元耀科技股份有限公司
YENYO TECHNOLOGY CO., LTD.

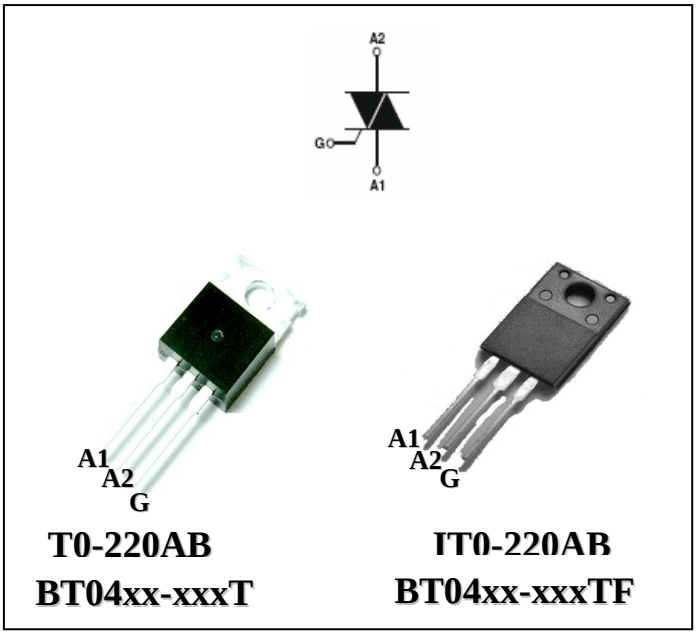
# BT04 Series

## 4A TRIACs

4-Quardrant Triacs (standard & logic level)

### Main features

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 4 | A |
| $V_{DRM}/V_{RRM}$ | 500 and 600 | V |
| $I_{GT(Q1)}$ | 5 to 25 | mA |




### DESCRIPTION

The BT04 series is suitable for use on AC inductive loads. These devices intended to be interface directly to micro-controllers, logic integrated circuits and other low power gate trigger circuits….

### Absolute maximum ratings

| Symbol | Parameter | | | Value | Unit |
|---|---|---|---|---|---|
| $I_{T(RMS)}$ | RMS on-state current ( full sine wave ) ,Tmb≦107℃ | | | 4 | A |
| $I_{TSM}$ | Non repetitive surge on-state current ( full sine wave , Tj initial=25℃ ) | F = 50Hz | t = 20ms | 25 | A |
| | | F = 60Hz | t = 16.7ms | 27 | |
| $I^2t$ | $I^2t$ Value for fusing | $t_p$ = 10ms | | 3.1 | $A^2s$ |
| dI/dt | Critical rate of rise of on-state current $I_G$ = 2 x $I_{GT}$ , tr ≦100ns | F = 120Hz | Tj = 125℃ | 50 | A/us |
| $I_{GM}$ | Peak gate current | $t_p$ = 20us | Tj = 125℃ | 2 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | Tj = 125℃ | 0.5 | W |
| $T_{stg}$<br>$T_j$ | Storage junction temperature range<br>Operating junction temperature range | | | -40 to +150<br>-40 to +125 | ℃ |

## Electrical characteristics ($T_j$ = 25℃, unless otherwise specified)

| Symbol | Test conditions | Quadrant | | BT04 | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | 05 | 10 | 25 | |
| $I_{GT}$(1) | $V_D$ = 12V RL=100 ohm | I - II – III<br>IV | MAX. | 5<br>10 | 10<br>25 | 25<br>70 | mA |
| $V_{GT}$ | | ALL | MAX. | 1.5 | | | V |
| $I_H$ (2) | $I_T$ = 100 mA | | MAX. | 10 | 15 | 20 | mA |
| $I_L$ | $I_G$ = 1.2 $I_{GT}$ | I - III | MAX. | 10 | 15 | 20 | mA |
| | | II-IV | | 15 | 20 | 30 | |

