TRIAC(Through Hole/Non-isolated)
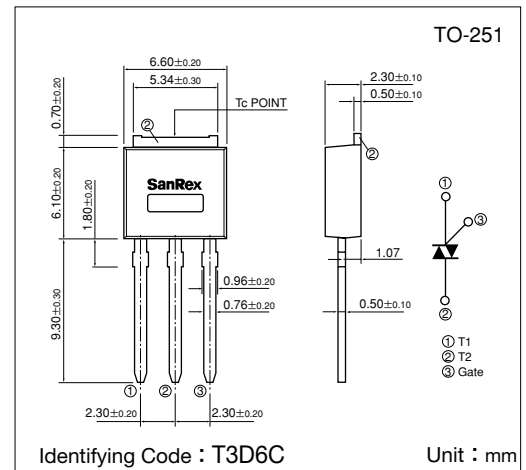
TMG3D60C

(Sensitive Gate)

SanRex Triac **TMG3D60C** 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 : Washing Machines, Vacuum Cleaners, Rice Cookers, Micro Wave Ovens, Hair Dryers, other control applications
- Industrial Use : SMPS, Copier Machines, Motor Controls, Dimmer, SSR, Heater Controls, Vending Machines, other control applications

Features
- $I_{T(RMS)}$=3A
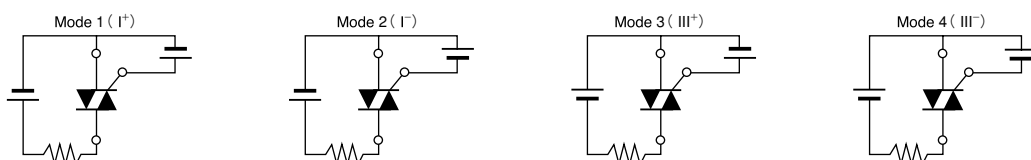- High Surge Current
- Low Voltage Drop
- Lead-Free Package

TO-251

6.60±0.20
5.34±0.30
0.70±0.20
6.10±0.20
1.80±0.20
9.30±0.30
0.96±0.20
0.76±0.20
2.30±0.20
2.30±0.20
Tc POINT
2.30±0.10
0.50±0.10
1.07
0.50±0.10

① T1
② T2
③ Gate

Identifying Code : T3D6C   Unit : mm

■Maximum Ratings
（Tj=25℃ unless otherwise specified）

Symbol	Item	Reference	Ratings	Unit
V_{DRM}	Repetitive Peak Off-State Voltage		600	V
$I_{T(RMS)}$	R.M.S. On-State Current	Tc=111℃	3	A
I_{TSM}	Surge On-State Current	One cycle, 50Hz/60Hz, Peak value non-repetitive	27/30	A
I^2t	I^2t （for fusing）		3.7	A^2S
P_{GM}	Peak Gate Power Dissipation		1.5	W
$P_{G(AV)}$	Average Gate Power Dissipation		0.1	W
I_{GM}	Peak Gate Current		1	A
V_{GM}	Peak Gate Voltage		7	V
Tj	Operating Junction Temperature		−40～＋125	℃
Tstg	Storage Temperature		−40～＋150	℃
	Mass		0.39	g

■Electrical Characteristics

Symbol		Item	Reference	Min.	Typ.	Max.	Unit
I_{DRM}		Repetitive Peak Off-State Current	V_D=V_{DRM}, Single phase, half wave, Tj=125℃			1	mA
V_{TM}		Peak On-State Voltage	I_T=4.5A, Inst. measurement			1.4	V
I^+_{GT1}	1	Gate Trigger Current	V_D=6V, R_L=10Ω			5	mA
I^-_{GT1}	2					5	
I^+_{GT3}	3					10	
I^-_{GT3}	4					5	
V^+_{GT1}	1	Gate Trigger Voltage				1.5	V
V^-_{GT1}	2					1.5	
V^+_{GT3}	3					2.0	
V^-_{GT3}	4					1.5	
V_{GD}		Non-Trigger Gate Voltage	Tj=125℃, V_D=½V_{DRM}	0.2			V
[dv/dt]c		Critical Rate of Rise of Off-State Voltage at Commutation	Tj=125℃, [di/dt]c=−1.5A/ms, V_D=⅔V_{DRM}	5			V/μs
I_H		Holding Current			2		mA
Rth(j-c)		Thermal Resistance	Junction to case			3.8	℃/W
Rth(j-a)			Junction to ambient			60	

