

T-25-15

Power triac suited for use on 200 V and 380 V main.

**FEATURES :**

- Glass passivated chip.
- I<sub>GT</sub> specified in four quadrants.

**ADVANTAGES :**

- Excellent (dv/dt)<sub>C</sub> : > 10 V/μs.
- Metallic encapsulation gives an excellent thermal impedance and high reliability construction.

**APPLICATIONS :**

- Motor control.
- Heating control.
- Light dimmer.

*Triac de puissance utilisable sur les réseaux 200 V et 380 V.*

**CARACTERISTIQUES :**

- *Pastille glassivée.*
- *I<sub>GT</sub> défini dans les quatre quadrants.*

**AVANTAGES :**

- *Excellente tenue aux (dv/dt)<sub>C</sub> : > 10 V/μs.*
- *L'encapsulation métallique confère une excellente impédance thermique assurant une bonne fiabilité.*

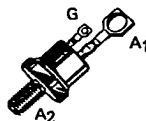
**APPLICATIONS :**

- *Commande de moteur.*
- *Régulation de chauffage.*
- *Variateur de lumière.*

I<sub>RMS</sub> = 25 A/T<sub>C</sub> = 60°C

V<sub>DRM</sub> : 200 V → 1200 V

Case : TO 48 metal (CB-267)  
Boîtier :



Standard type : 1/4"-28 UNF  
On request, type number + suffix M : ISO M6

| ABSOLUTE RATINGS (LIMITING VALUES)<br>VALEURS LIMITES ABSOLUES D'UTILISATION   |                         | Symbols                            | TRAL 1125 D → TRAL 1225 D    | Units            |
|--|-------------------------|------------------------------------|------------------------------|------------------|
| RMS on-state current (360° conduction angle)<br>Courant efficace à l'état passant (angle de conduction 360°)   | T <sub>C</sub> = 60°C   | I <sub>RMS</sub>                   | 25                           | A                |
| Non repetitive surge peak on-state current (on full cycle)<br>at 25°C < T <sub>j</sub> initial < 100°C<br>Courant non répétitif de surcharge crête accidentelle à l'état passant (1 cycle complet) à 25°C < T <sub>j</sub> initial < 100°C | F = 60 Hz               | I <sub>TSM</sub>                   | 240                          | A                |
|  | F = 50 Hz               |                                    | 230                          |                  |
| I <sup>2</sup> t value<br>Valeur de la constante I <sup>2</sup> t  | t = 10 ms               | I <sup>2</sup> t                   | 270                          | A <sup>2</sup> s |
| Critical rate of rise of on-state current <sup>e</sup><br>Vitesse critique de croissance du courant à l'état passant   | Repetitive<br>F = 50 Hz | di/dt                              | 20                           | A/μs             |
|  | Non Repetitive          |                                    | 100                          |                  |
| Storage and operating junction temperature range<br>Températures extrêmes de stockage et de jonction en fonctionnement   |                         | T <sub>stg</sub><br>T <sub>j</sub> | - 40 → + 150<br>- 40 → + 100 | °C               |

| ABSOLUTE RATING (LIMITING VALUE)<br>VALEUR LIMITE ABSOLUE D'UTILISATION          | Symbol           | TRAL 1125 D | TRAL 2225 D | TRAL 3325 D | TRAL 3825 D | TRAL 1025 D | TRAL 1225 D | Unit |
|--|------------------|-------------|-------------|-------------|-------------|-------------|-------------|------|
| Repetitive peak off-state voltage<br>Tension de crête répétitive à l'état bloqué | V <sub>DRM</sub> | ±200        | ±400        | ±600        | ±700        | ±1000       | ±1200       | V    |

\*Gate supply : 20 V/20 Ω - t<sub>r</sub> < 0,1 μs -  
Générateur de gâchette

Half sine wave 6,3 μs - V<sub>DRM</sub> specified  
Demi-sinusoïde de 6,3 μs - V<sub>DRM</sub> spécifié

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| Thermal resistance<br><i>Résistance thermique</i>   | Symbols                | TRAL 1125 D → TRAL 1225 D | Units |
|---|------------------------|---------------------------|-------|
| — Contact (case- heatsink) for recommended stud torque<br><i>Contact (boîtier- radiateur) au couple de serrage recommandé</i>   | R <sub>th c-h</sub>    | 0,4                       | °C/W  |
| — Junction to case for DC<br><i>Jonction - boîtier en continu</i>   | R <sub>th j-c</sub> DC | 1,24                      | °C/W  |
| — Junction to case for 360° conduction angle (F = 50 Hz)<br><i>Jonction - boîtier pour angle de conduction 360° (F = 50 Hz)</i> | R <sub>th j-c</sub> AC | 0,93                      | °C/W  |

