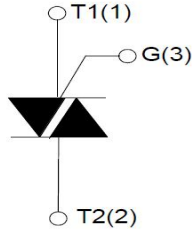
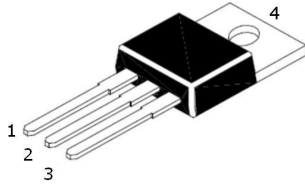


12A TRIACS



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 ($T_j=25^\circ\text{C}$)	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-220 (Ins) ($T_c=90^\circ\text{C}$)	12	A
	TO-220 (Non-Ins) ($T_c=105^\circ\text{C}$)		
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$)	I_{TSM}	120	A
I^2t value for fusing ($t_p=10\text{ms}$)	I^2t	72	A^2s
Critical rate of rise of on-state current ($I_G = 2 \times I_{GT}$)	di/dt	50	$\text{A}/\mu\text{s}$
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 ($T_j=25^\circ\text{C}$ unless otherwise specified)

3 Quadrants

PARAMETER	TEST CONDITIONS	SYMBOL	QUADRANT	VALUES				UNITS
				BW	CW	SW	TW	
Gate Trigger Current	$V_D = 12\text{V}$ $R_L = 33\Omega$	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	$V_D = V_{DRM}$ $T_j = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$	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	$I_T = 100\text{mA}$	I_H		<60	<40	<15	<10	mA
Critical Rate of Rise of Off-State Voltage	$V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^\circ\text{C}$	dV/dt		>1000	>500	>40	>20	V/ μs
	Without snubber $T_j = 125^\circ\text{C}$	$(dV/dt)_c$		>12	>6.5	>5.0	>3.5	V/ μs

4 Quadrants

PARAMETER	TEST CONDITIONS	SYMBOL	QUADRANT	VALUES		UNITS
				B	C	
Gate Trigger Current	$V_D = 12\text{V}$ $R_L = 33\Omega$	I_{GT}	I - II - III	<50	<25	mA
			IV	<70	<50	
Gate Trigger Voltage	$V_D = 12\text{V}$ $R_L = 33\Omega$	V_{GT}	ALL	<1.3		V
Off-State Gate Voltage	$V_D = V_{DRM}$ $T_j = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$	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	$I_T = 100\text{mA}$	I_H		<50	<25	mA
Critical Rate of Rise of Off-State Voltage	$V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^\circ\text{C}$	dV/dt		>400	>200	V/ μs

STATIC CHARACTERISTICS

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE (MAX)	UNITS
On-State Voltage	$I_{TM} = 17A$ $t_p = 380\mu s$ $T_j = 25^\circ C$	V_{TM}	1.55	V
Off-State Leakage Current	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_j = 25^\circ C$ I_{DRM}	5	μA
		$T_j = 125^\circ C$ 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	$^{\circ}\text{C/W}$
	TO-220 (Non-Ins)		1.4	

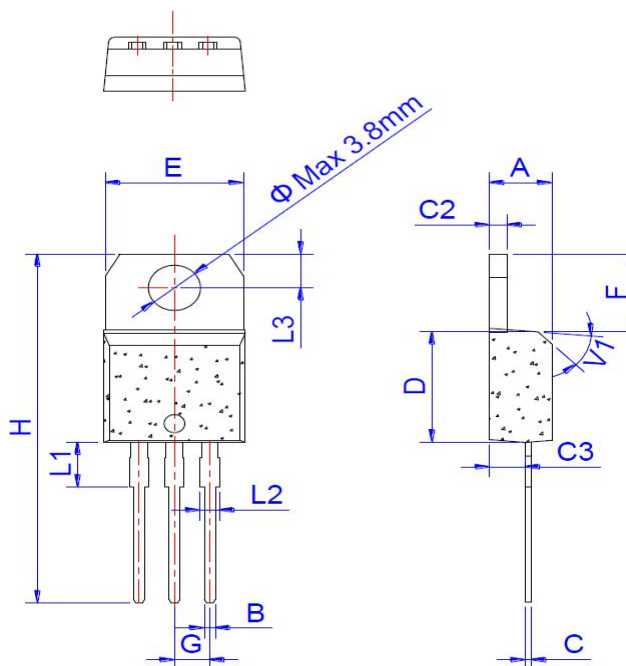
ORDERING INFORMATION

BTA12-XY BTB12-XY

X = 600: $V_{DRM}/V_{RRM} \geq 600$
= 800: $V_{DRM}/V_{RRM} \geq 800$
= 1200: $V_{DRM}/V_{RRM} \geq 1200$

