# SGS-THOMSON
## MICROELECTRONICS

S G S - T H O M S O N

# BTA 08 AW

## SNUBBERLESS TRIACS

- $I_{TRMS}$ = 8 A at $T_c$ = 90 °C.
- $V_{DRM}$ : 200 V to 800 V.
- $I_{GT}$ = 75 mA (QI-II-III).
- GLASS PASSIVATED CHIP.
- HIGH SURGE CURRENT : $I_{TSM}$ = 80 A.
- HIGH COMMUTATION CAPABILITY :
  (di/dt) $_c$ > 10 A / ms without snubber.
- INSULATING VOLTAGE : 2500 $V_{RMS}$.



A $_1$
A $_2$
G

**TO 220 AB**
(CB-415 Plastic)
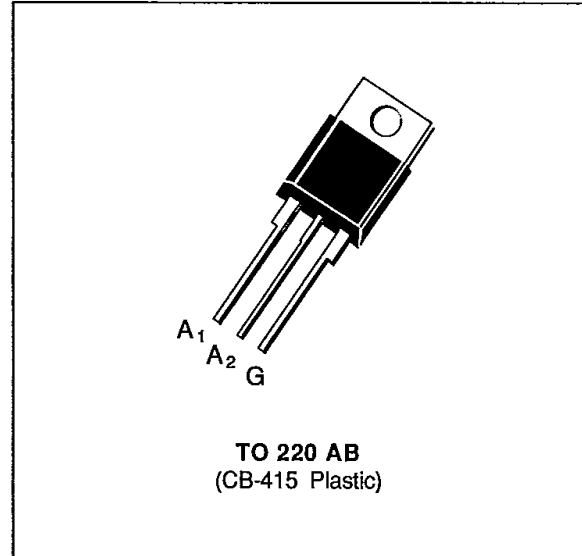
## DESCRIPTION

New range suited for applications such as phase control and static switching on inductive or resistive load.

## ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $I_{TRMS}$ | RMS on-state current (360 ° conduction angle) | $T_c$ = 90 °C | 8 | A |
| $I_{TSM}$ | Non repetitive surge peak on-state current ($T_j$ initial = 25 °C) | t = 8.3 ms | 85 | A |
| | | t = 10 ms | 80 | |
| $I^2t$ | $I^2t$ value | t = 10 ms | 32 | $A^2s$ |
| di/dt | Critical rate of rise of on-state current (1) | Repetitive F = 50 Hz | 20 | A/µs |
| | | Non Repetitive | 100 | |
| $T_{stg}$ $T_j$ | Storage and operating junction temperature range | | - 40, + 150 - 40, + 125 | °C °C |

| Symbol | Parameter | BTA 08- | | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | 200 AW | 400 AW | 600 AW | 700 AW | 800 AW | |
| $V_{DRM}$ | Repetitive peak off-state voltage (2) | ± 200 | ± 400 | ± 600 | ± 700 | ± 800 | V |

(1) Gate supply : $I_G$ = 750 mA – di$_G$ / dt = 1 A / µs.
(2) $T_j$ = 125 °C.

February 1989

1/4

219

30E D ▮▬ 7929237 0031501 8 ▮▬

## THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-a)}$ | Junction to ambient | 60 | °C/W |
| $R_{th(j-c)}$ DC | Junction to case for DC | 4.3 | °C/W |
| $R_{th(j-c)}$ AC | Junction to case for 360 ° conduction angle (F = 50 Hz) | 3.2 | °C/W |

## GATE CHARACTERISTICS (maximum values)

$P_{GM} = 40$ W (t = 10 µs)    $P_{G(AV)} = 1$ W    $I_{GM} = 4$ A (t = 10 µs)    $V_{GM} = 16$ V (t = 10 µs).