Trigger mode of the triac

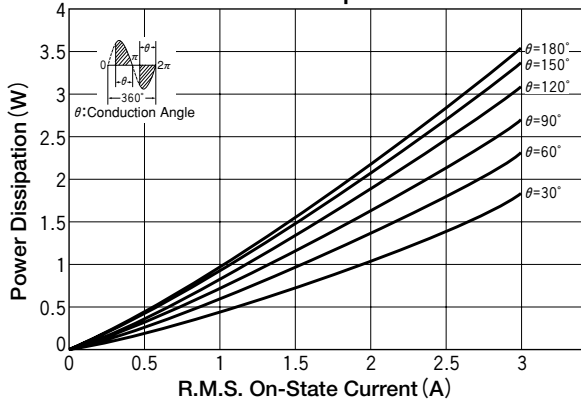Mode 1（I⁺）   Mode 2（I⁻）   Mode 3（III⁺）   Mode 4（III⁻）
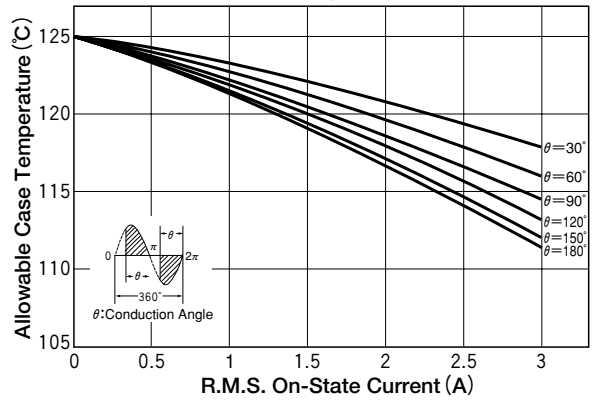
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Gate Characteristics

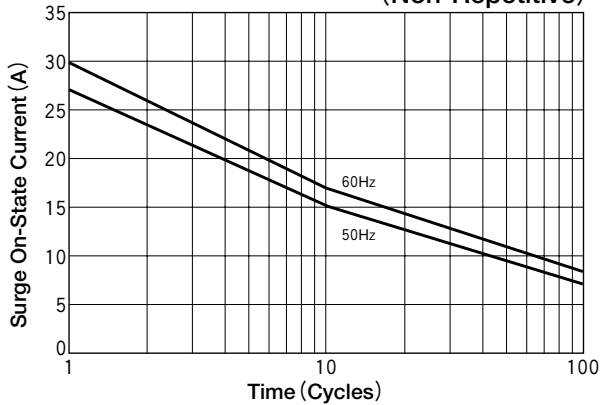## On-State Characteristics（MAX）
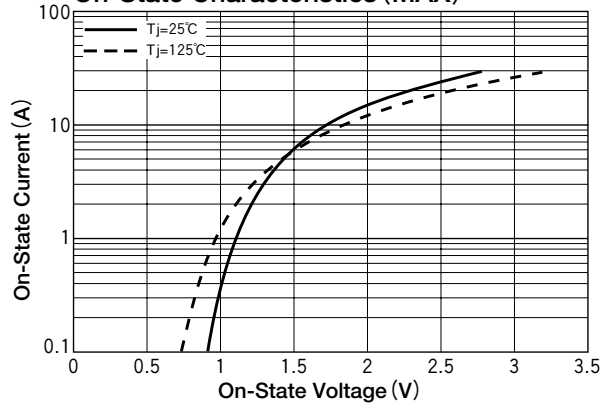
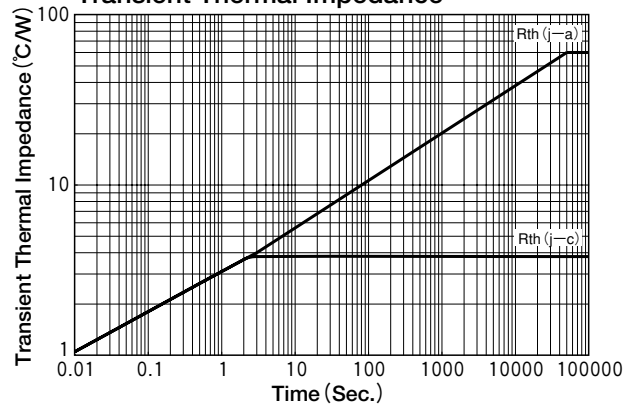## R.M.S. On-State Current vs Maximum Power Dissipation
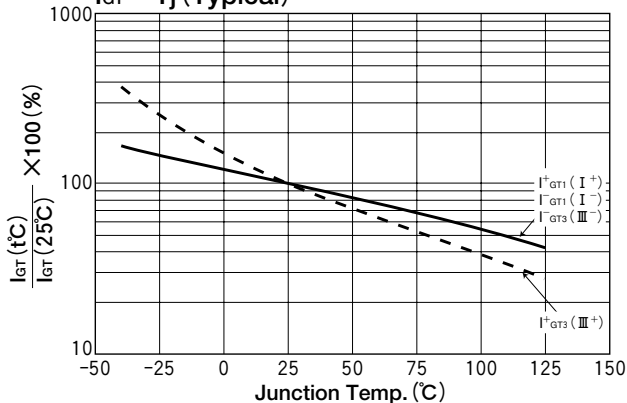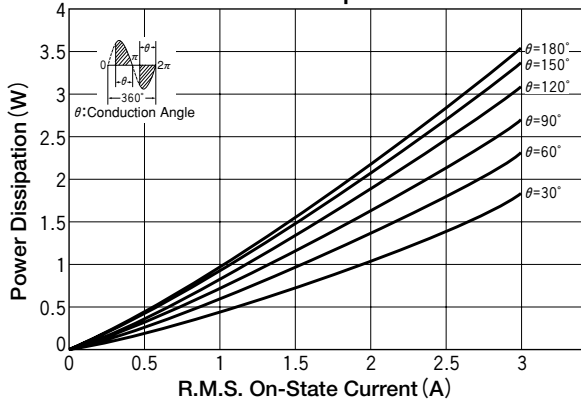

