

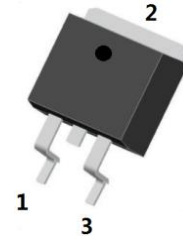
## BTA216B-600B/800B TRIACS

### ●DESCRIPTION:

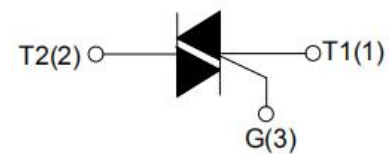
Due to separation glass passivation, these devices have good performance at  $dv/dt$  and reliability. The Triac series is suitable for general purpose AC switching. They can be used as an On-Off function in the applications such as static relays, heating regulation, or for phase control operation in light dimmers, motor speed controllers.

### ●MAIN FEATURES

| Symbol            | Value     | Unit |
|-------------------|-----------|------|
| $I_{T(RMS)}$      | 16        | A    |
| $V_{DRM}/V_{RRM}$ | 600/800   | V    |
| $I_{GT}$          | $\leq 10$ | mA   |



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### ●ABSOLUTE MAXIMUM RATINGS

| Symbol       | PARAMETER                                                                           |                                                      | Value | Unit       |
|--------------|-------------------------------------------------------------------------------------|------------------------------------------------------|-------|------------|
| $I_{T(RMS)}$ | RMS on-state current(full sine wave)                                                | TO-263.Non-Ins $T_C \leq 99^\circ C$                 | 16    | A          |
| $I_{TSM}$    | Non repetitive surge peak on-state current<br>(full sine wave, $T_j = 25^\circ C$ ) | $t = 20ms$                                           | 140   | A          |
|              |                                                                                     | $t = 16.7ms$                                         | 150   |            |
| $I^2t$       | $I^2t$ Value for fusing                                                             | $t = 10ms$                                           | 98    | $A^2S$     |
| $di/dt$      | Repetitive rate of rise of on-state Current<br>after triggering                     | $I_{TM} = 20 A; I_G = 0.2 A$<br>$di_G/dt = 0.2 A/us$ | 100   | $A/\mu s$  |
| $I_{GM}$     | Peak gate current,                                                                  | —                                                    | 2     | A          |
| $V_{GM}$     | Peak gate voltage                                                                   | —                                                    | 5     | W          |
| $P_{GM}$     | Peak gate power                                                                     | —                                                    | 5     | W          |
| $P_{G(AV)}$  | Average gate power                                                                  | over any 20 ms period                                | 0.5   | W          |
| $T_{stg}$    | Storage junction temperature range                                                  | -40 to +150                                          |       | $^\circ C$ |
| $T_j$        | Operating junction temperature range                                                | 125                                                  |       | $^\circ C$ |

**● ELECTRICAL CHARACTERISTICS** ( $T_j = 25^\circ\text{C}$ , unless otherwise specified)

**STATIC CHARACTERISTICS**

| Symbol   | Parameter                 | Test Condition                                                  | Quadrant | Value |      |     | Unit |
|----------|---------------------------|-----------------------------------------------------------------|----------|-------|------|-----|------|
|          |                           |                                                                 |          | MIN   | TYPE | MAX |      |
| $I_{GT}$ | Gate trigger current      | $V_D=12\text{V}$ , $I_T=0.1\text{A}$                            | I-II-III | -     | -    | 10  | mA   |
| $V_{GT}$ | Gate trigger voltage      | $V_D=12\text{V}$ , $I_T=0.1\text{A}$                            |          | -     | 0.7  | 1.5 | V    |
|          |                           | $V_D=400\text{V}$ , $I_T=0.1\text{A}$ , $T_j=125^\circ\text{C}$ |          | 0.25  | 0.4  | -   |      |
| $V_T$    | On-state voltage          | $I_T=20\text{A}$                                                |          | -     | 1.2  | 1.5 | V    |
| $I_H$    | Holding current           | $V_D=12\text{V}$ , $I_{GT}=0.1\text{A}$                         | I-II-III | -     | -    |     | mA   |
| $I_L$    | Latching current          | $V_D=12\text{V}$ , $I_{GT}=0.1\text{A}$                         | I-III    | -     | -    | 60  | mA   |
|          |                           |                                                                 | II       | -     | -    | 90  | mA   |
| $I_D$    | Off-state leakage current | $V_D = V_{DRM(max)}$ ; $T_j = 125^\circ\text{C}$                |          | -     | 0.1  | 0.5 | mA   |

