

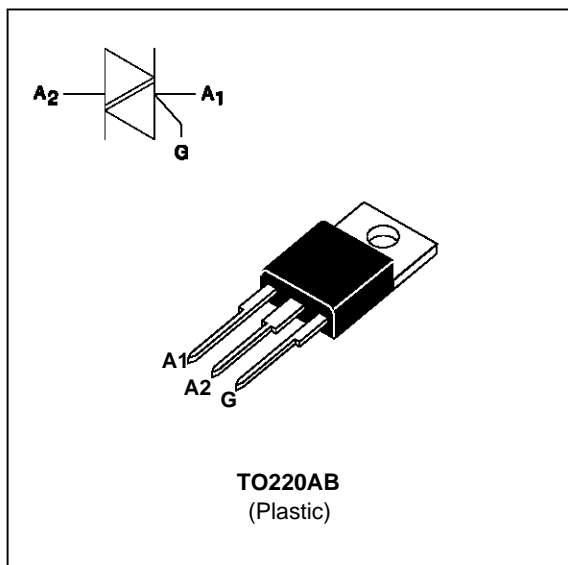
SNUBBERLESS TRIACS

FEATURES

- HIGH COMMUTATION : $(di/dt)_c > 7A/ms$ without snubber
- HIGH SURGE CURRENT : $I_{TSM} = 80A$
- V_{DRM} UP TO 800V
- BTA Family :
INSULATING VOLTAGE = 2500V_(RMS)
(UL RECOGNIZED : E81734)

DESCRIPTION

The BTA/BTB08 BW/CW triac family are high performance glass passivated chips technology. The SNUBBERLESS™ concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit | |
|------------------------------------|---|-----|--------------------------------|----------|------------------|
| I _{T(RMS)} | RMS on-state current (360° conduction angle) | BTA | T _c = 90 °C | 8 | A |
| | | BTB | T _c = 95 °C | | |
| I _{TSM} | Non repetitive surge peak on-state current (T _j initial = 25°C) | | tp = 8.3 ms | 85 | A |
| | | | tp = 10 ms | 80 | |
| I ² t | I ² t value | | tp = 10 ms | 32 | A ² s |
| di/dt | Critical rate of rise of on-state current Gate supply : I _G = 500mA di _G /dt = 1A/μs | | Repetitive F = 50 Hz | 20 | A/μs |
| | | | Non Repetitive | 100 | |
| T _{stg} T _j | Storage and operating junction temperature range | | - 40 to + 150 - 40 to + 125 | °C °C | |
| TI | Maximum lead temperature for soldering during 10 s at 4.5 mm from case | | 260 | °C | |

| Symbol | Parameter | BTA / BTB08-... BW/CW | | | | Unit |
|--------------------------------------|--|-----------------------|-----|-----|-----|------|
| | | 400 | 600 | 700 | 800 | |
| V _{DRM} V _{RRM} | Repetitive peak off-state voltage T _j = 125 °C | 400 | 600 | 700 | 800 | V |

BTA08 BW/CW / BTB08 BW/CW

THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|--------------|---|-----|-------|------|
| Rth (j-a) | Junction to ambient | | 60 | °C/W |
| Rth (j-c) DC | Junction to case for DC | BTA | 4.4 | °C/W |
| | | BTB | 3.3 | |
| Rth (j-c) AC | Junction to case for 360° conduction angle (F= 50 Hz) | BTA | 3.3 | °C/W |
| | | BTB | 2.5 | |

GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 1W$ $P_{GM} = 10W$ (tp = 20 μs) $I_{GM} = 4A$ (tp = 20 μs) $V_{GM} = 16V$ (tp = 20 μs).