R.M.S. On-State vs Allowable Case Temperature
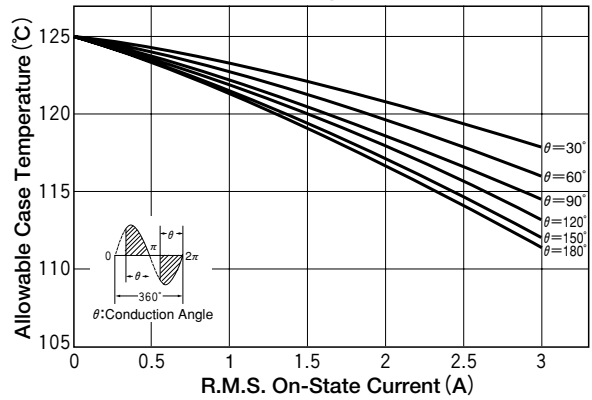
Surge On-State Current Rating（Non-Repetitive）
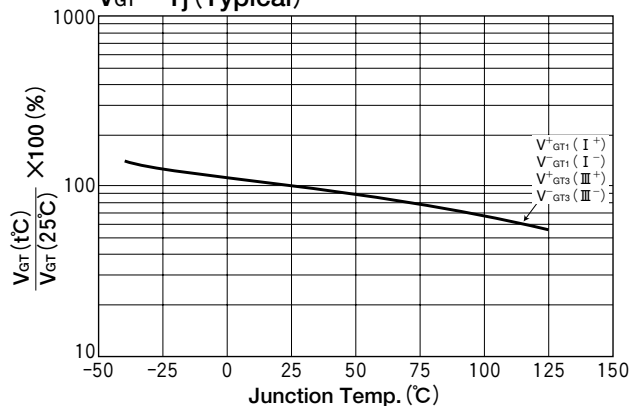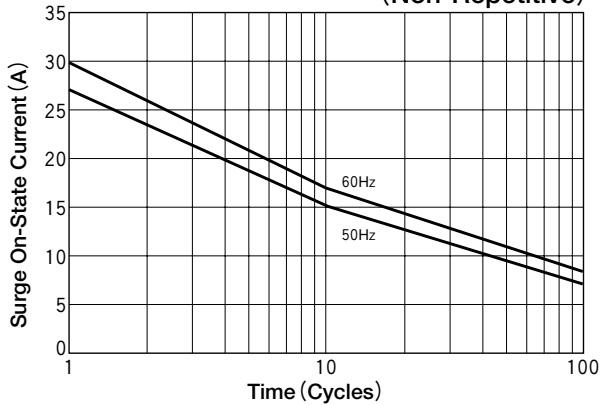

