

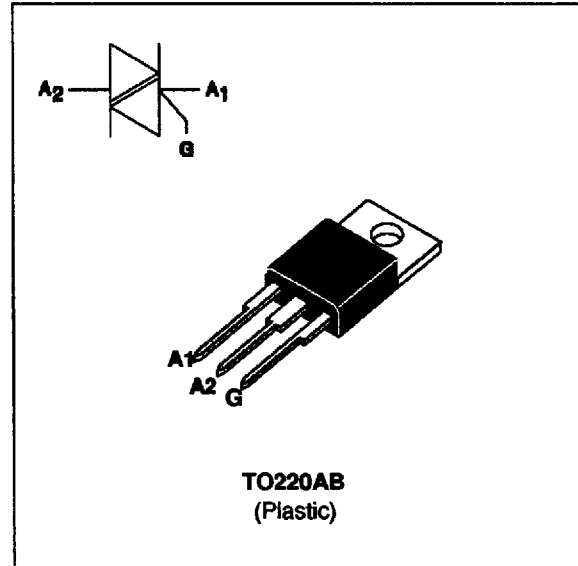
SNUBBERLESS TRIACS

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 | $T_c = 90\text{ °C}$ | 8 | A |
| | | BTB | $T_c = 95\text{ °C}$ | | |
| I_{TSM} | Non repetitive surge peak on-state current (T_j initial = 25°C) | $t_p = 8.3\text{ ms}$ | | 85 | A |
| | | $t_p = 10\text{ ms}$ | | 80 | |
| I^2t | I^2t value | $t_p = 10\text{ ms}$ | | 32 | A ² s |
| di/dt | Critical rate of rise of on-state current Gate supply : $I_G = 500mA$ $di_G/dt = 1A/\mu s$ | Repetitive $F = 50\text{ Hz}$ | | 20 | A/ μs |
| | | Non Repetitive | | 100 | |
| T_{stg} T_j | Storage and operating junction temperature range | | - 40 to + 150 - 40 to + 125 | °C °C | |
| T_l | 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 $T_j = 125\text{ °C}$ | 400 | 600 | 700 | 800 | V |

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 |
| | | BTB | 3.3 |
| Rth (j-c) AC | Junction to case for 360° conduction angle (F= 50 Hz) | BTA | 3.3 |
| | | BTB | 2.5 |

GATE CHARACTERISTICS (maximum values)

PG (AV) = 1W PGM = 10W (tp = 20 μs) IGM = 4A (tp = 20 μs) VGM = 16V (tp = 20 μs).

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | Quadrant | | Suffix | | Unit |
|--------------|---|----------|----------|-----|--------|-----|------|
| | | | | | BW | CW | |
| IGT | VD=12V (DC) RL=33Ω | Tj=25°C | I-II-III | MIN | 2 | 1 | mA |
| | | | | MAX | 50 | 35 | |
| VGT | VD=12V (DC) RL=33Ω | Tj=25°C | I-II-III | MAX | 1.5 | | V |
| VGD | VD=VDRM RL=3.3kΩ | Tj=125°C | I-II-III | MIN | 0.2 | | V |
| tgt | VD=VDRM IG = 500mA dIG/dt = 3A/μs | Tj=25°C | I-II-III | TYP | 2 | | μs |
| IL | IG=1.2 IGT | Tj=25°C | I-III | TYP | 40 | - | mA |
| | | | II | TYP | 80 | - | |
| | | | I-III | MAX | - | 50 | |
| | | | II | MAX | - | 80 | |
| IH * | IT= 500mA gate open | Tj=25°C | | MAX | 50 | 35 | mA |
| VTM * | ITM= 11A tp= 380μs | Tj=25°C | | MAX | 1.75 | | V |
| IDRM IRRM | VDRM Rated VRRM Rated | Tj=25°C | | MAX | 0.01 | | mA |
| | | Tj=125°C | | MAX | 2 | | |
| dV/dt * | Linear slope up to VD=67%VDRM gate open | Tj=125°C | | MIN | 500 | 250 | V/μs |
| | | | | TYP | 750 | 500 | |
| (di/dt)c * | Without snubber | Tj=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 | $I_T(RMS)$ | V_{DRM} / V_{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 ($F=50Hz$).
(Curves are cut off by $(di/dt)_c$ limitation)

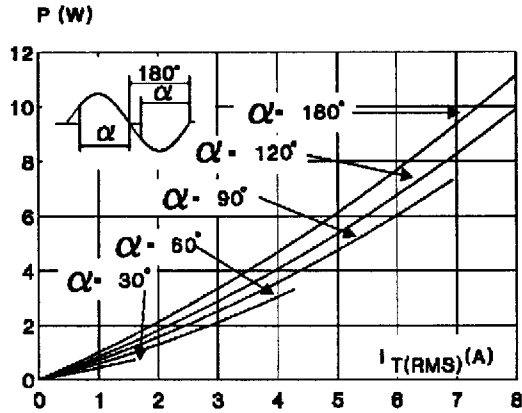


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTA).