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | Quadrant | | Suffix | | Unit | |
|--------------------------------------|--|-----------------------|----------|--------|------|------|------------|
| | | | | BW | CW | | |
| I _{GT} | V _D =12V (DC) R _L =33 Ω | T _j =25°C | I-II-III | MIN | 2 | 1 | mA |
| | | | | MAX | 50 | 35 | |
| V _{GT} | V _D =12V (DC) R _L =33 Ω | T _j =25°C | I-II-III | MAX | 1.5 | | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3k Ω | T _j =125°C | I-II-III | MIN | 0.2 | | V |
| t _{gt} | V _D =V _{DRM} I _G = 500mA dI _G /dt = 3A/ μs | T _j =25°C | I-II-III | TYP | 2 | | μs |
| I _L | I _G =1.2 I _{GT} | T _j =25°C | I-III | TYP | 40 | - | mA |
| | | | II | TYP | 80 | - | |
| | | | I-III | MAX | - | 50 | |
| | | | II | MAX | - | 80 | |
| I _H * | I _T = 500mA gate open | T _j =25°C | | MAX | 50 | 35 | mA |
| V _{TM} * | I _{TM} = 11A tp= 380 μs | T _j =25°C | | MAX | 1.75 | | V |
| I _{DRM} I _{RDM} | V _{DRM} Rated V _{RDM} Rated | T _j =25°C | | MAX | 0.01 | | mA |
| | | T _j =125°C | | MAX | 2 | | |
| dV/dt * | Linear slope up to V _D =67%V _{DRM} gate open | T _j =125°C | | MIN | 500 | 250 | V/ μs |
| | | | | TYP | 750 | 500 | |
| (dI/dt) _c * | Without snubber | T _j =125°C | | MIN | 7 | 4.5 | A/ms |
| | | | | TYP | 14 | 9 | |

* For either polarity of electrode A2 voltage with reference to electrode A1.

ORDERING INFORMATION

| Package | $I_T(\text{RMS})$ | $V_{\text{DRM}} / V_{\text{RRM}}$ | Sensitivity Specification | |
|----------------------|-------------------|-----------------------------------|---------------------------|----|
| | A | V | BW | CW |
| BTA (Insulated) | 8 | 400 | X | X |
| | | 600 | X | X |
| | | 700 | X | X |
| | | 800 | X | X |
| BTB (Uninsulated) | 8 | 400 | X | X |
| | | 600 | X | X |
| | | 700 | X | X |
| | | 800 | X | X |

Fig.1 : Maximum RMS power dissipation versus RMS on-state current ($F=50\text{Hz}$).
(Curves are cut off by $(di/dt)_c$ limitation)

