



BTB04-600SL

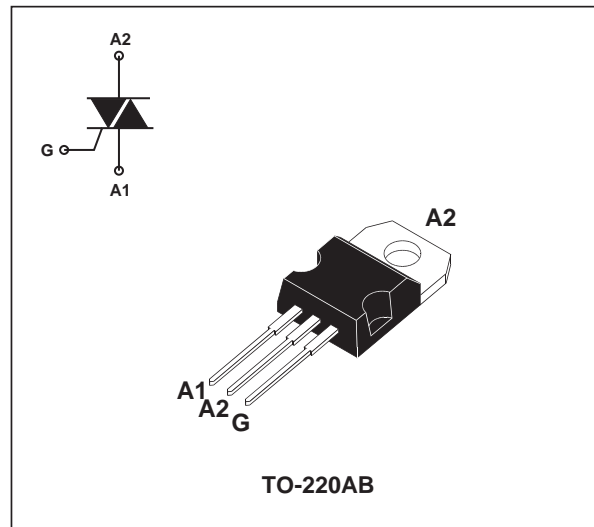
STANDARD 4A TRIAC

MAIN FEATURES

| Symbol | Value | Unit |
|---------------------|-------|------|
| $I_{T(RMS)}$ | 4 | A |
| V_{DRM} / V_{RRM} | 600 | V |
| $I_{GT(Q1)}$ | 10 | mA |

DESCRIPTION

The BTB04-600SL 4 quadrants TRIAC is intended for general purpose applications where high surge current capability is required, such as lighting, corded power tools, industrial. This TRIAC features a gate current capability sensitivity of 10mA.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|--------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------|
| $I_{T(RMS)}$ | RMS on-state current (full sine wave) | TO-220AB $T_c = 105^{\circ}\text{C}$ | 4 A |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C) | $F = 50\text{ Hz}$ $t = 20\text{ ms}$ | 35 A |
| | | $F = 60\text{ Hz}$ $t = 16.7\text{ ms}$ | 38 A |
| I^2t | I^2t value for fusing | $t_p = 10\text{ms}$ | 6 A^2s |
| di/dt | Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$ | Repetitive $F = 100\text{Hz}$ | 50 $\text{A}/\mu\text{s}$ |
| I_{GM} | Peak gate | $t_p = 20\mu\text{s}$ $T_j = 125^{\circ}\text{C}$ | 4 A |
| $P_{G(AV)}$ | Average gate power dissipation | $T_j = 125^{\circ}\text{C}$ | 0.5 W |
| T_{stg} | Storage junction temperature range | | -40 to +150 $^{\circ}\text{C}$ |
| T_j | Operating junction temperature range | | -40 to +125 $^{\circ}\text{C}$ |

BTB04-600SL

ELECTRICAL CHARACTERISTICS (T_j = 25°C, unless otherwise specified)

| Symbol | Test conditions | Quadrant | | Value | Unit |
|-------------------------------------|---------------------------------------------------------------------------------|--------------|------|-------|------|
| I _{GT} ⁽¹⁾ | V _D = 12V R _L = 30Ω | I - II - III | MAX. | 10 | mA |
| | | IV | MAX. | 25 | |
| V _{GT} | V _D = 12V R _L = 30Ω | ALL | MAX. | 1.3 | V |
| V _{GD} | V _D = V _{DRM} R _L = 3.3kΩ T _j = 125°C | ALL | MIN. | 0.2 | V |
| I _H ⁽²⁾ | I _T = 100mA | | MAX. | 15 | mA |
| I _L | I _G = 1.2I _{GT} | I - III - IV | MAX. | 15 | mA |
| | | II | | 25 | |
| dV/dt ⁽²⁾ | V _D = 67% V _{DRM} gate open T _j = 125°C | | MIN. | 75 | V/μs |
| (dV/dt) _c ⁽²⁾ | (dI/dt) _c = 1.8A/ms T _j = 125°C | | MIN. | 10 | V/μs |

