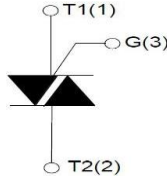
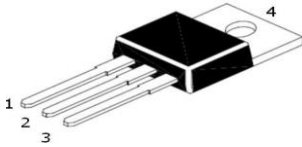


16A TRIACS



BTA16-600/800/1200
TO-220 (Ins)
Plastic Package

BTB16-600/800/1200
TO-220 (Non-Ins)
Plastic Package

BTA16 series triacs, with high ability to withstand the shock loading of large current, provide high dv/dt rate with strong resistance to electromagnetic interference. With high commutation performances, 3 quadrant products especially recommended for use on inductive load.

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|--|-----------------|------------------------|
| Storage junction temperature range | T_{stg} | -40 to 150 | °C |
| Operating junction temperature range | T_j | -40 to 125 | °C |
| Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$) | V_{DRM} | 600/800/1200 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$) | V_{RRM} | 600/800/1200 | V |
| Non repetitive surge peak Off-state voltage | V_{DSM} | $V_{DRM} + 100$ | V |
| Non repetitive peak reverse voltage | V_{RSM} | $V_{RRM} + 100$ | V |
| RMS on-state current | TO-220 (Ins) ($T_c=86^\circ\text{C}$) | 16 | A |
| | TO-220 (Non-Ins) ($T_c=107^\circ\text{C}$) | | |
| Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$) | I_{TSM} | 160 | A |
| I^2t value for fusing ($t_p=10\text{ms}$) | I^2t | 128 | A^2s |
| Critical rate of rise of on-state current ($I_G = 2 \times I_{GT}$) | di/dt | 50 | $\text{A}/\mu\text{s}$ |
| Peak gate current | I_{GM} | 4 | A |
| Average gate power dissipation | $P_{G(AV)}$ | 1 | W |
| Peak gate power | P_{GM} | 5 | W |



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An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company



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

3 Quadrants ($V_{\text{DRM}}/V_{\text{RRM}} : 600/800\text{V}$)

| PARAMETER | TEST CONDITIONS | SYMBOL | QUADRANT | VALUES | | | | UNITS |
|--|---|-----------------|--------------|--------|------|------|------|------------------|
| | | | | BW | CW | SW | TW | |
| Gate Trigger Current | $V_D = 12\text{V}$ $R_L = 33\Omega$ | I_{GT} | I - II - III | <50 | <35 | <10 | <5 | mA |
| Gate Trigger Voltage | | V_{GT} | I - II - III | <1.3 | | | | V |
| Off-State Gate Voltage | $V_D = V_{\text{DRM}}$ $T_j = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$ | V_{GD} | I - II - III | >0.2 | | | | V |
| Latching Current | $I_G = 1.2I_{\text{GT}}$ | I_L | I - III | <70 | <50 | <30 | <15 | mA |
| | | | II | <80 | <60 | <40 | <20 | |
| Holding Current | $I_T = 100\text{mA}$ | I_H | | <60 | <40 | <25 | <15 | mA |
| Critical Rate of Rise of Off-State Voltage | $V_D = 2/3V_{\text{DRM}}$ Gate Open $T_j = 125^\circ\text{C}$ | dV/dt | | >1000 | >500 | >200 | >100 | V/ μs |

