

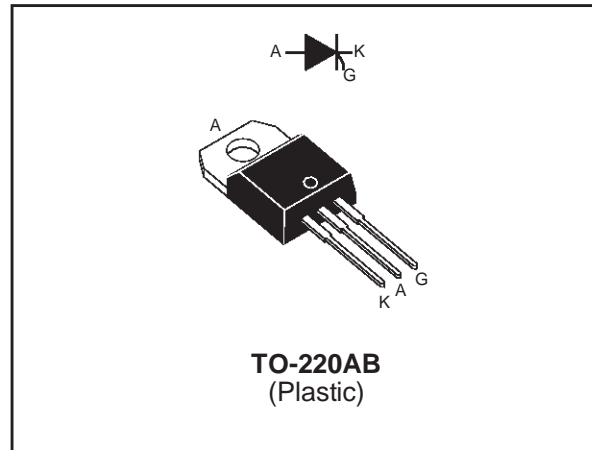
### FEATURES

- HIGH SURGE CAPABILITY
- HIGH ON-STATE CURRENT
- HIGH STABILITY AND RELIABILITY

### DESCRIPTION

The TYN612T and TYN812T Family of SCR uses a high performance glass passivated technology.

This general purpose Family of SCR is designed for power supplies up to 400Hz on resistive or inductive load.



### ABSOLUTE RATINGS (limiting values)

| Symbol             | Parameter   |   | Value                          | Unit             |
|--------------------|---|---|--------------------------------|------------------|
| $I_{T(RMS)}$       | RMS on-state current<br>(180° conduction angle)   | $T_c = 110^\circ\text{C}$                   | 12                             | A                |
| $I_{T(AV)}$        | Average on-state current<br>(180° conduction angle)   | $T_c = 110^\circ\text{C}$                   | 8                              | A                |
| $I_{TSM}$          | Non repetitive surge peak on-state current<br>( $T_j$ initial = 25°C)                                 | $t_p = 8.3\text{ms}$<br>$t_p = 10\text{ms}$ | 125<br>120                     | A                |
| $I^2t$             | $I^2t$ Value for fusing   | $t_p = 10\text{ms}$                         | 72                             | A <sup>2</sup> s |
| dl/dt              | Critical rate of rise of on-state current<br>$I_G = 100\text{mA}$ $dl_G/dt = 1\text{A}/\mu\text{s}$ . |   | 100                            | A/ $\mu\text{s}$ |
| $T_{stg}$<br>$T_j$ | Storage junction temperature range<br>Operating junction temperature range                            |   | - 40 to + 150<br>- 40 to + 125 | °C               |
| TI                 | Maximum lead temperature for soldering during 10s   |   | 260                            | °C               |

| Symbol    | Parameter                         | TYN  |      | Unit |
|-----------|-----------------------------------|------|------|------|
|           |                                   | 612T | 812T |      |
| $V_{DRM}$ | Repetitive peak off-state voltage | 600  | 800  | V    |
| $V_{RRM}$ | $T_j = 125^\circ\text{C}$         |      |      |      |

## TYN612T/812T

### THERMAL RESISTANCES

| Symbol   | Parameter               | Value | Unit |
|----------|-------------------------|-------|------|
| Rth(j-a) | Junction to ambient     | 60    | °C/W |
| Rth(j-c) | Junction to case for DC | 1.3   | °C/W |

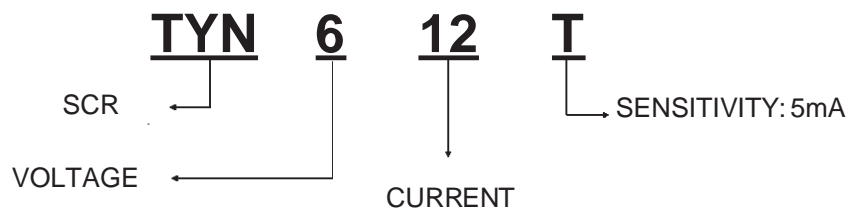
### GATE CHARACTERISTICS (maximum values)

$P_G (AV) = 1 \text{ W}$   $P_{GM} = 10 \text{ W}$  ( $t_p = 20 \mu\text{s}$ )  $I_{FGM} = 4 \text{ A}$  ( $t_p = 20 \mu\text{s}$ )  $V_{RGM} = 5 \text{ V}$

