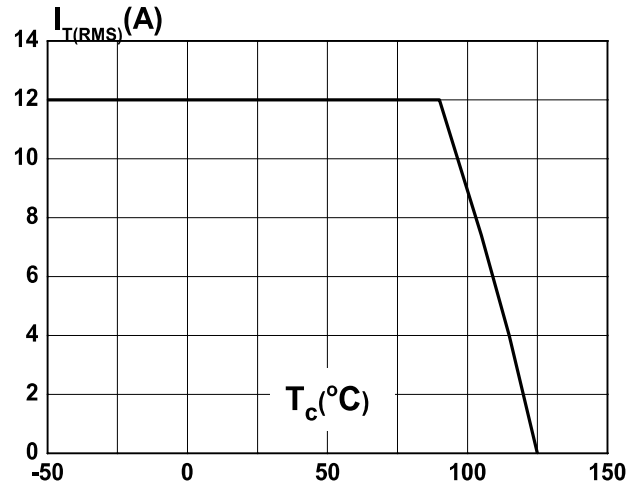


FIG.3: Surge peak on-state current versus number of cycles

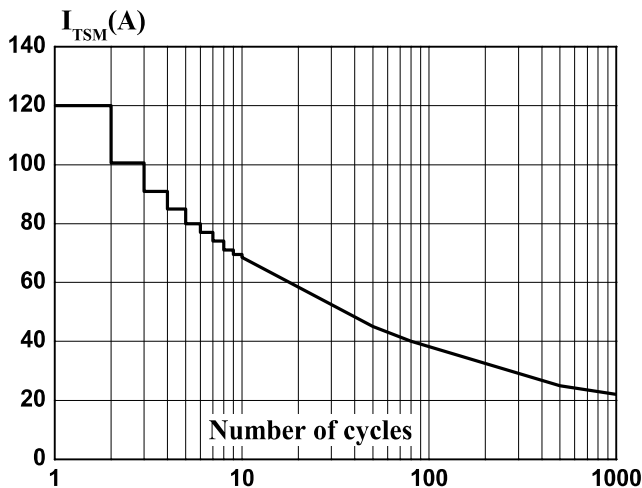


FIG.4: On-state characteristics (maximum values)

