

ALTERNISTORS

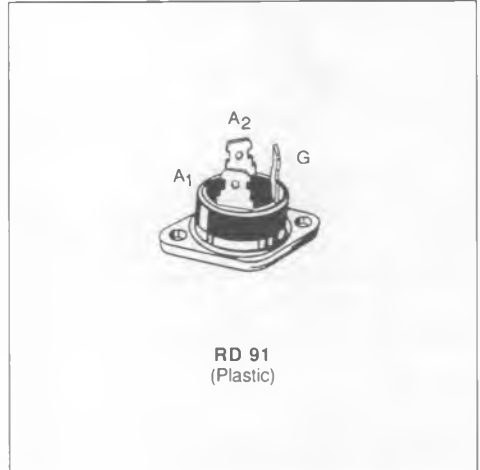
- $(di/dt)_c < 142 \text{ A/ms}$ (400 Hz)
- INSULATING VOLTAGE : 2500 V_{RMS}
($t \leq 1 \text{ mn}$ - $F = 50 \text{ Hz}$)
- UL RECOGNIZED (EB1734)

APPLICATIONS

- POWER CONTROL ON INDUCTIVE LOAD
(motor, transformer...)
- HIGH FREQUENCY OR HIGH $(di/dt)_c$ LEVEL
CIRCUITS

DESCRIPTION

New range of solid state AC - switches with very high commutating capability.


ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit |
|--------------------|--|-----------------------------------|-------------|------------------------|
| $I_{T(RMS)}$ | RMS on-state Current (360° conduction angle) | $T_C = 75 \text{ }^\circ\text{C}$ | 40 | A |
| I_{TSM} | Non Repetitive Surge Peak on-state Current | $t = 10 \text{ ms}$ | 350 | A |
| | | $t = 8.3 \text{ ms}$ | 370 | |
| | | $t = 2.5 \text{ ms}$ | 590 | |
| I^2t | I^2t Value for Fusing | $t = 10 \text{ ms}$ | 610 | A^2s |
| di/dt | Critical Rate of Rise of on-state Current (1) | | 100 | $\text{A}/\mu\text{s}$ |
| T_{stg} T_j | Storage and Operating Junction Temperature Range | | - 40 to 125 | $^\circ\text{C}$ |
| | | | - 40 to 125 | $^\circ\text{C}$ |

| Symbol | Parameter | TODV | | | | | | | Unit |
|-----------|---------------------------------------|------|-----|-----|-----|-----|------|------|------|
| | | 140 | 240 | 440 | 640 | 840 | 1040 | 1240 | |
| V_{DRM} | Repetitive Peak off-state Voltage (2) | 100 | 200 | 400 | 600 | 800 | 1000 | 1200 | V |

- (1) $I_G = 1.5 \text{ A}$ $di_c/dt = 1 \text{ A}/\mu\text{s}$
 (2) $T_j = 125 \text{ }^\circ\text{C}$.

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|--------------------------|--|-------|---------------------------|
| $R_{th(c-h)}$ | Contact (case-heatsink) with Grease | 0.1 | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)} \text{ DC}$ | Junction to Case for DC | 1.2 | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)} \text{ AC}$ | Junction to Case for 360° Conduction Angle ($F = 50 \text{ Hz}$) | 0.9 | $^\circ\text{C}/\text{W}$ |

GATE CHARACTERISTICS (maximum values)

