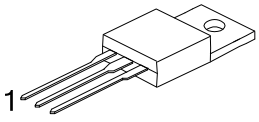
BTB12 **Preliminary** ***TRIAC***

12A TRIACS



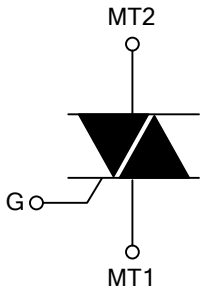
TO-220

■ DESCRIPTION

The UTC **BTB12** is a 12A triacs, it uses UTC's advanced technology to provide customers with high commutation performances and voltage insulated tab, etc.

The UTC **BTB12** is suitable for inductive loads, general purpose AC switching and an ON/OFF function in applications such as motor speed controllers, induction motor starting circuits and static relays, etc.

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BTB12L-x-xx-TA3-T	BTB12G-x-xx-TA3-T	TO-220	MT1	MT2	G	Tube

BTB12L-x-xx-TA3-T

(1)Packing Type
(2)Package Type
(3)Sensitivity and type
(4)Voltage
(5)Lead Free

(1) T: Tube
(2) TA3: TO-220
(3) refer to SENSITIVITY AND TYPE
(4) 6: 600V, 8: 800V
(5) L: Lead Free, G: Halogen Free

■ SENSITIVITY AND TYPE

PART NUMBER	VOLTAGE		SENSITIVITY	TYPE
	600V	800V		
B	◎	◎	50mA	STANDARD
BW	◎	◎	50mA	SNUBBERLESS
C	◎	◎	25mA	STANDARD
CW	◎	◎	35mA	SNUBBERLESS
SW	◎	◎	10mA	LOGIC LEVEL
TW	◎	◎	5mA	LOGIC LEVEL

◎: Available

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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER			SYMBOL	RATINGS	UNIT
RMS On-State Current (Full Sine Wave)		T_C=90°C	$I_{T(RMS)}$	12	A
Non Repetitive Surge Peak On-State Current (Full Cycle, T_J initial=25°C)	F=50 Hz	t=20ms	I_{TSM}	120	A
	F=60 Hz	t=16.7ms		126	A
I^2t Value for Fusing	t_P=10ms		I^2t	78	A^2s
Critical Rate of Rise of On-State Current I_G=2xI_{GT}, tr≤100ns	F=120 Hz	T_J=125°C	dI/dt	50	A/μs
Non Repetitive Surge Peak Off-State Voltage	t_P=10ms	T_J=25°C	V_{DSM}/V_{RSM}	V_{DRM}/V_{RRM}+100	V
Peak Gate Current	t_P=20μs	T_J=125°C	I_{GM}	4	A
Average Gate Power Dissipation		T_J=125°C	$P_{G(AV)}$	1	W
Operating Junction Temperature			T_J	-40~+125	°C
Storage Junction Temperature			T_{STG}	-40~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL RESISTANCES

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	60	°C/W
Junction to Case (AC)	θ_{JC}	1.4	°C/W

■ ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

FOR SNUBBERLESS TYPE and LOGIC LEVEL TYPE (3 QUADRANTS

PARAMETER	SYMBOL	TEST CONDITIONS		TW			SW			CW			BW			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
SNUBBERLESS TYPE and LOGIC LEVEL TYPE (3 QUADRANTS)																
Gate Trigger Current (Note 1)	I_{GT}	V_D=12V, R_L=30Ω	I-II-III			5			10			35			50	mA
Gate Trigger Voltage	V_{GT}		I-II-III			1.3			1.3			1.3			1.3	V
Gate Non-Trigger Voltage	V_{GD}	V_D=V_{DRM}, R_L=3.3kΩ, T_J=125°C	I-II-III			0.2	0.2			0.2			0.2			V
Holding Current (Note 2)	I_H	I_T=100mA					10			15			35			50
Latching Current	I_L	I_G=1.2I_{GT}	I-III			10			25			50			70	mA
			II			15			30			60			80	mA
Critical Rate of Rise of Off-State Voltage (Note 2)	dV/dt	V_D=67%V_{DRM}, Gate Open, T_J=125°C			20			40			500			1000		
Critical Rate of Rise of Off-State Voltage at Commutation (Note 2)	(dI/dt)c	(dV/dt)c=0.1V/μs, T_J=125°C			3.5			6.5								
		(dV/dt)c=10V/μs, T_J=125°C			1			2.9								
		Without Snubber T_J=125°C									6.5			12		

Note: 1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.
2. For both polarities of MT2 referenced to MT1.

■ ELECTRICAL CHARACTERISTICS(Cont.)

FOR STANDARD TYPE (4 QUADRANTS)

PARAMETER	SYMBOL	TEST CONDITIONS		C			B			UNIT
				MIN	TYP	MAX	MIN	TYP	MAX	
Gate Trigger Current (Note 1)	I_{GT}	V_D=12V, R_L=33Ω	I-II-III			25			50	mA
			IV			50			100	mA
Gate Trigger Voltage	V_{GT}		ALL			1.3			1.3	V
Gate Non-Trigger Voltage	V_{GD}	V_D=V_{DRM}, R_L=3.3kΩ, T_J=125°C	ALL	0.2			0.2			V
Holding Current (Note 2)	I_H	I_T=500mA				25			50	mA
Latching Current	I_L	I_G=1.2 I_{GT}	I-III-IV			40			50	mA
			II			80			100	mA
Critical Rate of Rise of Off-State Voltage (Note 2)	dV/dt	V_D=67%V_{DRM}, Gate Open, T_J=125°C		200			400			V/μs
Critical Rate of Rise of Off-State Voltage at Commutation(Note 2)	(dV/dt)c	(dI/dt)c=5.3A/ms, T_J= 125°C		5			10			V/μs

■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Peak On-State Voltage(Note)	V_T	I_{TM}=17A, t_p=380μs	T_J=25°C			1.55	V
Threshold Voltage(Note)	V_{TO}		T_J=125°C			0.85	V
Dynamic Resistance(Note)	R_D		T_J=125°C			35	mΩ
Repetitive Peak Off-State Current	I_{DRM}	V_{DRM}=V_{RRM}	T_J=25°C			5	μA
	I_{RRM}		T_J=125°C			1	mA

Note: 1. Minimum I_{GT} is guaranteed at 5% of I_{GT} max.
2. For both polarities of MT2 referenced to MT1.

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