



BTB04

Preliminary

TRIAC

SENSITIVE GATE TRIACS

DESCRIPTION

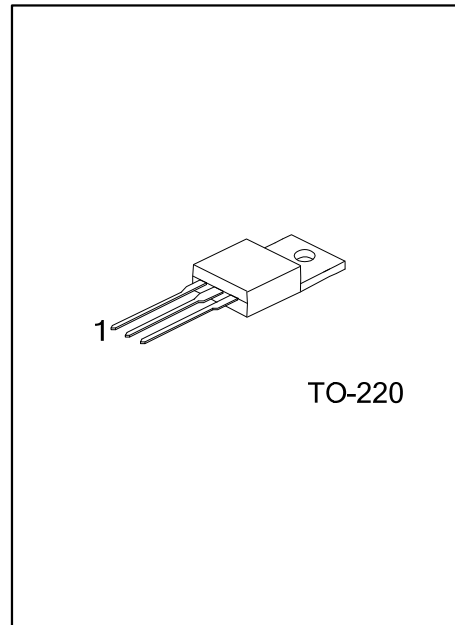
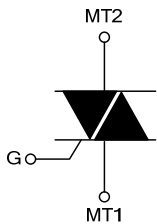
The UTC **BTB04** is a 4A triacs, it uses UTC's advanced technology to provide customers with high commutation performances.

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-TA3-T | BTB04G-x-x-TA3-T | TO-220 | MT1 | MT2 | G | Tube |

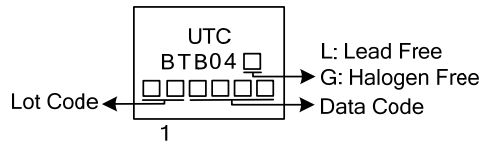
| | |
|---|---|
| <p>BTB04L-x-x-TA3-T</p> <p>(1)Packing Type (2)Package Type (3)Sensitivity (4)Voltage (5)Lead Free</p> | <p>(1) T: Tube (2) TA3: TO-220 (3) refer to SENSITIVITY AND TYPE (4) 4: 400V, 6: 600V (5) L: Lead Free, G: Halogen Free</p> |
|---|---|

SENSITIVITY AND TYPE

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

⊙: Available

■ MARKING



■ 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°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 | A^2s |
| 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 | θ_{JA} | 60 | $^{\circ}\text{C}/\text{W}$ |
| Junction to Case for 360° Conduction Angle ($F=50\text{Hz}$) (AC) | θ_{JC} | 2.4 | $^{\circ}\text{C}/\text{W}$ |
| Junction to Case (DC) | | 3.2 | $^{\circ}\text{C}/\text{W}$ |

■ 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 | μs |
| 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/ μs |
| 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/ μs |

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

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