

THOMSON SEMICONDUCTORS

2N 1843A → 2N 1850A

TR 1010 → TR 9010

THYRISTORS

T-25x15

78C 07700 D

General purpose SCR suited for power supplies up to 400 Hz on resistive or inductive loads.

- V_{RRM} up to 1 200 V.
- Glass passivated chips.
- High stability and reliability.

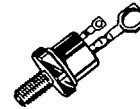
Thyristors à usage général, pour des alimentations jusqu'à 400 Hz sur charges résistives ou inductives.

- V_{RRM} jusqu'à 1 200 V.
- Pastilles glassivées.
- Grande stabilité des caractéristiques.

$$I_T(\text{RMS}) = 16 \text{ A} / T_{\text{case}} = 80^\circ\text{C}$$

$$50 \text{ V} < \frac{V_{\text{DRM}}}{V_{\text{RRM}}} \leq 1200 \text{ V}$$

Case : TO 48 metal (CB-267)
Boîtier :



| ABSOLUTE RATINGS (LIMITING VALUES) VALEURS LIMITES ABSOLUES D'UTILISATION | Symbol | Value | Unit |
|---|--------------------------------------|--|------------------|
| RMS on-state current* Courant efficace à l'état passant* | I _T (RMS) | 16 @ T _{case} = 80 °C | A |
| Mean on-state current* Courant moyen à l'état passant* | I _T (AV) | 10 @ T _{case} = 80 °C | A |
| Non repetitive surge peak on-state current** Courant non répétilif de surcharge crête accidentelle à l'état passant** | I _{TSM} I _{TSM} | 157 (t = 8,3 ms) 150 (t = 10 ms) @ T _J ≤ 125 °C | A A |
| i ² t for fusing Valeur de la constante i ² t | i ² t | 112,5 (t = 10 ms) @ T _J ≤ 125 °C | A ² s |
| Critical rate of rise of on-state current*** Vitesse critique de croissance du courant à l'état passant*** | di/dt | 100 | A/μs |
| Storage and operating junction temperatures Températures extrêmes de stockage et de jonction en fonctionnement | T _{stg} T _j | -40, + 150 -40, + 125 | °C °C |

| @ T _J = 125 °C | 2N 1843 A | 2N 1844 A | 2N 1846 A | 2N 1848 A | 2N 1849 A | 2N 1850 A | TR 6010 | TR 7010 | TR 8010 | TR 9010 | TR 1010 | TR 1110 | TR 1210 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|------------|------------|------------|------------|------------|------------|------------|
| V _{DRM} = V _{RRM} (V) | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 |

| Thermal resistances Résistances thermiques | Symbol | Value | Unit |
|---|-----------------------|-------|------|
| — Junction to case for D.C. Jonction-boîtier en continu | R _{th (j-c)} | 2 | °C/W |
| — Contact (case to heatsink) Contact (boîtier-radiateur) | R _{th (c-h)} | 0,4 | °C/W |

* Single phase circuit, 180° conduction angle
* Circuit monophasé, angle de conduction 180°

** Half sine wave
** Demi-onde sinusoïdale

*** Gate supply 20 V/20 Ω - t_r ≤ 0,1 μs - Half sine wave of 6,3 μs
*** Générateur de gâchette Demi-sinusoïde

May 1984 - 1/5

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127

THOMSON
COMPONENTS

78C 07701 D
T-25-15

GATE CHARACTERISTICS (Maximum values)
CARACTÉRISTIQUES DE GACHETTE (Valeurs maximales)

$P_{GM} = 5 \text{ W}$ ($t = 100 \mu\text{s}$)
 $P_{G(AV)} = 1 \text{ W}$

$I_{FGM} = 2 \text{ A}$ ($t = 100 \mu\text{s}$)
 $V_{FGM} = 10 \text{ V}$ ($t = 100 \mu\text{s}$)