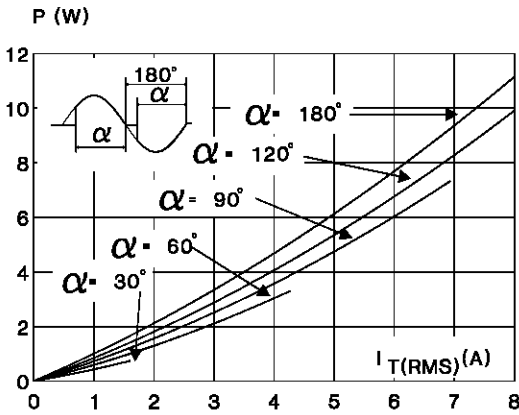


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

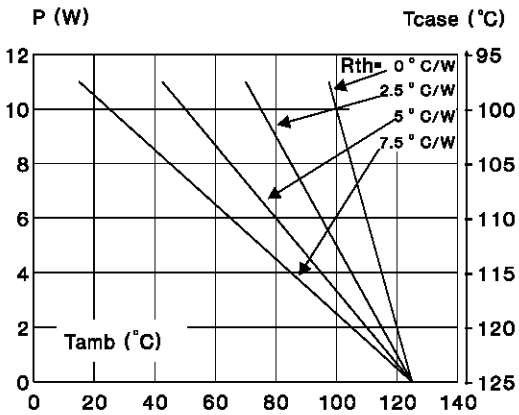


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

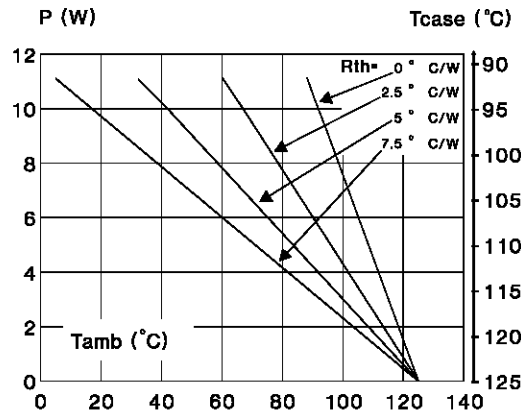
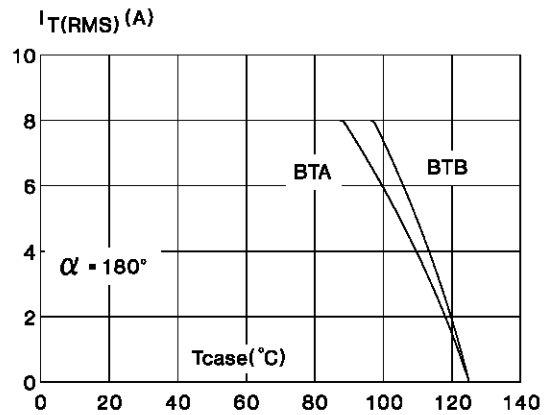


Fig.4 : RMS on-state current versus case temperature.



BTA08 BW/CW / BTB08 BW/CW

Fig.5 : Relative variation of thermal impedance versus pulse duration.

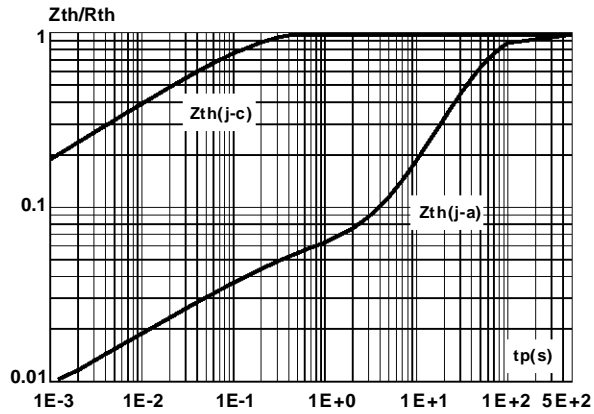


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

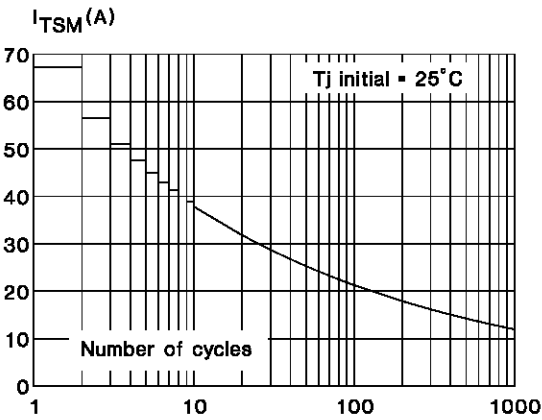


Fig.9 : On-state characteristics (maximum values).

