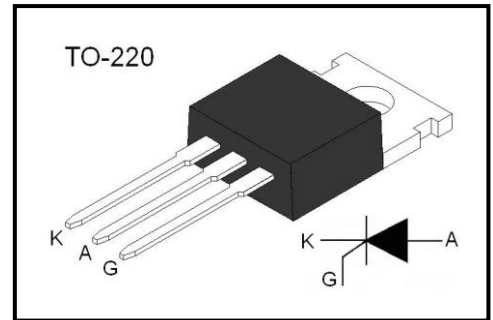


### General Description

Glasspassivated thyristors in a plastic envelope, intended for use in applications requiring high bidirectional blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.



### Quick Reference Data

| Parameter                            | Symbol       | Max  |      |      | Unit |
|--------------------------------------|--------------|------|------|------|------|
|                                      |              | 500R | 600R | 800R |      |
| Repetitive peak off-stat             | $V_{DRM}$    | 500  | 600  | 800  | V    |
| Average on-state current             | $I_T (AV)$   | 7.5  |      |      | A    |
| RMS on-state current                 | $I_{T(RMS)}$ | 12   |      |      | A    |
| Non-repetitive peak on-state current | $I_{TSM}$    | 100  |      |      | A    |

### Absolute Maximum Rating

| Parameter                            | Symbol              | Conditions                             |                        | Min. | Max.       |     |     | Unit              |
|--------------------------------------|---------------------|----------------------------------------|------------------------|------|------------|-----|-----|-------------------|
| Repetitive peak                      | V <sub>DRM</sub>    |                                        |                        |      | 500        | 600 | 800 | V                 |
| Off-state voltages                   | V <sub>RRM</sub>    |                                        |                        |      | 500        | 600 | 800 | V                 |
| Average on-state current             | I <sub>T(AV)</sub>  | half sine wave; Tmb ≤ 109 °C           |                        |      | 7.5        |     |     | A                 |
| RMS on-state current                 | I <sub>T(RMS)</sub> | all conduction angles                  |                        |      | 12         |     |     | A                 |
| Non-repetitive peak on-state current | I <sub>TSM</sub>    | half sine wave; Tj=25°C prior to surge | t = 10 ms<br>t = 8.3ms |      | 100<br>110 |     |     | A                 |
| I <sup>2</sup> t for fusing          | I <sup>2</sup> t    | t = 10 ms                              |                        |      | 50         |     |     | A <sup>2</sup> /s |
| Peak gate current                    | I <sub>GM</sub>     |                                        |                        |      | 2          |     |     | A                 |
| Average gate power                   | P <sub>G(AV)</sub>  | over any 20 ms period                  |                        |      | 5          |     |     | W                 |
| Operating Junction Temperature       | Tj                  |                                        |                        |      | 125        |     |     | °C                |
| Storage Temperature                  | Tstg                |                                        |                        |      | −40 ~ 150  |     |     | °C                |

### Electrical Characteristics ( $T_j = 25^\circ\text{C}$ unless otherwise stated)

| Parameter                 | Symbol     | Conditions                                                                                                            | Min       | Typ | Max      | Unit |
|---------------------------|------------|-----------------------------------------------------------------------------------------------------------------------|-----------|-----|----------|------|
| Gate trigger current      | $I_{GT}$   | $V_D = 12\text{ V}; I_T = 0.1\text{ A}$                                                                               |           |     | 15       | mA   |
| Latching current          | $I_H$      | $V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$                                                                            |           |     | 40       | mA   |
| Holding current           | $I_H$      | $V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$                                                                            |           |     | 20       | mA   |
| On-state voltage          | $V_T$      | $I_T = 23\text{ A}$                                                                                                   |           |     | 1.75     | V    |
| Gate Trigger Voltage      | $V_{GT}$   | $V_D = 12\text{ V}; I_T = 0.1\text{ A}$<br>$V_D = V_{DRM(max)}\text{ V}; I_T = 0.1\text{ A}; T_j = 125^\circ\text{C}$ | -<br>0.25 |     | 1.5<br>- | V    |
| Off-state leakage current | $I_D, I_R$ | $V_D = V_{DRM(max)}; V_D = V_{RRM(max)}; T_j = 125^\circ\text{C}$                                                     | -         |     | 0.5      | mA   |

