

## Silicon Planar PNP Thyristor (12A SCR)

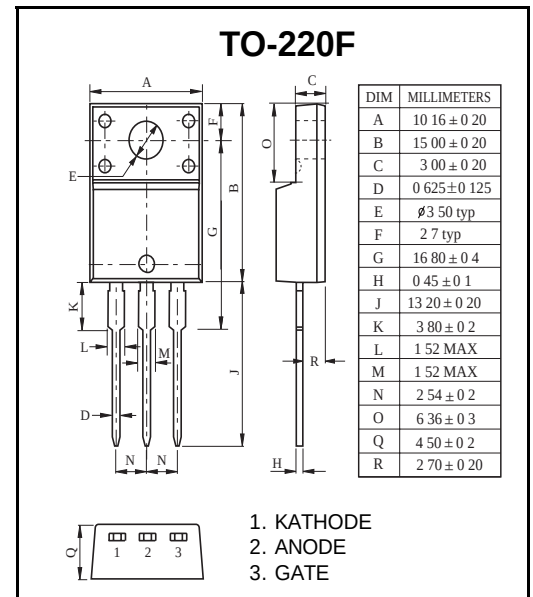
### MAIN FEATURES

| Symbol            | value | unit |
|-------------------|-------|------|
| $I_{T(RMS)}$      | 12    | A    |
| $V_{DRM}/V_{RRM}$ | 600   | V    |
| $I_{TSM}$         | 120   | A    |



### GENERAL DESCRIPTION

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



### ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

| symbol       | parameter                                                                            |         |                         | value       | unit             |
|--------------|--------------------------------------------------------------------------------------|---------|-------------------------|-------------|------------------|
| $I_{T(RMS)}$ | RMS on-state current (full sine wave)                                                | TO-220F | $T_C=90^\circ\text{C}$  | 12          | A                |
| $I_{TSM}$    | Non repetitive surge peak on-state current (full sine wave, $T_J=25^\circ\text{C}$ ) |         | $t=10\text{ms}$         | 120         | A                |
|              |                                                                                      |         | $t=8.3\text{ms}$        | 130         |                  |
| $I_{GM}$     | Peak gate current                                                                    |         |                         | 4           | A                |
| $P_{G(AV)}$  | Average gate power dissipation                                                       |         | $T_J=125^\circ\text{C}$ | 0.5         | W                |
| $T_{stg}$    | Storage junction temperature range                                                   |         |                         | -40 to +150 | $^\circ\text{C}$ |
| $T_J$        | Operating junction temperature range                                                 |         |                         | -40 to +125 |                  |

### ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter                                       | Symbol             | Test conditions                                          | Min | Max  | Unit          |
|-------------------------------------------------|--------------------|----------------------------------------------------------|-----|------|---------------|
| Rated repetitive peak off-state/reverse voltage | $V_{DRM}, V_{RRM}$ | $I_D=10\mu\text{A}$                                      | 600 |      | V             |
| Rated repetitive peak off-state current         | $I_{DRM}, I_{RRM}$ | $V_D=620\text{V}$                                        |     | 10   | $\mu\text{A}$ |
| On-state voltage                                | $V_{TM}$           | $I_T=23\text{A}$                                         | 1.4 | 1.75 | V             |
| Gate trigger current                            | $I_{GT}$           | $V_D=12\text{V}$<br>$I_T=0.1\text{A}$<br>$R_L=100\Omega$ |     | 20   | mA            |
| Gate trigger voltage                            | $V_{GT}$           | $V_D=12\text{V}$<br>$I_T=0.1\text{A}$<br>$R_L=100\Omega$ |     | 1.30 | V             |
| Holding current                                 | $I_H$              | $I_T=100\text{mA}$ $I_G=20\text{mA}$                     |     | 20   | mA            |

