

THYRISTOR

SMG05CB60

(Sensitive Gate)

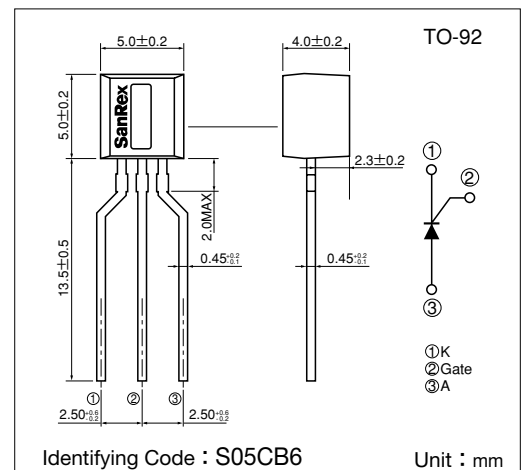
SanRex Thyristor **SMG05CB60** is designed for full wave AC control applications. It can be used as an ON/OFF function or for phase control operation.

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

- $I_{T(AV)}=0.5A$
- High Surge Current
- Low Voltage Drop



Maximum Ratings

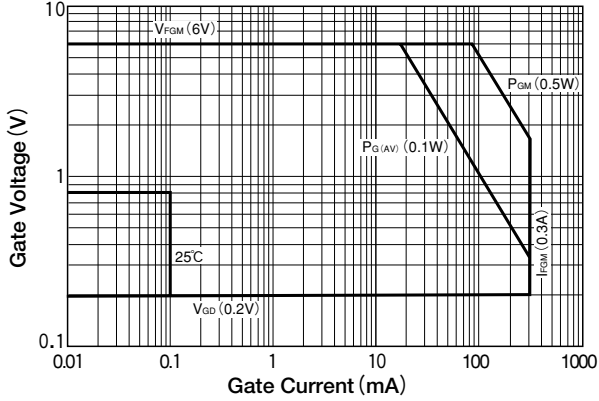
($T_j=25^\circ\text{C}$ unless otherwise specified)

| 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° , conduction, $T_a=39^\circ\text{C}$ | 0.5 | A |
| $I_{T(RMS)}$ | R.M.S. On-State Current | Single phase, half wave, 180° , conduction, $T_a=39^\circ\text{C}$ | 0.8 | A |
| I_{TSM} | Surge On-State Current | 50/60Hz, $\frac{1}{2}$ cycle Peak value, non-repetitive | 18/20 | A |
| I^2t | I^2t | | 1.65 | A^2S |
| P_{GM} | Peak Gate Power Dissipation | | 0.5 | W |
| $P_{G(AV)}$ | Average Gate Power Dissipation | | 0.1 | W |
| I_{FGM} | Peak Gate Current | | 0.3 | A |
| V_{FGM} | Peak Gate Voltage (Forward) | | 6 | V |
| V_{RGM} | Peak Gate Voltage (Reverse) | | 6 | V |
| T_j | Operating Junction Temperature | | $-40 \sim +125$ | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature | | $-40 \sim +150$ | $^\circ\text{C}$ |
| | Mass | | 0.2 | g |

