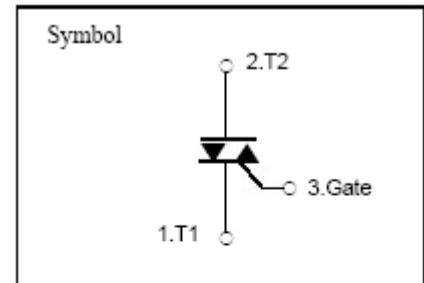


Bi-Directional Triode Thyristor

Features

- ◆ Repetitive Peak Off-State Voltage : 800V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$)= 8 A)
- ◆ High Commutation dv/dt
- ◆ Isolation Voltage (V_{ISO} = 1500V AC)

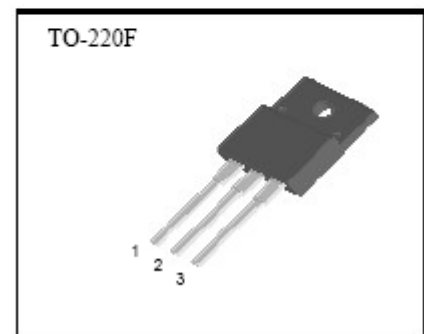


General Description

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

This device is approved to comply with applicable requirements by Underwriters Laboratories Inc.

By using an internal ceramic pad, the TO220F series provides voltage insulated tab (rated at 2500V RMS) complying with UL standards (file ref.:E347423)



Absolute Maximum Ratings (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Condition	Ratings	Units
V_{DRM}	Repetitive Peak Off-State Voltage		800	V
$I_{T(RMS)}$	R.M.S On-State Current	$T_c = 89^\circ\text{C}$	8.0	A
I_{TSM}	Surge On-State Current	One Cycle, 50Hz/60Hz, Peak, Non-Repetitive	80/88	A
$I_2 t$	$I_2 t$		32	A ² s
PGM	Peak Gate Power Dissipation		5.0	W
$PG(AV)$	Average Gate Power Dissipation		0.5	W
I_{GM}	Peak Gate Current		2.0	A
V_{GM}	Peak Gate Voltage		10	V
V_{ISO}	Isolation Breakdown Voltage(R.M.S.)	A.C. 1 minute	1500	V
T_J	Operating Junction Temperature		- 40 ~ 125	°C
T_{STG}	Storage Temperature		- 40 ~ 150	°C
	Mass		2.0	g

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Electrical Characteristics

Symbol	Items		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
IDRM	Repetitive Peak Off-State Current		VD = VDRM, Single Phase, Half Wave TJ = 125 °C	—	—	2.0	mA
VTM	Peak On-State Voltage		IT = 12 A, Inst. Measurement	—	—	1.4	V
I+GT1	I	Gate Trigger Current	VD = 6 V, RL=10 Ω	—	—	30	mA
I -GT1	II			—	—	30	
I -GT3	III			—	—	30	
V+GT1	I	Gate Trigger Voltage	VD = 6 V, RL=10 Ω	—	—	1.5	V
V-GT1	II			—	—	1.5	
V-GT3	III			—	—	1.5	
VGD	Non-Trigger Gate Voltage		TJ = 125 °C, VD = 1/2 VDRM	0.2	—	—	V
(dv/dt)c	Critical Rate of Rise Off-State Voltage at Commutation		TJ = 125 °C, [di/dt]c = -4.0 A/ms, VD=2/3 VDRM	10	—	—	V/μs
IH	Holding Current			—	15	—	mA
Rth(j-c)	Thermal Impedance		Junction to case	—	—	3.7	°C/W