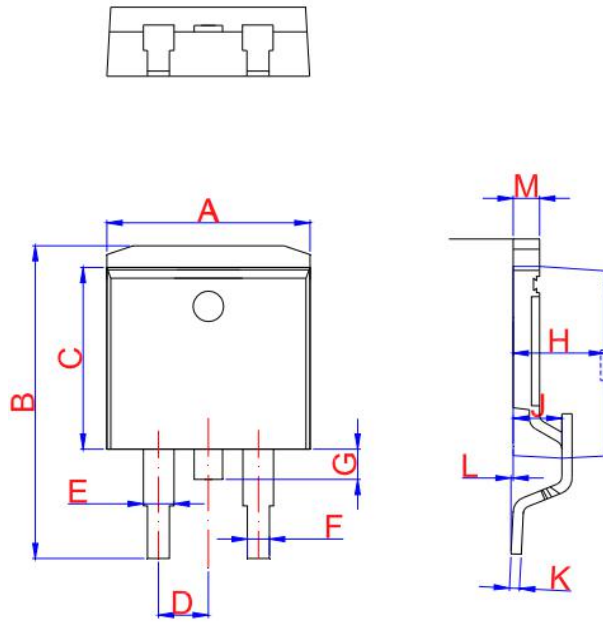
**DYNAMIC CHARACTERISTICS**

| Symbol        | Parameter                                      | Test Condition                                                                                                         | Value |      | Unit |
|---------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------|------|------|
|               |                                                |                                                                                                                        | MIN   | TYPE |      |
| $dV_D/dt$     | Critical rate of rise of off-state voltage     | $V_{DM} = 67\% V_{DRM(max)}$ ; $T_j = 125^\circ\text{C}$<br>exponential waveform; gate open circuit                    | 1000  | 4000 | V/us |
| $dI_{com}/dt$ | Critical rate of change of commutating current | $V_{DM} = 400\text{V}$ ; $T_j = 125^\circ\text{C}$ ; $I_{T(RMS)} = 16\text{A}$ ;<br>without snubber; gate open circuit |       | 28   | A/ms |
| $t_{gt}$      | Gate controlled turn-on time                   | $I_{TM} = 20\text{A}$ ; $V_D = V_{DRM(max)}$ ; $I_G = 0.1\text{A}$ ; $dI_G/dt = 5\text{A}/\mu\text{s}$                 |       | 2    | us   |

**● THERMAL RESISTANCES**

| Symbol       | Parameter                                    | Test Condition | Value |      |     | Unit |
|--------------|----------------------------------------------|----------------|-------|------|-----|------|
|              |                                              |                | MIN   | TYPE | MAX |      |
| $R_{thj-mb}$ | Thermal resistance junction to mounting base | full cycle     |       |      | 1.2 | K/W  |
|              |                                              | half cycle     |       |      | 1.7 |      |
| $R_{thj-a}$  | Thermal resistance junction to ambient       | In free air    |       | 60   |     | K/W  |

## PACKAGE MECHANICAL DATA



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| Ref. | Dimensions  |      |      |        |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Millimeters |      |      | Inches |       |       |
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    | 9.9         |      | 10.3 | 0.390  |       | 0.406 |
| B    | 14.7        |      | 15.8 | 0.579  |       | 0.622 |
| C    | 8.5         |      | 8.9  | 0.370  |       | 0.378 |
| D    |             | 2.54 |      |        | 0.100 |       |
| E    | 1.20        |      | 1.40 | 0.047  |       | 0.055 |
| F    | 0.75        |      | 0.85 | 0.029  |       | 0.033 |
| G    |             |      | 1.75 |        |       | 0.069 |
| H    | 4.40        | 4.60 | 4.80 | 0.173  | 0.181 | 0.189 |
| J    | 2.40        | 2.60 | 2.80 | 0.094  | 0.102 | 0.110 |
| L    | 0           | 0.1  | 0.25 | 0      | 0.004 | 0.010 |
| M    | 1.17        | 1.27 | 1.37 | 0.046  | 0.05  | 0.054 |

