

# THYRISTOR(Through Hole/Isolated)

## SMG12C60F

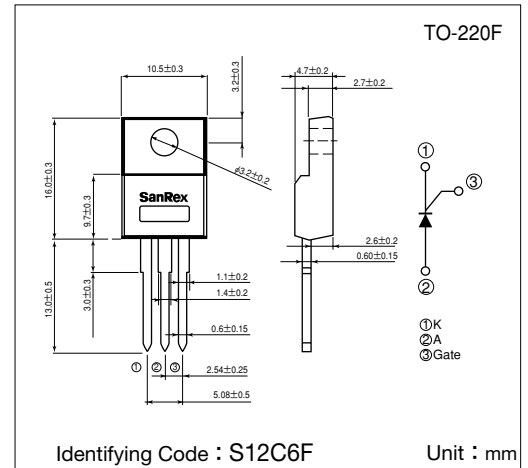
**SanRex** Thyristor SMG12C60F is designed for full wave AC control applications. It can be used as an ON/OFF function or for phase control operation.

### 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

- $I_{T(AV)}=12A$
- High Surge Current
- Low Voltage Drop
- Lead-Free Package



### Maximum Ratings

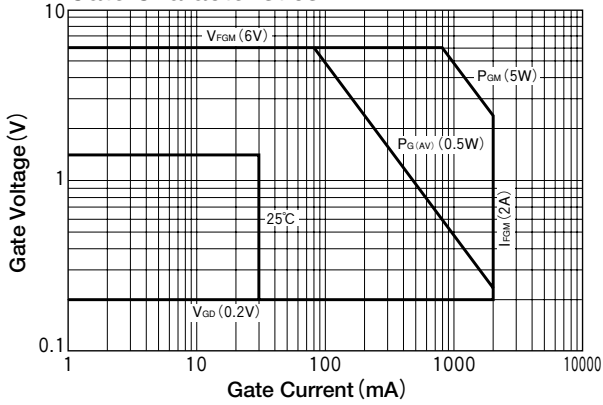
( $T_j=25^\circ\text{C}$  unless otherwise specified)

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, $T_c=68^\circ\text{C}$	12	A
$I_{T(RMS)}$	R.M.S. On-State Current	Single phase, half wave, $180^\circ$ , conduction, $T_c=68^\circ\text{C}$	18.8	A
$I_{TSM}$	Surge On-State Current	50Hz/60Hz, $\frac{1}{2}$ cycle Peak value, non-repetitive	180/197	A
$I^2t$	$I^2t$		162	$A^2S$
PGM	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

