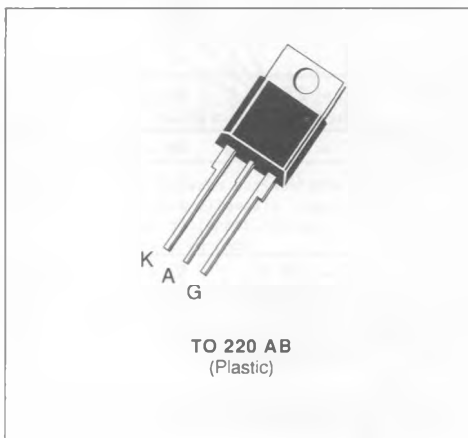




THYRISTORS

- 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)                                                | $T_c = 75\text{ }^\circ\text{C}$<br>8 | A                |
| $I_{T(AV)}$        | Mean on-state Current (1)                                               | $T_c = 75\text{ }^\circ\text{C}$<br>5 | A                |
| $I_{TSM}$          | Non Repetitive Surge Peak on-state Current ( $T_j$ initial = 25 °C) (2) | $t = 8.3\text{ ms}$                   | 84               |
|                    |                                                                         | $t = 10\text{ ms}$                    | 80               |
| $I^2t$             | $I^2t$ Value for Fusing                                                 | $t = 10\text{ ms}$<br>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<br>- 40 to 110            | °C<br>°C         |

| Symbol                 | Parameter                             | TXN/TYN ..., G, K |     |     |     |     |     |      | Unit |
|------------------------|---------------------------------------|-------------------|-----|-----|-----|-----|-----|------|------|
|                        |                                       | 058               | 108 | 208 | 408 | 608 | 808 | 1008 |      |
| $V_{DRM}$<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)  $I_G = 400\text{ mA}$   $di/dt = 1\text{ A}/\mu\text{s}$

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

**THERMAL RESISTANCES**

| Symbol        | Parameter              | Value | Unit |
|---------------|------------------------|-------|------|
| $R_{th(j-c)}$ | Junction-case for D.C. | 4.7   | °C/W |
| $R_{th(j-a)}$ | Junction-ambient       | 60    | °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 $\mu\text{s}$                            | $V_D = 12 \text{ V}$                                       | $R_L = 33 \text{ } \Omega$  | Without Suffix                     |      | 15   | mA               |
|           |                                                                                                   |                                                            |                             | Suffix G                           |      | 25   |                  |
|           |                                                                                                   |                                                            |                             | Suffix K                           |      | 40   |                  |
| $V_{GT}$  | $T_j = 25 \text{ }^\circ\text{C}$<br>Pulse Duration > 20 $\mu\text{s}$                            | $V_D = 12 \text{ V}$                                       | $R_L = 33 \text{ } \Omega$  |                                    |      | 1.5  | V                |
| $V_{GD}$  | $T_i = 110 \text{ }^\circ\text{C}$                                                                | $V_D = V_{DRM}$                                            | $R_L = 3.3 \text{ k}\Omega$ | 0.2                                |      |      | V                |
| $I_H$     | $T_j = 25 \text{ }^\circ\text{C}$                                                                 | $I_T = 100 \text{ mA}$                                     | Gate Open                   | Without Suffix                     |      | 30   | mA               |
|           |                                                                                                   |                                                            |                             | Suffix G                           |      | 45   |                  |
|           |                                                                                                   |                                                            |                             | Suffix K                           |      | 60   |                  |
| $I_L$     | $T_j = 25 \text{ }^\circ\text{C}$<br>Pulse Duration > 20 $\mu\text{s}$                            | $V_D = 12 \text{ V}$                                       | $I_G = 80 \text{ mA}$       |                                    | 50   |      | mA               |
| $V_{TM}$  | $T_j = 25 \text{ }^\circ\text{C}$                                                                 | $I_{TM} = 16 \text{ A}$                                    | $t_p = 10 \text{ ms}$       |                                    |      | 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    |                  |
| $t_{gt}$  | $T_j = 25 \text{ }^\circ\text{C}$<br>$I_G = 40 \text{ mA}$                                        | $V_D = V_{DRM}$<br>$di_G/dt = 0.45 \text{ A}/\mu\text{s}$  |                             | $I_T = 16 \text{ A}$               | 2    |      | $\mu\text{s}$    |
| $t_q$     | $T_j = 110 \text{ }^\circ\text{C}$<br>$V_D = 67 \% V_{DRM}$<br>$dv/dt = 50 \text{ V}/\mu\text{s}$ | $I_T = 16 \text{ A}$<br>$di/dt = 30 \text{ A}/\mu\text{s}$ |                             | $V_R = 25 \text{ V}$<br>Gate Open  | 70   |      | $\mu\text{s}$    |
| $dv/dt^*$ | $T_j = 110 \text{ }^\circ\text{C}$<br>Gate Open<br>Linear Slope up to $V_D = 67 \% V_{DRM}$       |                                                            |                             | Without Suffix                     | 200  |      | V/ $\mu\text{s}$ |
|           |                                                                                                   |                                                            |                             | Suffix G                           | 500  |      |                  |
|           |                                                                                                   |                                                            |                             | Suffix K                           | 750  |      |                  |