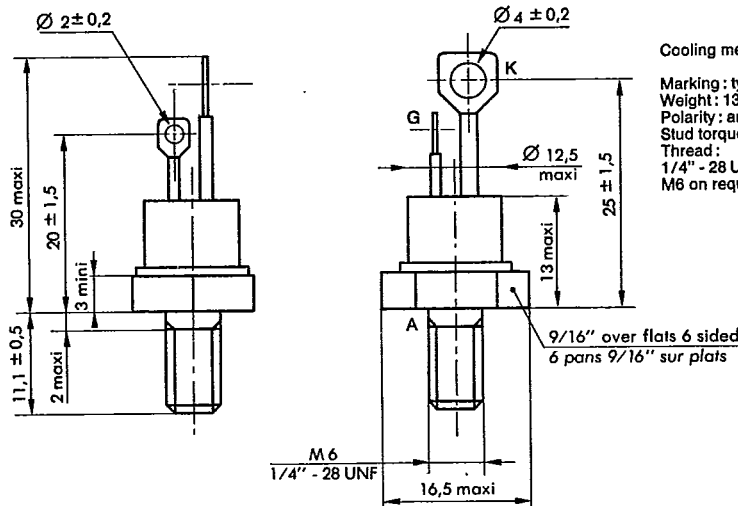
$V_{RGM} = 5 \text{ V}$

ELECTRICAL CHARACTERISTICS
CARACTÉRISTIQUES ÉLECTRIQUES

| Symbol | Value | | | Unit | Test conditions | | | |
|-----------|-------|-----|-----|------------------------|---|---|-----------------------------|-----------------------------------|
| | min | typ | max | | | | | |
| I_{GT} | | | 80 | mA | $T_J = 25^\circ\text{C}$ | $V_D = 12 \text{ V}$ | $R_L = 33 \Omega$ | $t_p \geq 20 \mu\text{s}$ |
| V_{GT} | | | 3 | V | $T_J = 25^\circ\text{C}$ | $V_D = 12 \text{ V}$ | $R_L = 33 \Omega$ | $t_p \geq 20 \mu\text{s}$ |
| V_{GD} | 0,25 | | | V | $T_J = 125^\circ\text{C}$ | $V_D = V_{DRM}$ | $R_L = 3,3 \text{ k}\Omega$ | |
| I_H | | 20 | | mA | $T_J = 25^\circ\text{C}$ | $I_T = 0,5 \text{ A}$ | Gate open | |
| V_{TM} | | | 2,2 | V | $T_J = 25^\circ\text{C}$ | $I_{TM} = 30 \text{ A}$ | | $t_p = 10 \text{ ms}$ |
| I_{DRM} | | | 5 | mA | $T_J = 125^\circ\text{C}$ | V_{DRM} specified | | |
| I_{RRM} | | | 5 | mA | $T_J = 125^\circ\text{C}$ | V_{RRM} specified | | |
| t_{gt} | | 2 | | μs | $T_J = 25^\circ\text{C}$ $I_G = 200 \text{ mA}$ | $I_T = 30 \text{ A}$ $di_G/dt = 2 \text{ A}/\mu\text{s}$ | $V_D = V_{DRM}$ | |
| t_q | | 100 | | μs | $T_J = 125^\circ\text{C}$ $di_R/dt = 30 \text{ A}/\mu\text{s}$ | $I_T = 10 \text{ A}$ $dv/dt = 20 \text{ V}/\mu\text{s}$ | $V_R = 30 \text{ V}$ | $V_D = 0,67 V_{DRM}$ Gate open |
| dv/dt^* | 100 | | | $\text{V}/\mu\text{s}$ | $T_J = 125^\circ\text{C}$ | Linear slope up to 0,67 V_{DRM} specified | | |

* For higher guaranteed values, please consult us.

CASE DESCRIPTION
DESCRIPTION DU BOITIER



Cooling method: by conduction (method C)
Marking: type number
Weight: $13,5 \pm 1 \text{ g}$
Polarity: anode to case
Stud torque: $3,5 \text{ m} \wedge \text{Nmin} - 3,8 \text{ m} \wedge \text{Nmax}$
Thread:
1/4'' - 28 UNF : type N°
M6 on request: type N° + suffix M

TO 48 metal (CB-267)

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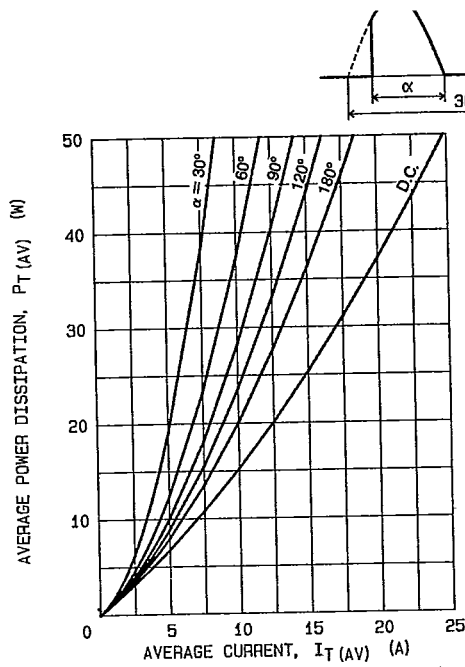


