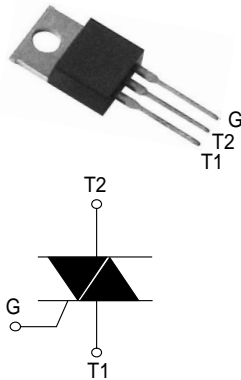
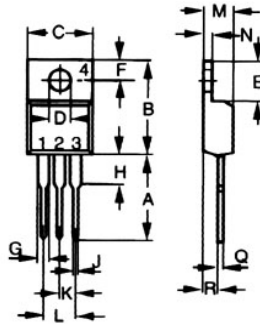


BTB/BTA06

Discrete Triacs(Non-Isolated/Isolated)



Dimensions TO-220AB



| Dim. | Inches | | Millimeter | |
|------|--------|-------|------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.500 | 0.550 | 12.70 | 13.97 |
| B | 0.580 | 0.630 | 14.73 | 16.00 |
| C | 0.390 | 0.420 | 9.91 | 10.66 |
| D | 0.139 | 0.161 | 3.54 | 4.08 |
| E | 0.230 | 0.270 | 5.85 | 6.85 |
| F | 0.100 | 0.125 | 2.54 | 3.18 |
| G | 0.045 | 0.065 | 1.15 | 1.65 |
| H | 0.110 | 0.230 | 2.79 | 5.84 |
| J | 0.025 | 0.040 | 0.64 | 1.01 |
| K | 0.100 | BSC | 2.54 | BSC |
| M | 0.170 | 0.190 | 4.32 | 4.82 |
| N | 0.045 | 0.055 | 1.14 | 1.39 |
| Q | 0.014 | 0.022 | 0.35 | 0.56 |
| R | 0.090 | 0.110 | 2.29 | 2.79 |

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|--------------------|--|---|--|
| $I_{T(RMS)}$ | RMS on-state current (full sine wave) | TO-220AB $T_c = 100^\circ\text{C}$ | 6 A |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C) | F = 60 Hz t = 16.7 ms | 63 A |
| | | F = 50 Hz t = 20 ms | 60 A |
| I^2t | I^2t Value for fusing | tp = 10 ms | 21 A^2s |
| dI/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr ≤ 100 ns | F = 120 Hz $T_j = 125^\circ\text{C}$ | 50 $\text{A}/\mu\text{s}$ |
| I_{GM} | Peak gate current | tp = 20 μs $T_j = 125^\circ\text{C}$ | 4 A |
| $P_{G(AV)}$ | Average gate power dissipation | $T_j = 125^\circ\text{C}$ | 1 W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | - 40 to + 150 - 40 to + 125 $^\circ\text{C}$ |

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

■ SNUBBERLESS™ and LOGIC LEVEL(3 Quadrants)

| Symbol | Test Conditions | Quadrant | BTB/BTA | | Unit | |
|--------------|---|--------------|---------|-----|------|------------------------|
| | | | CW | BW | | |
| $I_{GT}(1)$ | $V_D = 12\text{ V}$ $R_L = 30\ \Omega$ | I - II - III | MAX. | 35 | 50 | mA |
| V_{GT} | | I - II - III | MAX. | 1.3 | | |
| V_{GD} | $V_D = V_{DRM}$ $R_L = 3.3\ \text{k}\Omega$ $T_j = 125^\circ\text{C}$ | I - II - III | MIN. | 0.2 | | V |
| $I_H(2)$ | $I_T = 100\ \text{mA}$ | | MAX. | 35 | 50 | mA |
| I_L | $I_G = 1.2 I_{GT}$ | I - III | MAX. | 50 | 70 | mA |
| | | II | | 60 | 80 | |
| dV/dt (2) | $V_D = 67\% V_{DRM}$ gate open $T_j = 125^\circ\text{C}$ | | MIN. | 400 | 1000 | $\text{V}/\mu\text{s}$ |
| (dI/dt)c (2) | Without snubber $T_j = 125^\circ\text{C}$ | | MIN. | 3.5 | 5.3 | A/ms |

BTB/BTA06

Discrete Triacs(Non-Isolated/Isolated)

■ STANDARD (4 Quadrants)

| Symbol | Test Conditions | Quadrant | | Value | Unit |
|-----------------|---|--------------------|------|-----------|------------------|
| I_{GT} (1) | $V_D = 12\text{ V}$ $R_L = 30\ \Omega$ | I - II - III IV | MAX. | 50 100 | mA |
| V_{GT} | | ALL | MAX. | 1.3 | V |
| V_{GD} | $V_D = V_{DRM}$ $R_L = 3.3\ \Omega$ $T_j = 125^\circ\text{C}$ | ALL | MIN. | 0.2 | V |
| I_H (2) | $I_T = 500\text{ mA}$ | | MAX. | 50 | mA |
| I_L | $I_G = 1.2 I_{GT}$ | I - III - IV | MAX. | 50 | mA |
| | | II | | 100 | |
| dV/dt (2) | $V_D = 67\% V_{DRM}$ gate open $T_j = 125^\circ\text{C}$ | | MIN. | 400 | V/ μs |
| $(dV/dt)_c$ (2) | $(dI/dt)_c = 2.7\text{ A/ms}$ $T_j = 125^\circ\text{C}$ | | MIN. | 10 | V/ μs |