**GATE CHARACTERISTICS (MAXIMUM VALUES)**  
**CARACTERISTIQUES DE GACHETTE (VALEURS MAXIMALES)**

PGM\* = 40 W (t = 10 μs)    PG(AV) = 1 W    IGM\* = 6 A (t = 10 μs)    VGM\* = 16 V (t = 10 μs)

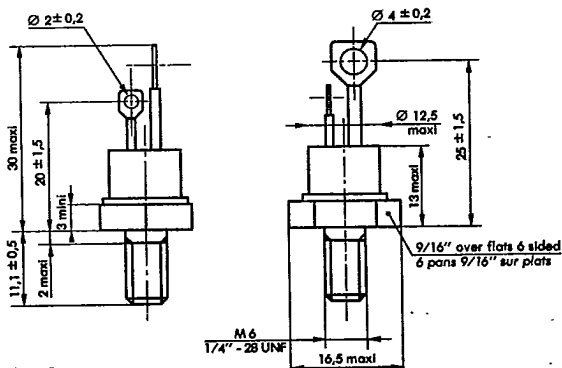
**ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise specified)**  
**CARACTERISTIQUES ELECTRIQUES (T<sub>J</sub> = 25°C sauf spécification contraire)**

| Symbols                 | Quadrants      | Values |           |            | Units | Test conditions  |
|-------------------------|----------------|--------|-----------|------------|-------|--|
|                         |                | min.   | typ.      | max.       |       |  |
| I <sub>GT</sub>         | I-II—III<br>IV |        |           | 100<br>150 | mA    | V <sub>D</sub> = 12 V R <sub>L</sub> = 33 Ω Pulse duration > 20 μs                                       |
| V <sub>GT</sub> *       |                |        |           | 3          | V     | V <sub>D</sub> = 12 V R <sub>L</sub> = 33 Ω Pulse duration > 20 μs                                       |
| V <sub>GD</sub> *       |                | 0,2    |           |            | V     | T <sub>J</sub> = 100°C V <sub>D</sub> = V <sub>DRM</sub><br>R <sub>L</sub> = 3 kΩ Pulse duration > 20 μs |
| I <sub>H</sub> **       |                |        |           | 50         | mA    | V <sub>D</sub> = 12 V Gate open  |
| I <sub>L</sub>          | I-III—IV<br>II |        | 50<br>100 |            | mA    | V <sub>D</sub> = 12 V R <sub>L</sub> = 33 Ω Pulse duration > 20 μs                                       |
| V <sub>TM</sub> **      |                |        | 2         |            | V     | I <sub>TM</sub> = 35 A t <sub>p</sub> = 10 ms  |
| I <sub>DRM</sub> **     |                |        | 3         |            |       | T <sub>J</sub> = 100°C V <sub>DRM</sub> rated Gate open  |
| dv/dt**                 |                | 100    |           |            | V/μs  | T <sub>J</sub> = 100°C Gate open<br>Linear slope up to 0,67 V <sub>DRM</sub>                             |
| (di/dt) <sub>c</sub> ** |                | 10     |           |            | V/μs  | T <sub>c</sub> = 60°C (di/dt) <sub>c</sub> = 11,2 A/ms<br>I <sub>TRMS</sub> and V <sub>DRM</sub> rated   |
| t <sub>gt</sub> *       |                |        | 3         |            | μs    | di/dt = 2 A/μs I <sub>G</sub> = 200 mA<br>I <sub>TRMS</sub> and V <sub>DRM</sub> rated                   |

\* For either polarity of gate voltage with reference to electrode A<sub>1</sub>.

\*\* For either polarity of electrode A<sub>2</sub> voltage with reference to electrode A<sub>1</sub>.

**CASE DESCRIPTION**  
**DESCRIPTION DU BOITIER**



Cooling method : by conduction (method C)

Marking : type number

Weight : 13,5 ± 1g

Stud torque : 3,5 mAN min - 3,8 mAN max

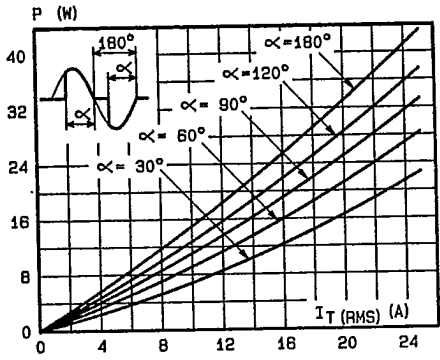


Fig.1 - Maximum mean power dissipation versus RMS on-state current.