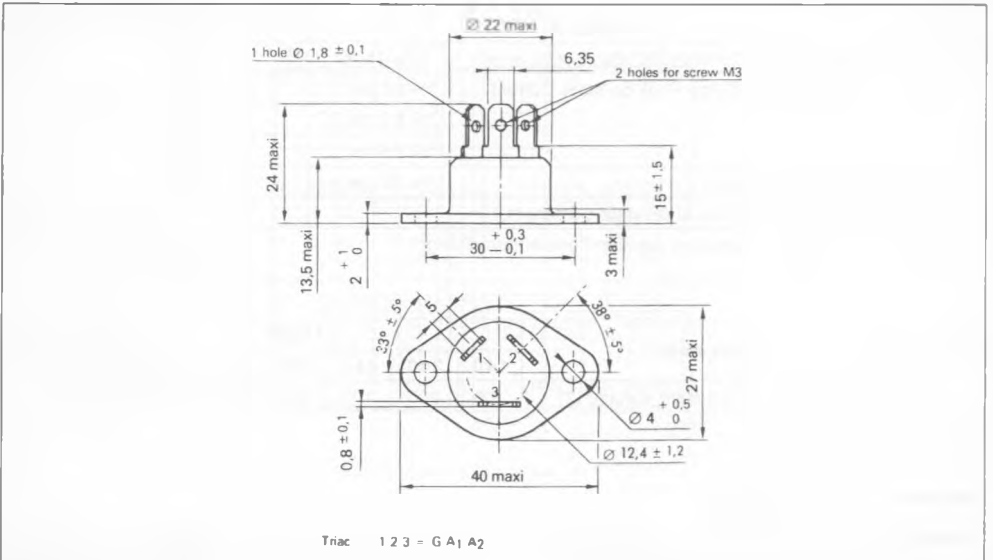
$P_{GM} = 40 \text{ W}$ ($t_p = 10 \mu\text{s}$) $I_{GM} = 8 \text{ A}$ ($t_p = 10 \mu\text{s}$)
 $P_{G(AV)} = 1 \text{ W}$ $V_{GM} = 16 \text{ V}$ ($t_p = 10 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | Quadrants | Min. | Typ. | Max. | Unit |
|---------------|---|---|------|------|------|------------------|
| I_{GT} | $T_j = 25 \text{ }^\circ\text{C}$ $V_D = 12 \text{ V}$ $R_L = 33 \text{ } \Omega$ Pulse Duration > 20 μs | I-II-III | | | 200 | mA |
| V_{GT} | $T_j = 25 \text{ }^\circ\text{C}$ $V_D = 12 \text{ V}$ $R_L = 33 \text{ } \Omega$ Pulse Duration > 20 μs | I-II-III | | | 1.5 | V |
| V_{GD} | $T_j = 125 \text{ }^\circ\text{C}$ $V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$ | I-II-III | 0.2 | | | V |
| I_H^* | $T_j = 25 \text{ }^\circ\text{C}$ $I_T = 500 \text{ mA}$ Gate Open | | | 50 | | mA |
| I_L | $T_j = 25 \text{ }^\circ\text{C}$ $V_D = 12 \text{ V}$ $I_G = 400 \text{ mA}$ Pulse Duration > 20 μs | I-III | | 50 | | mA |
| | | II | | 100 | | |
| V_{TM}^* | $T_j = 25 \text{ }^\circ\text{C}$ $I_{TM} = 60 \text{ A}$ $t_p = 10 \text{ ms}$ | | | | 1.8 | V |
| I_{DRM}^* | $T_j = 125 \text{ }^\circ\text{C}$ V_{DRM} Specified | | | | 8 | mA |
| dv/dt^* | $T_j = 125 \text{ }^\circ\text{C}$ Gate Open Linear Slope up to $V_D = 67\% V_{DRM}$ | $V_{DRM} \leq 800 \text{ V}$ | | 500 | | V/ μs |
| | | $V_{DRM} \geq 1000 \text{ V}$ | | 250 | | |
| $(di/dt)_c^*$ | $T_C = 75 \text{ }^\circ\text{C}$ $V_D = V_{DRM}$ $I_T = 60 \text{ A}$ | $(dv/dt)_c = 200 \text{ V}/\mu\text{s}$ | | 35 | | A/ms |
| | | $(dv/dt)_c = 10 \text{ V}/\mu\text{s}$ | | 142 | | |
| t_{gt} | $T_j = 25 \text{ }^\circ\text{C}$ $V_D = V_{DRM}$ $I_T = 60 \text{ A}$ $I_G = 0.5 \text{ A}$ $di_G/dt = 3.5 \text{ A}/\mu\text{s}$ | I-II-III | | 2.5 | | μs |

* For either polarity of electrode A_2 voltage with reference to electrode A_1 .

PACKAGE MECHANICAL DATA : RD 91 Plastic



Cooling method : by conduction (method C)
 Marking : type number
 Weight : 15 g

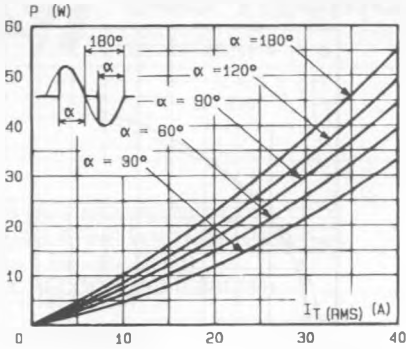


Fig.1 - Maximum mean power dissipation versus RMS on-state current.