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | Value | Unit | |
|--------------|--|---------------------------|-------|------|---------------|
| V_{TM} (2) | $I_{TM} = 5.5\text{ A}$ $t_p = 380\ \mu\text{s}$ | $T_j = 25^\circ\text{C}$ | MAX. | 1.55 | V |
| V_{to} (2) | Threshold voltage | $T_j = 125^\circ\text{C}$ | MAX. | 0.85 | V |
| R_d (2) | Dynamic resistance | $T_j = 125^\circ\text{C}$ | MAX. | 60 | m Ω |
| I_{DRM} | $V_{DRM} = V_{RRM}$ | $T_j = 25^\circ\text{C}$ | MAX. | 5 | μA |
| I_{RRM} | | $T_j = 125^\circ\text{C}$ | | 1 | mA |

Note 1: minimum IGT is guaranteed at 5% of IGT max.

Note 2: for both polarities of A2 referenced to A1

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|-----------------------|-------|--------------------|
| $R_{th(j-c)}$ | Junction to case (AC) | 1.8 | $^\circ\text{C/W}$ |
| $R_{th(j-a)}$ | Junction to ambient | 60 | $^\circ\text{C/W}$ |

PRODUCT SELECTOR

| Part Number | Voltage (xxx) | | Sensitivity | Type | Package |
|-------------|---------------|----------|-------------|----------|----------|
| | 200 V | ~ 1000 V | | | |
| BTB/BTA06 | X | X | 50 mA | Standard | TO-220AB |

OTHER INFORMATION

| Part Number | Marking | Weight | Base quantity | Packing mode |
|-------------|-----------|--------|---------------|--------------|
| BTB/BTA06 | BTB/BTA06 | 2.3 g | 250 | Bulk |

BTB/BTA06

Discrete Triacs(Non-Isolated/Isolated)

Fig. 1 Maximum power dissipation versus RMS on-state current (full cycle).

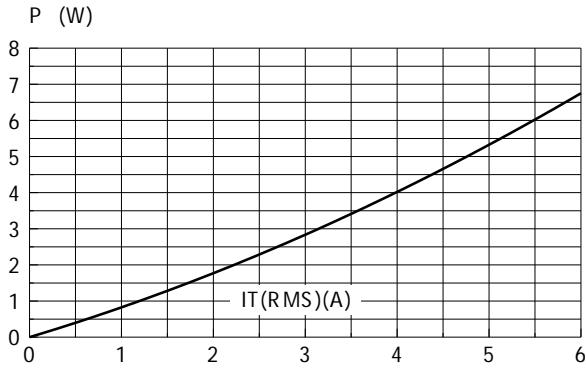


Fig. 3 Relative variation of thermal impedance versus pulse duration.

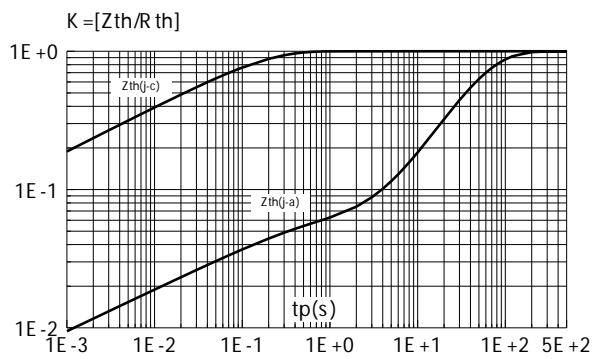


Fig. 5 Surge peak on-state current versus number of cycles.

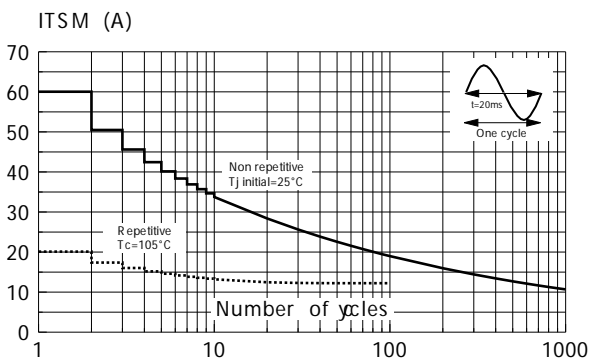


Fig. 2 2RMS on-state current versus case temperature (full cycle).