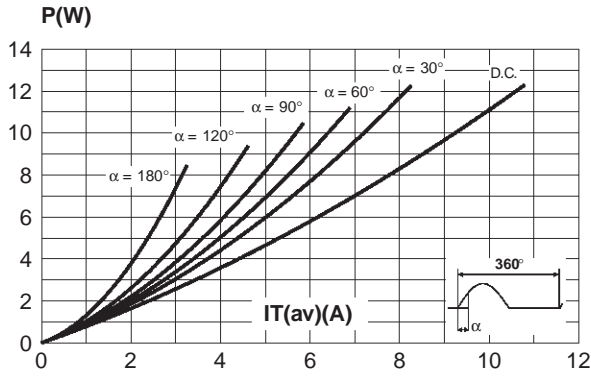
### ELECTRICAL CHARACTERISTICS

| Symbol    | Test Conditions                              |                           | Type | Value | Unit             |
|-----------|--|---------------------------|------|-------|------------------|
| $I_{GT}$  | $V_D = 12\text{V (DC)}$ $R_L = 33\Omega$     | $T_j = 25^\circ\text{C}$  | MIN  | 0.5   | mA               |
|           |  |                           | MAX  | 5     |                  |
| $V_{GT}$  | $V_D = 12\text{V (DC)}$ $R_L = 33\Omega$     | $T_j = 25^\circ\text{C}$  | MAX  | 1.3   | V                |
| $V_{GD}$  | $V_D = V_{DRM}$ $R_L = 3.3\text{k}\Omega$    | $T_j = 125^\circ\text{C}$ | MIN  | 0.2   | V                |
| $I_L$     | $I_G = 1.2 I_{GT}$                           | $T_j = 25^\circ\text{C}$  | MAX  | 30    | mA               |
| $I_H$     | $I_T = 100\text{mA}$ gate open               | $T_j = 25^\circ\text{C}$  | MAX  | 15    | mA               |
| $V_{TM}$  | $I_{TM} = 24\text{A}$ $t_p = 380\mu\text{s}$ | $T_j = 25^\circ\text{C}$  | MAX  | 1.6   | V                |
| $I_{DRM}$ | $V_D = V_{DRM}$                              | $T_j = 25^\circ\text{C}$  | MAX  | 5     | $\mu\text{A}$    |
| $I_{RRM}$ | $V_R = V_{RRM}$                              | $T_j = 125^\circ\text{C}$ | MAX  | 1     | mA               |
| dV/dt     | $V_D = 67\% V_{DRM}$ gate open               | $T_j = 125^\circ\text{C}$ | MIN  | 40    | V/ $\mu\text{s}$ |

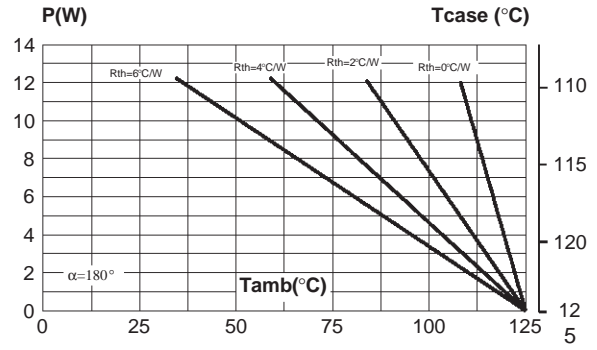
### ORDERING INFORMATION



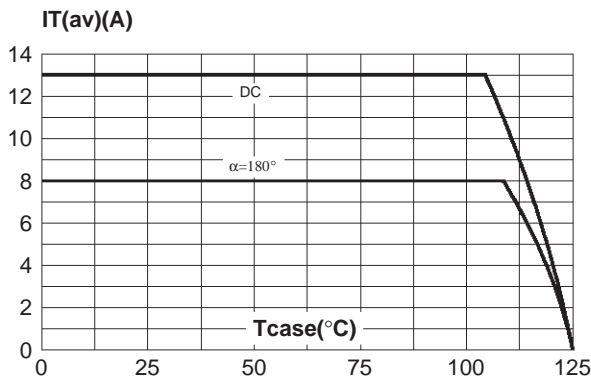
**Fig. 1:** Maximum average power dissipation versus average on-state current.