## Static characteristics

| Symbol | Test conditions | | | Value | Unit |
|---|---|---|---|---|---|
| $V_T$ (2) | $I_{TM}$ = 5A tp = 380 us | Tj = 25℃ | MAX. | 1.7 | V |
| $I_{DRM}$<br>$I_{RRM}$ | $V_{DRM}$=$V_{RRM(MAX)}$. | Tj = 25℃ | MAX. | 5 | uA |
| | | Tj = 125℃ | | 1 | mA |

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

**Note 2 :** for both polarities of A2 referenced to A1

## Thermal resistance

| Symbol | Parameter | Conditions | Value | Unit |
|---|---|---|---|---|
| $R_{th\ (j\text{-}mb)}$ | Junction to mounting base | Full cycle<br>Half cycle | 3.0(max.)<br>3.7(max.) | K/W |
| $R_{th\ (j\text{-}a)}$ | Junction to ambient | In free air | 60(typ.) | K/W |

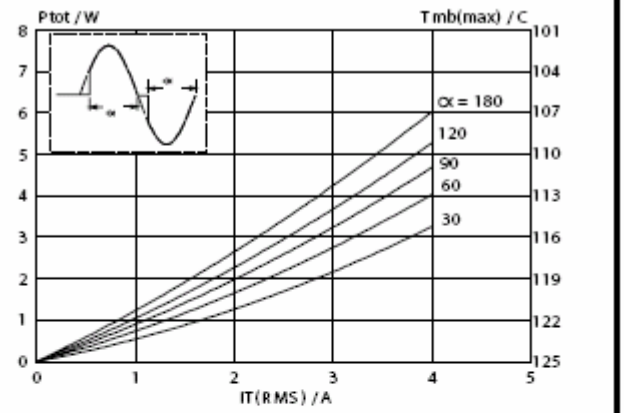



*Fig.1. Maximum on-state dissipation, $P_{tot}$, versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.*

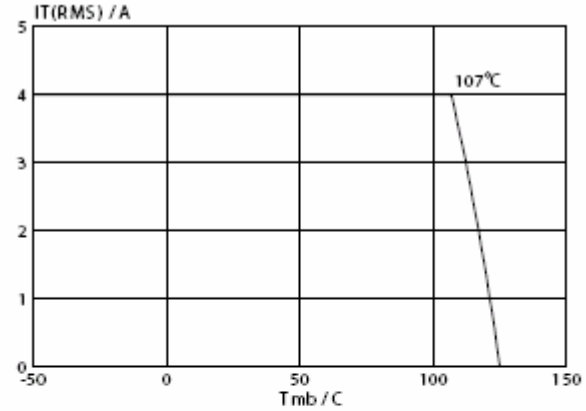



*Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature $T_{mb}$.*

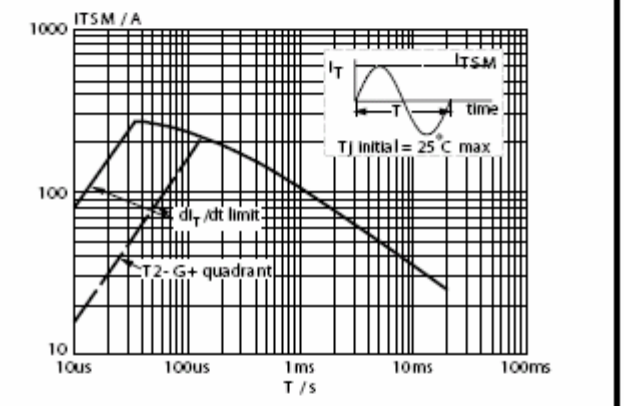



*Fig.2. Maximum permissible non-repetitive peak on-state current $I_{TSM}$, versus pulse width $t_p$, for sinusoidal currents, $t_p \leq 20ms$.*

