

# THYRISTOR(Through Hole/Isolated)

# SMG16C60F

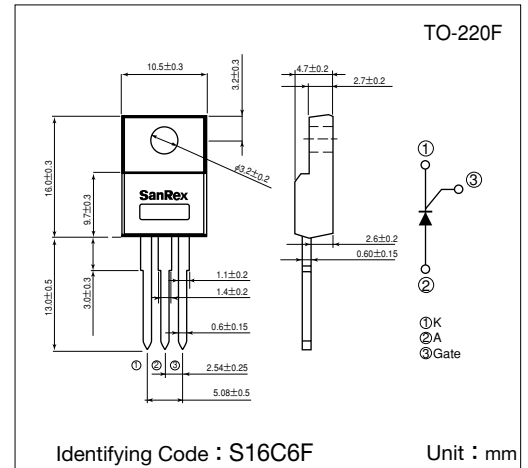
**SanRex** Thyristor **SMG16C60F** is designed for full wave AC control applications. It can be used as an ON/OFF function or for phase control operation.

### Typical Applications

- Home Appliances : Electric Blankets, Starter for FL, other control applications
- Industrial Use : SMPS, Solenoid for Breakers, Motor Controls, Heater Controls, other control applications

### Features

- $I_{T(AV)}=16A$
- High Surge Current
- Low Voltage Drop
- Lead-Free Package



### Maximum Ratings

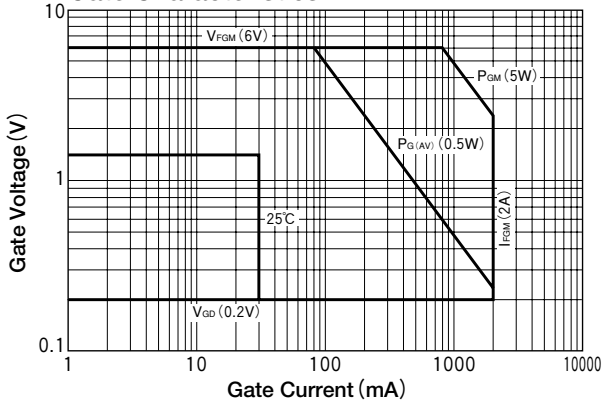
( $T_j=25^\circ\text{C}$  unless otherwise specified)

| Symbol       | Item                                | Reference   | Ratings         | Unit             |
|--------------|-------------------------------------|---|-----------------|------------------|
| $V_{RRM}$    | Repetitive Peak Reverse Voltage     |   | 600             | V                |
| $V_{RSM}$    | Non-Repetitive Peak Reverse Voltage |   | 720             | V                |
| $V_{DRM}$    | Repetitive Peak Off-State Voltage   |   | 600             | V                |
| $I_{T(AV)}$  | Average On-State Current            | Single phase, half wave, $180^\circ$ , conduction, $T_c=58^\circ\text{C}$ | 16              | A                |
| $I_{T(RMS)}$ | R.M.S. On-State Current             | Single phase, half wave, $180^\circ$ , conduction, $T_c=58^\circ\text{C}$ | 25.1            | A                |
| $I_{TSM}$    | Surge On-State Current              | 50Hz/60Hz, $\frac{1}{2}$ cycle Peak value, non-repetitive                 | 240/263         | A                |
| $I^2t$       | $I^2t$                              |   | 288             | $A^2S$           |
| $P_{GM}$     | Peak Gate Power Dissipation         |   | 5               | W                |
| $P_{G(AV)}$  | Average Gate Power Dissipation      |   | 0.5             | W                |
| $I_{FGM}$    | Peak Gate Current                   |   | 2               | A                |
| $V_{FGM}$    | Peak Gate Voltage (Forward)         |   | 6               | V                |
| $V_{RGM}$    | Peak Gate Voltage (Reverse)         |   | 10              | V                |
| $V_{ISO}$    | Isolation Breakdown (R.M.S.)        | A.C 1minute   | 1500            | V                |
| $T_j$        | Operating Junction Temperature      |   | $-40 \sim +125$ | $^\circ\text{C}$ |
| $T_{stg}$    | Storage Temperature                 |   | $-40 \sim +150$ | $^\circ\text{C}$ |
|              | Mass                                |   | 2               | g                |

