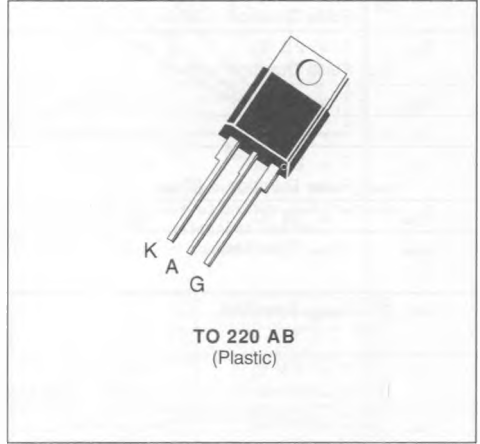




**THYRISTORS**

- GLASS PASSIVATED CHIP
- POSSIBILITY OF MOUNTING ON PRINTED CIRCUIT
- AVAILABLE IN NON-INSULATED VERSION → TYN SERIES OR IN INSULATED VERSION → TXN SERIES (INSULATING VOLTAGE 2500 V<sub>RMS</sub>)
- UL RECOGNIZED FOR TXN SERIES (E81734)



**DESCRIPTION**

SCR's designed for motor control, heating controls, power supplies...

**ABSOLUTE RATINGS** (limiting values)

| Symbol             | Parameter   |                    | Value       | Unit             |
|--------------------|---|--------------------|-------------|------------------|
| $I_{T(RMS)}$       | RMS on-state Current (1)  | $T_c = 80^\circ C$ | 6           | A                |
| $I_{T(AV)}$        | Mean on-state Current (1)   | $T_c = 80^\circ C$ | 3.8         | A                |
| $I_{TSM}$          | Non Repetitive Surge Peak on-state Current ( $T_j$ initial = $25^\circ C$ ) (2) | $t = 8.3$ ms       | 84          | A                |
|                    |   | $t = 10$ ms        | 80          |                  |
| $I^2t$             | $I^2t$ Value for Fusing   | $t = 10$ ms        | 32          | A <sup>2</sup> s |
| di/dt              | Critical Rate of Rise of on-state Current (3)                                   |                    | 50          | A/ $\mu$ s       |
| $T_{stg}$<br>$T_j$ | Storage and Operating Junction Temperature Range                                |                    | - 40 to 110 | $^\circ C$       |
|                    |   |                    | - 40 to 110 | $^\circ C$       |

| Symbol                 | Parameter                             | TXN/TYN |     |     |     |     |     | Unit |      |
|------------------------|---------------------------------------|---------|-----|-----|-----|-----|-----|------|------|
|                        |                                       | 056     | 106 | 206 | 406 | 606 | 806 |      | 1006 |
| $V_{DRM}$<br>$V_{RRM}$ | Repetitive Peak off-state Voltage (4) | 50      | 100 | 200 | 400 | 600 | 800 | 1000 | V    |

(1) Single phase circuit, 180° conduction angle.

(2) Half sine wave.

(3)  $I_G = 150$  mA     $di/dt = 1$  A/ $\mu$ s.

(4)  $T_j = 110^\circ C$ .

**THERMAL RESISTANCES**

| Symbol        | Parameter              | Value | Unit         |
|---------------|------------------------|-------|--------------|
| $R_{th(j-c)}$ | Junction-case for D.C. | 5     | $^\circ C/W$ |
| $R_{th(j-a)}$ | Junction-ambient       | 60    | $^\circ C/W$ |

**GATE CHARACTERISTICS** (maximum values)

$P_{GM} = 20 \text{ W}$  ( $t_p = 20 \mu\text{s}$ )

$I_{FGM} = 2 \text{ A}$  ( $t_p = 20 \mu\text{s}$ )

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

$P_G(AV) = 0.5 \text{ W}$

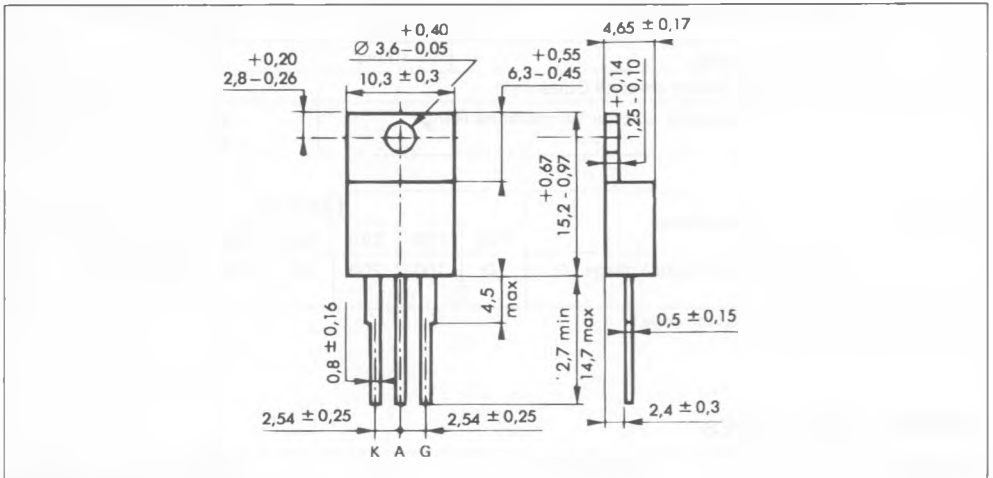
$V_{FGM} = 15 \text{ V}$  ( $t_p = 20 \mu\text{s}$ )