Transient Thermal Impedance
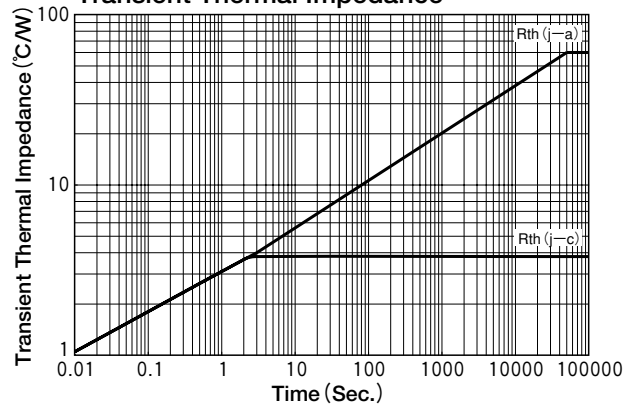
I$_{GT}$－Tj（Typical）
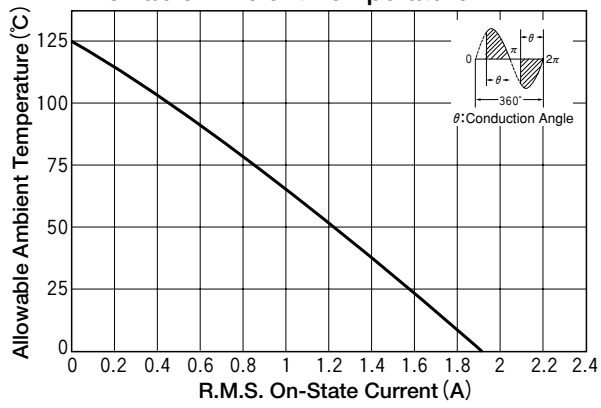

V$_{GT}$－Tj（Typical）

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R.M.S. On-State vs Allowable Ambient Temperature

Allowable Ambient Temperature (℃) vs R.M.S. On-State Current (A)

θ:Conduction Angle

TRIAC(Through Hole/Non-isolated)
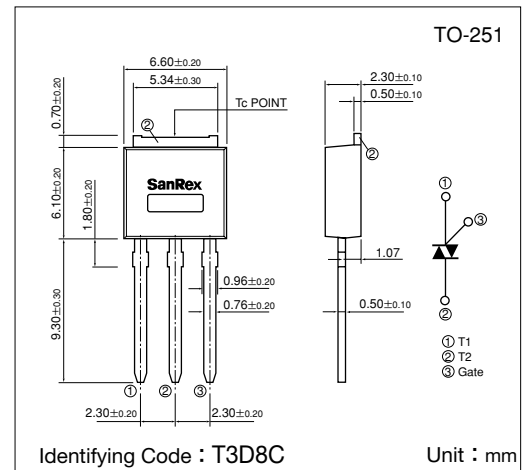
TMG3D80C

(Sensitive Gate)

SanRex Triac **TMG3D80C** 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 : Washing Machines, Vacuum Cleaners, Rice Cookers, Micro Wave Ovens, Hair Dryers, other control applications
- Industrial Use : SMPS, Copier Machines, Motor Controls, Dimmer, SSR, Heater Controls, Vending Machines, other control applications

Features
- $I_{T(RMS)}$=3A
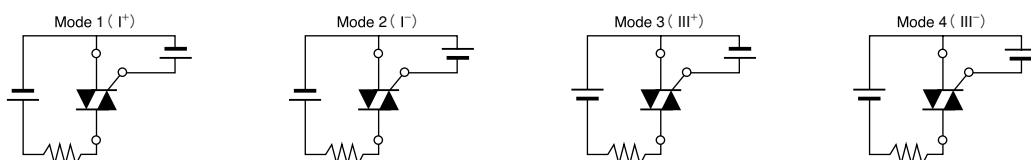- High Surge Current
- Low Voltage Drop
- Lead-Free Package

TO-251

Identifying Code : T3D8C

Unit : mm

① T1
② T2
③ Gate

■Maximum Ratings

(Tj=25℃ unless otherwise specified)