## ELECTRICAL CHARACTERISTICS (CURVES)

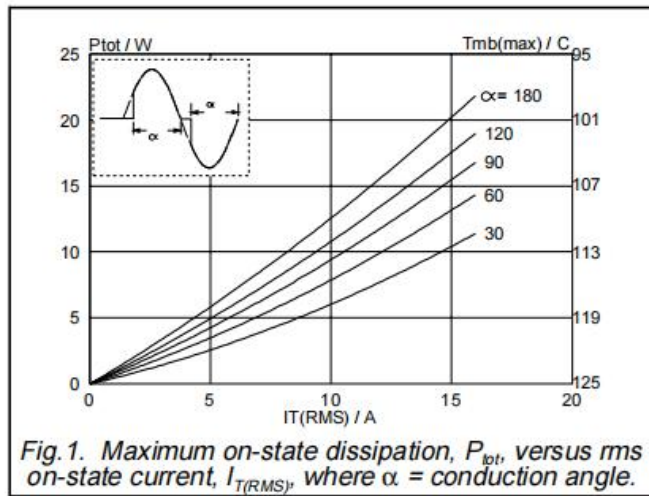


Fig. 1. Maximum on-state dissipation,  $P_{tot}$ , versus rms on-state current,  $I_{T(RMS)}$ , where  $\alpha$  = conduction angle.

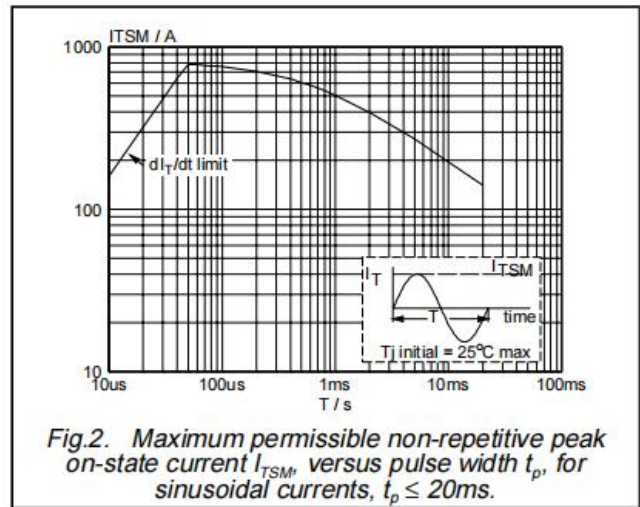


Fig. 2. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus pulse width  $t_p$ , for sinusoidal currents,  $t_p \leq 20\text{ms}$ .

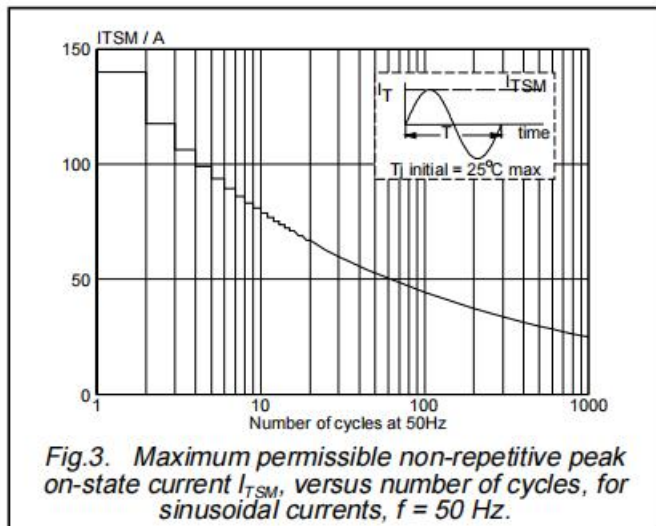


Fig. 3. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , versus number of cycles, for sinusoidal currents,  $f = 50\text{ Hz}$ .

