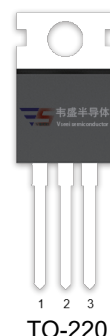


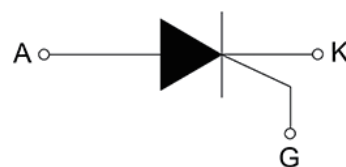
## DESCRIPTION:

With high ability to withstand the shock loading of large current, chip series of silicon controlled rectifiers provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.



## MAIN FEATURES

| Symbol            | Value    | Unit |
|-------------------|----------|------|
| $I_{T(RMS)}$      | 12       | A    |
| $V_{DRM}/V_{RRM}$ | 600      | V    |
| $I_{GT}$          | $\leq 5$ | mA   |



## 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 | $^{\circ}C$ |
| 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 ( $T_c \leq 105^{\circ}C$ )                                           | $I_{T(AV)}$  | 7.6     | A           |
| RMS on-state current ( $T_c \leq 105^{\circ}C$ )                                               | $I_{T(RMS)}$ | 12      | A           |
| Non repetitive surge peak on-state current ( $t_p=10ms, T_j=25^{\circ}C$ )                     | $I_{TSM}$    | 140     | A           |
| Non repetitive surge peak on-state current ( $t_p=8.3ms, T_j=25^{\circ}C$ )                    |              | 154     |             |
| $I^2t$ value for fusing ( $t_p=10ms, T_j=25^{\circ}C$ )                                        | $I^2t$       | 98      | $A^2s$      |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}, f=100Hz, T_j=125^{\circ}C$ ) | $di/dt$      | 100     | $A/\mu s$   |
| Peak gate current ( $t_p=20\mu s, T_j=125^{\circ}C$ )                                          | $I_{GM}$     | 4       | A           |

|                                                                                     |             |     |    |
|-------------------------------------------------------------------------------------|-------------|-----|----|
| Average gate power dissipation ( $T_j=125^{\circ}\text{C}$ )                        | $P_{G(AV)}$ | 1   | W  |
| Peak gate power                                                                     | $P_{GM}$    | 10  | W  |
| Peak pulse voltage<br>( $T_j=25^{\circ}\text{C}$ ; non-repetitive, off-state; FIG ) | $V_{pp}$    | 0.5 | kV |

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

| Symbol    | Test Condition                                                                     | Value |      |      | Unit             |
|-----------|------------------------------------------------------------------------------------|-------|------|------|------------------|
|           |                                                                                    | MIN.  | TYP. | MAX. |                  |
| $I_{GT}$  | $V_D=12\text{V}$ $R_L=33\Omega$                                                    | -     | -    | 5    | mA               |
| $V_{GT}$  |                                                                                    | -     | -    | 1    | V                |
| $V_{GD}$  | $V_D=V_{DRM}$ $T_j=125^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$                    | 0.2   | -    | -    | V                |
| $I_L$     | $I_G=1.2I_{GT}$                                                                    | -     | -    | 30   | mA               |
| $I_H$     | $I_T=500\text{mA}$                                                                 | -     | -    | 15   | mA               |
| $dV/dt$   | $V_D=400\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$                              | 400   | -    | -    | V/ $\mu\text{s}$ |
| $t_{on}$  | $I_G=20\text{mA}$ $I_A=200\text{mA}$ $I_R=20\text{mA}$<br>$T_j=25^{\circ}\text{C}$ | -     | 5    | -    | $\mu\text{s}$    |
| $t_{off}$ |                                                                                    | -     | 80   | -    |                  |

**STATIC CHARACTERISTICS**

| Symbol    | Parameter                                |                           | Value(MAX.) | Unit             |
|-----------|------------------------------------------|---------------------------|-------------|------------------|
| $V_{TM}$  | $I_{TM}=24\text{A}$ $t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.5         | V                |
| $V_{TO}$  | Threshold voltage                        | $T_j=125^{\circ}\text{C}$ | 0.8         | V                |
| $R_D$     | Dynamic resistance                       | $T_j=125^{\circ}\text{C}$ | 27          | $\text{m}\Omega$ |
| $I_{DRM}$ | $V_D=V_{DRM}$ $V_R=V_{RRM}$              | $T_j=25^{\circ}\text{C}$  | 5           | $\mu\text{A}$    |
| $I_{RRM}$ |                                          | $T_j=125^{\circ}\text{C}$ | 0.2         | mA               |

