

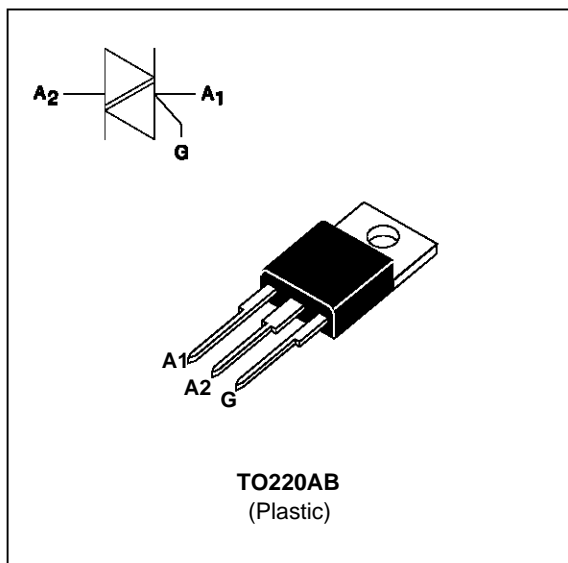
LOGIC LEVEL TRIACS

FEATURES

- LOW $I_{GT} = 10\text{mA max}$
- HIGH EFFICIENCY SWITCHING ON COMMUTATION
- BTA Family :
INSULATING VOLTAGE = $2500V_{(RMS)}$
(UL RECOGNIZED : E81734)

DESCRIPTION

The BTA/BTB12 SW Triac family are high performance products glass passivated PNP devices. These parts are suited for low power trigger circuit (integrated circuits, microcontroller, microprocessors).



ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit | |
|--------------------|---|-----|----------------------------------|----------------------------|-----------|
| $I_{T(RMS)}$ | RMS on-state current (360° conduction angle) | BTA | $T_c = 70\text{ °C}$ | 12 | A |
| | | BTB | $T_c = 75\text{ °C}$ | | |
| I_{TSM} | Non repetitive surge peak on-state current (T_j initial = 25 °C) | | $t_p = 8.3\text{ ms}$ | 126 | A |
| | | | $t_p = 10\text{ ms}$ | 120 | |
| i^2t | i^2t value | | $t_p = 10\text{ ms}$ | 72 | A^2s |
| di/dt | Critical rate of rise of on-state current Gate supply : $I_G = 50\text{mA}$ $di_G/dt = 0.1A/\mu s$ | | Repetitive $F = 50\text{ Hz}$ | 20 | $A/\mu s$ |
| | | | Non Repetitive | 100 | |
| T_{stg} T_j | Storage and operating junction temperature range | | - 40 to + 150 - 40 to + 110 | $^{\circ}C$ $^{\circ}C$ | |
| T_l | Maximum lead temperature for soldering during 10 s at 4.5 mm from case | | 260 | $^{\circ}C$ | |

| Symbol | Parameter | BTA / BTB12- | | | Unit |
|------------------------|--|--------------|--------|--------|------|
| | | 400 SW | 600 SW | 700 SW | |
| V_{DRM} V_{RRM} | Repetitive peak off-state voltage $T_j = 110\text{ °C}$ | 400 | 600 | 700 | V |

BTA12 SW / BTB12 SW

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 | 3.3 | °C/W |
| | | BTB | 2.7 | |
| Rth (j-c) AC | Junction to case for 360° conduction angle (F= 50 Hz) | BTA | 2.5 | °C/W |
| | | BTB | 2 | |

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 |
|---------------------------------------|---|-----------------------|----------|-----|--------|------|
| | | | | | SW | |
| IGT | V _D =12V (DC) R _L =33Ω | T _j =25°C | I-II-III | MAX | 10 | mA |
| V _{GT} | V _D =12V (DC) R _L =33Ω | T _j =25°C | I-II-III | MAX | 1.5 | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3kΩ | T _j =110°C | I-II-III | MIN | 0.2 | V |
| tgt | V _D =V _{DRM} I _G = 40mA dI _G /dt = 0.5A/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 | 15 | mA |
| | | | II | | 25 | |
| I _H * | I _T = 100mA gate open | T _j =25°C | | MAX | 25 | mA |
| V _{TM} * | I _{TM} = 17A tp= 380μs | T _j =25°C | | MAX | 1.75 | V |
| I _{DRM} I _R RM | V _{DRM} Rated V _R RM Rated | T _j =25°C | | MAX | 0.01 | mA |
| | | T _j =110°C | | MAX | 1 | |
| dV/dt * | Linear slope up to V _D =67%V _{DRM} gate open | T _j =110°C | | MIN | 50 | V/μs |
| (dI/dt) _c * | dV/dt= 0.1V/μs | T _j =110°C | | MIN | 5.3 | A/ms |
| | dV/dt= 20V/μs | | | MIN | 3.5 | |

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

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

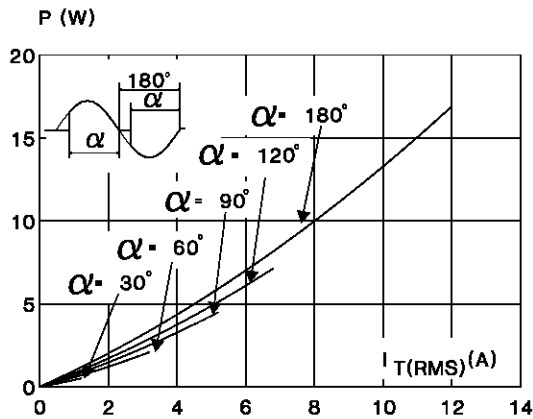


Fig.2 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTA).