FIG. 1 - MAXIMUM ON-STATE POWER DISSIPATION FOR SINUSOIDAL CURRENT WAVEFORM

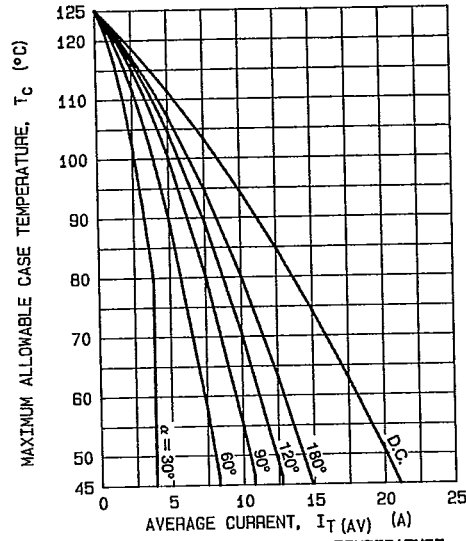


FIG. 2 - MAXIMUM ALLOWABLE CASE TEMPERATURE FOR SINUSOIDAL CURRENT WAVEFORM

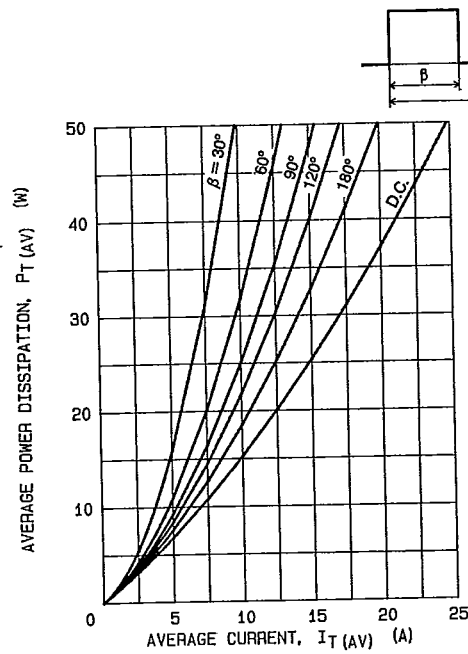


FIG. 3 - MAXIMUM ON-STATE POWER DISSIPATION FOR RECTANGULAR CURRENT WAVEFORM

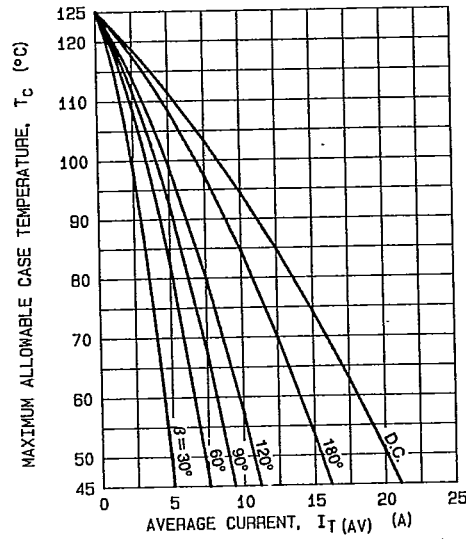


FIG. 4 - MAXIMUM ALLOWABLE CASE TEMPERATURE FOR RECTANGULAR CURRENT WAVEFORM

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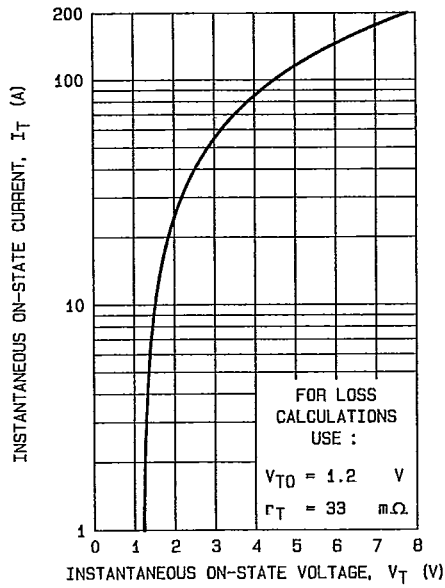


FIG.5 - MAXIMUM ON-STATE CONDUCTION CHARACTERISTIC ($T_J = 125^\circ\text{C}$).

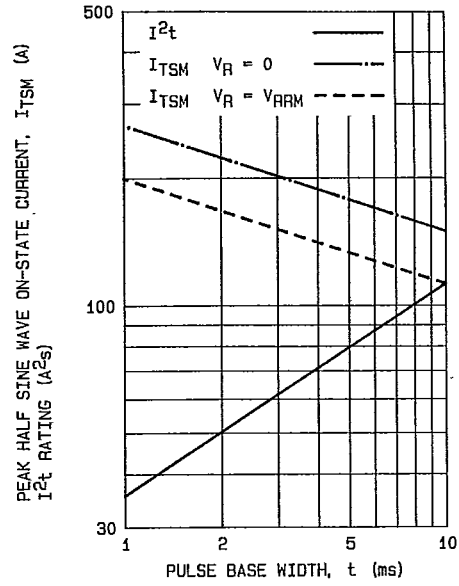


FIG.6 - NON REPETITIVE SUB-CYCLE SURGE ON-STATE CURRENT AND I^2t RATING (INITIAL $T_J = 125^\circ\text{C}$).