**THERMAL RESISTANCES**

| Symbol        | Parameter                | Value | Unit                        |
|---------------|--------------------------|-------|-----------------------------|
| $R_{th(j-c)}$ | junction to case (DC)    | 1.3   | $^{\circ}\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (DC) | 55    | $^{\circ}\text{C}/\text{W}$ |

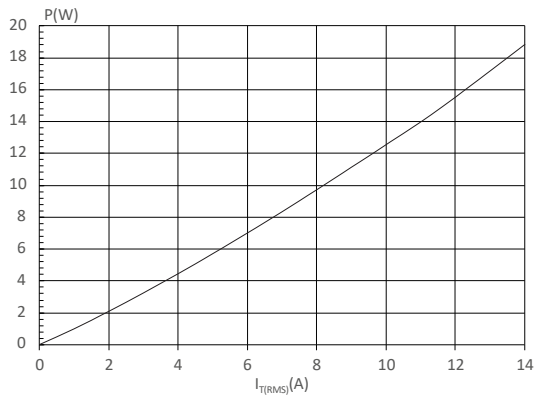
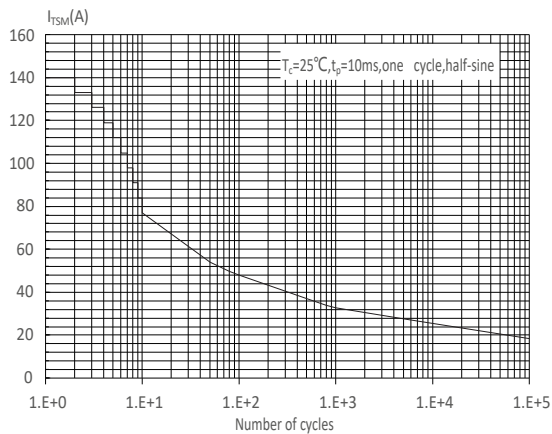
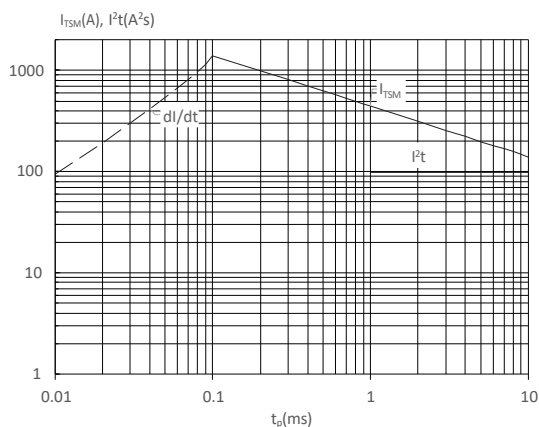