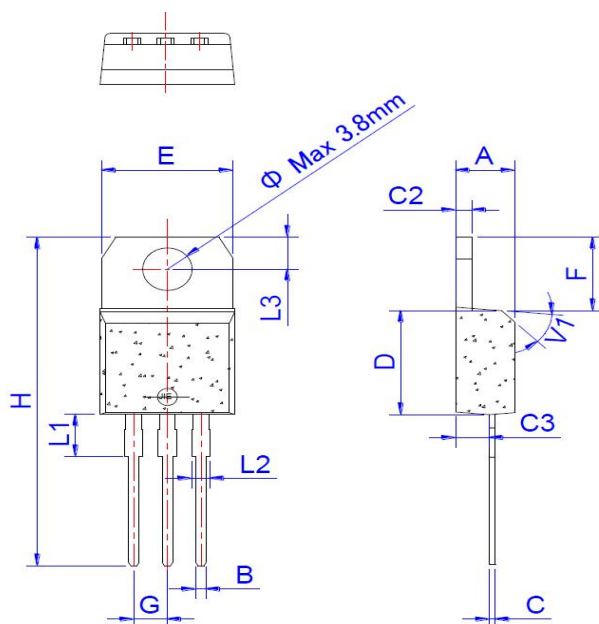
Y = BW: $I_{GT1-3} \leq 50mA$
= CW: $I_{GT1-3} \leq 35mA$
= SW: $I_{GT1-3} \leq 10mA$
= TW: $I_{GT1-3} \leq 5mA$
= B: $I_{GT1-3} \leq 50mA$ $I_{GT4} \leq 70mA$
= C: $I_{GT1-3} \leq 25mA$ $I_{GT4} \leq 50mA$

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

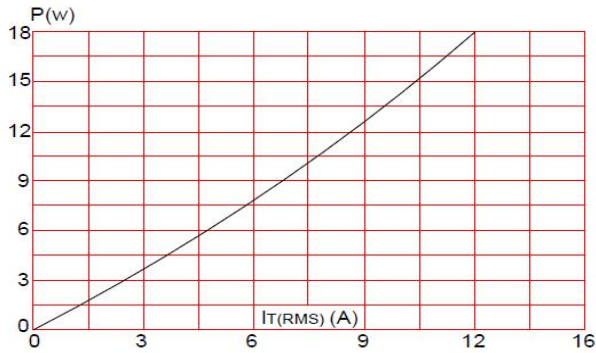


FIG.3: Surge peak on-state current versus number of cycles



FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20ms$, and corresponding value of I^2t ($di/dt < 50A/\mu s$)

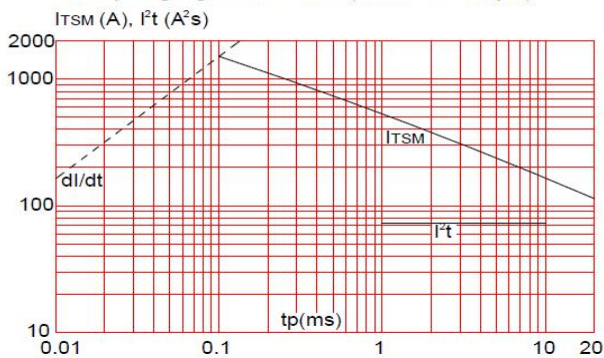


FIG.2: RMS on-state current versus case temperature

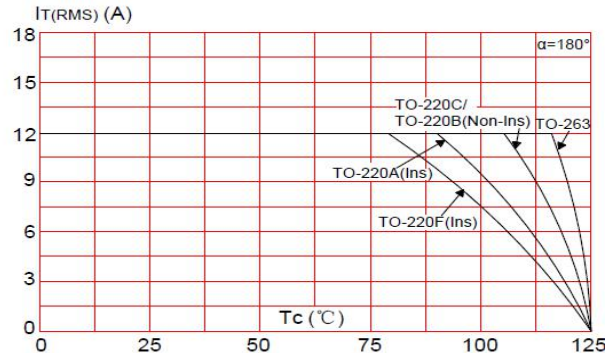


FIG.4: On-state characteristics (maximum values)

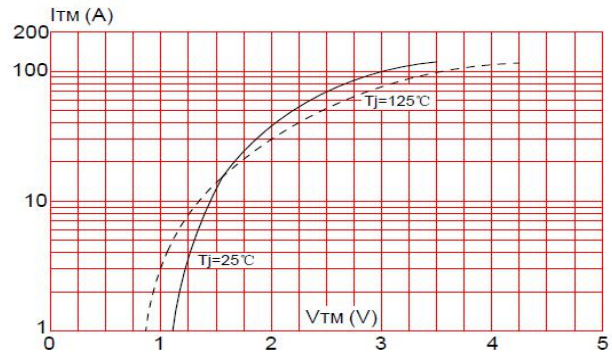
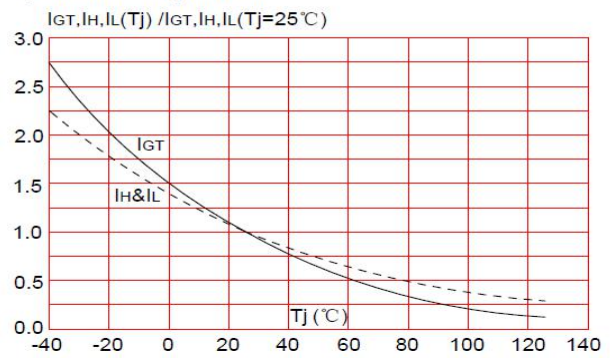


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

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