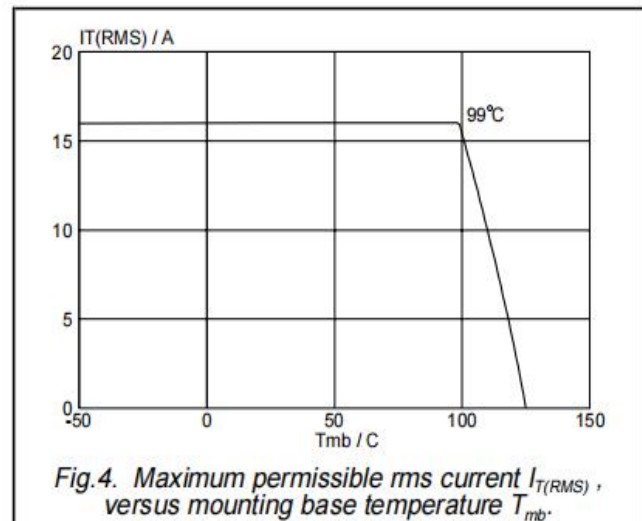


Fig. 4. Maximum permissible rms current  $I_{T(RMS)}$ , versus mounting base temperature  $T_{mb}$ .

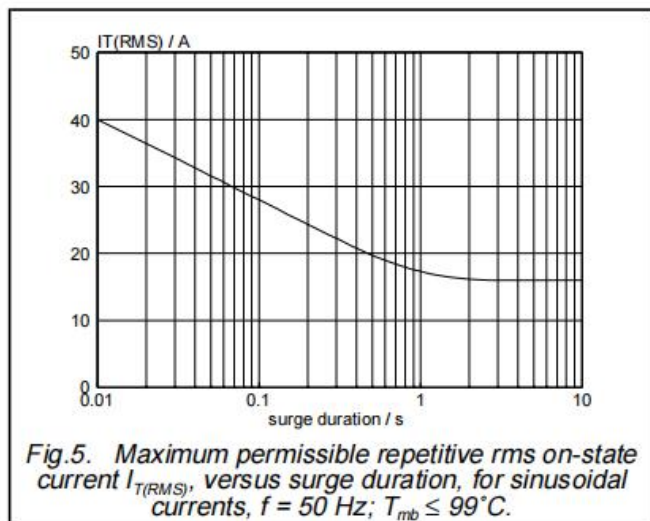


Fig. 5. Maximum permissible repetitive rms on-state current  $I_{T(RMS)}$ , versus surge duration, for sinusoidal currents,  $f = 50\text{ Hz}$ ;  $T_{mb} \leq 99^\circ\text{C}$ .

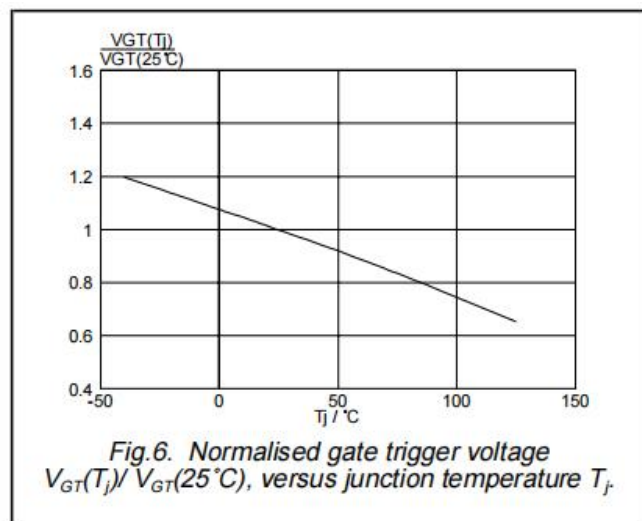


Fig. 6. Normalised gate trigger voltage  $V_{GT}(T_j)/V_{GT}(25^\circ\text{C})$ , versus junction temperature  $T_j$ .

