



## BTB40

Preliminary

TRIACS

### 40A STANDARD TRIAC

#### DESCRIPTION

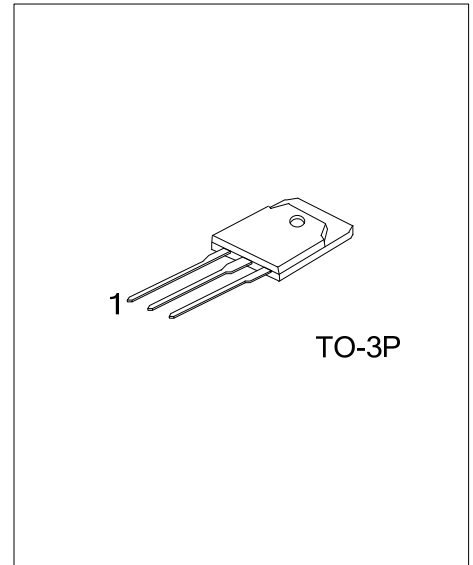
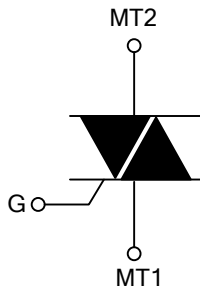
The UTC **BTB40** is a 40A standard triac, it uses UTC's advanced technology to provide customers with low thermal resistance with clip bonding and high commutation capability, etc.

The UTC **BTB40** is suitable for general purpose AC switching, heating regulation and on/off function in static relays, etc.

#### FEATURES

- \* Low thermal resistance with clip bonding
- \* High current capability
- \* High commutation capability

#### SYMBOL



#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
BTB40L-x-xx-T3P-T	BTB40G-x-xx-T3P-T	TO-3P	MT1	MT2	G	Tube

<p>BTB40L-x-x-T3P-T</p>	<p>(1) T: Tube  (2) T3P: TO-3P  (3) refer to SENSITIVITY AND TYPE  (4) 6: 600V, 8: 800V  (5) L: Lead Free, G: Halogen Free</p>
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#### SENSITIVITY AND TYPE

PART NUMBER	VOLTAGE		SENSITIVITY	TYPE
	600V	800V		
B	⊙	⊙	50mA	STANDARD

⊙: Available

### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
On-State RMS Current (Full Sine Wave)	$T_C=95^{\circ}\text{C}$ $I_{T(RMS)}$	40	A
Non Repetitive Surge Peak On-State Current (Full Cycle, $T_J$ initial= $25^{\circ}\text{C}$ )	$F=50\text{Hz}$ , $t=20\text{ms}$	400	A
	$F=60\text{Hz}$ , $t=16.7\text{ms}$	420	A
$I^2t$ Value for Fusing	$t_p=10\text{ms}$ $I^2t$	1000	$\text{A}^2\text{s}$
Critical Rate of Rise of On-State Current: $I_G=2xI_{GT}$ , $t_r \leq 100\text{ns}$	$F=120\text{Hz}$ , $T_J=125^{\circ}\text{C}$ $di/dt$	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	$t_p=20\mu\text{s}$ , $T_J=125^{\circ}\text{C}$ $I_{GM}$	8	A
Average Gate Power Dissipation	$T_J=125^{\circ}\text{C}$ $P_{G(AV)}$	1	W
Storage Junction Temperature	$T_{STG}$	$-40 \sim +150$	$^{\circ}\text{C}$
Operating Junction Temperature	$T_J$	$-40 \sim +125$	$^{\circ}\text{C}$

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.

### ■ DEVICE SUMMARY

PARAMETER	SYMBOL	RATINGS	UNIT
On-State RMS Current	$I_{T(RMS)}$	40	A
Repetitive Peak Off-State Voltage	$V_{DRM}/V_{RRM}$	600	V
Triggering Gate Current	$I_{GT}$	50	mA

### ■ THERMAL RESISTANCES

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	50	$^{\circ}\text{C}/\text{W}$
Junction to Case (AC)	$\theta_{JC}$	0.6	$^{\circ}\text{C}/\text{W}$

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Trigger Current (Note 1)	$I_{GT}$	$V_D=12\text{V}$ , $R_L=33\Omega$	I-II-III		50	mA
			IV		100	mA
Gate Trigger Voltage	$V_{GT}$				1.3	V
Gate Non-Trigger Voltage	$V_{GD}$	$V_D=V_{DRM}$ , $R_L=3.3\text{k}\Omega$ , $T_J=125^{\circ}\text{C}$	ALL	0.2		V
Holding Current (Note 2)	$I_H$	$I_T=500\text{mA}$			80	mA
Latching Current	$I_L$	$I_G=1.2I_{GT}$	I-III-IV		70	mA
			II		160	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			$\text{V}/\mu\text{s}$
Critical Rate of Rise of Off-State Voltage at Commutation (Note 2)	$(dV/dt)_c$	$(di/dt)_c=20\text{A}/\text{ms}$ , $T_J=125^{\circ}\text{C}$	10			$\text{V}/\mu\text{s}$

### ■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Peak On-State Voltage (Note 1)	$V_T$	$I_{TM}=60\text{A}$ , $t_p=380\mu\text{s}$ , $T_J=25^{\circ}\text{C}$			1.55	V
Threshold Voltage (Note 2)	$V_{TO}$	$T_J=125^{\circ}\text{C}$			0.85	V
Dynamic Resistance (Note 2)	$R_D$	$T_J=125^{\circ}\text{C}$			10	$\text{m}\Omega$
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM}=V_{RRM}$ , $T_J=25^{\circ}\text{C}$			5	$\mu\text{A}$
	$I_{RRM}$	$V_{DRM}=V_{RRM}$ , $T_J=125^{\circ}\text{C}$			5	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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