Σ G Σ-THOMΣON

## ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | Quadrants | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{GT}$ | $T_j = 25$ °C   $V_D = 12$ V    $R_L = 33$ Ω <br> Pulse duration > 20 µs | I-II-III | 2 | | 75 | mA |
| $V_{GT}$ | $T_j = 25$ °C   $V_D = 12$ V    $R_L = 33$ Ω <br> Pulse duration > 20 µs | I-II-III | | | 1.5 | V |
| $V_{GD}$ | $T_j = 125$ °C   $V_D = V_{DRM}$    $R_L = 3.3$ kΩ <br> Pulse duration > 20 µs | I-II-III | 0.2 | | | V |
| $I_H$ * | $T_j = 25$ °C   $I_T = 100$ mA <br> Gate open    $R_L = 140$ Ω | | | | 75 | mA |
| $I_L$ | $T_j = 25$ °C   $V_D = 12$ V    $I_G = 500$ mA <br> Pulse duration > 20 µs | I-III | | 75 | | mA |
| | | II | | 150 | | |
| $V_{TM}$ * | $T_j = 25$ °C   $I_{TM} = 11$ A    $t_p = 10$ ms | | | | 1.75 | V |
| $I_{DRM}$ * | $T_j = 25$ °C   $V_{DRM}$ rated    Gate open | | | | 0.01 | mA |
| | $T_j = 125$ °C | | | | 2 | |
| dv/dt * | $T_j = 125$ °C   Gate open <br> Linear slope up to 0.67 $V_{DRM}$ | | 750 | 1000 | | V/µs |
| $(di/dt)_c$ * | $T_j = 125$ °C   $V_{DRM}$ rated <br> Without snubber | | 10 | 20 | | A/ms |
| $t_{gt}$ | $T_j = 25$ °C   $di_G/dt = 3.5$ A/µs    $I_G = 500$ mA <br> $I_T = 11$ A    $V_D = V_{DRM}$ | I-II-III | | 2 | | µs |

* For either polarity of electrode $A_2$ voltage with reference to electrode $A_1$.
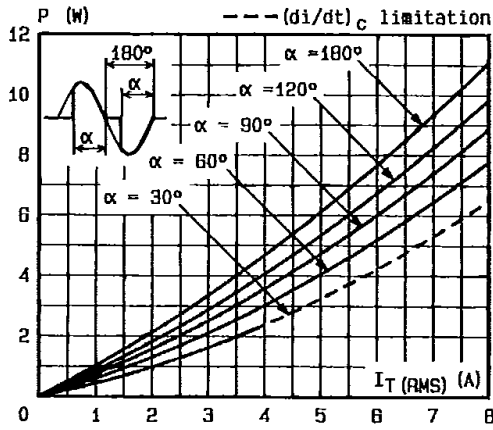
**SGS-THOMSON**
**MICROELECTRONICS**

O



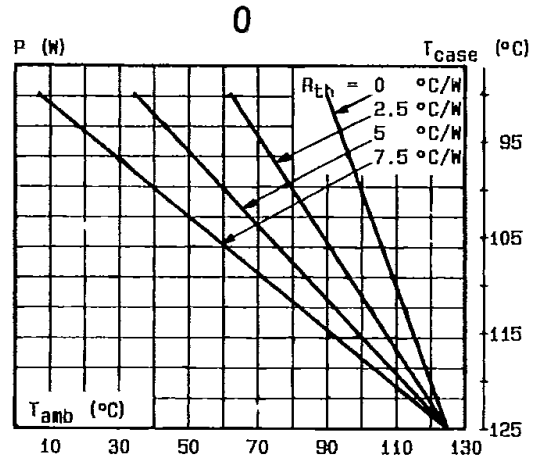Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).