4 Quadrant ($V_{\text{DRM}}/V_{\text{RRM}} : 600/800\text{V}$)

| PARAMETER | TEST CONDITIONS | SYMBOL | QUADRANT | VALUES | | UNITS |
|--|---|-----------------|--------------|--------|------|------------------|
| | | | | B | C | |
| Gate Trigger Current | $V_D = 12\text{V}$ $R_L = 33\Omega$ | I_{GT} | I - II - III | <50 | <25 | mA |
| | | | IV | <70 | <50 | |
| Gate Trigger Voltage | $V_D = 12\text{V}$ $R_L = 33\Omega$ | V_{GT} | ALL | <1.5 | | V |
| Off-State Gate Voltage | $V_D = V_{\text{DRM}}$ $T_j = 125^\circ\text{C}$ $R_L = 3.3\text{K}\Omega$ | V_{GD} | ALL | >0.2 | | V |
| Latching Current | $I_G = 1.2I_{\text{GT}}$ | I_L | I - III - IV | <70 | <50 | mA |
| | | | II | <100 | <80 | |
| Holding Current | $I_T = 100\text{mA}$ | I_H | | <60 | <40 | mA |
| Critical Rate of Rise of Off-State Voltage | $V_D = 2/3V_{\text{DRM}}$ Gate Open $T_j = 125^\circ\text{C}$ | dV/dt | | >500 | >200 | V/ μs |

3 Quadrants (V_{DRM}/V_{RRM} : 1200V)

| PARAMETER | TEST CONDITIONS | SYMBOL | QUADRANT | VALUES | UNITS |
|--|---|----------|--------------|--------|------------|
| Gate Trigger Current | $V_D = 12V$ $R_L = 33\Omega$ | I_{GT} | I - II - III | <50 | mA |
| Gate Trigger Voltage | | V_{GT} | I - II - III | <1.5 | V |
| Off-State Gate Voltage | $V_D = V_{DRM}$ $T_j = 125^\circ C$ $R_L = 3.3K\Omega$ | V_{GD} | I - II - III | >0.2 | V |
| Latching Current | $I_G = 1.2I_{GT}$ | I_L | I - III | <70 | mA |
| | | | II | <90 | |
| Holding Current | $I_T = 100mA$ | I_H | | <60 | mA |
| Critical Rate of Rise of Off-State Voltage | $V_D = 2/3V_{DRM}$ Gate Open $T_j = 125^\circ C$ | dV/dt | | >1500 | V/ μs |

STATIC CHARACTERISTICS

| PARAMETER | TEST CONDITIONS | SYMBOL | VALUE (MAX) | | | UNITS |
|---------------------------|-----------------------------------|----------------------------------|-------------|-------|--------|---------|
| | | | -600V | -800V | -1200V | |
| On-State Voltage | $I_{TM} = 22.5A$ $t_p = 380\mu s$ | $T_j = 25^\circ C$ V_{TM} | 1.5 | | | V |
| Off-State Leakage Current | $V_D = V_{DRM}$, $V_R = V_{RRM}$ | $T_j = 25^\circ C$ I_{DRM} | 5 | 5 | 10 | μA |
| | | $T_j = 125^\circ C$ I_{RRM} | 2 | 2 | 1 | mA |

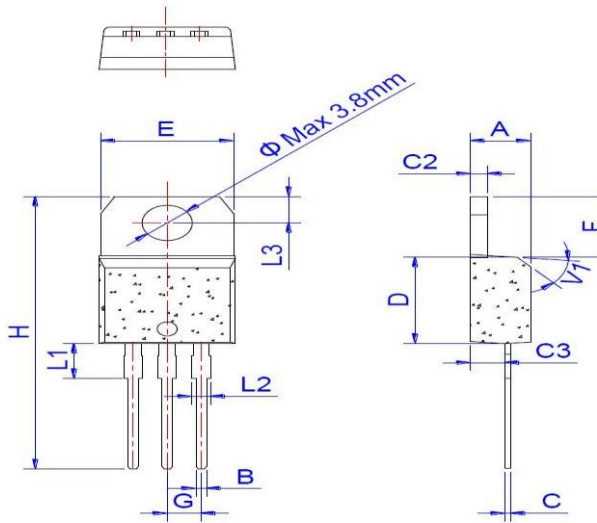
THERMAL RESISTANCES

| PARAMETER | SYMBOL | VALUE (MAX) | UNITS |
|----------------------------|---------------|-------------|--------------|
| Maximum Thermal Resistance | $R_{th(j-c)}$ | 2.1 | $^\circ C/W$ |
| | | 1.2 | |

