

Bi-Directional Triode Thyristor

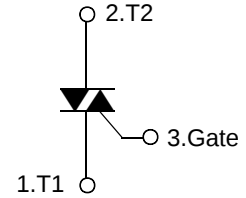
Features

- ◆ Repetitive Peak Off-State Voltage : 600V
- ◆ R.M.S On-State Current ($I_{T(RMS)} = 25\text{ A}$)
- ◆ High Commutation dv/dt

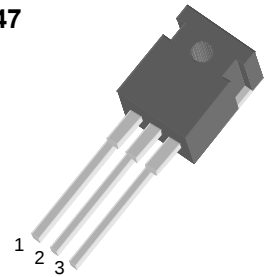
General Description

This device is suitable for AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay.

Symbol



TO-247



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

Symbol	Parameter	Condition	Ratings	Units
V_{DRM}	Repetitive Peak Off-State Voltage		600	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_C = 86^\circ\text{C}$	25	A
I_{TSM}	Surge On-State Current	One Cycle, 50Hz/60Hz, Peak, Non-Repetitive	225/250	A
I_t^2	I_t^2		260	A^2s
P_{GM}	Peak Gate Power Dissipation		5.0	W
$P_{G(AV)}$	Average Gate Power Dissipation		0.5	W
I_{GM}	Peak Gate Current		2.0	A
V_{GM}	Peak Gate Voltage		10	V
T_J	Operating Junction Temperature		- 40 ~ 125	$^\circ\text{C}$
T_{STG}	Storage Temperature		- 40 ~ 150	$^\circ\text{C}$
	Mass		6.2	g

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Electrical Characteristics

Symbol	Items		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
I _{DRM}	Repetitive Peak Off-State Current		V _D = V _{DRM} , Single Phase, Half Wave T _J = 125 °C	—	—	5.0	mA
V _{TM}	Peak On-State Voltage		I _T = 35 A, Inst. Measurement	—	—	1.4	V
I ⁺ _{GT1}	I	Gate Trigger Current	V _D = 6 V, R _L =10 Ω	—	—	30	mA
I ⁻ _{GT1}	II			—	—	30	
I ⁻ _{GT3}	III			—	—	30	
V ⁺ _{GT1}	I	Gate Trigger Voltage	V _D = 6 V, R _L =10 Ω	—	—	1.5	V
V _{GT1}	II			—	—	1.5	
V _{GT3}	III			—	—	1.5	
V _{GD}	Non-Trigger Gate Voltage		T _J = 125 °C, V _D = 1/2 V _{DRM}	0.2	—	—	V
(dv/dt) _c	Critical Rate of Rise Off-State Voltage at Commutation		T _J = 125 °C, [di/dt] _c = -12.5 A/ms, V _D =2/3 V _{DRM}	6	—	—	V/ <i>μ</i> s
I _H	Holding Current			—	35	—	mA
R _{th(j-c)}	Thermal Impedance		Junction to case	—	—	1.3	°C/W

Fig 1. Gate Characteristics

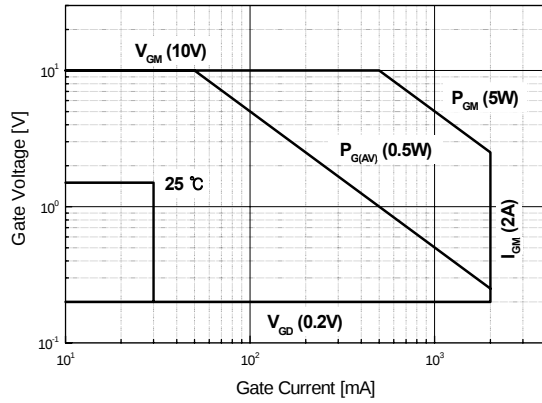


Fig 2. On-State Voltage

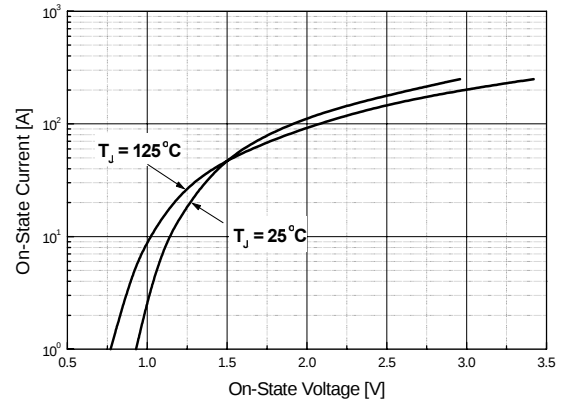


Fig 3. On State Current vs. Maximum Power Dissipation

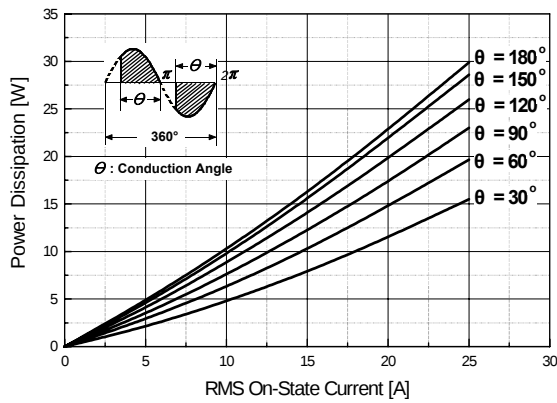


Fig 4. On State Current vs. Allowable Case Temperature

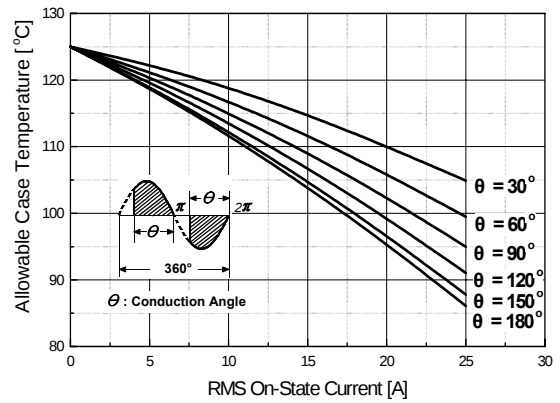


Fig 5. Surge On-State Current Rating (Non-Repetitive)