## Typical Characteristics

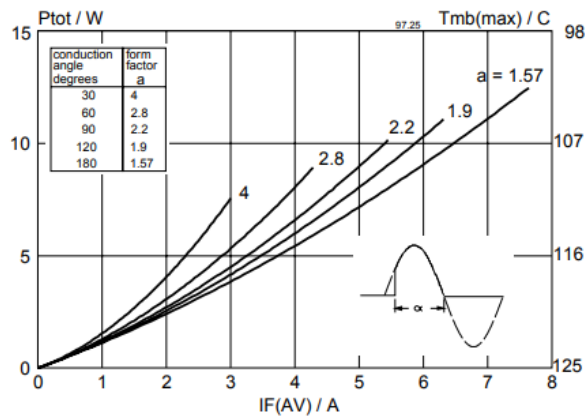


Fig.1. Maximum on-state dissipation,  $P_{tot}$ , vs  $I_T(AV)$ , where  $a = \text{form factor} = I_{T(RMS)} / I_{T(AV)}$

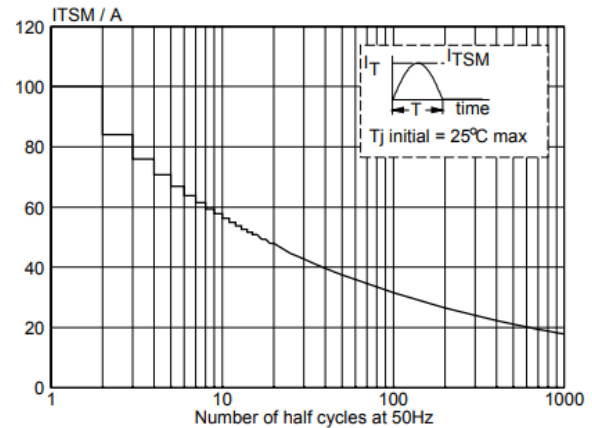


Fig.2. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , vs number of cycles, for sinusoidal currents,  $f = 50$  Hz.

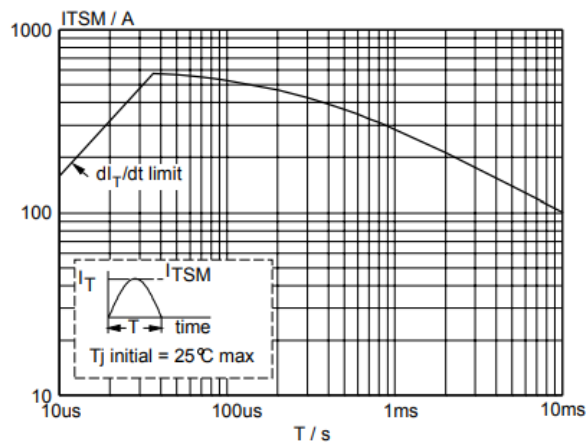


Fig.3. Maximum permissible non-repetitive peak on-state current  $I_{TSM}$ , vs pulse width  $t_p$ , for sinusoidal currents,  $t_p \leq 10$  ms

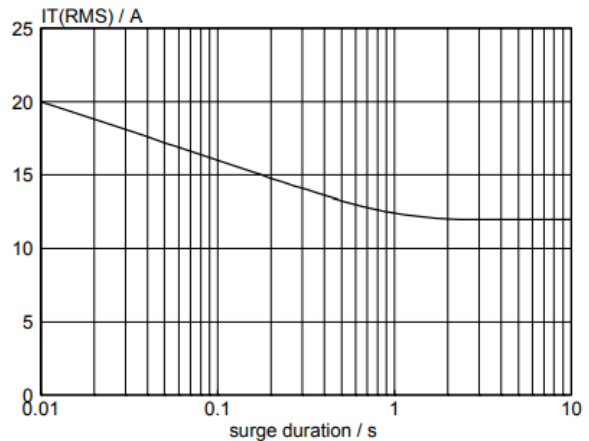


Fig.4. Maximum permissible repetitive rms on-state current  $I_{T(RMS)}$ , vs surge duration, for sinusoidal currents,  $f = 50$  Hz;  $T_{mb} \leq 103^\circ\text{C}$ .