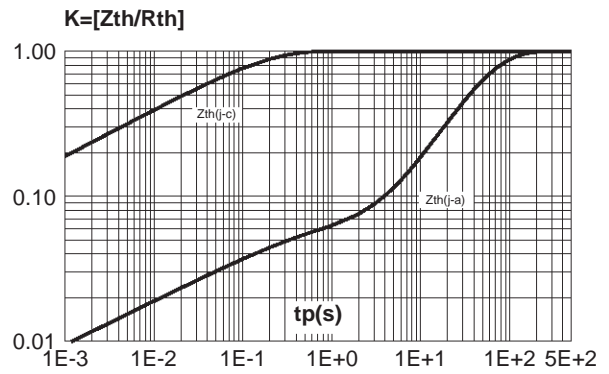
**Fig. 2:** Correlation between maximum average power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances  $R_{th(sink+contact)}$ .



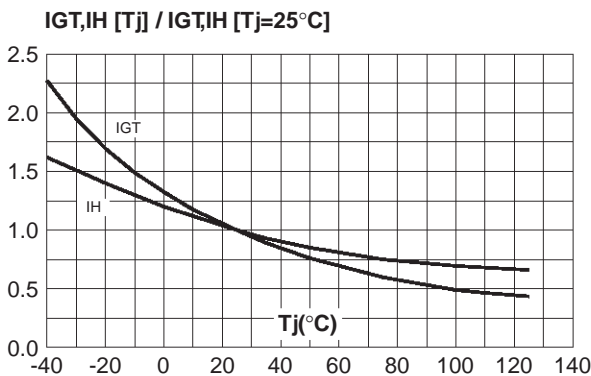
**Fig. 3:** Average and DC on-state current versus case temperature.



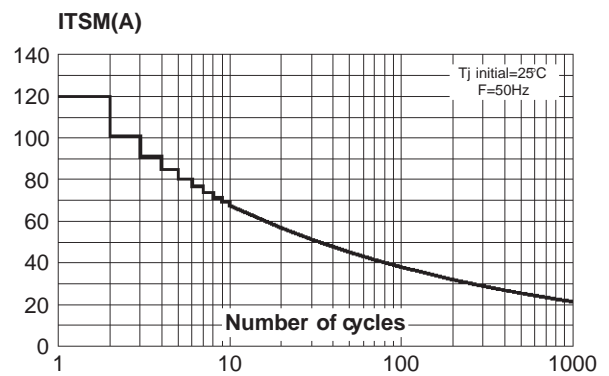
**Fig. 4:** Relative variation of thermal impedance junction to case versus pulse duration.



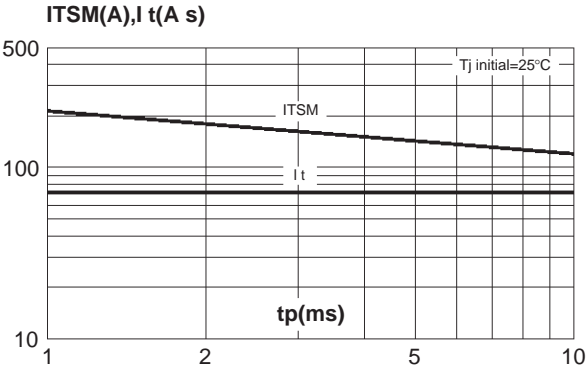
**Fig. 5:** Relative variation of gate trigger current and holding current versus junction temperature.



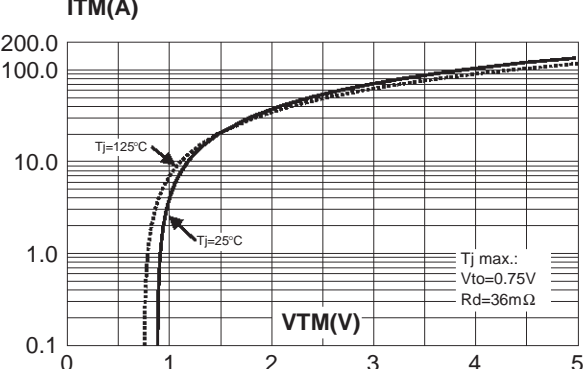
**Fig. 6:** Non repetitive surge peak on-state current versus number of cycles.