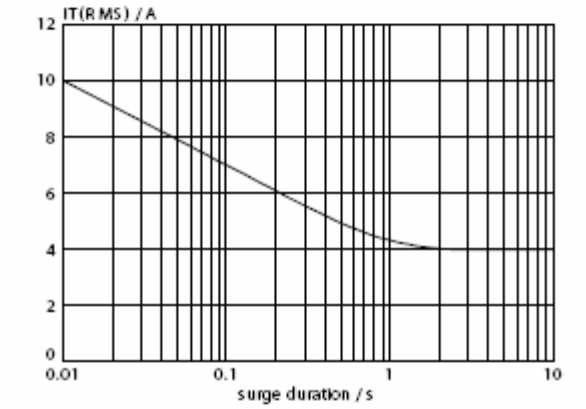



*Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \leq 107℃$.*

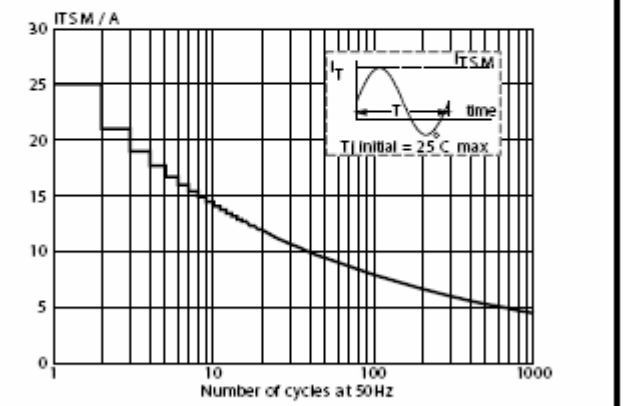



*Fig.3. Maximum permissible non-repetitive peak on-state current $I_{TSM}$, versus number of cycles, for sinusoidal currents, f = 50 Hz.*

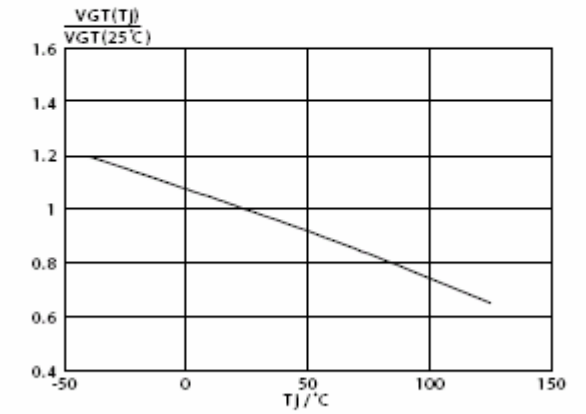



*Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}(25℃)$, versus junction temperature $T_j$.*

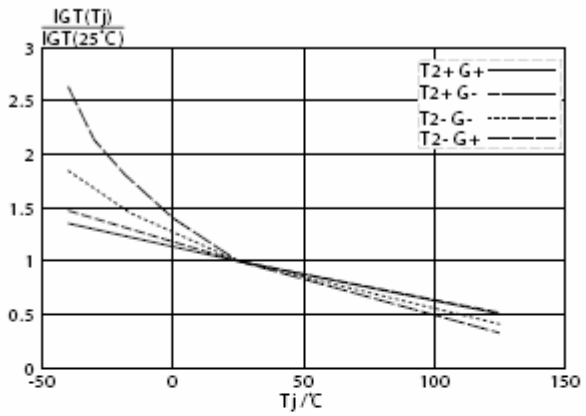



*Fig.7. Normalised gate trigger current $I_{GT}(T_j)/I_{GT}(25°C)$, versus junction temperature $T_j$.*

