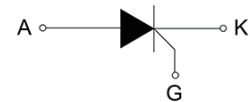


## DESCRIPTION:

The chip SCR provides high  $dV/dt$  rate with strong resistance to electromagnetic interface. It is especially recommended for use on residual current circuit breaker, straight hair, igniter etc.

## MAIN FEATURES

| Symbol            | Value      | Unit    |
|-------------------|------------|---------|
| $I_{T(RMS)}$      | 4          | A       |
| $V_{DRM}/V_{RRM}$ | 600        | V       |
| $I_{GT}$          | $\leq 200$ | $\mu A$ |



## ABSOLUTE MAXIMUM RATINGS

| Parameter                                                                                            | Symbol       | Value                | Unit        |
|------------------------------------------------------------------------------------------------------|--------------|----------------------|-------------|
| Storage junction temperature range                                                                   | $T_{stg}$    | -40-150              | $^{\circ}C$ |
| Operating junction temperature range                                                                 | $T_j$        | -40-125 <sup>①</sup> | $^{\circ}C$ |
| Repetitive peak off-state voltage ( $T_j=25^{\circ}C$ )                                              | $V_{DRM}$    | 600                  | V           |
| Repetitive peak reverse voltage ( $T_j=25^{\circ}C$ )                                                | $V_{RRM}$    | 600                  | V           |
| Average on-state current ( $T_c \leq 93^{\circ}C$ )                                                  | $I_{T(AV)}$  | 2.5                  | A           |
| RMS on-state current ( $T_c \leq 93^{\circ}C$ )                                                      | $I_{T(RMS)}$ | 4                    | A           |
| Non repetitive surge peak on-state current ( $t_p=10ms$ , $T_j=25^{\circ}C$ )                        | $I_{TSM}$    | 40                   | A           |
| Non repetitive surge peak on-state current ( $t_p=8.3ms$ , $T_j=25^{\circ}C$ )                       |              | 44                   |             |
| $I^2t$ value for fusing ( $t_p=10ms$ , $T_j=25^{\circ}C$ )                                           | $I^2t$       | 8                    | $A^2s$      |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100Hz$ , $T_j=125^{\circ}C$ ) | $di/dt$      | 50                   | $A/\mu s$   |
| Peak gate current ( $t_p=20\mu s$ , $T_j=125^{\circ}C$ )                                             | $I_{GM}$     | 2                    | A           |
| Average gate power dissipation ( $T_j=125^{\circ}C$ )                                                | $P_{G(AV)}$  | 0.5                  | W           |

|                                                                                     |          |     |    |
|-------------------------------------------------------------------------------------|----------|-----|----|
| Peak gate power                                                                     | $P_{GM}$ | 5   | W  |
| Peak pulse voltage<br>( $T_j=25^{\circ}\text{C}$ ; non-repetitive, off-state; FIG ) | $V_{pp}$ | 0.5 | kV |

**NOTE 1:** Operating junction temperature  $T_j$  is up to  $125^{\circ}\text{C}$  when a resistor  $\leq 1\text{k}\Omega$  is connected between Gate and Cathode. Without this resistor, the  $T_j$  is up to  $110^{\circ}\text{C}$  only.

### ELECTRICAL CHARACTERISTICS ( $T_j=25^{\circ}\text{C}$ unless otherwise specified)

| Symbol    | Test Condition                                                                   | Value |      |      | Unit                   |
|-----------|----------------------------------------------------------------------------------|-------|------|------|------------------------|
|           |                                                                                  | MIN.  | TYP. | MAX. |                        |
| $I_{GT}$  | $V_D=12\text{V}$ $R_L=33\Omega$                                                  | -     | 50   | 200  | $\mu\text{A}$          |
| $V_{GT}$  |                                                                                  | -     | 0.6  | 0.8  | V                      |
| $V_{GD}$  | $V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$                                          | 0.2   | -    | -    | V                      |
| $I_L$     | $I_G=1.2 I_{GT}$                                                                 | -     | -    | 6    | mA                     |
| $I_H$     | $I_T=0.05\text{A}$                                                               | -     | -    | 5    | mA                     |
| $dV/dt$   | $V_D=400\text{V}$ $T_j=125^{\circ}\text{C}$ $R_{GK}=1\text{k}\Omega$             | 50    | -    | -    | $\text{V}/\mu\text{s}$ |
|           | $V_D=400\text{V}$ $T_j=125^{\circ}\text{C}$ $R_{GK}=220\Omega$                   | 200   | -    | -    |                        |
| $t_{on}$  | $I_G=10\text{mA}$ $I_A=20\text{mA}$ $I_R=2\text{mA}$<br>$T_j=25^{\circ}\text{C}$ | -     | 2    | -    | $\mu\text{s}$          |
| $t_{off}$ |                                                                                  | -     | 50   | -    | $\mu\text{s}$          |