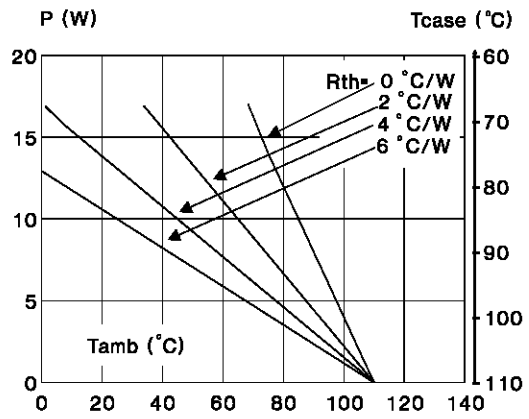


Fig.3 : Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact (BTB).

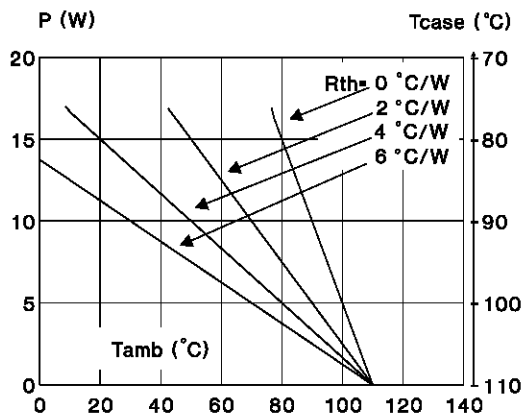


Fig.4 : RMS on-state current versus case temperature.

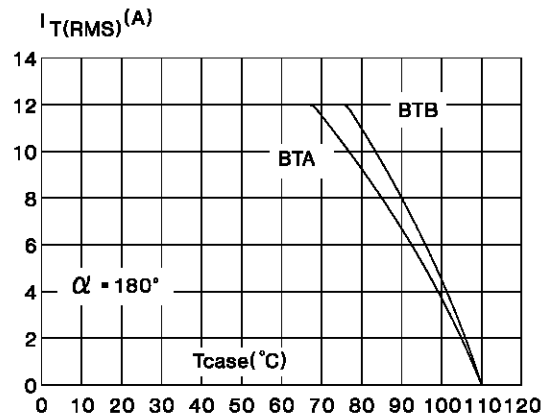


Fig.5 : Relative variation of thermal impedance versus pulse duration.

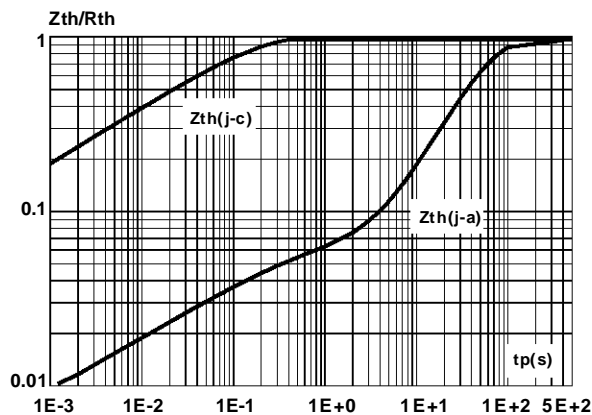
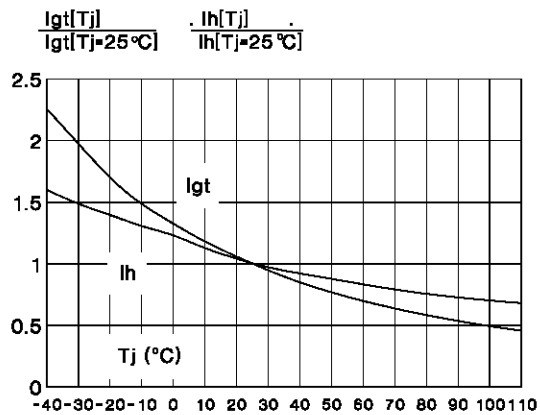


Fig.6 : Relative variation of gate trigger current and holding current versus junction temperature.



BTA12 SW / BTB12 SW

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

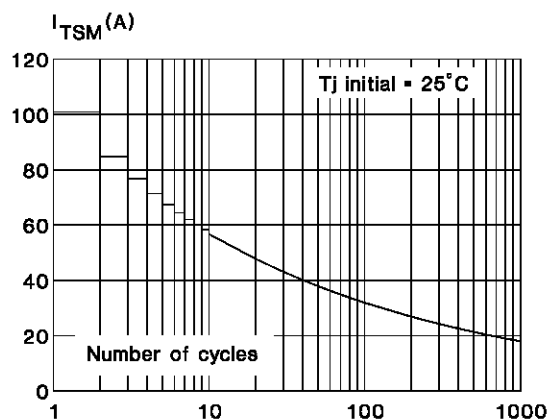


Fig.8 : Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10\text{ms}$, and corresponding value of I^2t .