STATIC CHARACTERISTICS

| Symbol | Test Conditions | | | Value | Unit |
|--------------------------------------|---------------------------------------------|------------------------|------|-------|------|
| V _{TM} ⁽²⁾ | I _{TM} = 5A t _p = 380μs | T _j = 25°C | MAX. | 1.5 | V |
| V _{TO} ⁽²⁾ | Threshold voltage | T _j = 125°C | MAX. | 0.85 | V |
| R _d ⁽²⁾ | Dynamic resistance | T _j = 125°C | MAX. | 100 | mΩ |
| I _{DRM} I _{RDM} | V _{DRM} = V _{RRM} | T _j = 25°C | MAX. | 5 | μA |
| | | T _j = 125°C | | 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 | Value | Unit |
|-----------------------|-----------------------|-------|------|
| R _{th} (j-c) | Junction to case (AC) | 3 | °C/W |
| R _{th} (j-a) | Junction to ambient | 60 | °C/W |

PRODUCT SELECTOR

| Part Number | Voltage | Sensitivity | Type | Package |
|-------------|---------|-------------|----------|----------|
| BTB04-600SL | 600V | 10 mA | Standard | TO-220AB |

ORDERING INFORMATION

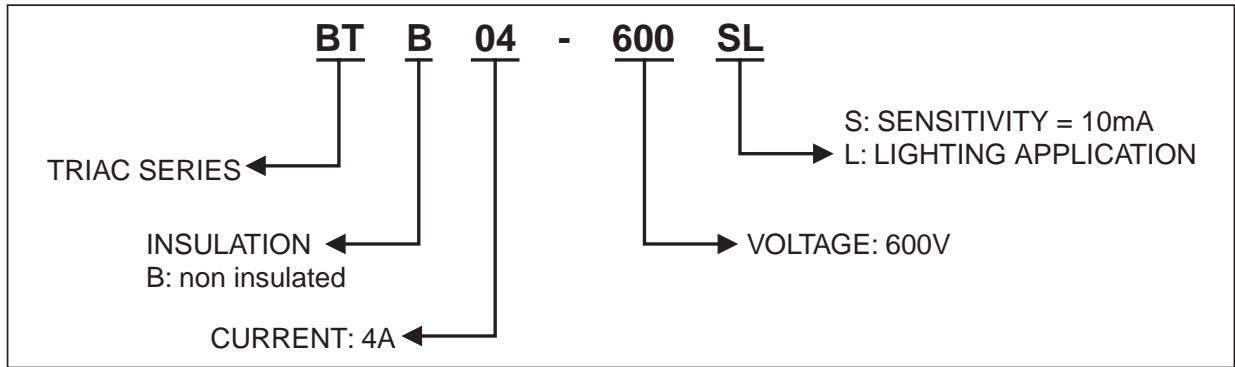


Fig. 1: Maximum power dissipation versus RMS on-state current

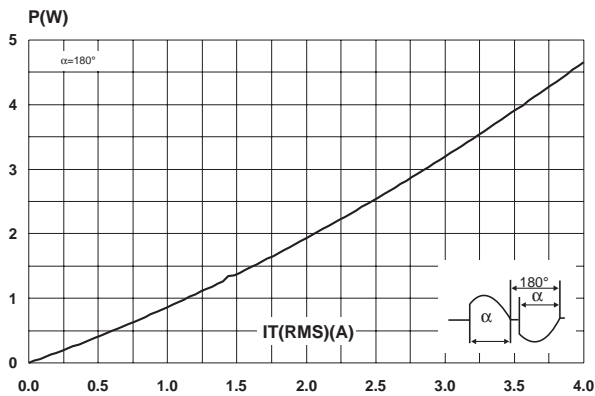


Fig. 3: Relative variation of thermal impedance versus pulse duration.

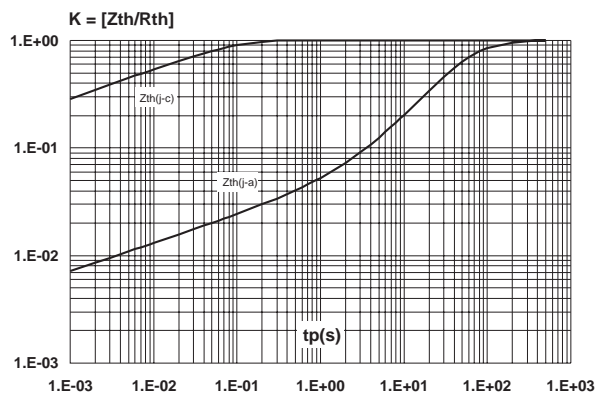


Fig. 2: RMS on-state current versus case temperature.