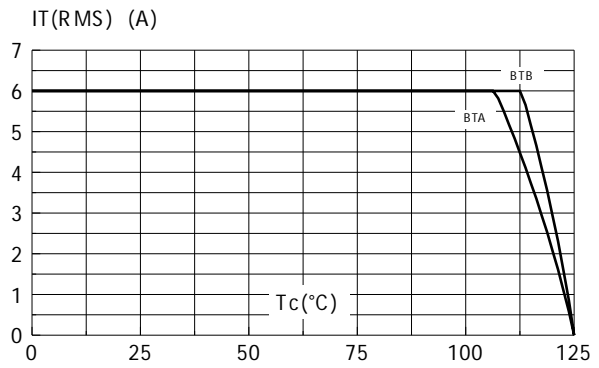


Fig. 4 On-state characteristics (maximum values).

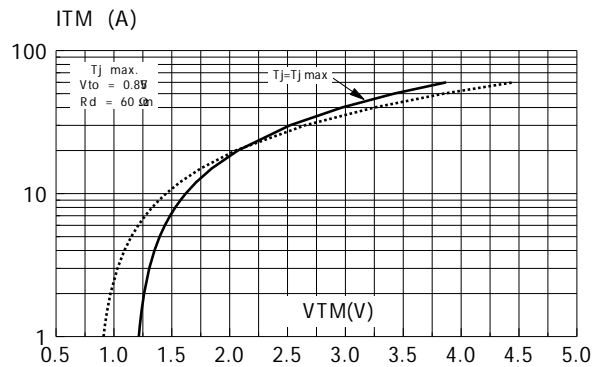
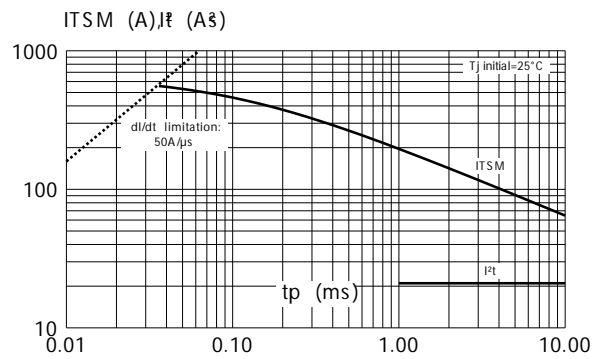


Fig. 6 Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t .



BTB/BTA06

Discrete Triacs(Non-Isolated/Isolated)

Fig. 7 Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

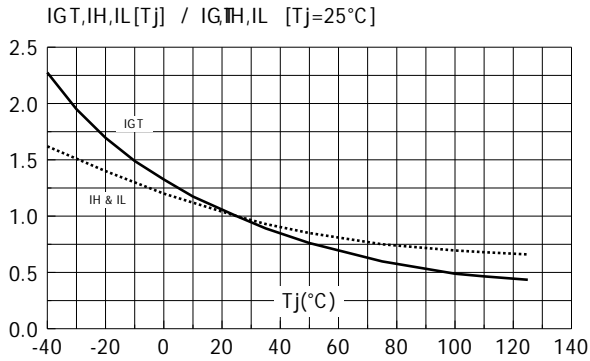


Fig. -8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values). S Standard Types

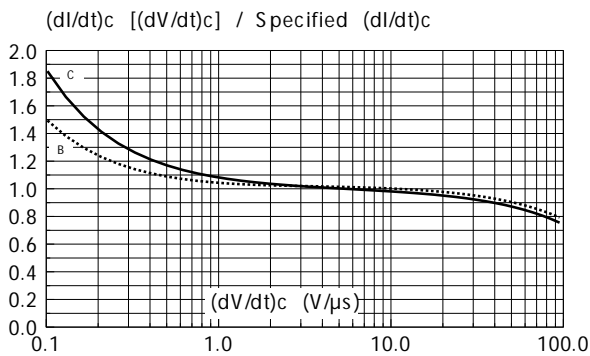


Fig. -8: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values). S rubberless & Logic Level Types

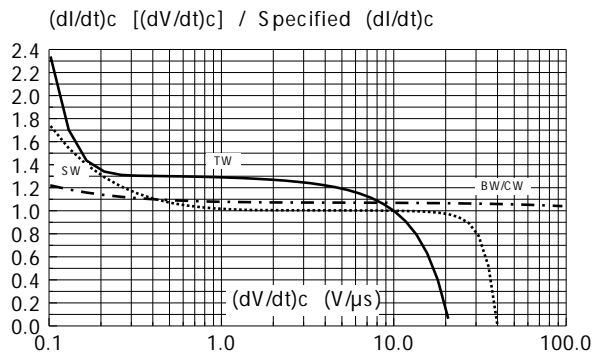


Fig. :9 Relative variation of critical rate of decrease of main current versus junction temperature.

