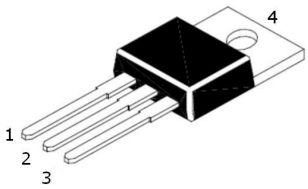
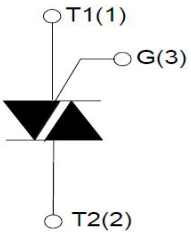
12A TRIACS





BTA12-600/800/1200
TO-220 (Ins)
Plastic Package

BTB12-600/800/1200
TO-220 (Non-Ins)
Plastic Package

BTA12 / BTB12 series triacs, with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load.

ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	VALUE	UNIT
Storage junction temperature range		T_{stg}	-40 to 150	°C
Operating junction temperature range		T_j	-40 to 125	°C
Repetitive peak off-state voltage (T_j=25°C)		V_{DRM}	600/800/1200	V
Repetitive peak reverse voltage (T_j=25°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-220 (Ins) (T_C=90°C)	$I_{T(RMS)}$	12	A
	TO-220 (Non-Ins) (T_C=105°C)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I_{TSM}	120	A
I^2t value for fusing (t_p=10ms)		I^2t	72	A^2s
Critical rate of rise of on-state current (I_G =2×I_{GT})		dI/dt	50	A/µs
Peak gate current		I_{GM}	4	A
Average gate power dissipation		$P_{G(AV)}$	1	W
Peak gate power		P_{GM}	5	W

ELECTRICAL CHARACTERISTICS (T_j=25°c unless otherwise specified)

3 Quadrants

PARAMETER	TEST CONDITIONS	SYMBOL	QUADRANT	VALUES				UNITS
				BW	CW	SW	TW	
Gate Trigger Current	V_D =12V R_L =33Ω	I_{GT}	I - II - III	<50	<35	<10	<5	mA
Gate Trigger Voltage		V_{GT}	I - II - III	<1.3				V
Off-State Gate Voltage	V_D =V_{DRM} T_j =125°C R_L =3.3KΩ	V_{GD}	I - II - III	>0.2				V
Latching Current	I_G =1.2I_{GT}	I_L	I - III	<70	<50	<25	<10	mA
			II	<80	<60	<30	<15	
Holding Current	I_T =100mA	I_H		<60	<40	<15	<10	mA
Critical Rate of Rise of Off-State Voltage	V_D=2/3V_{DRM} Gate Open T_j =125°C	dV/dt		>1000	>500	>40	>20	V/µs
	Without snubber T_j=125°C	(dV/dt)c		>12	>6.5	>5.0	>3.5	V/µs

4 Quadrants

PARAMETER	TEST CONDITIONS	SYMBOL	QUADRANT	VALUES		UNITS
				B	C	
Gate Trigger Current	V_D =12V R_L=33Ω	I_{GT}	I - II - III	<50	<25	mA
			IV	<70	<50	
Gate Trigger Voltage		V_{GT}	ALL	<1.3		V
Off-State Gate Voltage	V_D =V_{DRM} T_j =125°C R_L =3.3KΩ	V_{GD}	ALL	>0.2		V
Latching Current	I_G =1.2I_{GT}	I_L	I - III - IV	<50	<40	mA
			II	<100	<80	
Holding Current	I_T =100mA	I_H		<50	<25	mA
Critical Rate of Rise of Off-State Voltage	V_D=2/3V_{DRM} Gate Open T_j=125°C	dV/dt		>400	>200	V/µs

STATIC CHARACTERISTICS

PARAMETER	TEST CONDITIONS		SYMBOL	VALUE (MAX)	UNITS
On-State Voltage	I_{TM} =17A t_p=380µs	T_j=25°C	V_{TM}	1.55	V
Off-State Leakage Current	V_D =V_{DRM} V_R =V_{RRM}	T_j=25°C	I_{DRM}	5	µA
		T_j=125°C	I_{RRM}	1	mA

THERMAL RESISTANCES

PARAMETER		SYMBOL	VALUE (MAX)	UNITS
Maximum Thermal Resistance Junction to case	TO-220 (Ins)	$R_{th(j-c)}$	2.3	°C/W
	TO-220 (Non-Ins)		1.4	