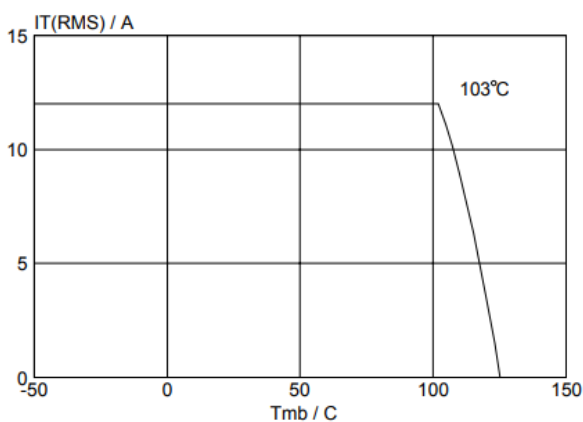


Fig.5. Maximum permissible rms current  $I_{T(RMS)}$ , vs mounting base temperature  $T_{mb}$ .

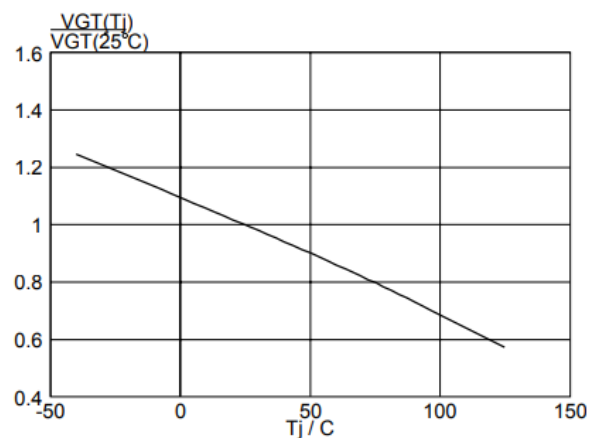


Fig.6. Normalised gate trigger voltage  $V_{GT}(T_j) / V_{GT}(25^\circ\text{C})$ , vs  $T_j$ .

## Typical Characteristics

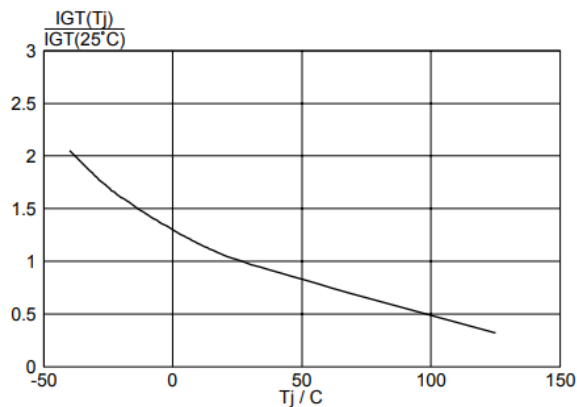


Fig.7. Normalised gate trigger current  $I_{GT}(T_j) / I_{GT}(25^\circ\text{C})$ , vs  $T_j$ .

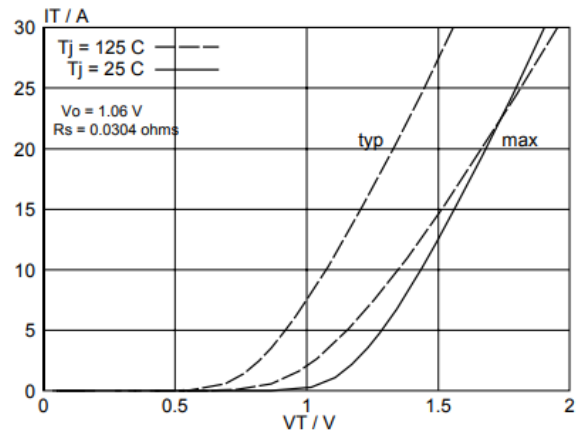


Fig.8. Typical and maximum on-state characteristic.

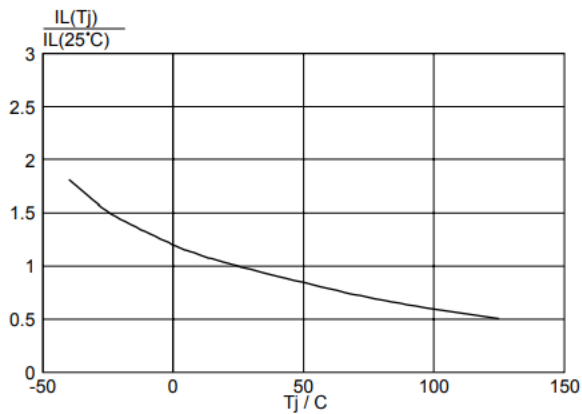


Fig.9. Normalised latching current  $I_L(T_j) / I_L(25^\circ\text{C})$ , vs  $T_j$ .