## Typical Characteristics

**Figure 1: Maximum average power dissipation versus average on- state current**

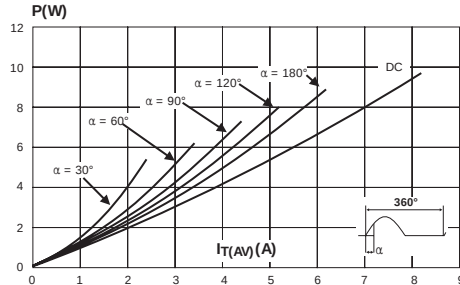


**Figure 2: Correlation between maximum average power dissipation and maximum allowable temperature ( $T_{amb}$  and  $T_{lead}$ )**

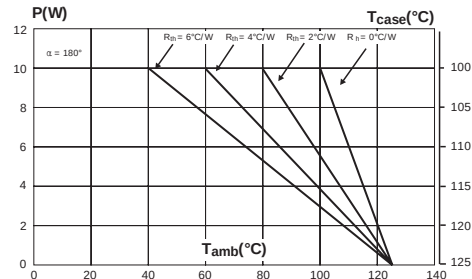


**Figure 3: Average on- state current versus case temperature**

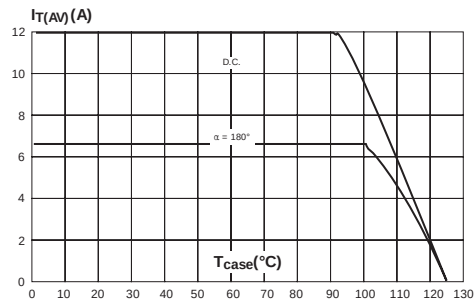


**Figure 4: Relative variation of thermal impedance versus pulse duration**

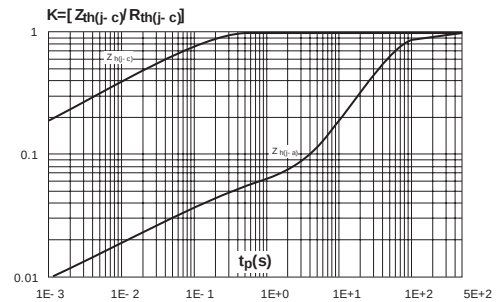


**Figure 5: Relative variation of gate trigger current versus junction temperature**

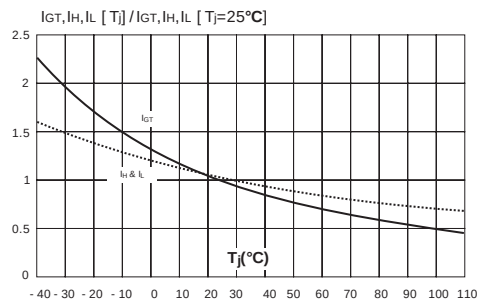


**Figure 6: Surge peak on- state current versus number of cycles**

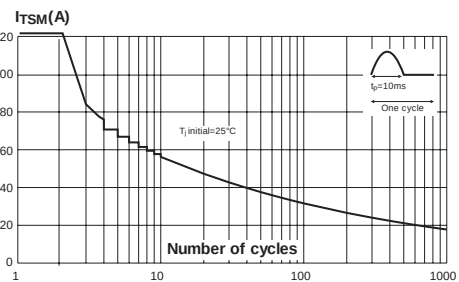


**Figure 7: Non- repetitive surge peak on- state current for a sinusoidal pulse with width  $t_p < 10$  ms, and corresponding values of  $I^2t$**

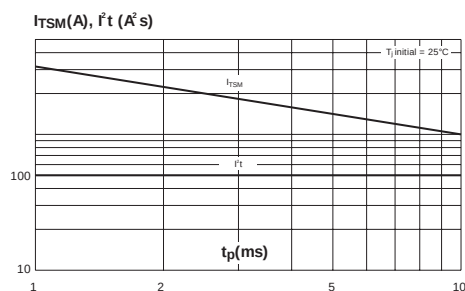


**Figure 8: On- state characteristics (maximum values)**