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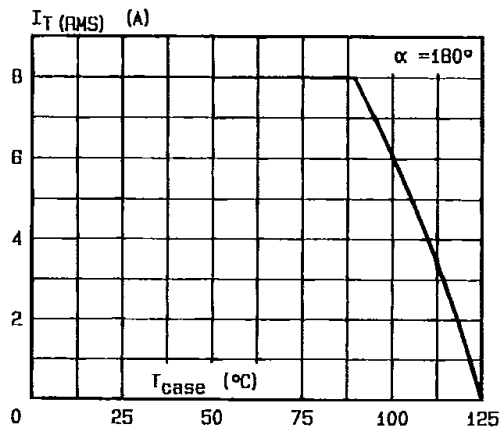


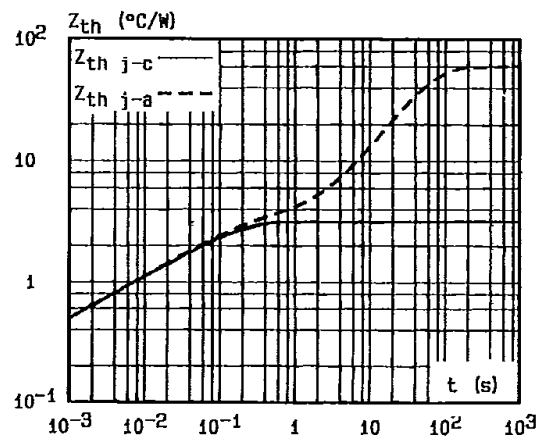Fig.3 - RMS on-state current versus case temperature.



Fig.4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.
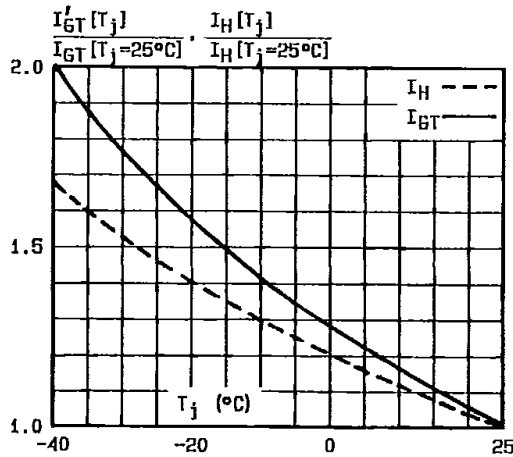


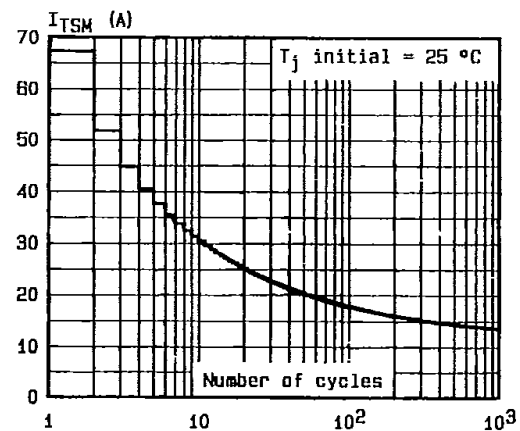Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.



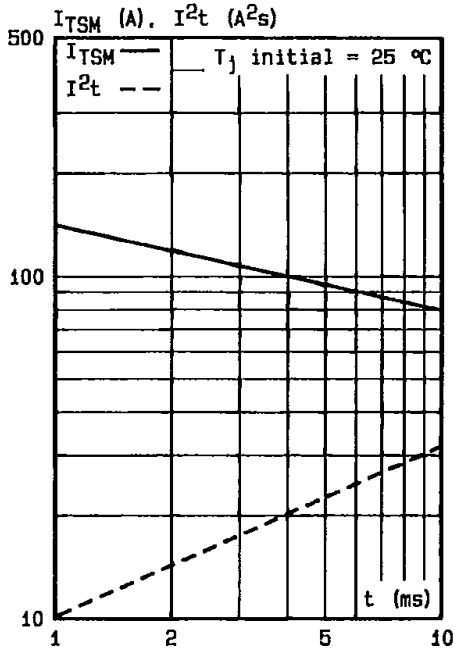Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