ORDERING INFORMATION

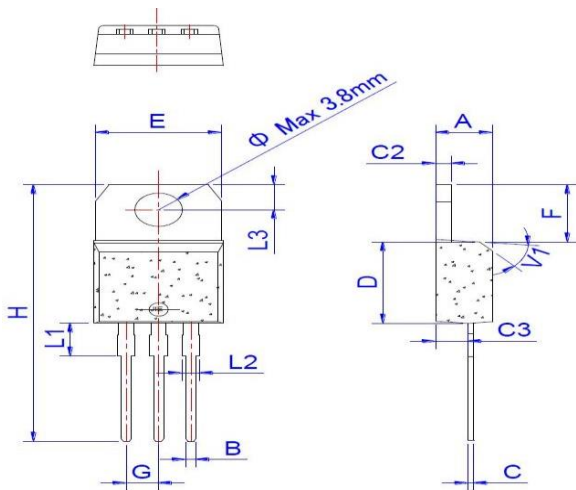
| |
|---|
| <p>BTA12-XY BTB12-XY</p> <p>X = 600: $V_{DRM}/V_{RRM} \geq 600$ = 800: $V_{DRM}/V_{RRM} \geq 800$ = 1200: $V_{DRM}/V_{RRM} \geq 1200$</p> <p>Y = BW: $I_{GT1-3} \leq 50mA$ = CW: $I_{GT1-3} \leq 35mA$ = SW: $I_{GT1-3} \leq 10mA$ = TW: $I_{GT1-3} \leq 5mA$ = B: $I_{GT1-3} \leq 50mA$ $I_{GT4} \leq 70mA$ = C: $I_{GT1-3} \leq 25mA$ $I_{GT4} \leq 50mA$</p> |
|---|

TO-220 (Ins) PACKAGE OUTLINE AND DIMENSIONS



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 0.61 | | 0.88 | 0.024 | | 0.035 |
| C | 0.46 | | 0.70 | 0.018 | | 0.028 |
| C2 | 1.21 | | 1.32 | 0.048 | | 0.052 |
| C3 | 2.40 | | 2.72 | 0.094 | | 0.107 |
| D | 8.60 | | 9.70 | 0.339 | | 0.382 |
| E | 9.80 | | 10.4 | 0.386 | | 0.409 |
| F | 6.55 | | 6.95 | 0.258 | | 0.274 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.75 | | | 0.148 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 45° | | | 45° | |

TO-220 (Non-Ins) PACKAGE OUTLINE AND DIMENSIONS



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 0.61 | | 0.88 | 0.024 | | 0.035 |
| C | 0.46 | | 0.70 | 0.018 | | 0.028 |
| C2 | 1.21 | | 1.32 | 0.048 | | 0.052 |
| C3 | 2.40 | | 2.72 | 0.094 | | 0.107 |
| D | 8.60 | | 9.70 | 0.339 | | 0.382 |
| E | 9.60 | | 10.4 | 0.378 | | 0.409 |
| F | 6.20 | | 6.60 | 0.244 | | 0.260 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.75 | | | 0.148 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 45° | | | 45° | |