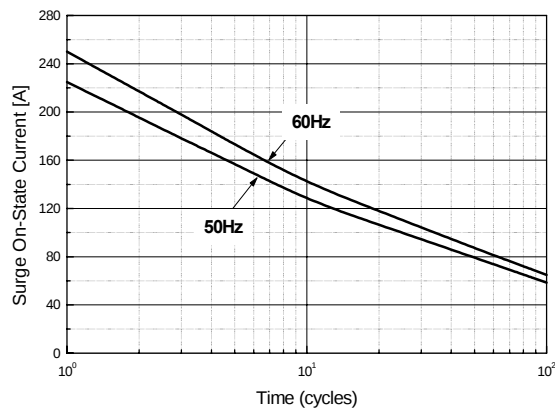
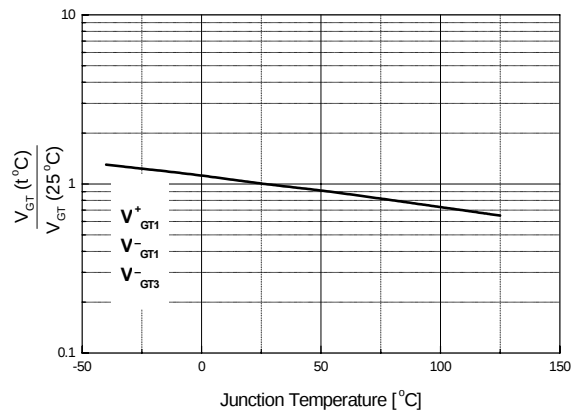


Fig 6. Gate Trigger Voltage vs. Junction Temperature



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Fig 7. Gate Trigger Current vs. Junction Temperature

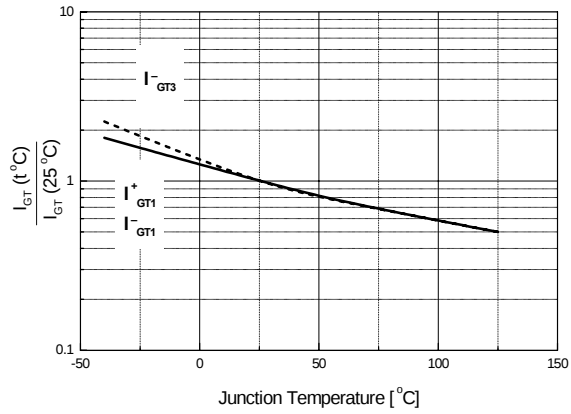


Fig 8. Transient Thermal Impedance

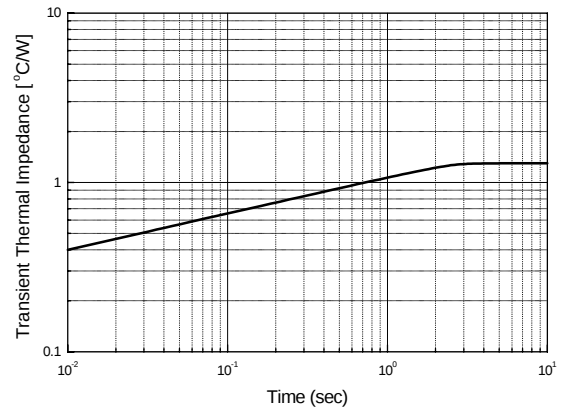
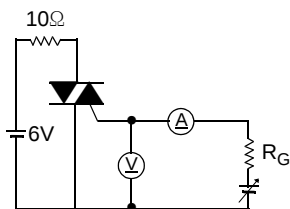
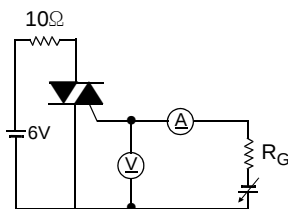


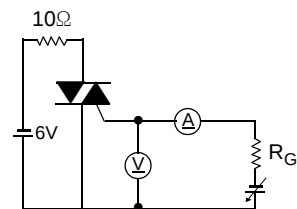
Fig 9. Gate Trigger Characteristics Test Circuit



Test Procedure I



Test Procedure II



Test Procedure III

TO-247 Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.77		16.03	0.621		0.631
B	20.80		21.10	0.819		0.831
C	20.05		20.31	0.789		0.800
D	4.48		4.58	0.176		0.180
E	4.27		4.37	0.168		0.172
F	5.32		5.58	0.209		0.220
G	4.90		5.16	0.193		0.203
H	1.90		2.06	0.075		0.081
I	2.35		2.45	0.093		0.096
J		0.6			0.024	
K	1.93		2.13	0.076		0.084
L	1.07		1.33	0.042		0.052
M	2.99		3.25	0.118		0.128
ϕ	3.56		3.66	0.140		0.144

