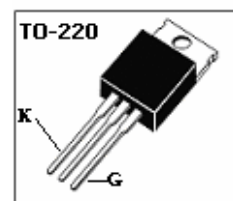




## Silicon Controlled Rectifier

### Features

- \* Repetitive Peak Off-State Voltage : 600V
- \* R.M.S On-State Current( $I_{T(RMS)}$ )=10A
- \* Low On-State Voltage (1.4V(Typ.)@  $I_{TM}$ )
- \* Non-isolated Type



### General Description

Standard gate triggering SCR is suitable for the application where requiring high bi-directional blocking voltage capability and also suitable for over voltage protection, motor control circuit in power tool, inrush current limit circuit and heating control system.

### Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ unless otherwise specified)

|                                                                                                    |                    |
|----------------------------------------------------------------------------------------------------|--------------------|
| $T_{stg}$ — Storage Temperature                                                                    | -40~125°C          |
| $T_j$ — Operating Junction Temperature                                                             | -40~125°C          |
| $V_{DRM}$ — Repetitive Peak Off-State Voltage                                                      | 600V               |
| $I_T$ (RMS) — R.M.S On-State Current (180° Conduction Angles)                                      | 10A                |
| $I_{T(AV)}$ — Average On-State Current (Half Sine Wave : $T_C = 111^\circ\text{C}$ )               | 6.4A               |
| $I_{TSM}$ — Surge On-State Current (1/2 Cycle, 60Hz, Sine Wave, Non-repetitive)                    | 110A               |
| $I^2t$ — Circuit Fusing Considerations( $t = 8.3\text{ms}$ )                                       | 60A <sup>2</sup> s |
| $P_{GM}$ — Forward Peak Gate Power Dissipation ( $T_a=25^\circ\text{C}$ )                          | 5W                 |
| $P_{G(AV)}$ — Forward Average Gate Power Dissipation ( $T_a=25^\circ\text{C}$ , $t=8.3\text{ms}$ ) | 0.5W               |
| $I_{FGM}$ — Forward Peak Gate Current                                                              | 2A                 |
| $V_{RGM}$ — Reverse Peak Gate Voltage                                                              | 5V                 |



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

| Symbol               | Items                                   | Min. | Typ. | Max.      | Unit                   | Conditions                                                                          |
|----------------------|-----------------------------------------|------|------|-----------|------------------------|-------------------------------------------------------------------------------------|
| $I_{\text{DRM}}$     | Repetitive Peak Off-State Current       |      |      | 10<br>200 | $\mu\text{A}$          | $V_{\text{AK}}=V_{\text{DRM}}$<br>$T_a=25^\circ\text{C}$<br>$T_a=125^\circ\text{C}$ |
| $V_{\text{TM}}$      | Peak On-State Voltage (1)               |      |      | 1.6       | V                      | $I_{\text{TM}}=20\text{A}$ , $t_p=380\mu\text{s}$                                   |
| $I_{\text{GT}}$      | Gate Trigger Current (2)                |      |      | 15        | mA                     | $V_{\text{AK}}=6\text{V(DC)}$ , $R_L=10\text{ ohm}$                                 |
| $V_{\text{GT}}$      | Gate Trigger Voltage (2)                |      |      | 1.5       | V                      | $V_{\text{AK}}=6\text{V(DC)}$ , $R_L=10\text{ ohm}$<br>$T_a=25^\circ\text{C}$       |
| $V_{\text{GD}}$      | Non-Trigger Gate Voltage                | 0.2  |      |           | V                      | $V_{\text{AK}}=12\text{V}$ , $R_L=100\text{ ohm}$<br>$T_a=125^\circ\text{C}$        |
| $I_{\text{H}}$       | Holding Current                         |      |      | 20        | mA                     | $I_{\text{T}}=100\text{mA}$ , Gate open,<br>$T_a=25^\circ\text{C}$                  |
| $R_{\text{th(j-c)}}$ | Thermal Resistance                      |      |      | 1.3       | $^\circ\text{C/W}$     | Junction to Case                                                                    |
| $R_{\text{th(j-a)}}$ | Thermal Resistance                      |      |      | 60        | $^\circ\text{C/W}$     | Junction to Ambient                                                                 |
| $dv/dt$              | Critical Rate of Rise Off-state Voltage | 200  |      |           | $\text{V}/\mu\text{s}$ | Linear slope up to $V_D=V_{\text{DRM}}67\%$<br>Gate open $T_j=125^\circ\text{C}$    |

- Forward current applied for 1 ms maximum duration, duty cycle  $\leq 1\%$ .
- $R_{\text{GK}}$  current is not included in measurement