\* For higher guaranteed values, please consult us.

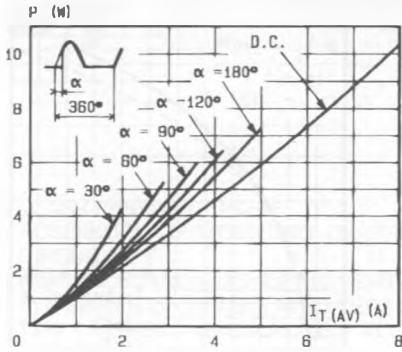


Fig. 1 - Maximum mean power dissipation versus mean on-state current.

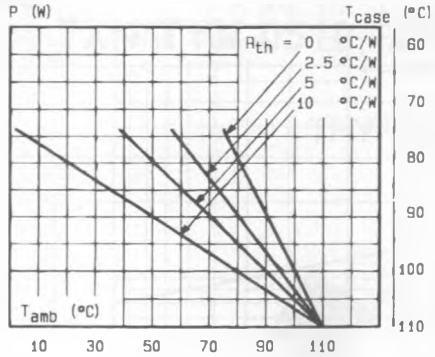


Fig. 2 - Correlation between maximum mean power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.

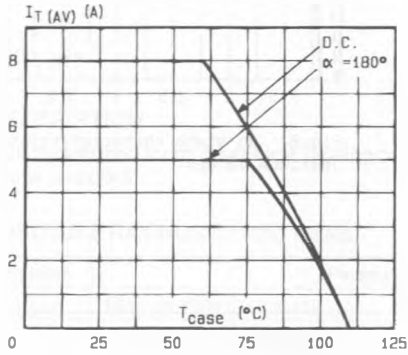


Fig. 3 - Mean on-state current versus case temperature.

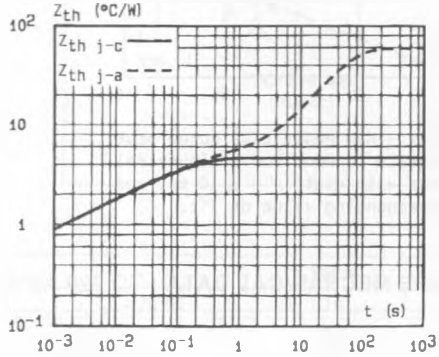


Fig. 4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

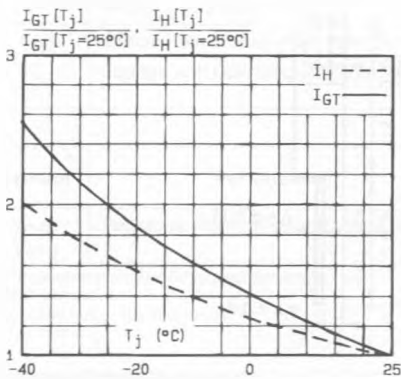


Fig. 5 - Relative variation of gate trigger current and holding current versus junction temperature.