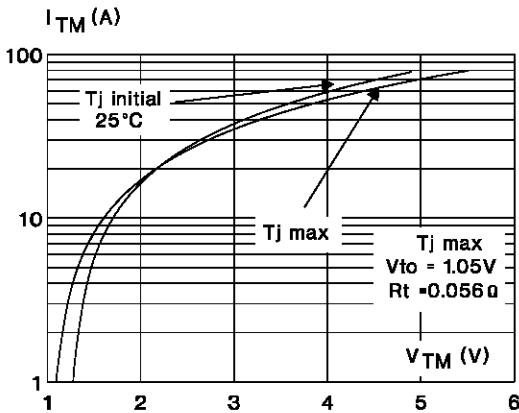


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

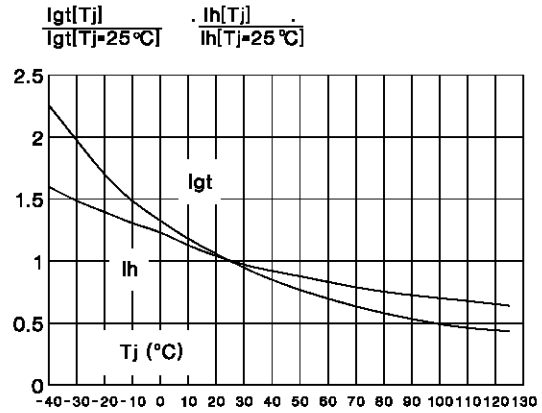
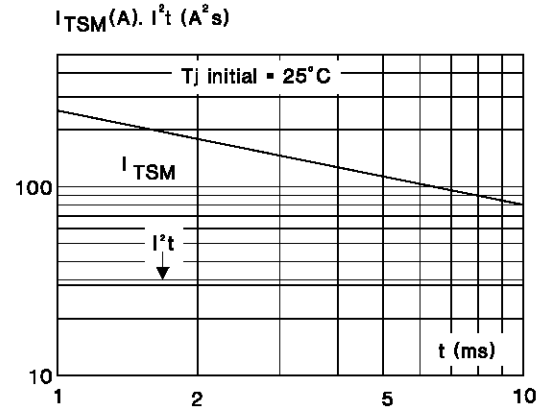
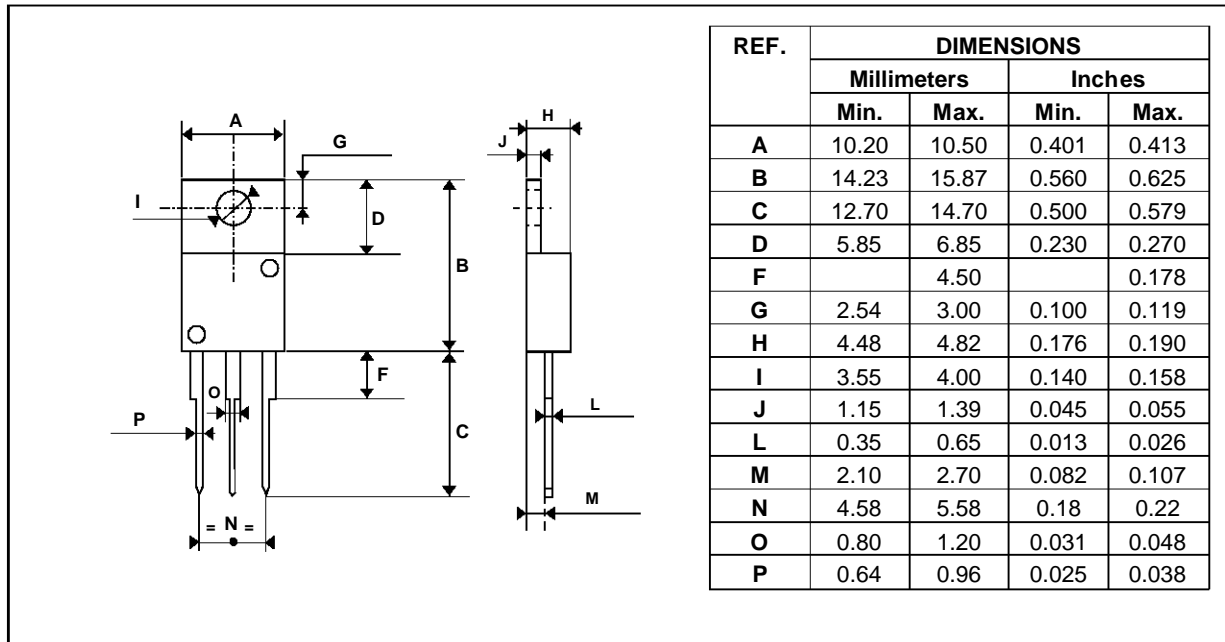


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .



PACKAGE MECHANICAL DATA

TO220AB Plastic



Cooling method : C
 Marking : type number
 Weight : 2.3 g
 Recommended torque value : 0.8 m.N.
 Maximum torque value : 1 m.N.

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