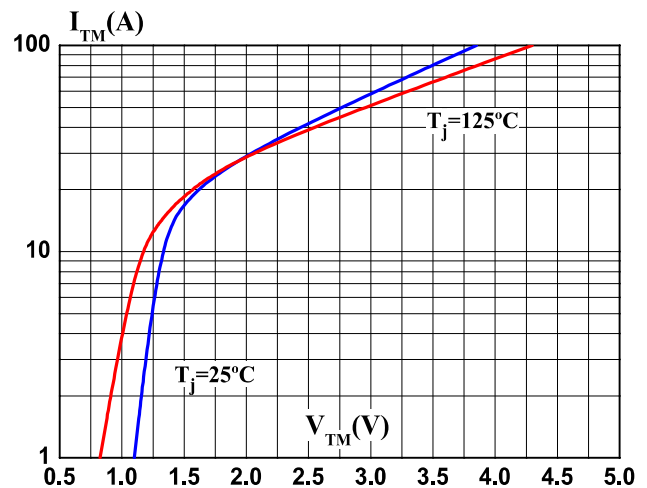


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$

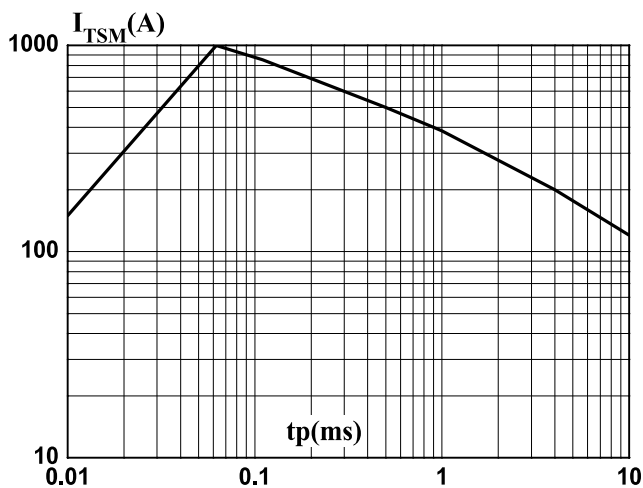
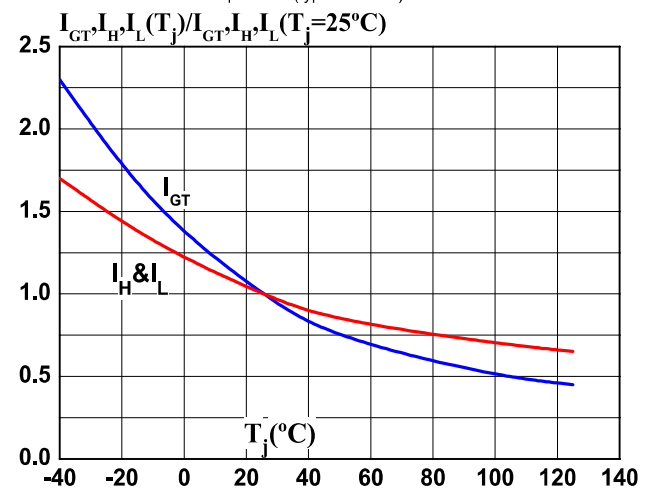
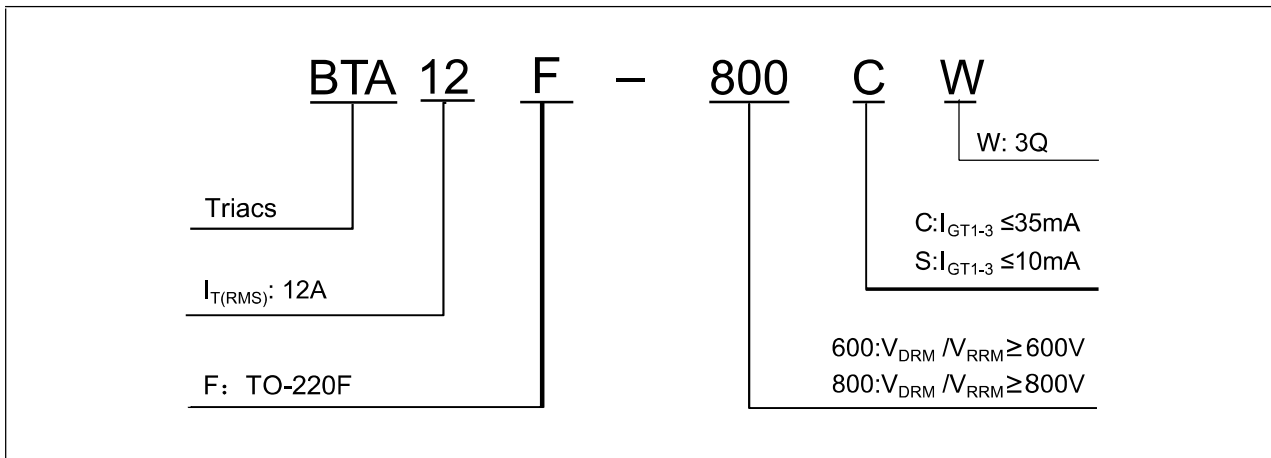


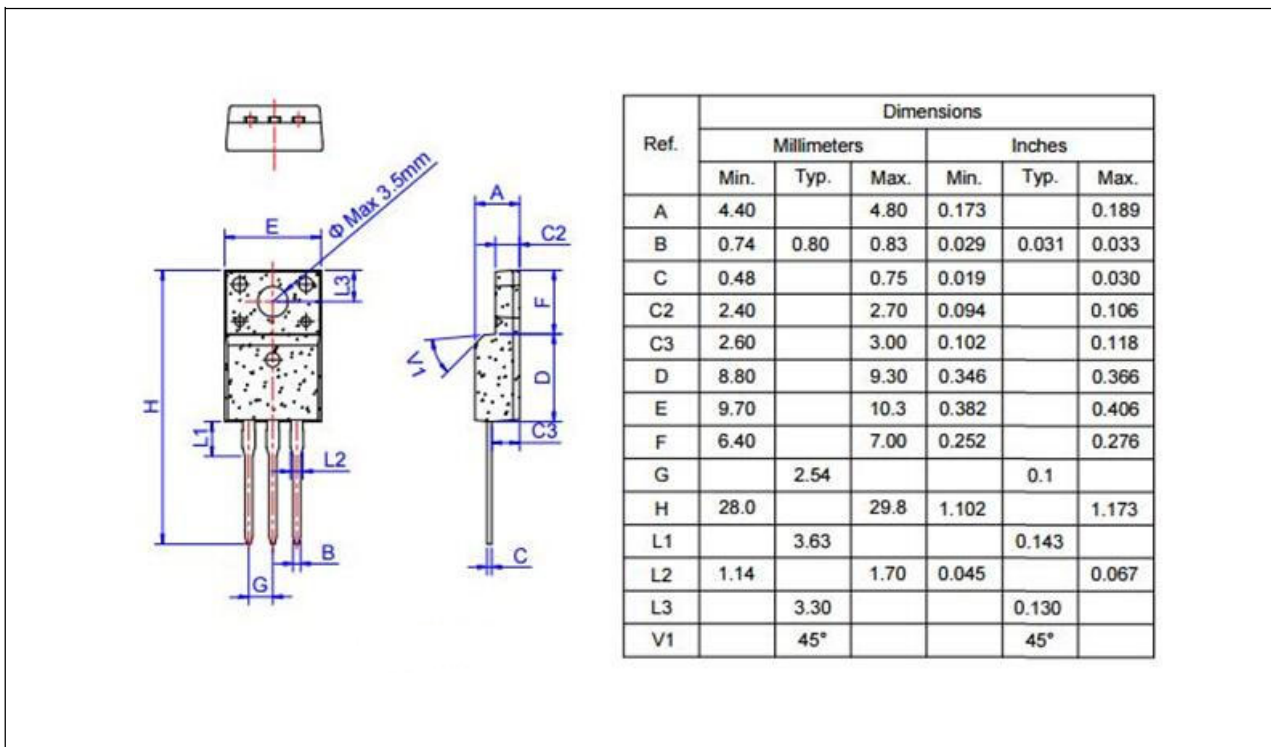
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



**Ordering Information**



**TO-220F Insulated Package Information**



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