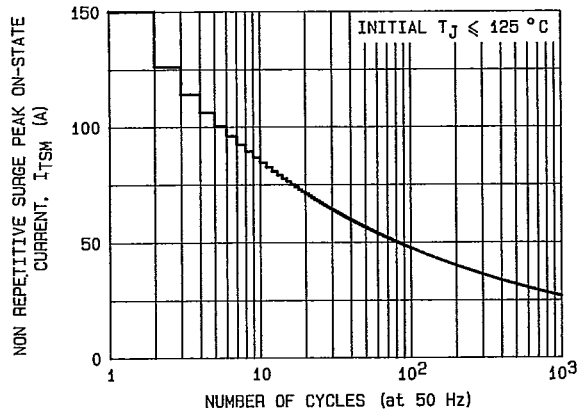


FIG.7 - NON REPETITIVE SURGE PEAK ON-STATE CURRENT VERSUS NUMBER OF CYCLES.

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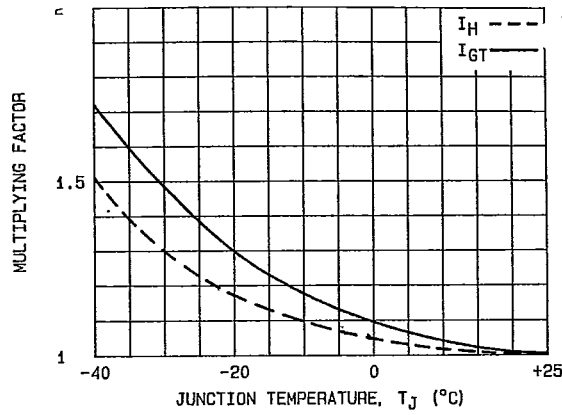


FIG.8 - RELATIVE VARIATION OF GATE TRIGGER CURRENT AND HOLDING CURRENT VERSUS JUNCTION TEMPERATURE.

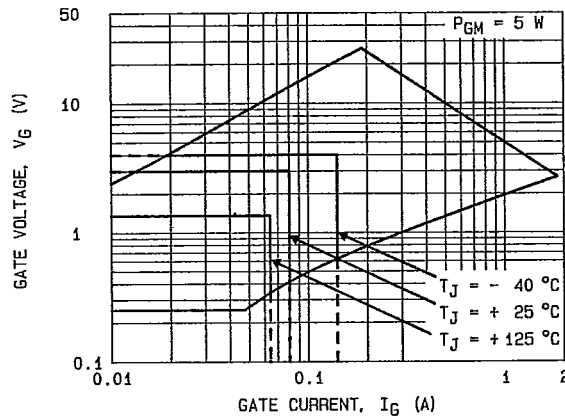
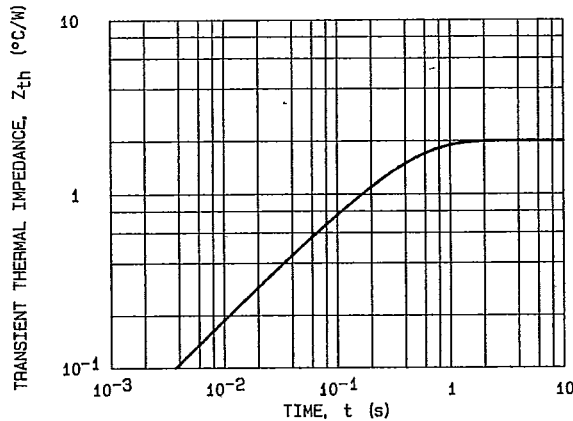


FIG.9 - GATE TRIGGER CHARACTERISTICS.



| Conduction angle (α, β) | Effective thermal resistance ($^{\circ}\text{C}/\text{W}$) junction to case | |
|--------------------------------------|---|-------------|
| | Sinusoidal | Rectangular |
| 180° | 2.23 | 2.18 |
| 120° | 2.31 | 3.09 |
| 90° | 2.47 | 3.50 |
| 60° | 2.88 | 3.91 |
| 30° | 3.71 | 4.94 |

FIG.10 - TRANSIENT THERMAL IMPEDANCE JUNCTION TO CASE.