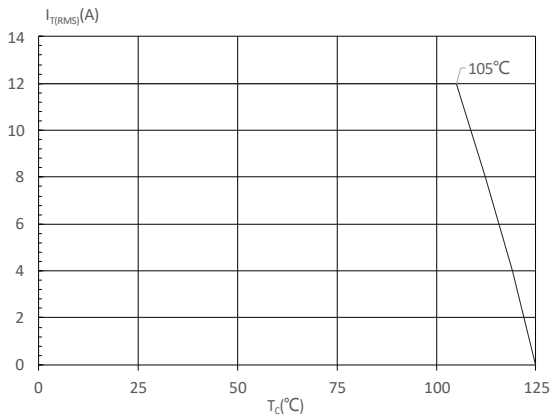
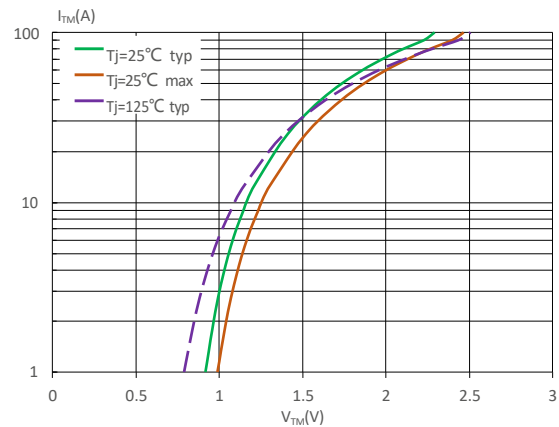
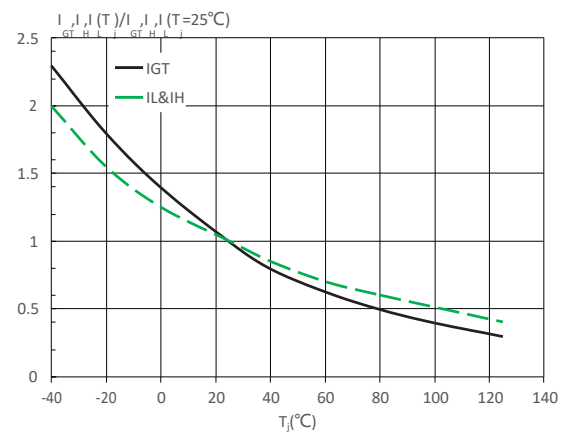
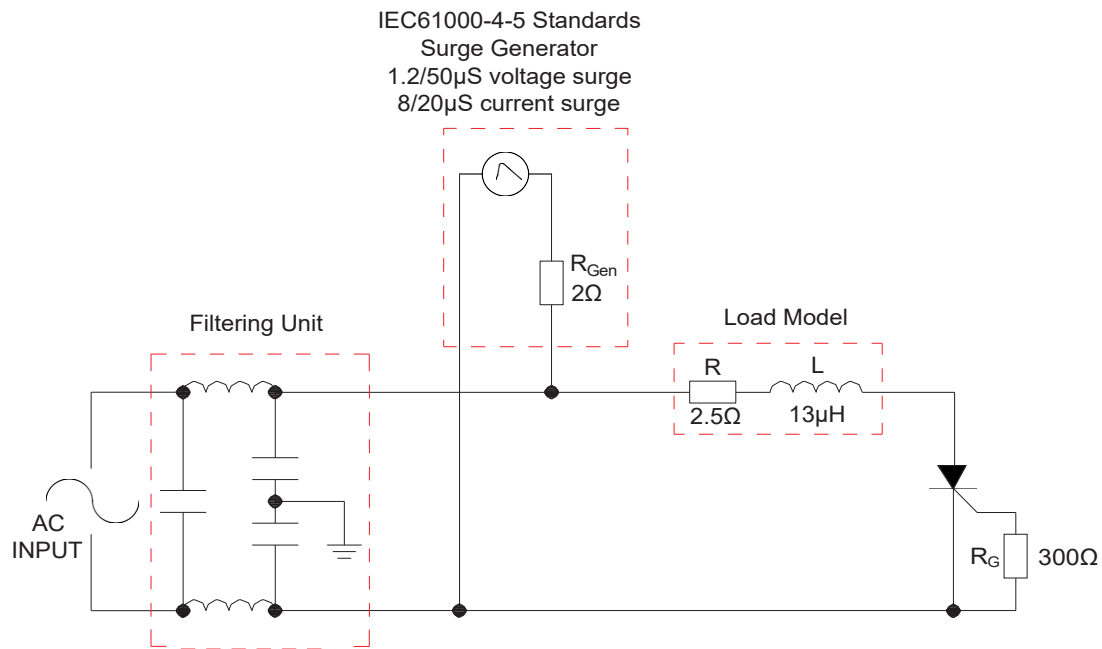
**FIG :** Maximum power dissipation versus RMS on-state current

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

**FIG :** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 100\text{A}/\mu\text{s}$ )

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

**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