



**BTB04A**

Preliminary

**TRIAC**

**SENSITIVE GATE TRIACS**

■ DESCRIPTION

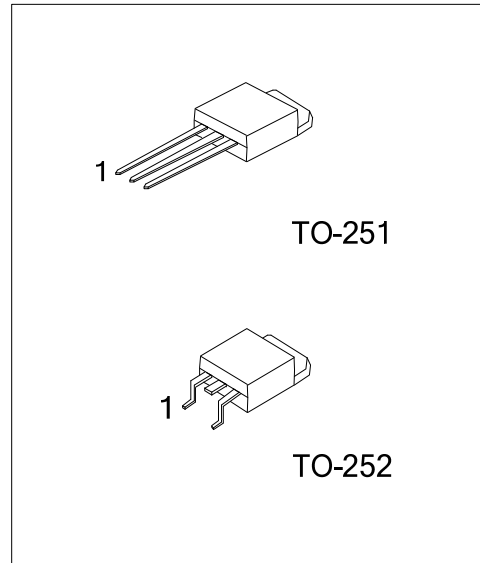
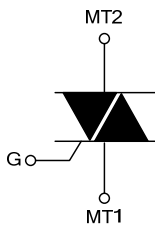
The UTC **BTB04A** is a 4A triacs which can be operated in 3 quadrants only, it uses UTC's advanced technology to provide customers with high commutation performances and voltage insulated tab, etc.

The UTC **BTB04A** 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.

■ FEATURES

- \* Low gate trigger current
- \* Low holding current

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BTB04AL-x-xx-TM3-T	BTB04AG-x-xx-TM3-T	TO-251	MT1	MT2	G	Tube
BTB04AL-x-xx-TN3-R	BTB04AG-x-xx-TN3-R	TO-252	MT1	MT2	G	Tape Reel

<p>BTB04AL-x-xx-TM3-T</p> <ul style="list-style-type: none"> <li>(1)Packing Type</li> <li>(2)Package Type</li> <li>(3)Sensitivity and type</li> <li>(4)Voltage</li> <li>(5)Lead Free</li> </ul>	<ul style="list-style-type: none"> <li>(1) T: Tube, R: Tape Reel</li> <li>(2) TM3: TO-251, TN3: TO-252</li> <li>(3) refer to SENSITIVITY AND TYPE</li> <li>(4) 9: 900V</li> <li>(5) L: Lead Free, G: Halogen Free</li> </ul>
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■ SENSITIVITY AND TYPE

PART NUMBER	VOLTAGE	SENSITIVITY	TYPE
SW	900V	10mA	LOGIC LEVEL

■ MARKING INFORMATION

PACKAGE	MARKING
TO-220	<p>UTC BTB04A □ □□□□□ 1</p> <p>Lot Code ←      → Data Code</p> <p>L: Lead Free G: Halogen Free</p>

### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
RMS On-State Current (360° Conduction Angle)	$T_C=90^\circ\text{C}$	$I_{T(RMS)}$	4	A
Non Repetitive Surge Peak On-State Current ( $T_J$ initial= $25^\circ\text{C}$ )	$t_p=8.3\text{ms}$	$I_{TSM}$	42	A
	$t_p=10\text{ms}$		40	A
$I^2t$ Value	$t_p=10\text{ms}$	$I^2t$	8	$\text{A}^2\text{s}$
Critical Rate of Rise of On-State Current: $I_G=50\text{mA}$ , $dI_G/dt=0.1\text{A}/\mu\text{s}$	Repetitive $F=50\text{Hz}$	$dI/dt$	10	$\text{A}/\mu\text{s}$
	Non Repetitive		50	$\text{A}/\mu\text{s}$
Repetitive Peak Off-State Voltage ( $T_J=110^\circ\text{C}$ )	400 T/D	$V_{DRM}/V_{RRM}$	400	V
	600 T/S		600	V
Peak Gate Current	$t_p=20\mu\text{s}$	$I_{GM}$	4	A
Peak Positive Gate Voltage	$t_p=20\mu\text{s}$	$V_{GM}$	16	V
Peak Positive Gate Power Dissipation	$t_p=20\mu\text{s}$	$P_{GM}$	40	W
Average Gate Power Dissipation		$P_{G(AV)}$	1	W
Operating Junction Temperature		$T_J$	-40~+110	$^\circ\text{C}$
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 for 360° Conduction Angle ( $F=50\text{Hz}$ ) (AC)	$\theta_{JC}$	2.4	$^\circ\text{C}/\text{W}$
Junction to Case (DC)		3.2	$^\circ\text{C}/\text{W}$

### ■ ELECTRICAL CHARACTERISTICS

#### FOR LOGIC LEVEL (3 QUADRANTS)

PARAMETER	SYMBOL	TEST CONDITIONS	SW			UNIT
			MIN	TYP	MAX	
Gate Trigger Current	$I_{GT}$	$V_D=12\text{V}$ (DC)	I-II-III		10	mA
Gate Trigger Voltage	$V_{GT}$	$R_L=33\Omega$ , $T_J=25^\circ\text{C}$	I-II-III		1.5	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D=V_{DRM}$ , $R_L=3.3\text{k}\Omega$ , $T_J=110^\circ\text{C}$	I-II-III	0.2		V
Time Gate Trigger	$t_{GT}$	$V_D=V_{DRM}$ , $I_G=40\text{mA}$ , $dI_G/dt=0.5\text{A}/\mu\text{s}$ , $T_J=25^\circ\text{C}$	I-II-III		2	$\mu\text{s}$
Holding Current (Note 1)	$I_H$	$I_T=100\text{mA}$ , Gate Open, $T_J=25^\circ\text{C}$			25	mA
Latching Current	$I_L$	$I_G=1.2I_{GT}$ , $T_J=25^\circ\text{C}$	I-III		20	mA
			II		40	mA
Peak On-State Voltage (Note 1)	$V_{TM}$	$I_{TM}=5.5\text{A}$ , $t_p=380\mu\text{s}$ , $T_J=25^\circ\text{C}$			1.65	V
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}$ Rated, $T_J=25^\circ\text{C}$			0.01	mA
	$I_{RRM}$	$V_{RRM}$ Rated, $T_J=110^\circ\text{C}$			0.75	mA
Critical Rate of Rise of Off-State Voltage (Note 1)	$dV/dt$	Linear Slope up to $V_D=67\%V_{DRM}$ , Gate Open, $T_J=110^\circ\text{C}$		10		$\text{V}/\mu\text{s}$
Critical Rate of Rise of Off-State Voltage at Commutation (Note 1)	$(dV/dt)_c$	$(dI/dt)_c=1.8\text{A}/\text{ms}$ , $T_J=110^\circ\text{C}$		5		$\text{V}/\mu\text{s}$

Note: 1. For either polarity of electrode MT2 voltage with reference to electrode MT1.

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