

ALTERNISTORS

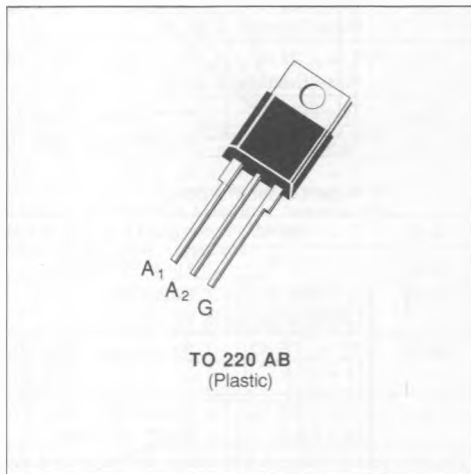
- $(di/dt)_c > 28 \text{ A/ms}$ (400 Hz)
- **INSULATING VOLTAGE** : 2500 V_{RMS}
($t \leq 1 \text{ mn}$ - $F = 50 \text{ Hz}$)
- **UL RECOGNIZED** (E81734)

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) | $T_C = 75 \text{ }^\circ\text{C}$ | 8 | A |
| I_{TSM} | Non Repetitive Surge Peak on-state Current | $t = 10 \text{ ms}$ | 80 | A |
| | | $t = 8.3 \text{ ms}$ | 85 | |
| | | $t = 2.5 \text{ ms}$ | 115 | |
| I^2t | I^2t Value for Fusing | $t = 10 \text{ ms}$ | 32 | A^2s |
| di/dt | Critical Rate of Rise of on-state Current (1) | | 100 | $\text{A}/\mu\text{s}$ |
| T_{stg} T_i | Storage and Operating Junction Temperature Range | | - 40 to 150 | $^\circ\text{C}$ |
| | | | - 40 to 110 | $^\circ\text{C}$ |

| Symbol | Parameter | TXDV | | | | Unit |
|-----------|---------------------------------------|------|-----|-----|-----|------|
| | | 208 | 408 | 608 | 808 | |
| V_{DRM} | Repetitive Peak off-state Voltage (2) | 200 | 400 | 600 | 800 | V |

- (1) $I_G = 1 \text{ A}$ $di_G/dt = 1 \text{ A}/\mu\text{s}$
 (2) $T_i = 110 \text{ }^\circ\text{C}$.

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|------------------|--|-------|---------------------------|
| $R_{th(j-a)}$ | Junction to Ambient | 60 | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)}$ DC | Junction to Case for DC | 4 | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-c)}$ AC | Junction to Case for 360° Conduction Angle ($F = 50 \text{ Hz}$) | 3 | $^\circ\text{C}/\text{W}$ |

GATE CHARACTERISTICS (maximum values)

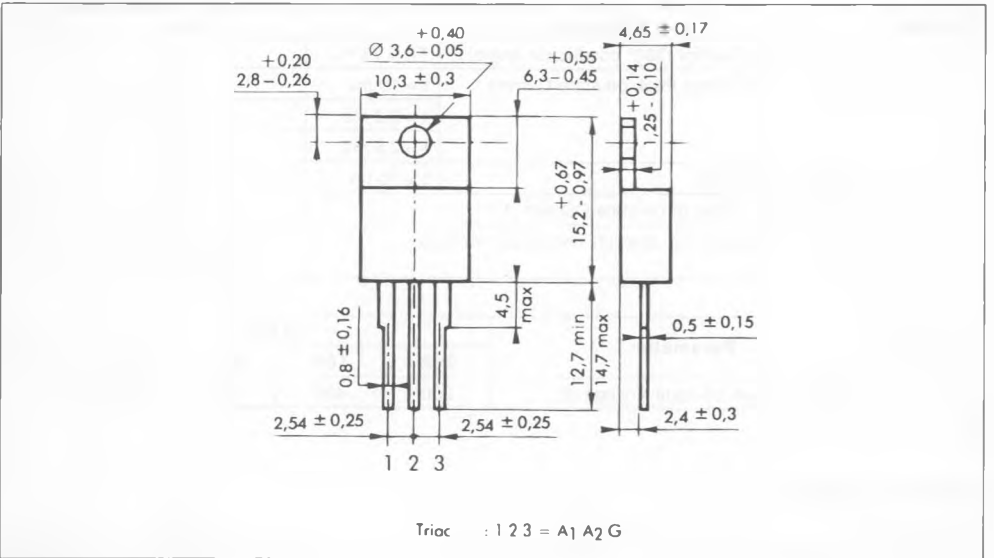
$P_{GM} = 40 \text{ W}$ ($t_p = 10 \mu\text{s}$) $I_{GM} = 4 \text{ A}$ ($t_p = 10 \mu\text{s}$)
 $P_{G(AV)} = 1 \text{ W}$ $V_{GM} = 16 \text{ V}$ ($t_p = 10 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