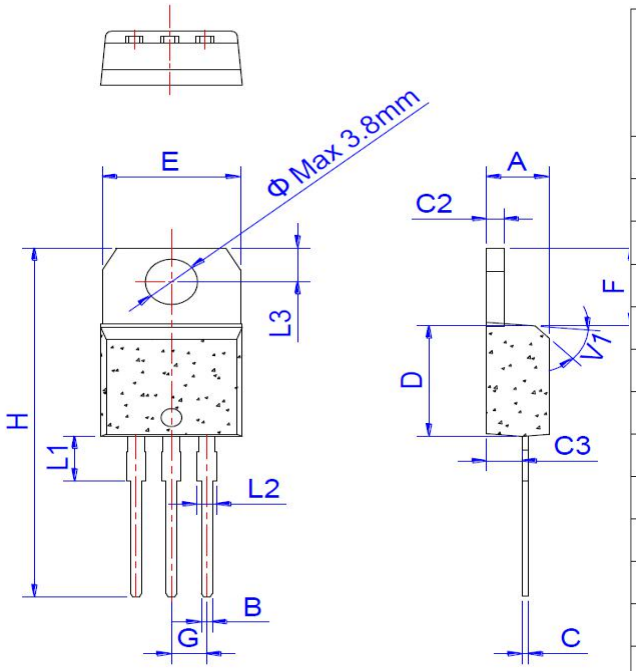
ORDERING INFORMATION

BTA12-XY
BTB12-XY

X = 600: VDRM/VRRM ≥ 600
= 800: VDRM/VRRM ≥ 800
= 1200: VDRM/VRRM ≥ 1200

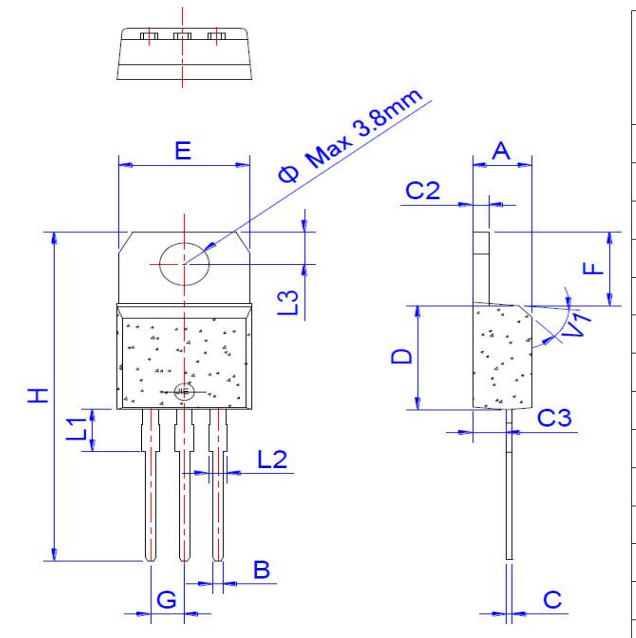
Y = BW: I_{GT1-3} ≤ 50mA
= CW: I_{GT1-3} ≤ 35mA
= SW: I_{GT1-3} ≤ 10mA
= TW: I_{GT1-3} ≤ 5mA
= B: I_{GT1-3}≤50mA I_{GT4}≤70mA
= C: I_{GT1-3}≤25mA I_{GT4}≤50mA

TO-220 (Ins) PACKAGE OUTLINE AND DIMENSIONS



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

TO-220 (Non-Ins) PACKAGE OUTLINE AND DIMENSIONS



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

CHARACTERISTIC CURVES

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

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

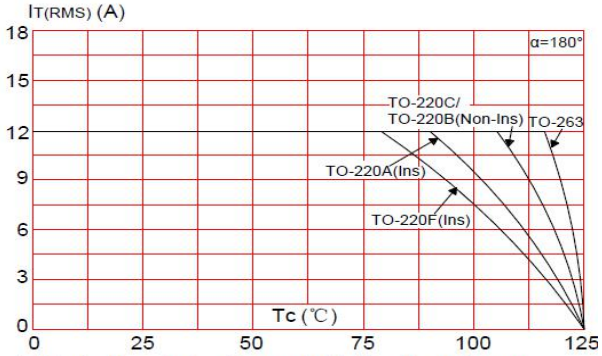


FIG.3: Surge peak on-state current versus number of cycles

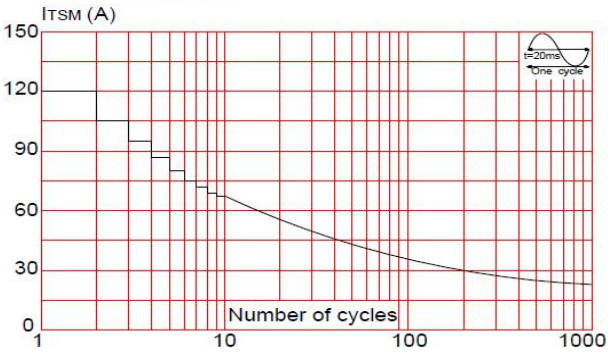


FIG.4: On-state characteristics (maximum values)

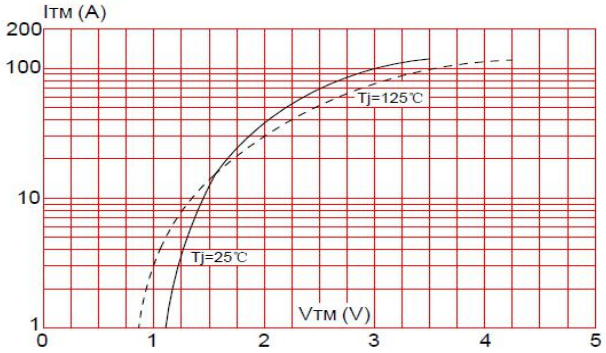


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I^2t (dI/dt < 50A/µs)

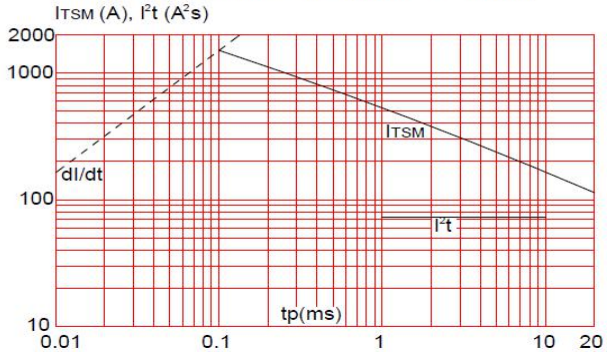
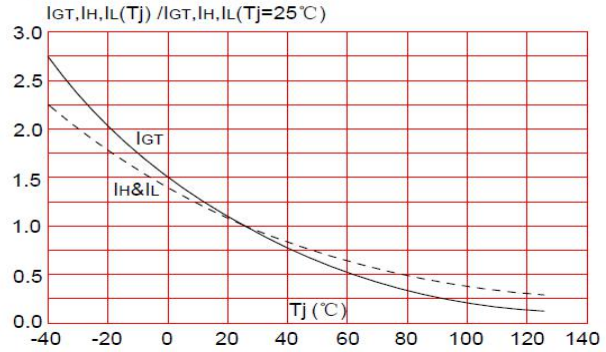


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

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