**ELECTRICAL CHARACTERISTICS**

| Symbol    | Test Conditions  |  |  | Min.                               | Typ. | Max. | Unit             |
|-----------|--|--|--|------------------------------------|------|------|------------------|
| $I_{GT}$  | $T_j = 25 \text{ }^\circ\text{C}$<br>Pulse Duration > 20 $\mu\text{s}$         | $V_D = 12 \text{ V}$                                       | $R_L = 33 \text{ } \Omega$                                 |                                    |      | 15   | mA               |
| $V_{GT}$  | $T_j = 25 \text{ }^\circ\text{C}$<br>Pulse Duration > 20 $\mu\text{s}$         | $V_D = 12 \text{ V}$                                       | $R_L = 33 \text{ } \Omega$                                 |                                    |      | 1.5  | V                |
| $V_{GD}$  | $T_j = 110 \text{ }^\circ\text{C}$   | $V_D = V_{DRM}$  | $R_L = 3.3 \text{ k}\Omega$                                | 0.2                                |      |      | V                |
| $I_H$     | $T_j = 25 \text{ }^\circ\text{C}$  | $I_T = 100 \text{ mA}$                                     | Gate Open  |                                    |      | 30   | mA               |
| $I_L$     | $T_j = 25 \text{ }^\circ\text{C}$<br>Pulse Duration > 20 $\mu\text{s}$         | $V_D = 12 \text{ V}$                                       | $I_G = 30 \text{ mA}$                                      |                                    | 50   |      | mA               |
| $V_{TM}$  | $T_j = 25 \text{ }^\circ\text{C}$  | $I_{TM} = 12 \text{ A}$                                    | $t_p = 10 \text{ ms}$                                      |                                    |      | 1.6  | V                |
| $I_{DRM}$ | $V_{DRM}$ Specified  |  |  | $T_j = 25 \text{ }^\circ\text{C}$  |      | 0.01 | mA               |
|           |  |  |  | $T_j = 110 \text{ }^\circ\text{C}$ |      | 1    |                  |
| $I_{RRM}$ | $V_{RRM}$ Specified  |  |  | $T_j = 25 \text{ }^\circ\text{C}$  |      | 0.01 | mA               |
|           |  |  |  | $T_j = 110 \text{ }^\circ\text{C}$ |      | 1    |                  |
| $t_{g1}$  | $T_j = 25 \text{ }^\circ\text{C}$<br>$I_G = 40 \text{ mA}$                     | $V_D = V_{DRM}$<br>$di_G/dt = 0.45 \text{ A}/\mu\text{s}$  | $I_T = 12 \text{ A}$                                       |                                    | 2    |      | $\mu\text{s}$    |
| $t_q$     | $T_j = 110 \text{ }^\circ\text{C}$<br>$V_D = 67 \% V_{DRM}$<br>Gate Open       | $I_T = 12 \text{ A}$<br>$di/dt = 30 \text{ A}/\mu\text{s}$ | $V_R = 25 \text{ V}$<br>$dv/dt = 50 \text{ V}/\mu\text{s}$ |                                    | 70   |      | $\mu\text{s}$    |
| $dv/dt^*$ | $T_j = 110 \text{ }^\circ\text{C}$<br>Linear Slope up to $V_D = 67 \% V_{DRM}$ | Gate Open  |  | 200                                |      |      | V/ $\mu\text{s}$ |

\* For higher guaranteed values, please consult us.

**PACKAGE MECHANICAL DATA : TO 220 AB Plastic**



Cooling method : by conduction (method C)

Marking : type number

Weight : 2 g

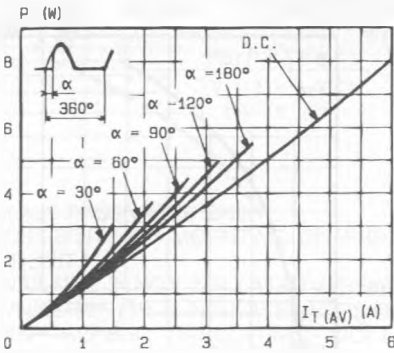


Fig. 1 - Maximum mean power dissipation versus mean on-state current.