Symbol	Item	Reference	Ratings	Unit
V_{DRM}	Repetitive Peak Off-State Voltage		800	V
$I_{T(RMS)}$	R.M.S. On-State Current	Tc＝111℃	3	A
I_{TSM}	Surge On-State Current	One cycle, 50Hz/60Hz, Peak value non-repetitive	27/30	A
I^2t	I^2t (for fusing)		3.7	A^2S
P_{GM}	Peak Gate Power Dissipation		1.5	W
$P_{G(AV)}$	Average Gate Power Dissipation		0.1	W
I_{GM}	Peak Gate Current		1	A
V_{GM}	Peak Gate Voltage		7	V
Tj	Operating Junction Temperature		−40～＋125	℃
Tstg	Storage Temperature		−40～＋150	℃
	Mass		0.39	g

■Electrical Characteristics

Symbol		Item	Reference	Ratings			Unit
				Min.	Typ.	Max.	
I_{DRM}		Repetitive Peak Off-State Current	V_D=V_{DRM}, Single phase, half wave, Tj＝125℃			1	mA
V_{TM}		Peak On-State Voltage	I_T＝4.5A, Inst. measurement			1.4	V
I^+_{GT1}	1	Gate Trigger Current	V_D＝6V, R_L＝10Ω			5	mA
I^-_{GT1}	2					5	
I^+_{GT3}	3					10	
I^-_{GT3}	4					5	
V^+_{GT1}	1	Gate Trigger Voltage				1.5	V
V^-_{GT1}	2					1.5	
V^+_{GT3}	3					2.0	
V^-_{GT3}	4					1.5	
V_{GD}		Non-Trigger Gate Voltage	Tj＝125℃, V_D＝½V_{DRM}	0.2			V
[dv/dt]c		Critical Rate of Rise of Off-State Voltage at Commutation	Tj＝125℃, [di/dt]c＝−1.5A/ms, V_D＝400V	5			V/μs
I_H		Holding Current			2		mA
Rth(j-c)		Thermal Resistance	Junction to case			3.8	℃/W
Rth(j-a)			Junction to ambient			60	

Trigger mode of the triac

Mode 1 (I⁺)　　Mode 2 (I⁻)　　Mode 3 (III⁺)　　Mode 4 (III⁻)

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Gate Characteristics

Gate Voltage (V) vs Gate Current (mA)

- V$_{GM}$ (7V)
- P$_{GM}$ (1.5W)
- P$_{G(AV)}$ (0.1W)
- I$_{GM}$ (1A)
- 25℃ I$^+$$_{GT1}$
- I$^-$$_{GT1}$
- I$^-$$_{GT3}$
- 25℃ I$^+$$_{GT3}$
- V$_{GD}$ (0.2V)

On-State Characteristics (MAX)

On-State Current (A) vs On-State Voltage (V)

- Tj=25℃
- Tj=125℃

R.M.S. On-State Current vs Maximum Power Dissipation

Power Dissipation (W) vs R.M.S. On-State Current (A)

- θ=180°
- θ=150°
- θ=120°
- θ=90°
- θ=60°
- θ=30°
- θ:Conduction Angle

R.M.S. On-State vs Allowable Case Temperature

Allowable Case Temperature (℃) vs R.M.S. On-State Current (A)

- θ=30°
- θ=60°
- θ=90°
- θ=120°
- θ=150°
- θ=180°
- θ:Conduction Angle

Surge On-State Current Rating (Non-Repetitive)

Surge On-State Current (A) vs Time (Cycles)

- 60Hz
- 50Hz

Transient Thermal Impedance

Transient Thermal Impedance (℃/W) vs Time (Sec.)

- Rth (j−a)
- Rth (j−c)

I$_{GT}$ −Tj (Typical)

$\dfrac{I_{GT}(t℃)}{I_{GT}(25℃)}$ ×100 (%) vs Junction Temp. (℃)

- I$^+$$_{GT1}$ (I$^+$)
- I$^-$$_{GT1}$ (I$^-$)
- I$^-$$_{GT3}$ (Ⅲ$^-$)
- I$^+$$_{GT3}$ (Ⅲ$^+$)

V$_{GT}$ −Tj (Typical)

$\dfrac{V_{GT}(t℃)}{V_{GT}(25℃)}$ ×100 (%) vs Junction Temp. (℃)

- V$^+$$_{GT1}$ (I$^+$)
- V$^-$$_{GT1}$ (I$^-$)
- V$^+$$_{GT3}$ (Ⅲ$^+$)
- V$^-$$_{GT3}$ (Ⅲ$^-$)

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**R.M.S. On-State vs
Allowable Ambient Temperature**

Allowable Ambient Temperature (℃) vs R.M.S. On-State Current (A)

θ:Conduction Angle