| Symbol | Test Conditions | | | Quadrants | Min. | Typ. | Max. | Unit |
|---------------|--|---------------------------------------|-----------------------------|-----------|------|------|---|------------------|
| I_{GT} | $T_j = 25 \text{ }^\circ\text{C}$ | $V_D = 12 \text{ V}$ | $R_L = 33 \text{ } \Omega$ | I-II-III | | | 100 | mA |
| | Pulse Duration > 20 μs | | | | | | | |
| V_{GT} | $T_j = 25 \text{ }^\circ\text{C}$ | $V_D = 12 \text{ V}$ | $R_L = 33 \text{ } \Omega$ | I-II-III | | | 1.5 | V |
| | Pulse Duration > 20 μs | | | | | | | |
| V_{GD} | $T_j = 110 \text{ }^\circ\text{C}$ | $V_D = V_{DRM}$ | $R_L = 3.3 \text{ k}\Omega$ | I-II-III | 0.2 | | | V |
| I_{H^*} | $T_j = 25 \text{ }^\circ\text{C}$ | $I_T = 500 \text{ mA}$ | Gate Open | | | | 100 | mA |
| I_L | $T_j = 25 \text{ }^\circ\text{C}$ | $V_D = 12 \text{ V}$ | $I_G = 200 \text{ mA}$ | I-III | | 100 | | mA |
| | | | | II | | 200 | | |
| V_{TM}^* | $T_j = 25 \text{ }^\circ\text{C}$ | $I_{TM} = 11 \text{ A}$ | $t_D = 10 \text{ ms}$ | | | | 1.8 | V |
| I_{DRM}^* | $T_j = 110 \text{ }^\circ\text{C}$ | V_{DRM} Specified | | | | | 2 | mA |
| dv/dt^* | $T_j = 110 \text{ }^\circ\text{C}$ | Gate Open | | | 500 | | | V/ μs |
| | Linear Slope up to $V_D = 67 \% V_{DRM}$ | | | | | | | |
| $(di/dt)_c^*$ | $T_C = 75 \text{ }^\circ\text{C}$ | $V_D = V_{DRM}$ | $I_T = 11 \text{ A}$ | | | | 7 | A/ms |
| | | | | | | | $(dv/dt)_c = 200 \text{ V}/\mu\text{s}$ | 28 |
| | $(dv/dt)_c = 10 \text{ V}/\mu\text{s}$ | | | | | | | |
| t_{gt} | $T_j = 25 \text{ }^\circ\text{C}$ | $V_D = V_{DRM}$ | $I_T = 11 \text{ A}$ | I-II-III | | 2.5 | | μs |
| | $I_G = 0.5 \text{ A}$ | $di_G/dt = 3.5 \text{ A}/\mu\text{s}$ | | | | | | |

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

PACKAGE MECHANICAL DATA : TO 220 AB Plastic



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

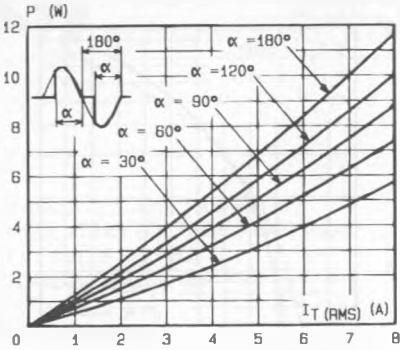


Fig. 1 - Maximum mean power dissipation versus RMS on-state current.

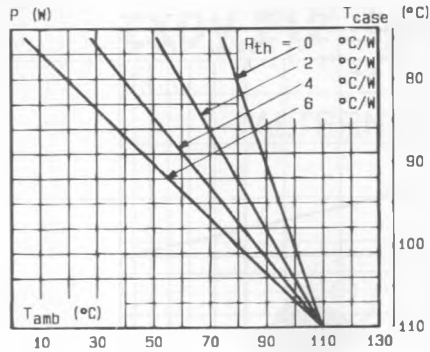


Fig. 2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.