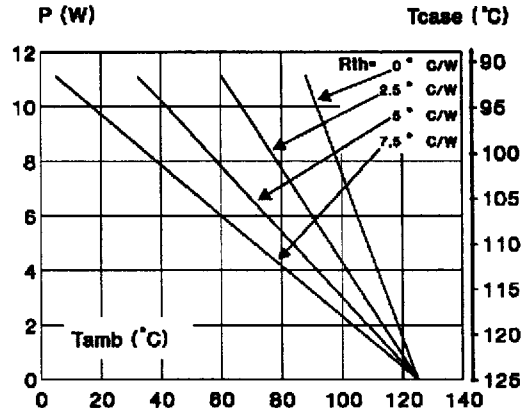


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact (BTB).

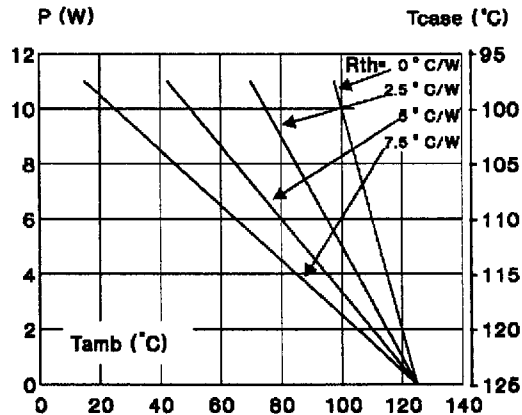
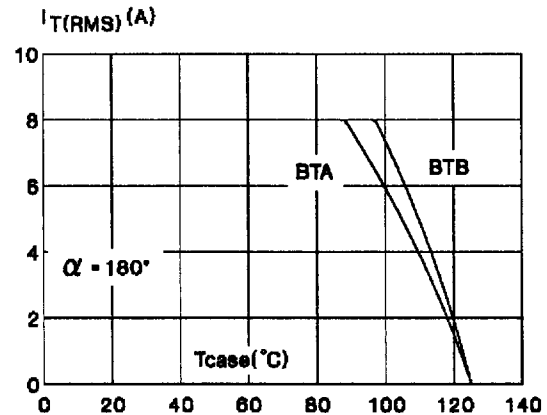


Fig.4 : RMS on-state current versus case temperature.



BTA08 BW/CW / BTB08 BW/CW

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

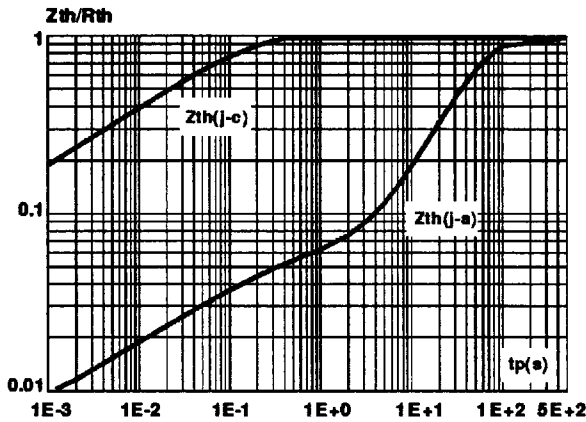


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.

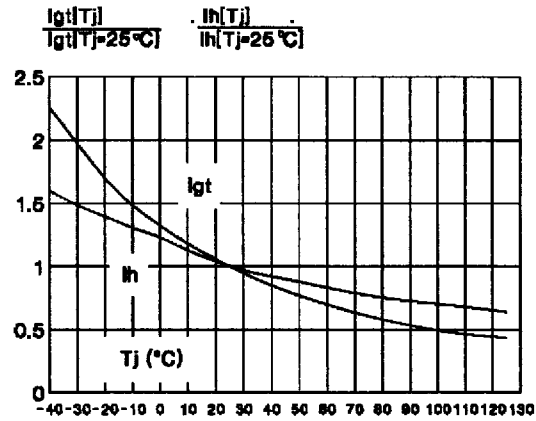


Fig.7 : Non Repetitive surge peak on-state current versus number of cycles.