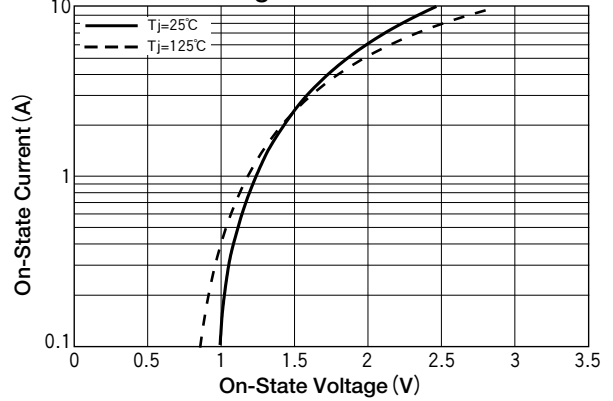
Electrical Characteristics

| Symbol | Item | Reference | Ratings | | | Unit |
|---------------|-----------------------------------|--|---------|------|------|---------------------------|
| | | | Min. | Typ. | Max. | |
| I_{DRM} | Repetitive Peak Off-State Current | $T_j=125^\circ\text{C}$, $V_D=V_{DRM}$, $R_{GK}=1k\Omega$ | | | 0.5 | mA |
| | | $T_j=110^\circ\text{C}$, $V_D=V_{DRM}$, $R_{GK}=1k\Omega$ | | | 0.1 | mA |
| I_{RRM} | Repetitive Peak Reverse Current | $T_j=125^\circ\text{C}$, $V_R=V_{RRM}$, $R_{GK}=1k\Omega$ | | | 0.5 | mA |
| | | $T_j=110^\circ\text{C}$, $V_R=V_{RRM}$, $R_{GK}=1k\Omega$ | | | 0.1 | mA |
| V_{TM} | Peak On-State Voltage | $I_T=1.5A$, Inst. measurement | | | 1.2 | V |
| I_{GT} | Gate Trigger Current | $V_D=6V$, $R_L=100\Omega$ | | | 200 | μA |
| V_{GT} | Gate Trigger Voltage | | | | 0.8 | V |
| V_{GD} | Non-Trigger Gate Voltage | $T_j=125^\circ\text{C}$, $V_D=\frac{1}{2}V_{DRM}$, $R_{GK}=1k\Omega$ | 0.2 | | | V |
| I_H | Holding Current | | | 500 | | μA |
| $R_{th(j-a)}$ | Thermal Resistance | Junction to ambient | | | 150 | $^\circ\text{C}/\text{W}$ |

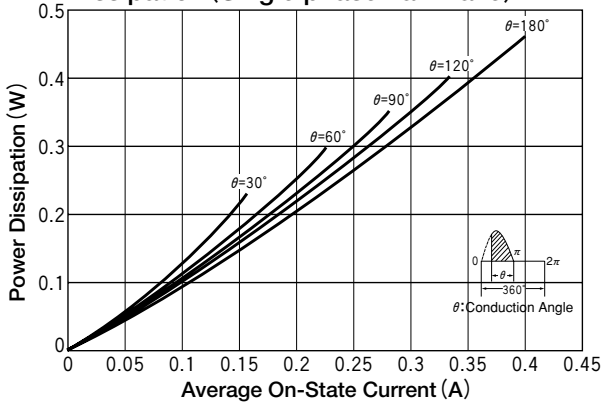
Gate Characteristics



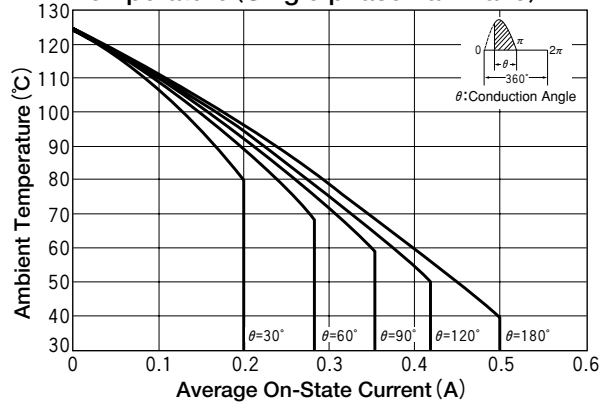
On-State Voltage (MAX)



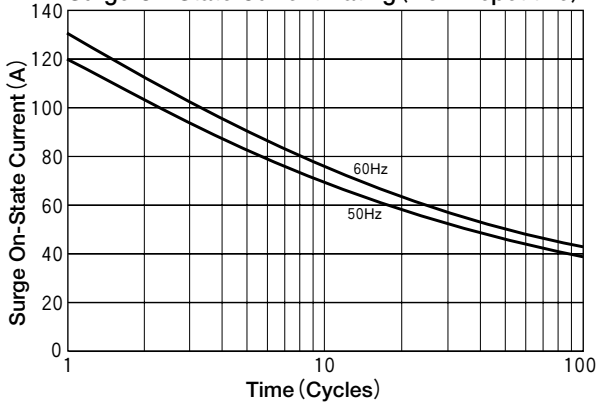
Average On-State Current vs Power Dissipation (Single phase half wave)



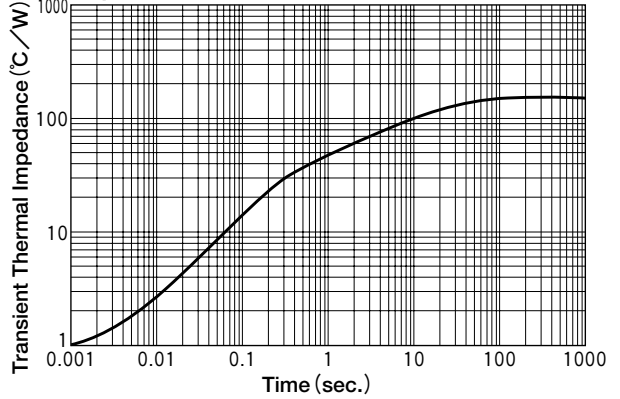
Average On-State Current vs Ambient Temperature (Single phase half wave)