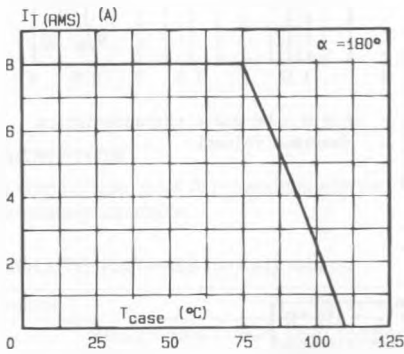


Fig. 3 - RMS on-state current versus case temperature.

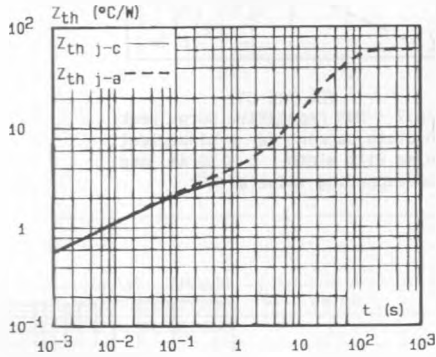


Fig. 4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

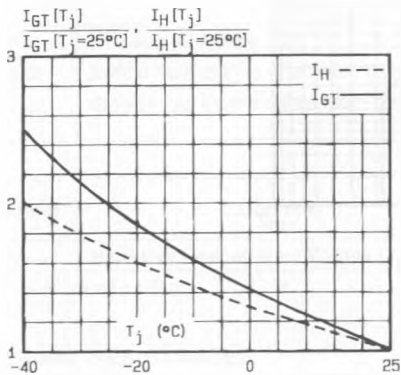


Fig. 5 - Relative variation of gate trigger current and holding current versus junction temperature.

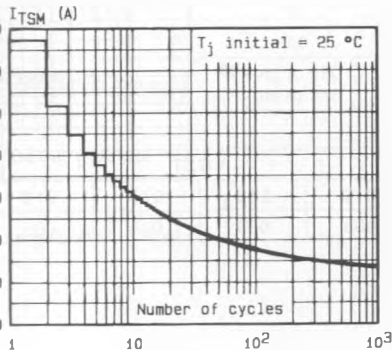


Fig. 6 - Non repetitive surge peak on-state current versus number of cycles.

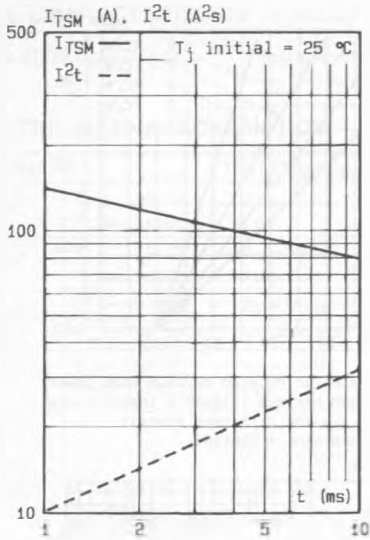


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width : $t \leq 10$ ms, and corresponding value of I^2t .

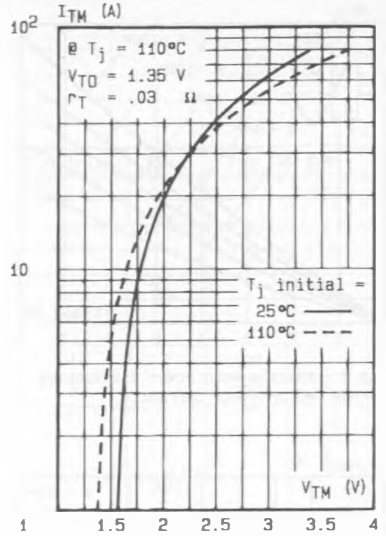


Fig.8 - Un-state characteristics (maximum values).

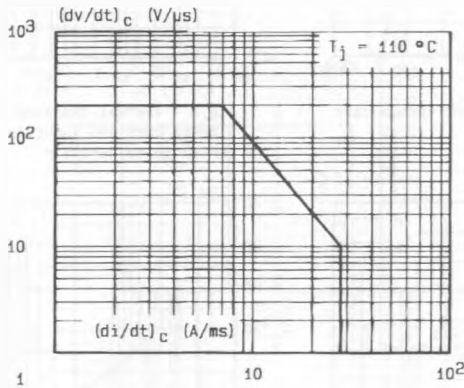


Fig.9 - Safe operating area.