



## BTB04

TRIAC

### SENSITIVE GATE TRIACS

#### DESCRIPTION

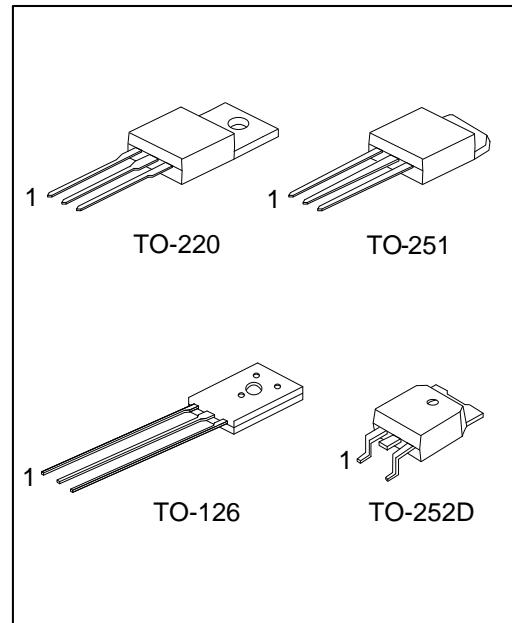
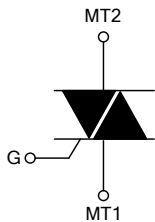
The UTC **BTB04** is a 4A triacs, it uses UTC's advanced technology to provide customers with high commutation performances.

The UTC **BTB04** is suitable for inductive loads, general purpose AC switching and an ON/OFF function in applications such as induction motor starting circuits, for phase control operation in light dimmers and 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	
BTB04L-x-x-T60-K	BTB04G-x-x-T60-K	TO-126	MT1	MT2	G	Bulk
BTB04L-x-x-TA3-T	BTB04G-x-x-TA3-T	TO-220	MT1	MT2	G	Tube
BTB04L-x-x-TM3-T	BTB04G-x-x-TM3-T	TO-251	MT1	MT2	G	Tube
BTB04L-x-x-TND-T	BTB04G-x-x-TND-T	TO-252D	MT1	MT2	G	Tube

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

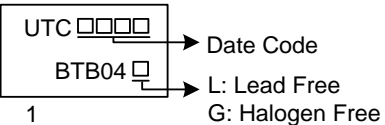
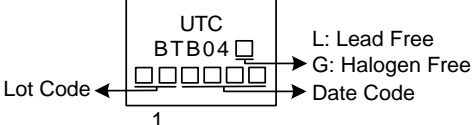
BTB04G-x-x-T60-K	(1)Packing Type (2)Package Type (3)Sensitivity (4)Voltage (5)Green Package	(1) K: Bulk, T: Tube (2) T60: TO-126, TA3: TO-220, TM3: TO-251 TND: TO-252D (3) refer to SENSITIVITY AND TYPE (4) 4: 400V, 6: 600V, 8: 800V (5) G: Halogen Free and Lead Free, L: Lead Free
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#### SENSITIVITY AND TYPE

PART NUMBER	VOLTAGE			SENSITIVITY	TYPE
	400V	600V	800		
A	⊙	⊙		10mA	STANDARD
S		⊙		10mA	STANDARD
D	⊙			5mA	STANDARD
T	⊙	⊙	⊙	5mA	STANDARD

⊙: Available

## MARKING

TO-126	TO-220 / TO-251 / TO-252D
 <p>The diagram shows a rectangular marking area for a TO-126 package. It contains the text 'UTC' followed by three small squares, and 'BTB04' followed by one small square. An arrow points from the three squares to the text 'Date Code'. Another arrow points from the one square to the text 'L: Lead Free' and 'G: Halogen Free'. A small '1' is located below the marking area.</p>	 <p>The diagram shows a rectangular marking area for TO-220 / TO-251 / TO-252D packages. It contains the text 'UTC' followed by one small square, 'BTB04' followed by one small square, and five small squares. An arrow points from the one square under 'UTC' to the text 'L: Lead Free' and 'G: Halogen Free'. An arrow points from the one square under 'BTB04' to the text 'Date Code'. An arrow points from the five squares to the text 'Lot Code'. A small '1' is located below the marking area.</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
	800 T		800	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 DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-126	$\theta_{JA}$	100	$^{\circ}\text{C}/\text{W}$
	TO-220		60	$^{\circ}\text{C}/\text{W}$
	TO-251/TO-252D		100	$^{\circ}\text{C}/\text{W}$
Junction to Case (AC)	TO-126	$\theta_{JC}$	3.7	$^{\circ}\text{C}/\text{W}$
	TO-220		2.4	$^{\circ}\text{C}/\text{W}$
	TO-251/TO-252D		2.6	$^{\circ}\text{C}/\text{W}$

## ■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	T			D			S			A			UNIT	
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX		
Gate Trigger Current	$I_{GT}$	$V_D=12V$ (DC) $R_L=33\Omega$ $T_J=25^\circ C$	I-II-III			5			5			10			10	mA
			IV			5			10			10			25	mA
Gate Trigger Voltage	$V_{GT}$	$T_J=25^\circ C$	ALL			1.5			1.5			1.5			1.5	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D=V_{DRM}$ , $R_L=3.3k\Omega$ , $T_J=110^\circ C$	ALL	0.2			0.2			0.2			0.2			V
Time Gate Trigger	$t_{GT}$	$V_D=V_{DRM}$ , $I_G=40mA$ , $dI_G/dt=0.5A/\mu s$ , $T_J=25^\circ C$	ALL		2			2			2			2		$\mu s$
Holding Current (Note 1)	$I_H$	$I_T=100mA$ , Gate Open, $T_J=25^\circ C$				15			15			25			25	mA
Latching Current	$I_L$	$I_G=1.2I_{GT}$ , $T_J=25^\circ C$	I-III-IV		10			10			20			20		mA
			II		20			20			40			40		mA
Peak On-State Voltage (Note 1)	$V_{TM}$	$I_{TM}=5.5A$ , $t_p=380\mu s$ , $T_J=25^\circ C$			1.65			1.65			1.65			1.65	V	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}$ Rated, $T_J=25^\circ C$			0.01			0.01			0.01			0.01	mA	
	$I_{RRM}$	$V_{RRM}$ Rated, $T_J=110^\circ C$			0.75			0.75			0.75			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, $T_J=110^\circ C$		10			10			10			10		$V/\mu s$	
Critical Rate of Rise of Off-State Voltage at Commutation (Note 1)	$(dV/dt)_c$	$(dI/dt)_c=1.8A/ms$ , $T_J=110^\circ C$		1			1			5			5		$V/\mu s$	

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

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