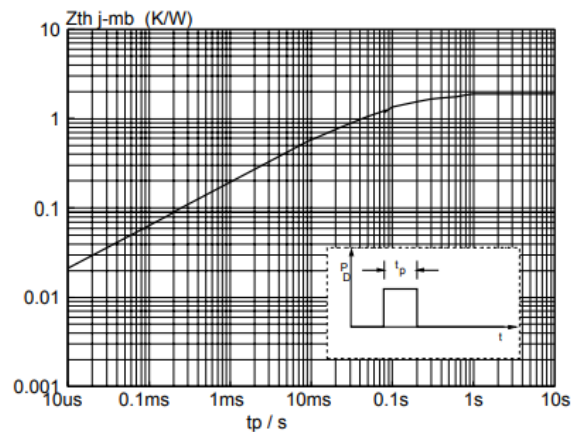


Fig.10. Transient thermal impedance  $Z_{th j-mb}$ , vs pulse width  $t_p$ .

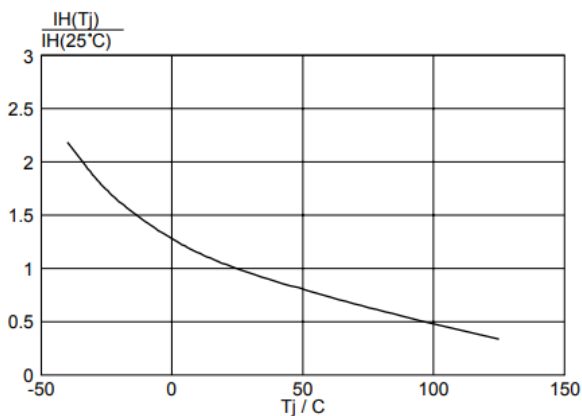


Fig.11. Normalised holding current  $I_H(T_j) / I_H(25^\circ\text{C})$ , vs  $T_j$ .

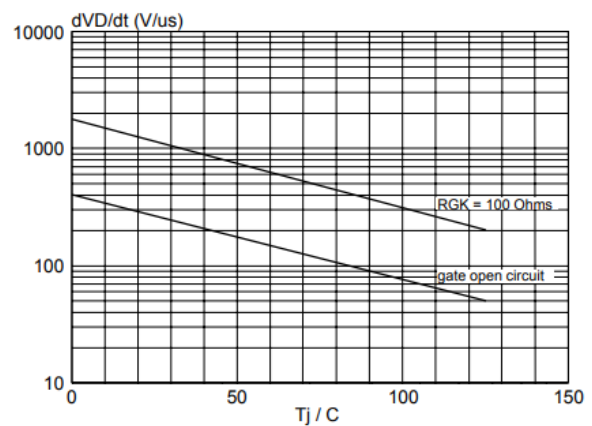


Fig.12. Typical, critical rate of rise of off-state voltage,  $dV_D/dt$  vs  $T_j$ .

## Package Dimensions

| Diml | Millimeter |       | Inches |       |
|------|------------|-------|--------|-------|
|      | Min.       | Max.  | Min.   | Max.  |
| A    | 4.34       | 4.67  | 0.171  | 0.184 |
| A1   | 2.52       | 2.82  | 0.099  | 0.111 |
| b    | 0.71       | 0.91  | 0.028  | 0.036 |
| b1   | 1.17       | 1.37  | 0.046  | 0.054 |
| c    | 0.30       | 0.50  | 0.012  | 0.020 |
| c1   | 1.17       | 1.37  | 0.046  | 0.054 |
| D    | 9.90       | 10.20 | 0.390  | 0.402 |
| E    | 8.50       | 8.90  | 0.335  | 0.350 |
| E1   | 12.00      | 12.50 | 0.472  | 0.492 |
| e    | 2.44       | 2.64  | 0.096  | 0.104 |
| e1   | 4.88       | 5.28  | 0.192  | 0.208 |
| F    | 2.60       | 2.80  | 0.102  | 0.110 |
| L    | 13.20      | 13.80 | 0.520  | 0.543 |
| L1   | 3.80       | 4.20  | 0.150  | 0.165 |
| Φ    | 3.60       | 3.96  | 0.142  | 0.156 |