### Performance Curves

FIGURE 1 – Gate Characteristics

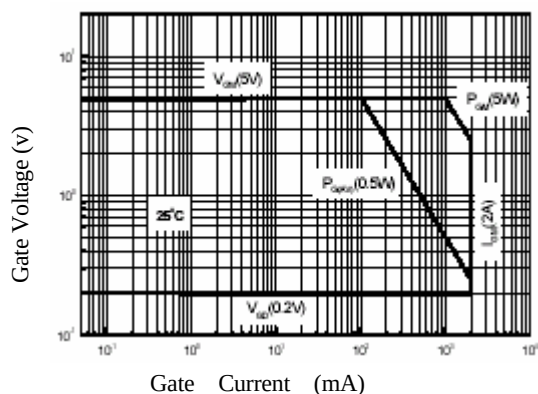
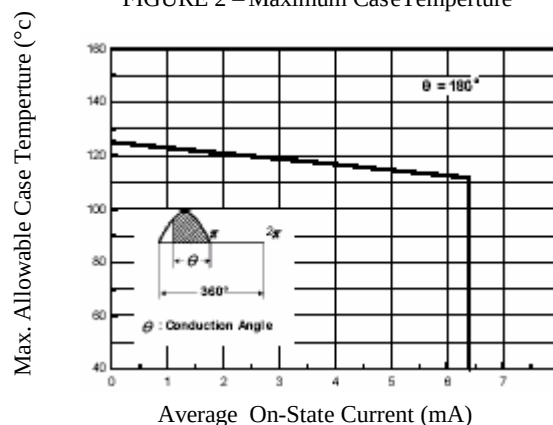


FIGURE 2 – Maximum Case Temperature





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FIGURE 3-Typical Forward Voltage(V)

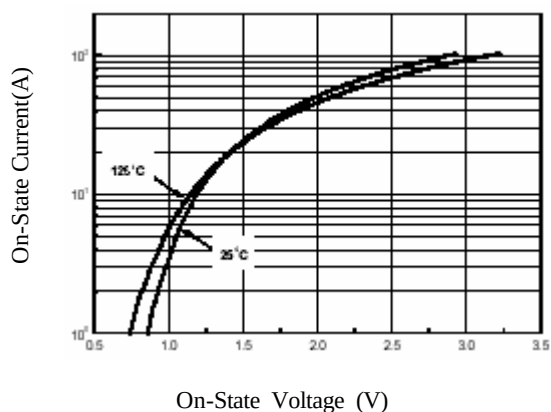


FIGURE 4-Thermal Response

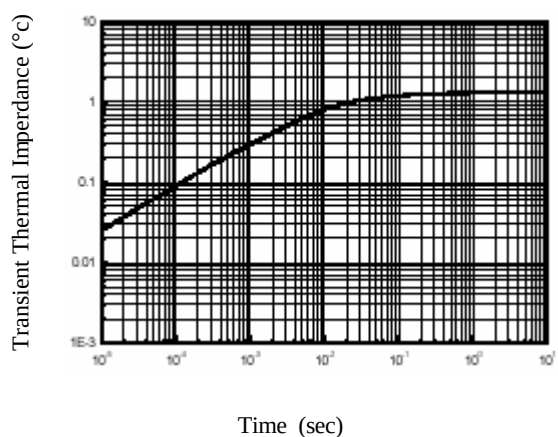


FIGURE 5-Typical Gate Trigger Voltage VS Junction Temperature

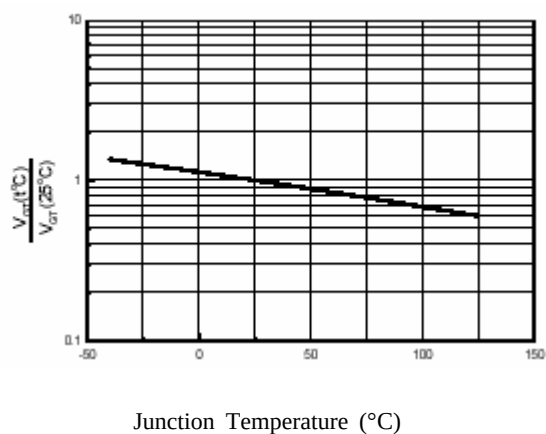


FIGURE 6-Typical Gate Trigger Current VS Junction Temperature

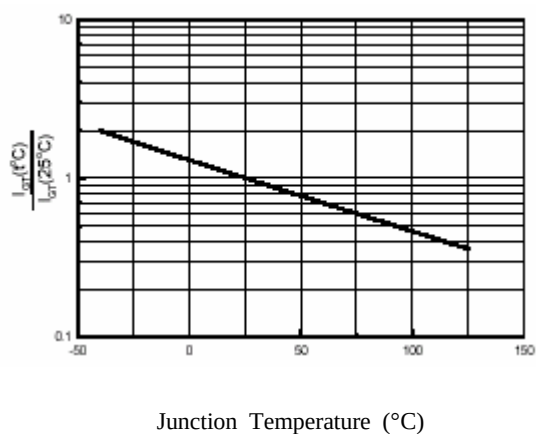


FIGURE 7-Typical Holding Current

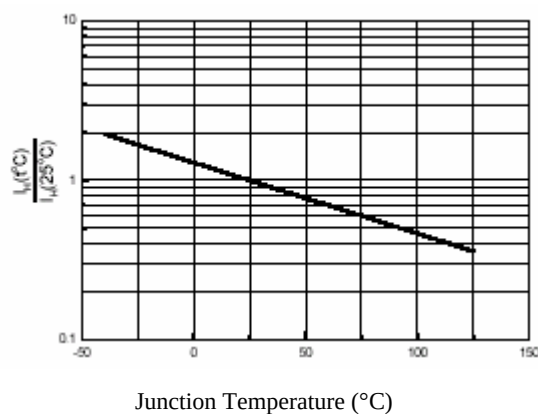


FIGURE 8-Power Dissipation