---

**SGS-THOMSON**
**MICROELECTRONICS**

3/4

221

Fig.7 - Non repetitive surge peak
on-state current for a sinusoidal
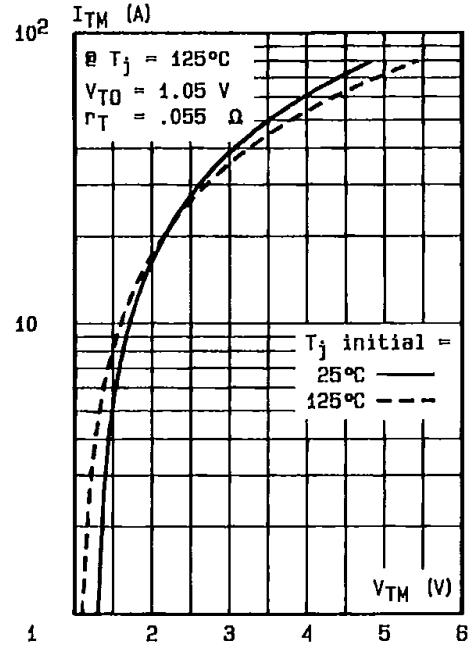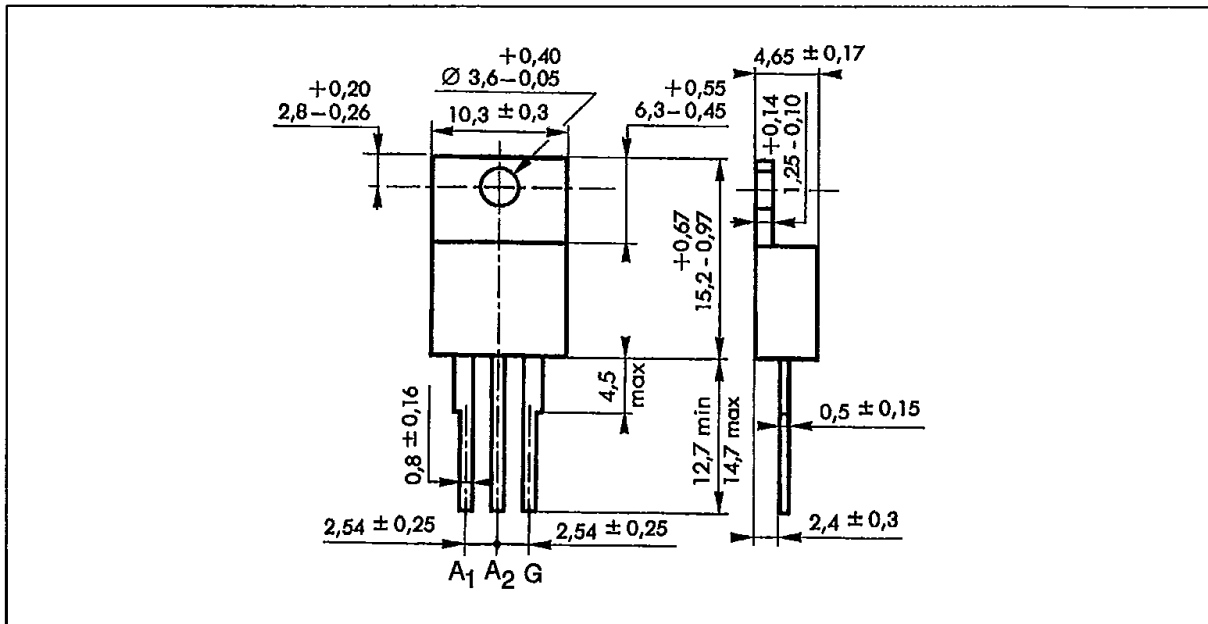pulse with width : t ≤ 10 ms, and
corresponding value of $I^2t$.

Fig.8 - On-state characteristics
(maximum values).

## PACKAGE MECHANICAL DATA

TO 220 AB (CB-415) Plastic

Cooling method : by conduction (method C)
Marking : type number
Weight : 2 g

**SGS-THOMSON**
MICROELECTRONICS