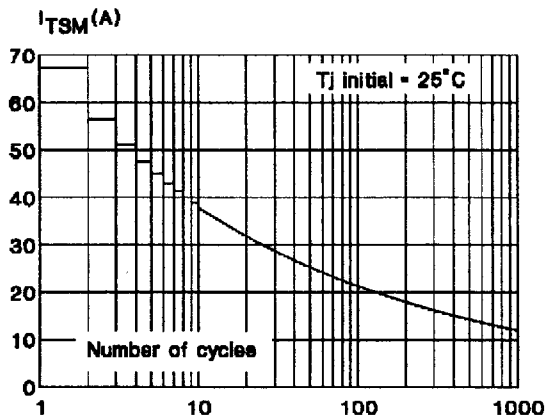


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10ms$, and corresponding value of I^2t .

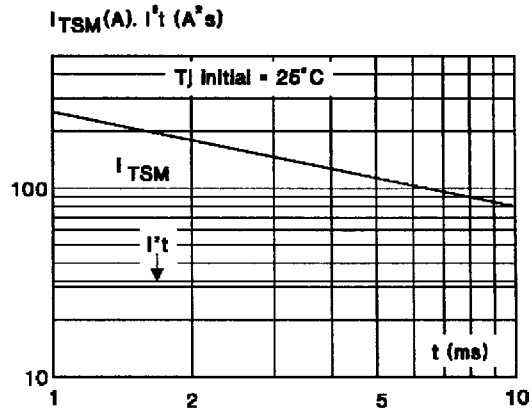
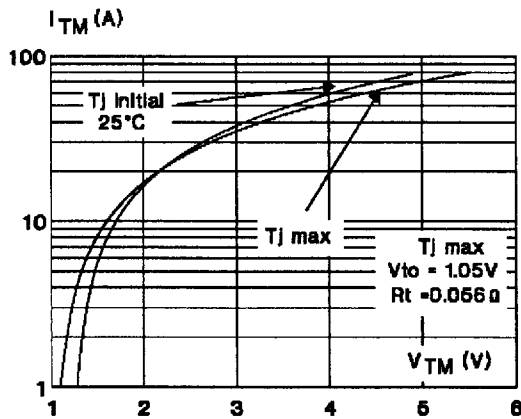
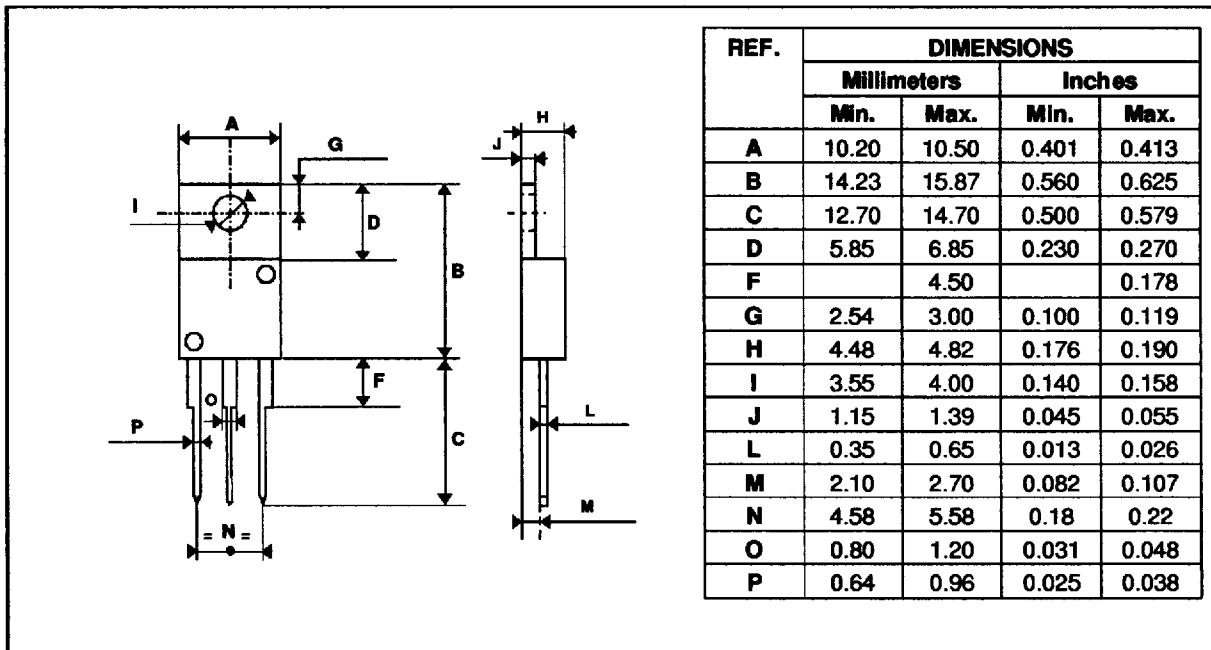


Fig.9 : On-state characteristics (maximum values).



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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