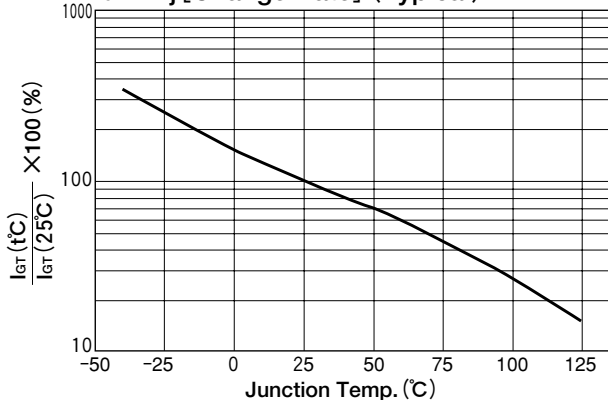
Surge On-State Current Rating (Non-Repetitive)



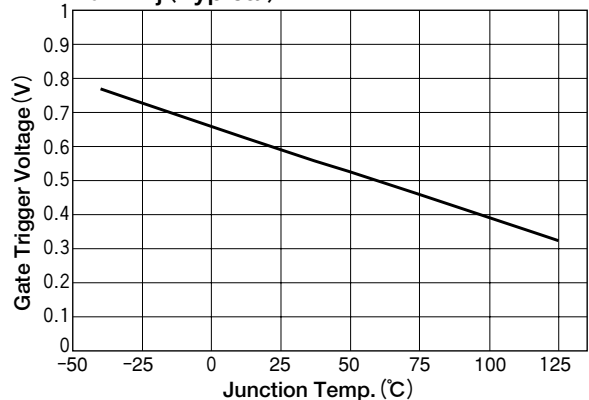
Maximum Transient Thermal Impedance Characteristics



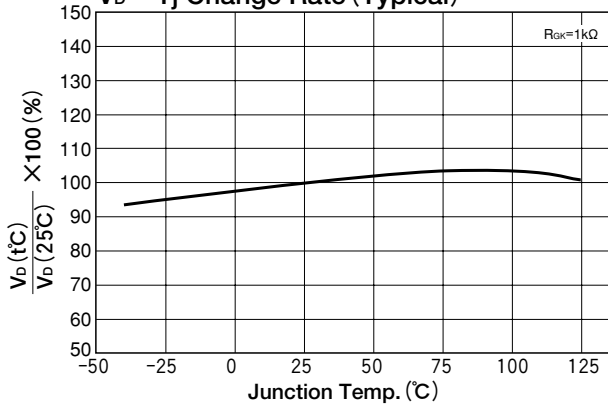
$I_{GT} - T_j$ [Change Rate] (Typical)



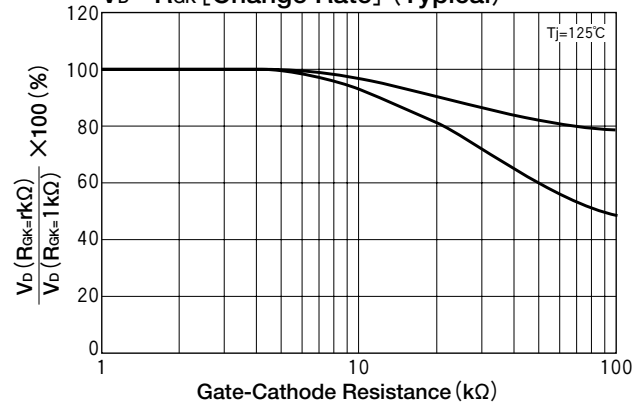
$V_{GT} - T_j$ (Typical)



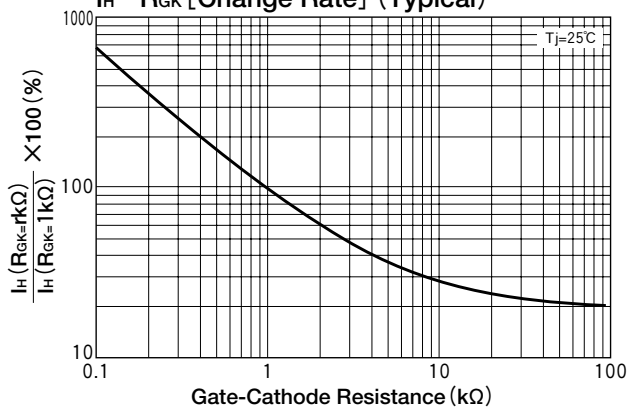
$V_D - T_j$ Change Rate (Typical)



$V_D - R_{GK}$ [Change Rate] (Typical)



$I_H - R_{GK}$ [Change Rate] (Typical)



$V_R - T_j$ Change Rate (Typical)