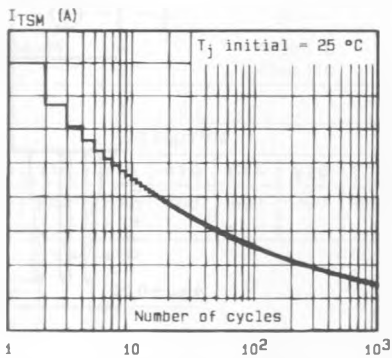


Fig. 6 - Non repetitive surge peak on-state current versus number of cycles.

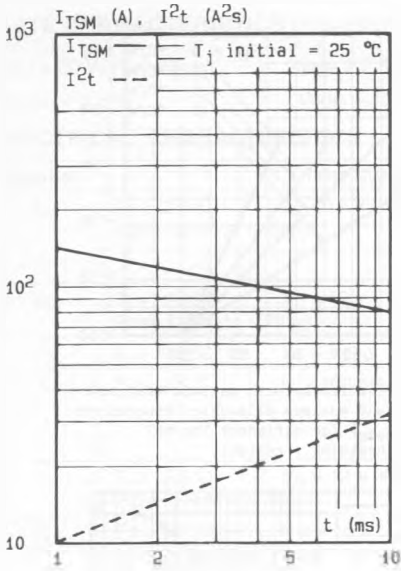


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .

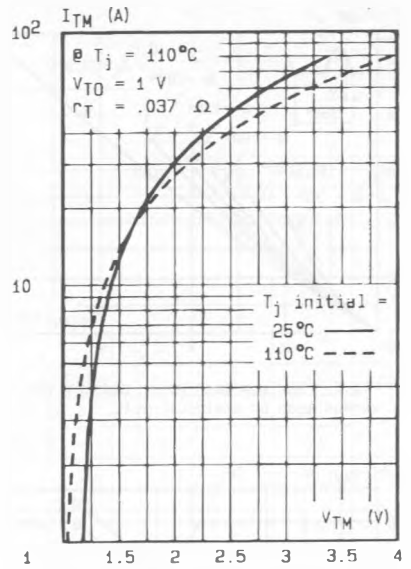
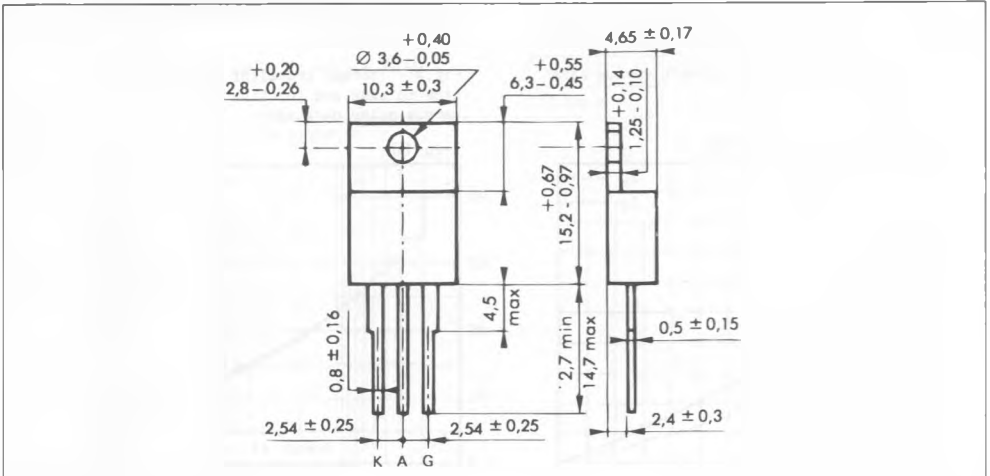


Fig.8 - On-state characteristics (maximum values).

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



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