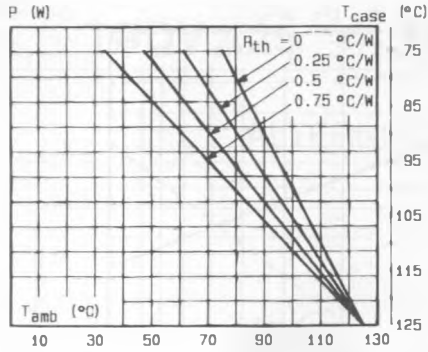


Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

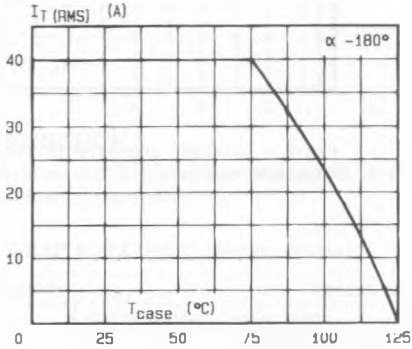


Fig.3 - RMS on-state current versus case temperature.

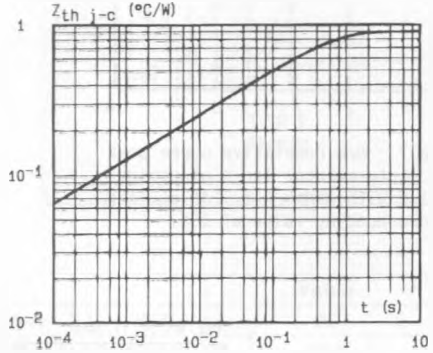


Fig.4 - Thermal transient impedance junction to case versus pulse duration.

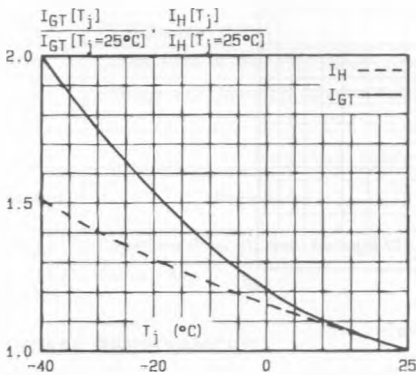


Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

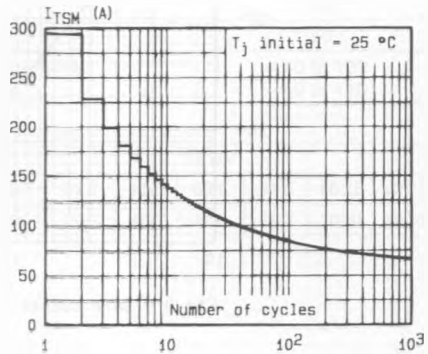


Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

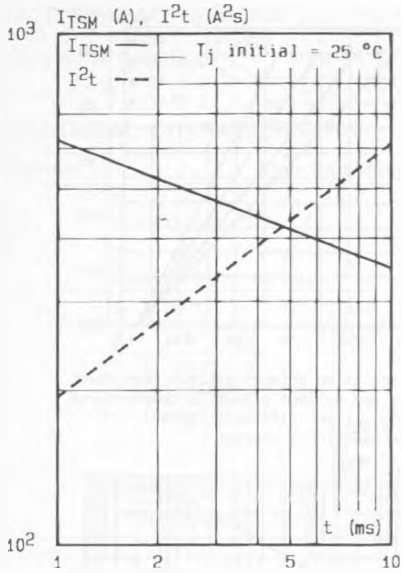


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

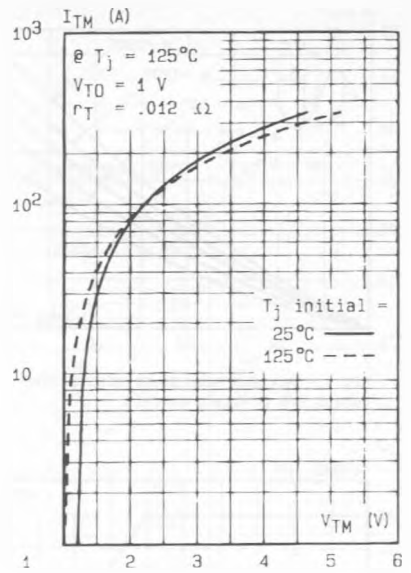


Fig.8 - On-state characteristics (maximum values).

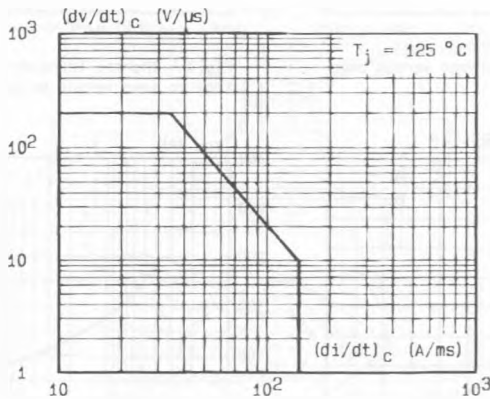


Fig.9 - Safe operating area.