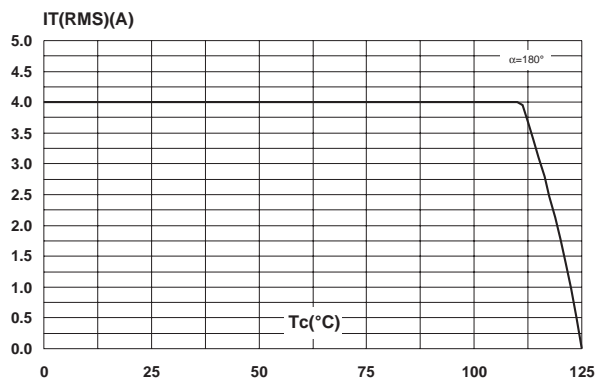


Fig. 4: On-state characteristics (maximum values)

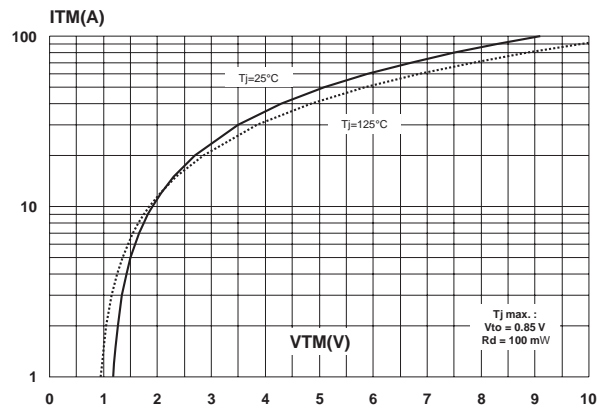


Fig. 5: Surge peak on-state current versus number of cycles.

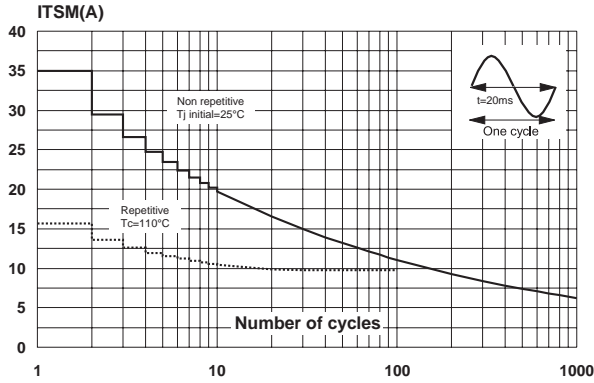


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .

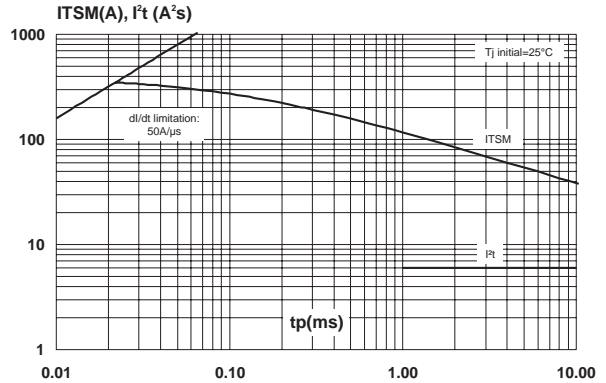


Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

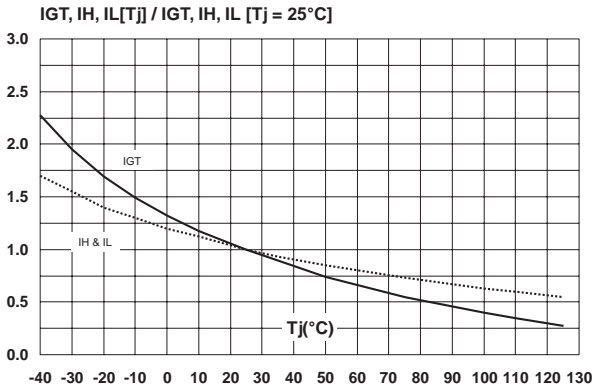


Fig. 8: Relative variation of critical rate of decrease of main current versus reapplied dV/dt (typical values).