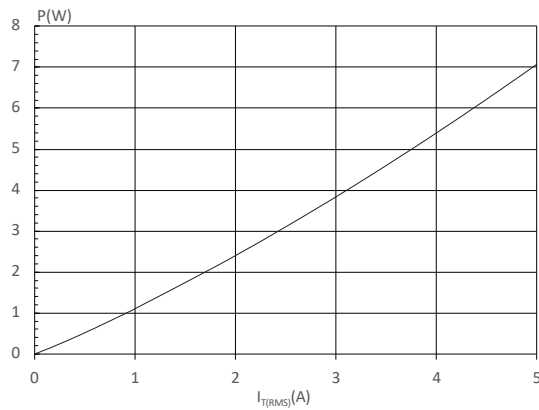
### STATIC CHARACTERISTICS

| Symbol    | Parameter                            |                           | Value(MAX.) | Unit          |
|-----------|--------------------------------------|---------------------------|-------------|---------------|
| $V_{TM}$  | $I_T=8\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.6         | V             |
| $V_{TO}$  | Threshold voltage                    | $T_j=125^{\circ}\text{C}$ | 0.8         | V             |
| $R_D$     | Dynamic Resistance                   | $T_j=125^{\circ}\text{C}$ | 0.1         | $\Omega$      |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$          | $T_j=25^{\circ}\text{C}$  | 5           | $\mu\text{A}$ |
| $I_{RRM}$ |                                      | $T_j=125^{\circ}\text{C}$ | 0.5         | mA            |

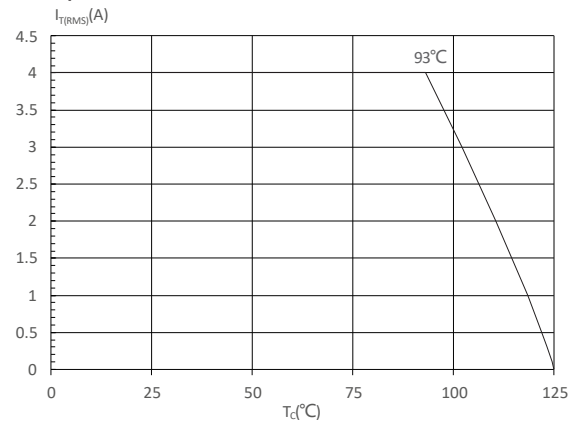
### THERMAL RESISTANCES

| Symbol        | Parameter                | Value | Unit                        |
|---------------|--------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (DC)    | 6     | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (DC) | 120   | $^{\circ}\text{C}/\text{W}$ |

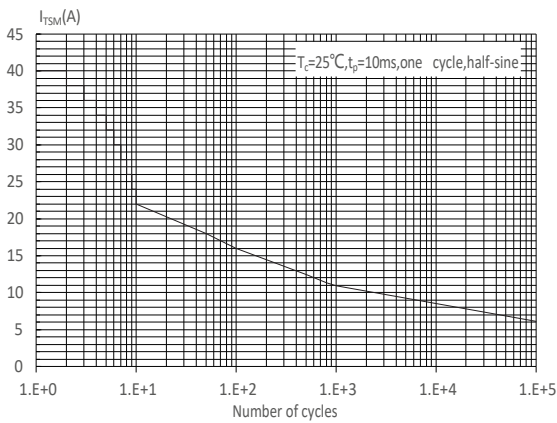
**FIG :** Maximum power dissipation versus RMS on-state current



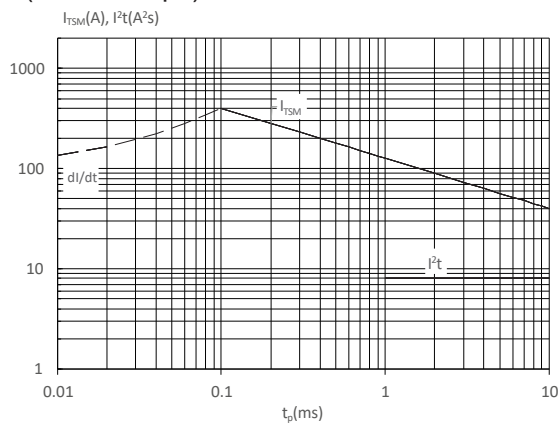
**FIG :** RMS on-state current versus case temperature