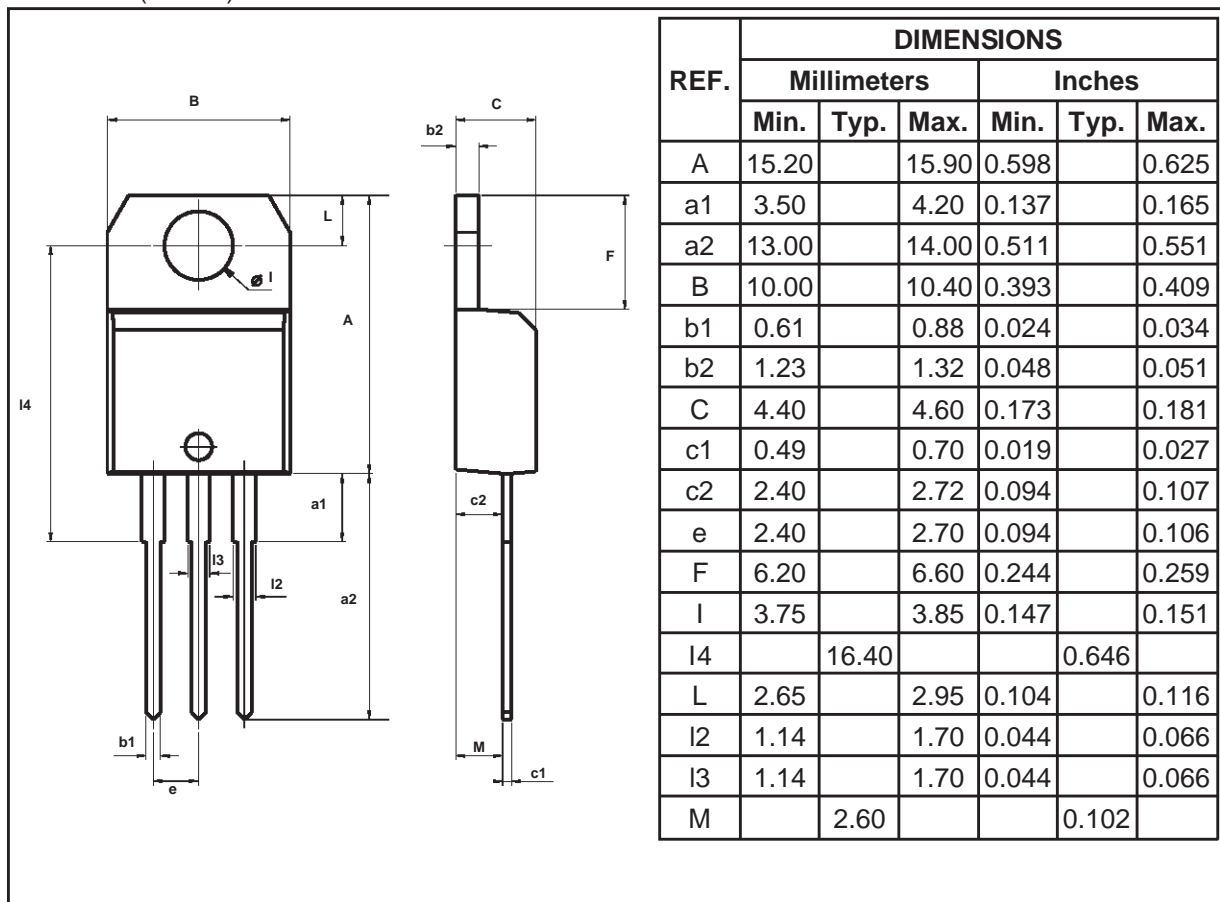
**Fig. 7:** Non repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$ .



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



**PACKAGE MECHANICAL DATA**  
TO-220AB (Plastic)



| Marking     | Package  | Weight | Base qty  | Delivery mode |
|-------------|----------|--------|-----------|---------------|
| Type number | TO-220AB | 2.3 g. | 250 units | Plastic bag   |

- Recommended torque value: 0.8 m.N.
- Maximum torque value: 1 m.N.

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