



**BTB310A**

Preliminary

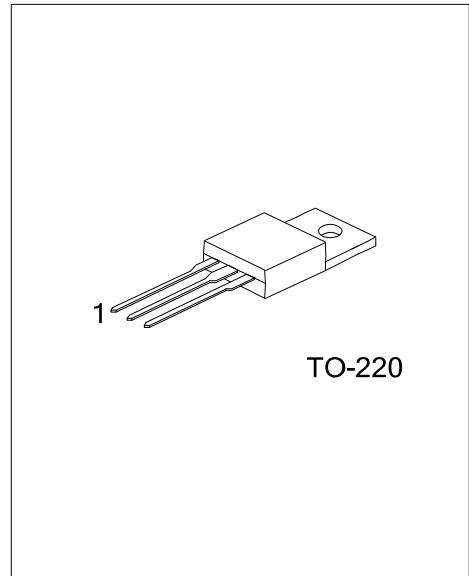
**TRIAC**

**10A TRIACS**

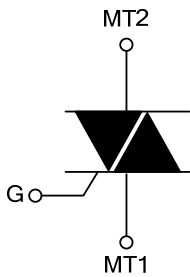
■ DESCRIPTION

The UTC **BTB310A** is a 10A triacs which can be operated in 3 quadrants, it uses UTC's advanced technology to provide customers with high commutation performances.

The UTC **BTB310A** is suitable for inductive load switching operations, also can be used in ON/OFF function applications such as induction motor starting circuits, heating regulation, static relays etc.



■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BTB310AL-x-xx-TA3-T	BTB310AG-x-xx-TA3-T	TO-220	MT1	MT2	G	Tube

Note: Pin Assignment: MT1: MT1 MT2: MT2 G: Gate

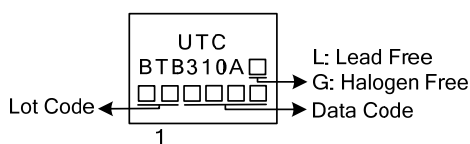
<p>BTB310AL-x-xx-TA3-T</p> <p>(1)Packing Type (2)Package Type (3)Sensitivity and type (4)Voltage (5)Green Package</p>	<p>(1) T: Tube (2) TA3: TO-220 (3) refer to SENSITIVITY AND TYPE (4) 6: 600V, 8: 800V (5) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ SENSITIVITY AND TYPE

PART NUMBER	VOLTAGE		SENSITIVITY	TYPE
	600V	800V		
BW	⊙	⊙	50mA	SNUBBERLESS
CW	⊙	⊙	35mA	SNUBBERLESS

⊙: Available

■ MARKING



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL		RATINGS	UNIT	
RMS On-State Current (Full Sine Wave)	$T_C=95^\circ\text{C}$		$I_{T(RMS)}$	10	A
Non Repetitive Surge Peak On-State Current (Full Cycle $T_J$ initial= $25^\circ\text{C}$ )	F=50Hz	t=20ms	$I_{TSM}$	100	A
	F=60Hz	t=16.7ms		105	A
$I^2t$ Value for Fusing	$t_P=10\text{ms}$		$I^2t$	55	$\text{A}^2\text{s}$
Critical Rate of Rise of On-State Current: $I_G=2I_{GT}$ , $t_r \leq 100\text{ns}$	F=120Hz	$T_J=125^\circ\text{C}$	dI/dt	50	$\text{A}/\mu\text{s}$
Non Repetitive Surge Peak Off-State Voltage	$t_P=10\text{ms}$	$T_J=25^\circ\text{C}$	$V_{DSM}/V_{RSM}$	$V_{DSM}/V_{RSM}+100$	V
Peak Gate Current	$t_P=20\mu\text{s}$	$T_J=125^\circ\text{C}$	$I_{GM}$	4	A
Average Gate Power Dissipation	$T_J=125^\circ\text{C}$		$P_{G(AV)}$	1	W
Operating Junction Temperature			$T_J$	-40~+125	$^\circ\text{C}$
Storage Junction Temperature			$T_{STG}$	-40~+150	$^\circ\text{C}$

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	$\theta_{JA}$	60	$^\circ\text{C}/\text{W}$
Junction to Case (AC)	$\theta_{JC}$	1.5	$^\circ\text{C}/\text{W}$

### ■ ELECTRICAL CHARACTERISTICS ( $T_J=25^\circ\text{C}$ , unless otherwise specified)

#### FOR SNUBBERLESS (3 QUADRANTS)

PARAMETER	SYMBOL	TEST CONDITIONS	CW			BW			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Gate Trigger Current (Note 1)	$I_{GT}$	$V_D=12\text{V}$ , $R_L=33\Omega$	I-II-III		35			50	mA
Gate Trigger Voltage	$V_{GT}$		I-II-III		1.3			1.3	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D=V_{DRM}$ , $R_L=3.3\text{k}\Omega$ , $T_J=125^\circ\text{C}$	I-II-III	0.2			0.2		V
Holding Current (Note 2)	$I_H$	$I_T=500\text{mA}$			35			50	mA
Latching Current	$I_L$	$I_G=1.2I_{GT}$	I-III		50			70	mA
			II		60			80	mA
Critical Rate of Rise of Off-State Voltage (Note 2)	dV/dt	$V_D=67\%V_{DRM}$ , Gate Open, $T_J=125^\circ\text{C}$		500			1000		$\text{V}/\mu\text{s}$
Critical Rate of Rise of Off-State Voltage at Commutation (Note 2)	(dI/dt) <sub>c</sub>	Without Snubber, $T_J=125^\circ\text{C}$		5.5			9.0		$\text{A}/\text{ms}$

Note: 1. Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GT}$  max.

2. For both polarities of MT2 referenced to MT1.

### ■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Peak On-State Voltage (Note 2)	$V_T$	$I_{TM}=14\text{A}$ , $t_P=380\mu\text{s}$			1.55	V
Threshold Voltage (Note 2)	$V_{TO}$				0.85	V
Dynamic Resistance (Note 2)	$R_D$				40	$\text{m}\Omega$
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}=V_{RRM}$			5	$\mu\text{A}$
	$I_{RRM}$				1	mA

Notes: 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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