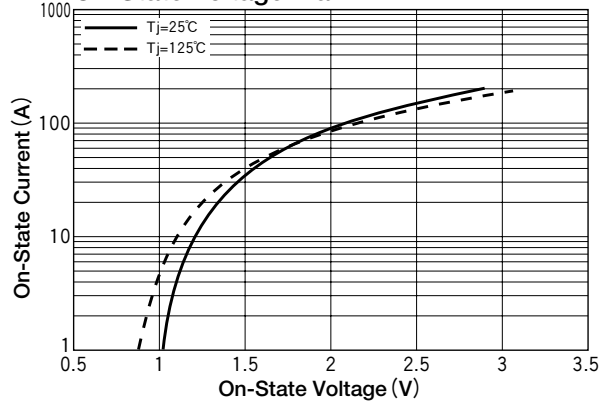
### Electrical Characteristics

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			3.3	$^\circ\text{C/W}$

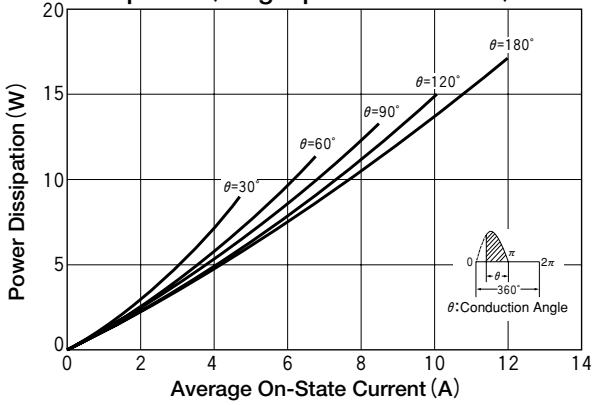
### Gate Characteristics



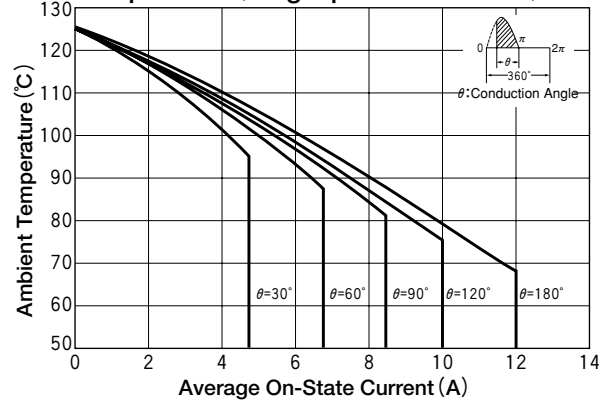
### On-State Voltage Max



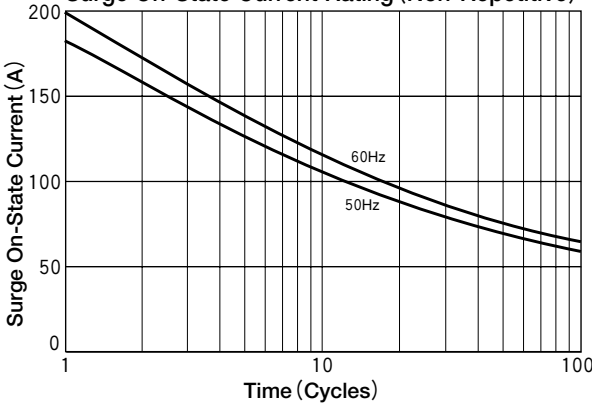
### Average On-State Current vs Power Dissipation (Single phase half wave)



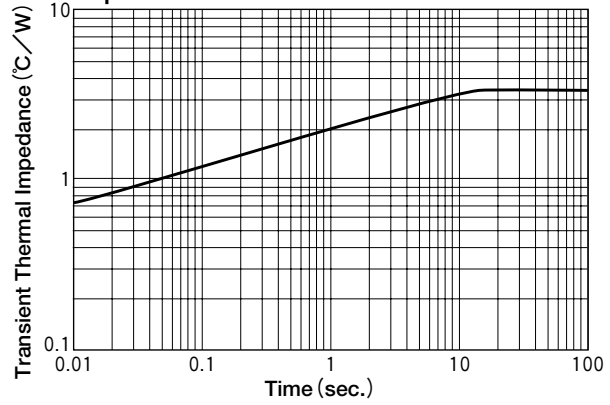
### Average On-State Current vs Ambient Temperature (Single phase half wave)



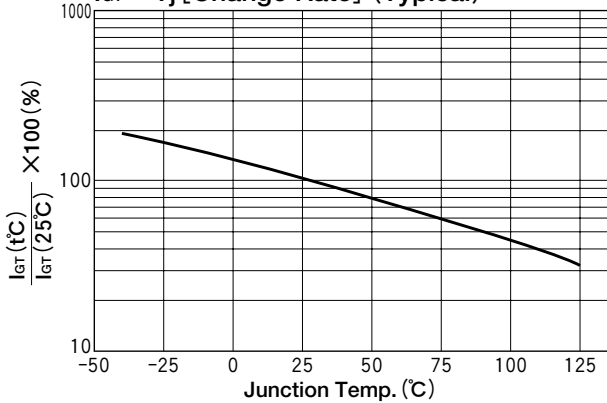
### Surge On-State Current Rating (Non-Repetitive)



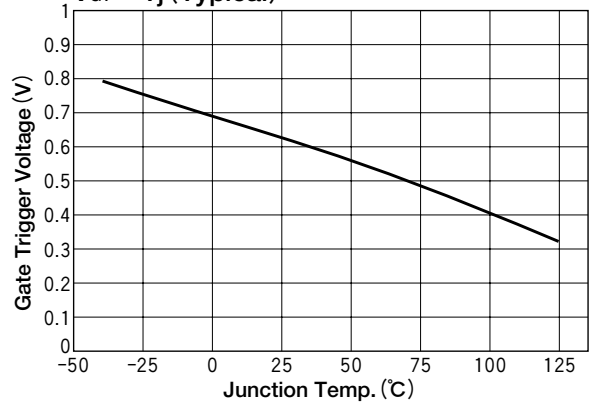
### Maximum Transient Thermal Impedance Characteristics



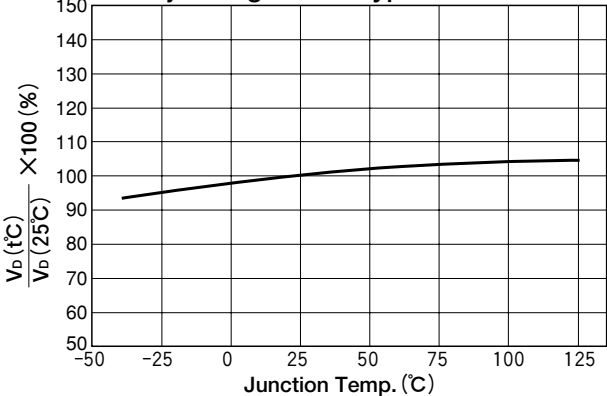
### $I_{GT} - T_j$ [Change Rate] (Typical)



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



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



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