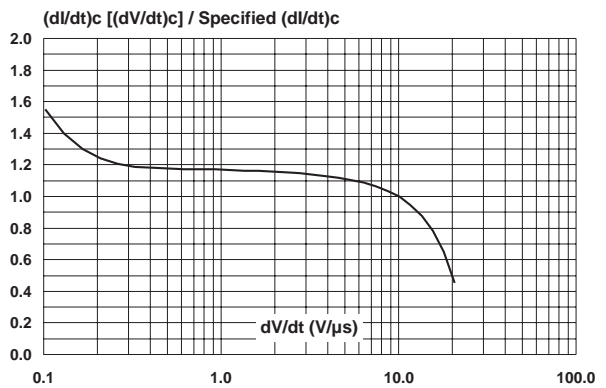


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

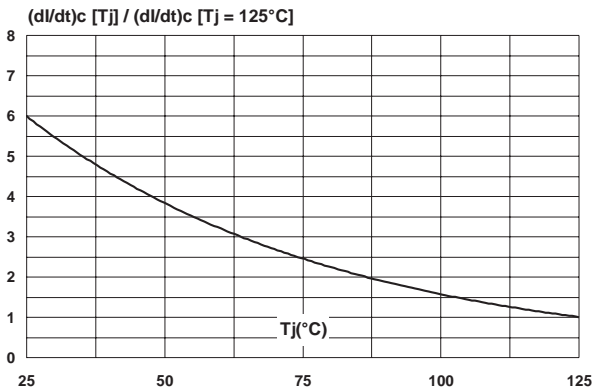
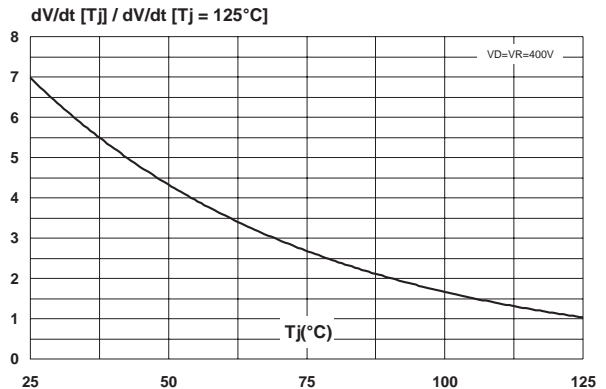


Fig. 10: Relative variation of static dV/dt immunity versus junction temperature.



PACKAGE MECHANICAL DATA
 TO-220AB (Plastic)

| REF. | DIMENSIONS | | | |
|-------|-------------|-------|------------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| C | 1.23 | 1.32 | 0.048 | 0.051 |
| D | 2.40 | 2.72 | 0.094 | 0.107 |
| E | 0.49 | 0.70 | 0.019 | 0.027 |
| F | 0.61 | 0.88 | 0.024 | 0.034 |
| F1 | 1.14 | 1.70 | 0.044 | 0.066 |
| F2 | 1.14 | 1.70 | 0.044 | 0.066 |
| G | 4.95 | 5.15 | 0.194 | 0.202 |
| G1 | 2.40 | 2.70 | 0.094 | 0.106 |
| H2 | 10 | 10.40 | 0.393 | 0.409 |
| L2 | 16.4 typ. | | 0.645 typ. | |
| L4 | 13 | 14 | 0.511 | 0.551 |
| L5 | 2.65 | 2.95 | 0.104 | 0.116 |
| L6 | 15.25 | 15.75 | 0.600 | 0.620 |
| L7 | 6.20 | 6.60 | 0.244 | 0.259 |
| L9 | 3.50 | 3.93 | 0.137 | 0.154 |
| M | 2.6 typ. | | 0.102 typ. | |
| Diam. | 3.75 | 3.85 | 0.147 | 0.151 |

OTHER INFORMATION

| Ordering type | Marking | Package | Weight | Base qty | Packing mode |
|---------------|-------------|----------|--------|----------|--------------|
| BTB04-600SL | BTB04-600SL | TO-220AB | 2.3 g | 50 | Tube |

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