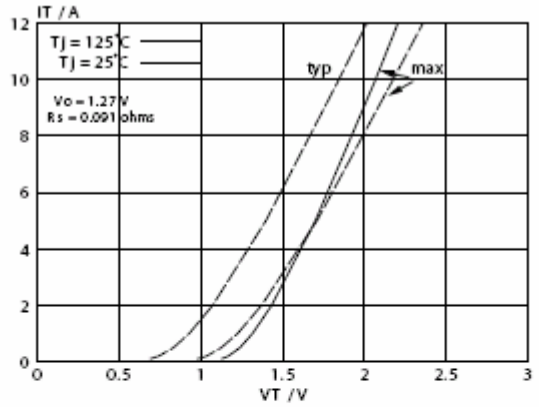



*Fig.10. Typical and maximum on-state characteristic.*

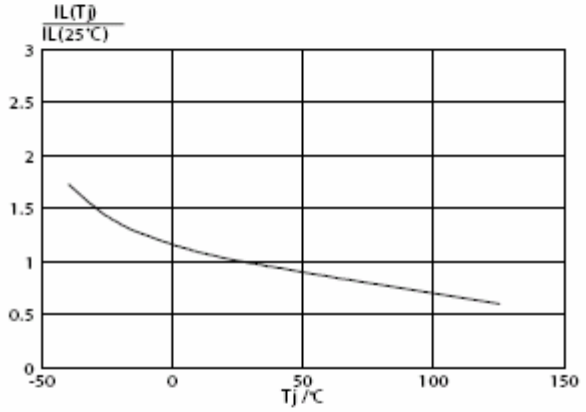



*Fig.8. Normalised latching current $I_L(T_j)/I_L(25°C)$, versus junction temperature $T_j$.*

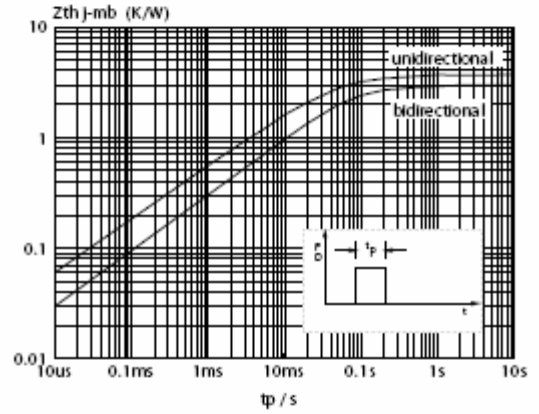



*Fig.11. Transient thermal impedance $Z_{th\ j\text{-}mb}$, versus pulse width $t_p$.*

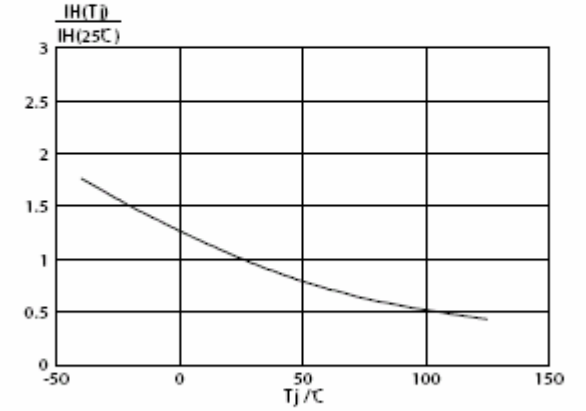



*Fig.9. Normalised holding current $I_H(Tj)/I_H(25°C)$, versus junction temperature $T_j$.*

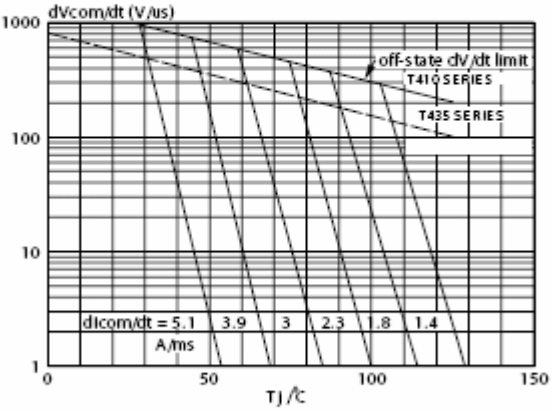



*Fig.12. Typical commutation dV/dt versus junction temperature, parameter commutation $dI_T/dt$. The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation $dI_T/dt$.*

**Product selector**

| Part Number | Voltage (xxx) | | Sensitivty | Package |
|---|---|---|---|---|
| | 500V | 600V | | |
| BT0405-XXXT | X | X | 5mA | TO-220AB |
| BT0405-XXXTF | X | X | 5mA | ITO-220AB |
| BT0410-XXXT | X | X | 10mA | TO-220AB |
| BT0410-XXXTF | X | X | 10mA | ITO-220AB |
| BT0425-XXXT | X | X | 25mA | TO-220AB |
| BT0425-XXXTF | X | X | 25mA | ITO-220AB |