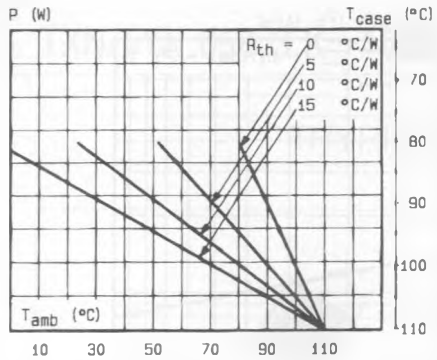


Fig. 2 - Correlation between maximum mean power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.

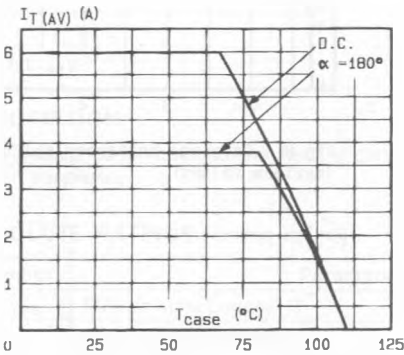


Fig. 3 - Mean on-state current versus case temperature.

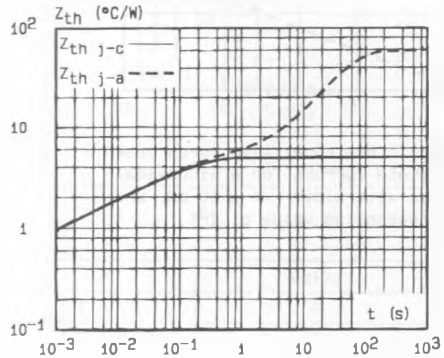


Fig. 4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

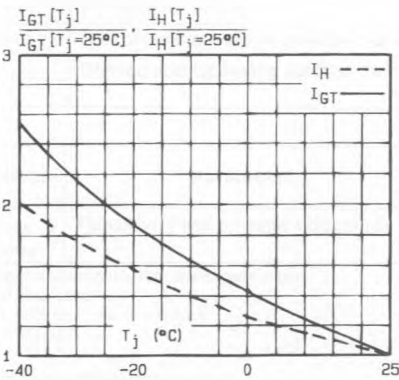


Fig. 5 - Relative variation of gate trigger current and holding current versus junction temperature.

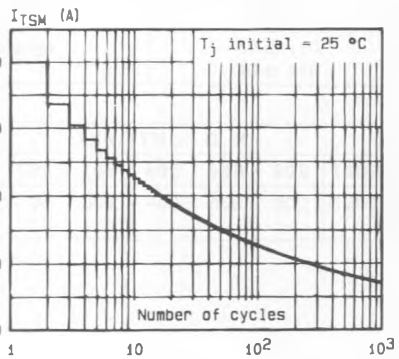


Fig. 6 - Non repetitive surge peak on-state current versus number of cycles.

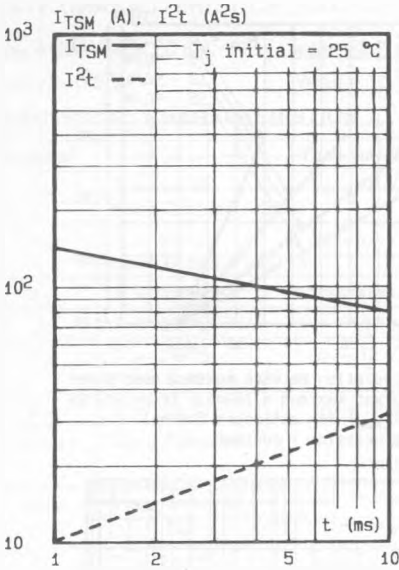


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .

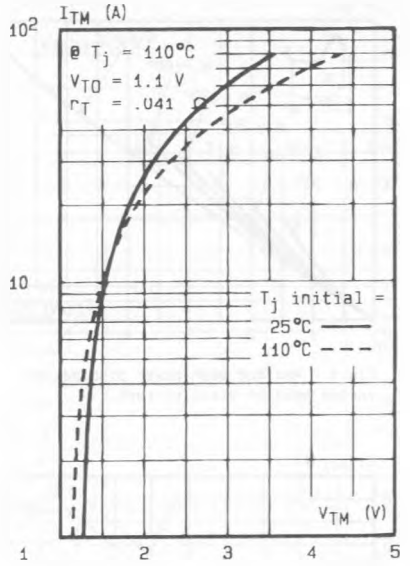


Fig.8 - On-state characteristics (maximum values).