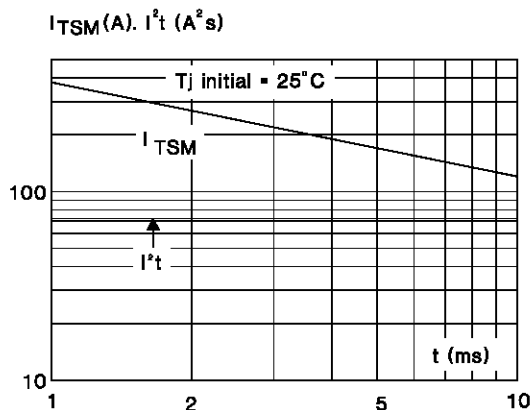


Fig.9 : On-state characteristics (maximum values).

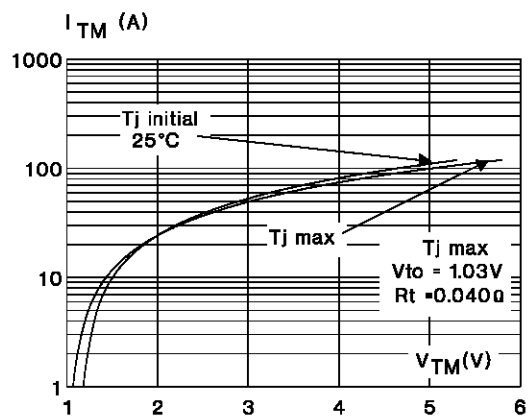
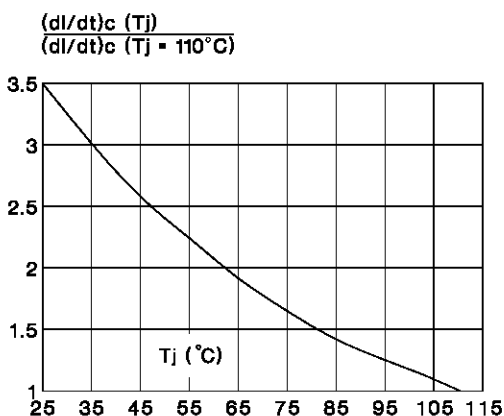
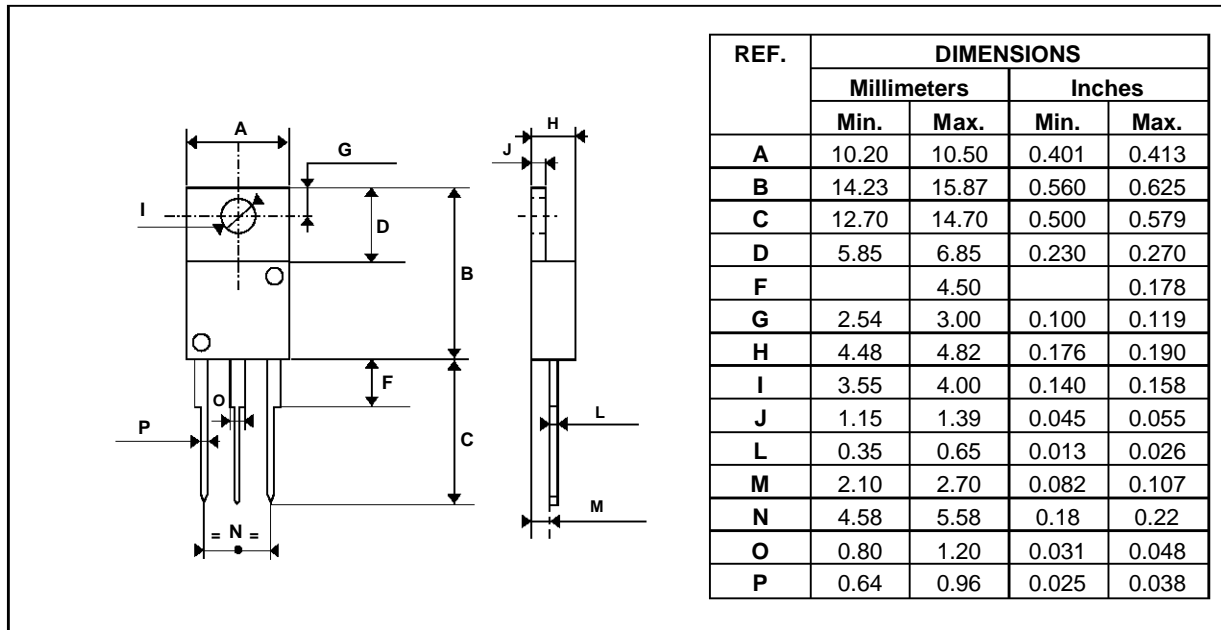


Fig.10 : Relative variation of $(di/dt)c$ versus junction temperature.



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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