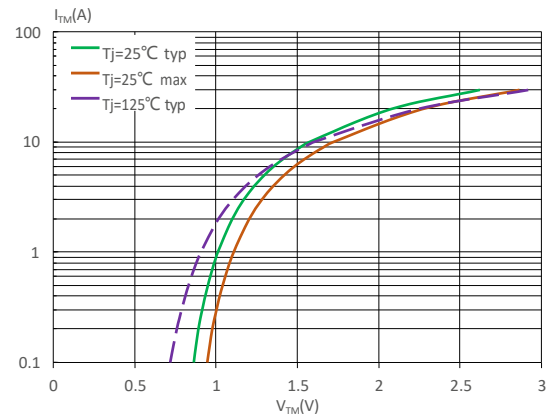
**FIG :** Surge peak on-state current versus number of cycles



**FIG :** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$ , and corresponding value of  $I^2t$  ( $di/dt < 50A/\mu s$ )



**FIG :** On-state characteristics



**FIG :** Relative variations of gate trigger current, holding current and latching current versus junction temperature

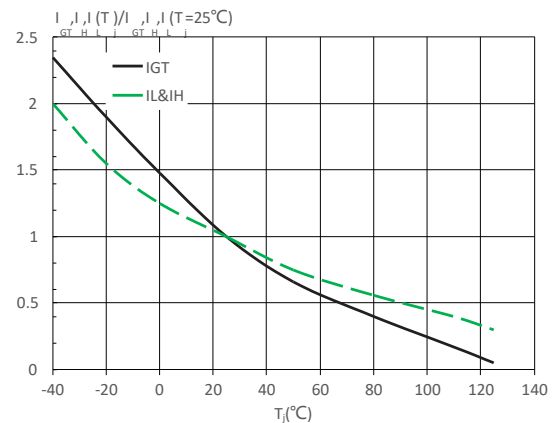
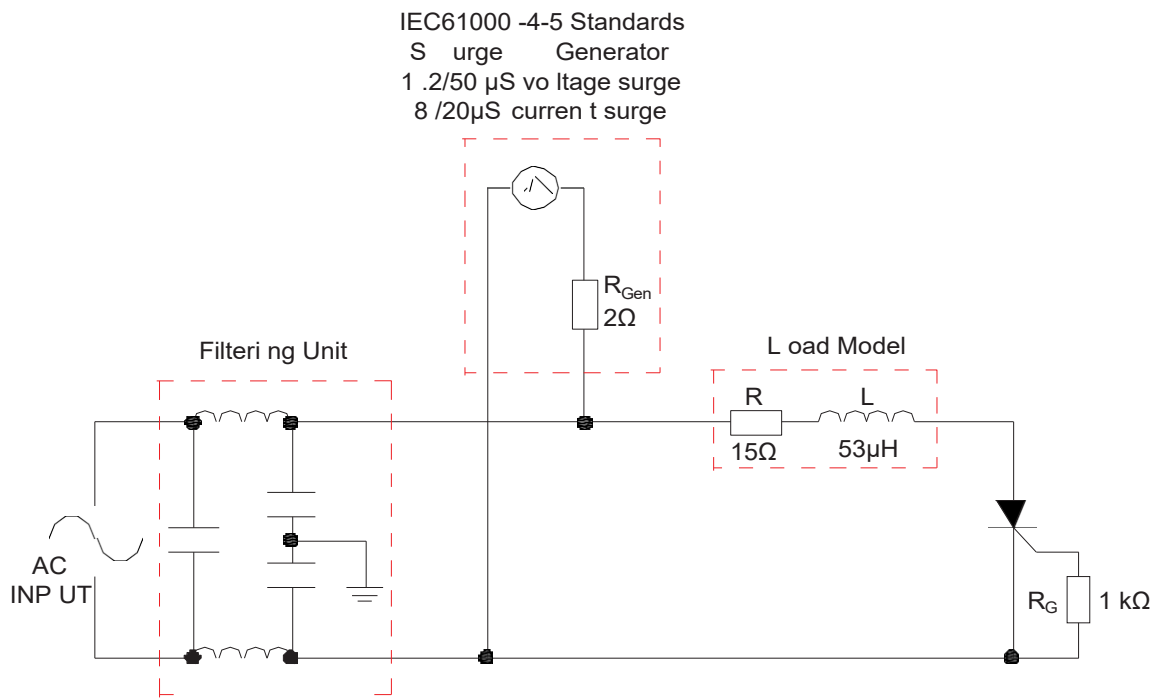


FIG : Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



## LEAD FORMING AND SOLDERING

Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package” released by JieJie Microelectronics