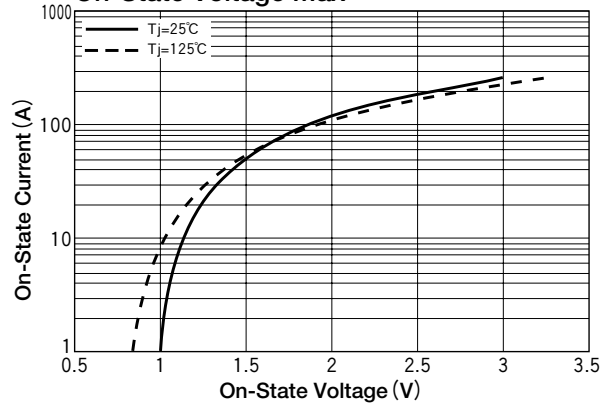
### Electrical Characteristics

| Symbol        | Item                              | Reference  | Ratings |      |      | Unit               |
|---------------|-----------------------------------|--|---------|------|------|--------------------|
|               |                                   |  | Min.    | Typ. | Max. |                    |
| $I_{DRM}$     | Repetitive Peak Off-State Current | $T_j=125^\circ\text{C}$ , $V_D=V_{DRM}$ ,            |         |      | 2    | mA                 |
| $I_{RRM}$     | Repetitive Peak Reverse Current   | $T_j=125^\circ\text{C}$ , $V_R=V_{RRM}$ ,            |         |      | 2    | mA                 |
| $V_{TM}$      | Peak On-State Voltage             | $I_T=35A$ , Inst. measurement                        |         |      | 1.5  | V                  |
| $I_{GT}$      | Gate Trigger Current              | $V_D=6V$ , $R_L=10\Omega$                            |         |      | 30   | mA                 |
| $V_{GT}$      | Gate Trigger Voltage              |  |         |      | 1.4  | V                  |
| $V_{GD}$      | Non-Trigger Gate Voltage          | $T_j=125^\circ\text{C}$ , $V_D=\frac{1}{2}V_{DRM}$ , | 0.2     |      |      | V                  |
| $I_H$         | Holding Current                   |  |         | 15   |      | mA                 |
| $R_{th(j-c)}$ | Thermal Resistance                | Junction to case                                     |         |      | 3    | $^\circ\text{C/W}$ |

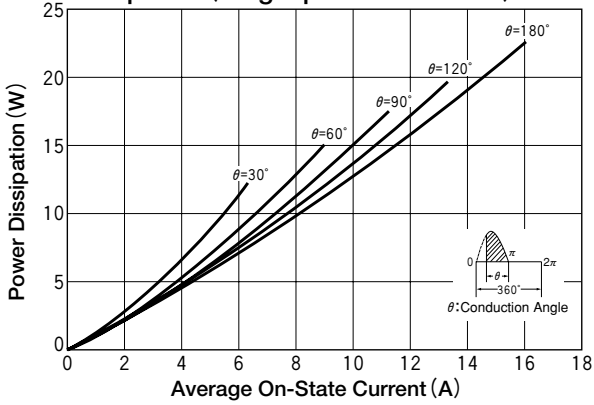
### Gate Characteristics



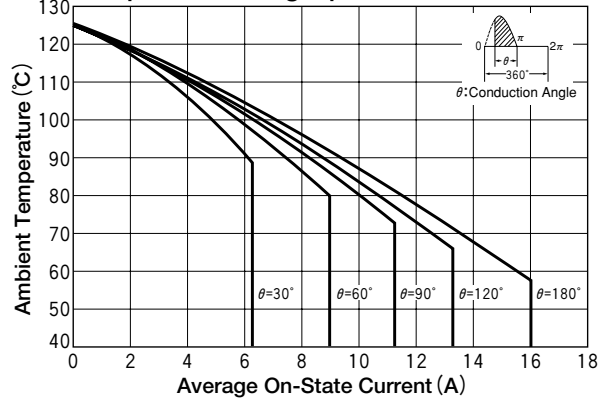
### On-State Voltage Max



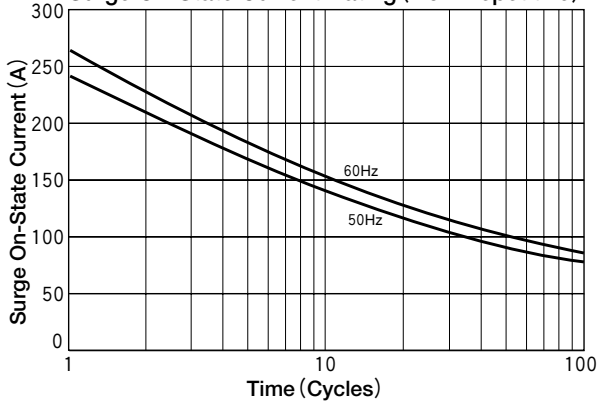
### Average On-State Current vs Power Dissipation (Single phase half wave)