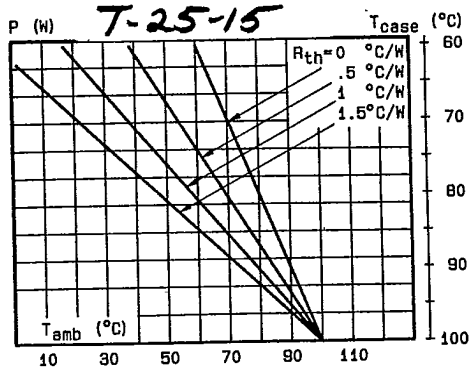


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.

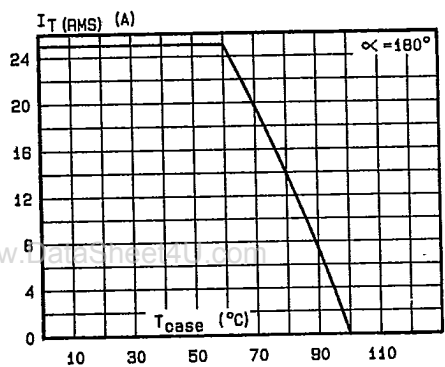


Fig.3 - RMS on-state current versus case temperature.

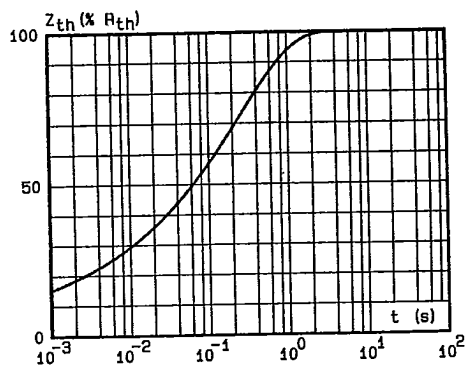


Fig.4 - Thermal transient impedance junction to case versus pulse duration.

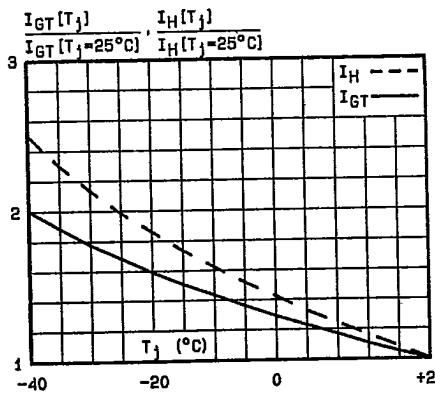


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

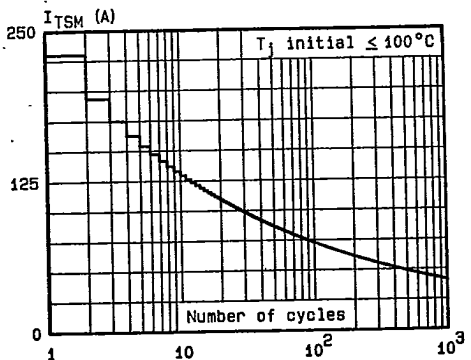


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

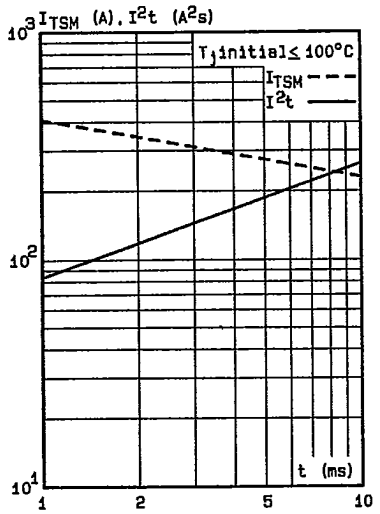


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t \leq 10\text{ms}$ , and corresponding value of  $I^2t$ .

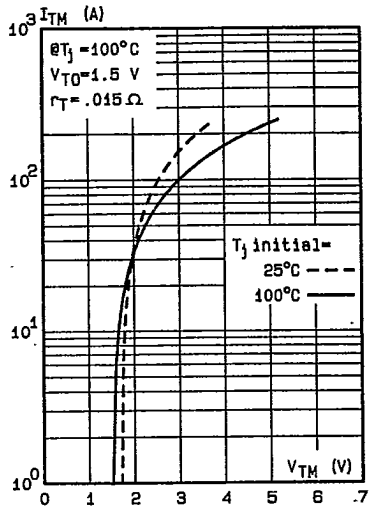


Fig.8 - On-state characteristic (maximum values).