CHARACTERISTIC CURVES

FIG.1 Maximum power dissipation versus RMS on-state current

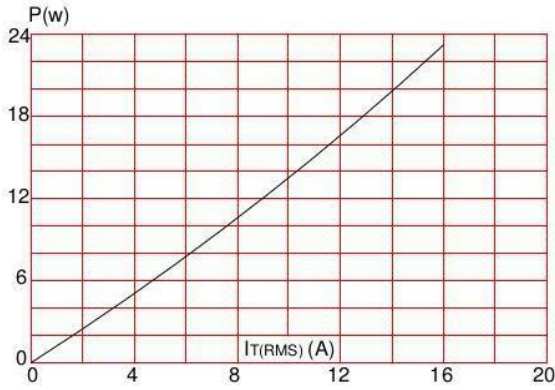


FIG.2: RMS on-state current versus case temperature

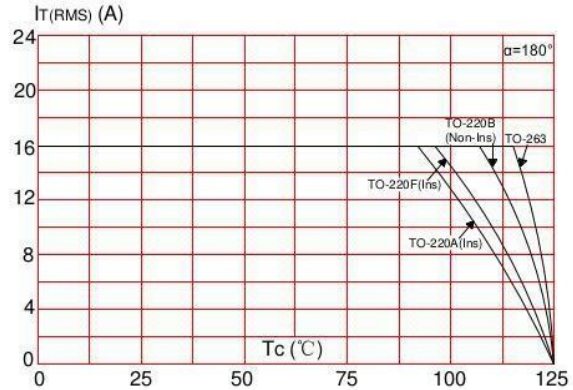


FIG.3: Surge peak on-state current versus number of cycles

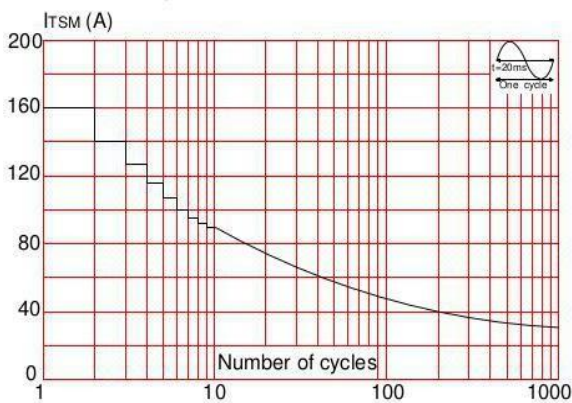


FIG.4: On-state characteristics (maximum values)

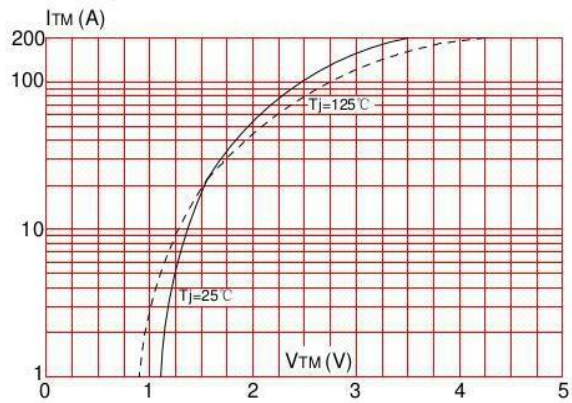


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of $I^2 t$ ($dI/dt < 50\text{A}/\mu\text{s}$)

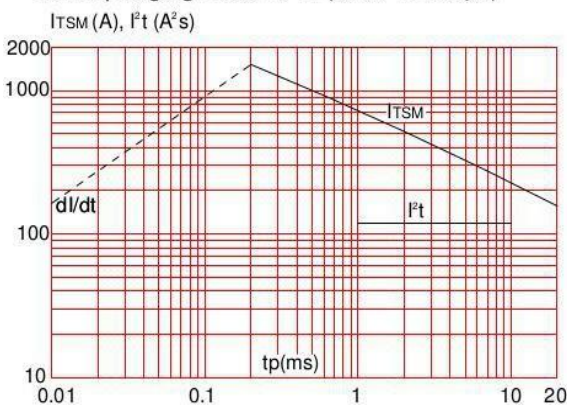
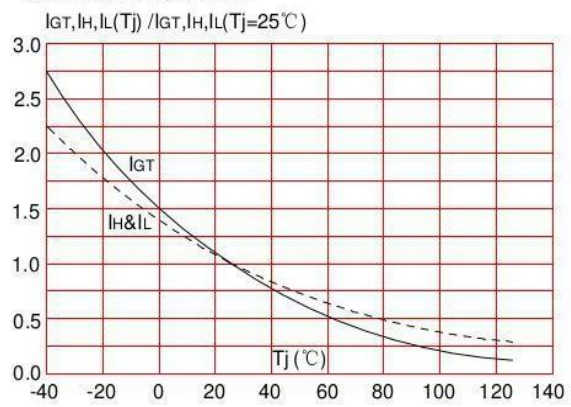


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature





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Customer Notes

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2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

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