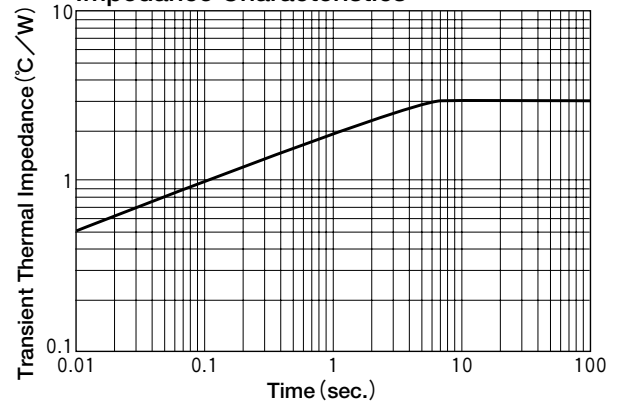
### Average On-State Current vs Ambient Temperature (Single phase half wave)



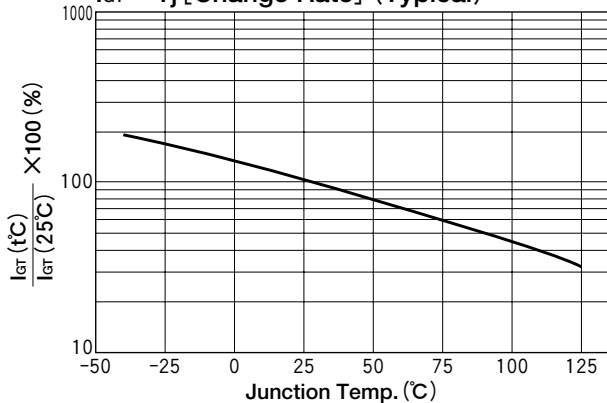
### Surge On-State Current Rating (Non-Repetitive)



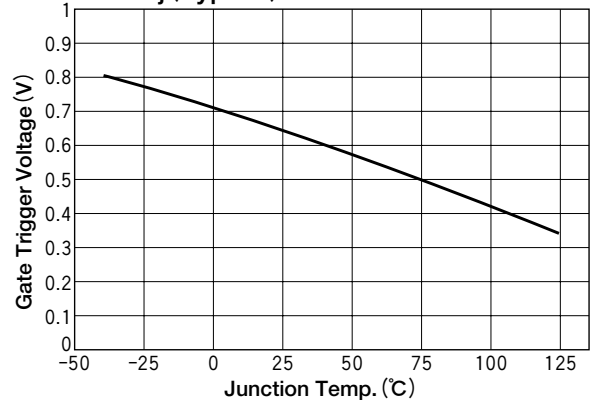
### Maximum Transient Thermal Impedance Characteristics



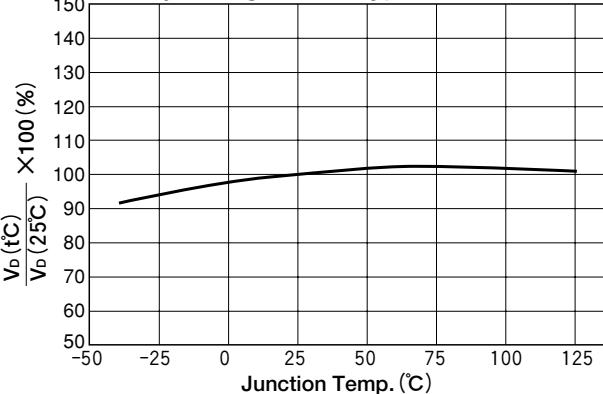
### $I_{GT} - T_j$ [Change Rate] (Typical)



### $V_{GT} - T_j$ (Typical)



V<sub>D</sub> - T<sub>j</sub> Change Rate (Typical)



V<sub>R</sub> - T<sub>j</sub> Change Rate (Typical)