Fig 1. Gate Characteristics

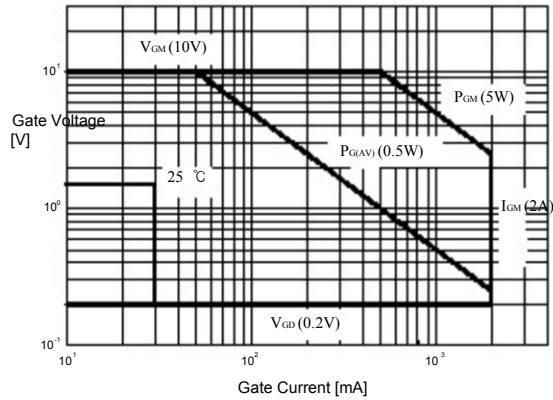


Fig 2. On-State Voltage

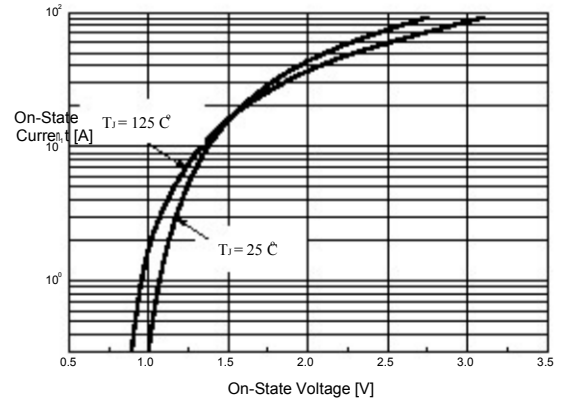


Fig 3. On State Current vs. Maximum Power Dissipation

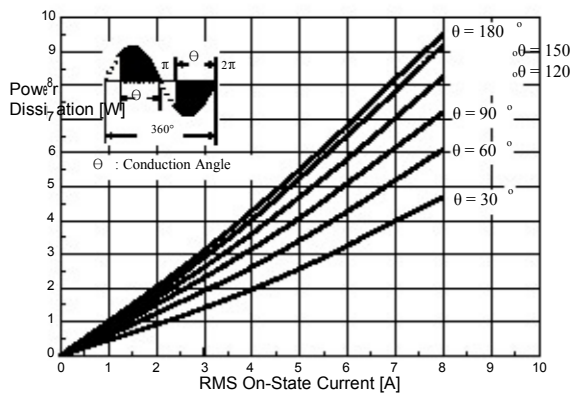


Fig 4. On State Current vs. Allowable Case Temperature

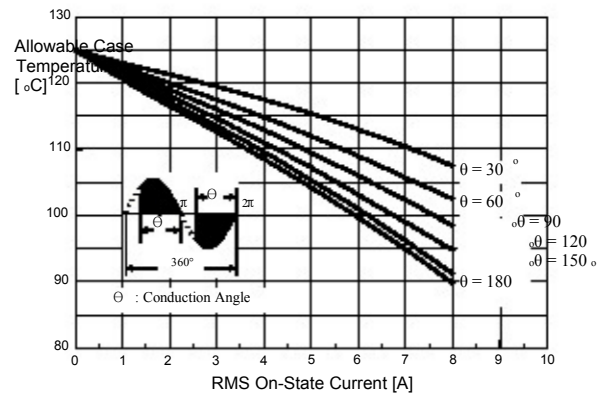


Fig 5. Surge On-State Current Rating (Non-Repetitive)

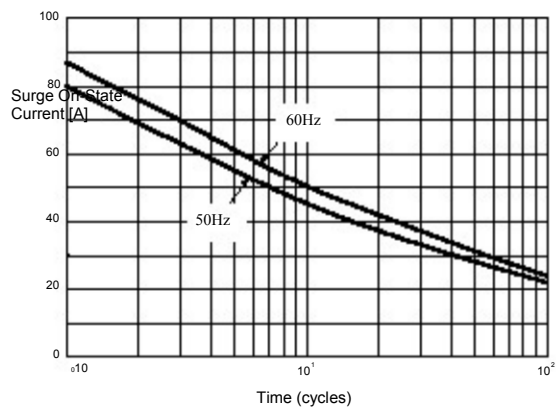
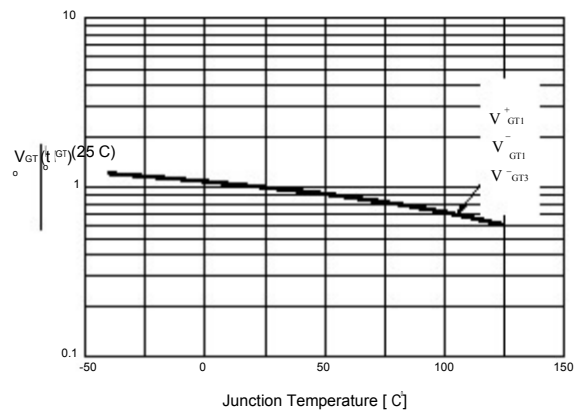


Fig 6. Gate Trigger Voltage vs. Junction Temperature



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Fig 7. Gate Trigger Current vs. Junction Temperature

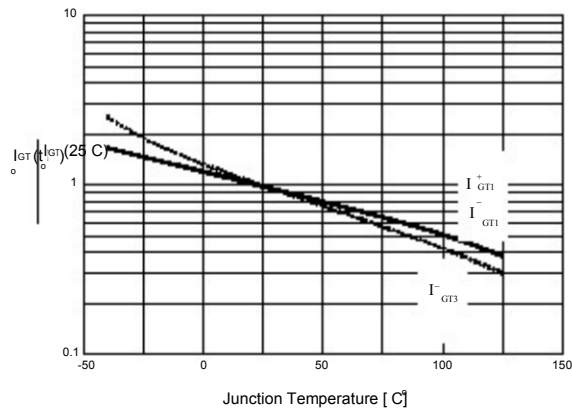


Fig 8. Transient Thermal Impedance

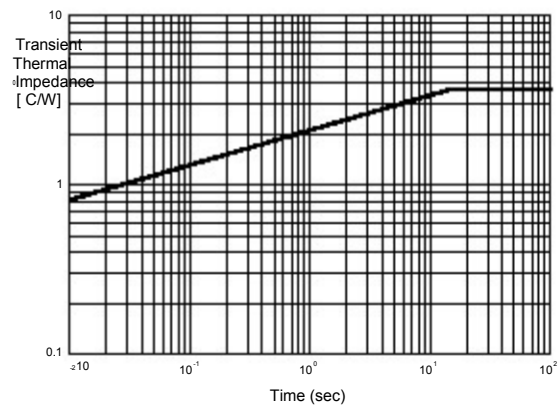
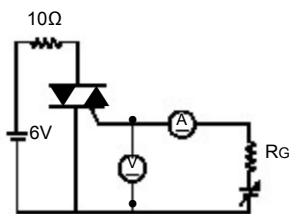
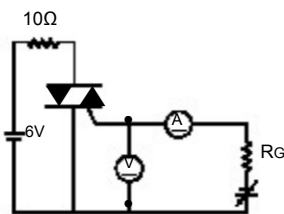


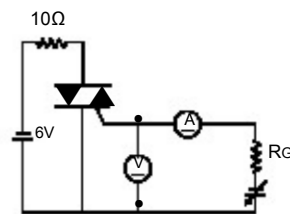
Fig 9. Gate Trigger Characteristics Test Circuit



Test Procedure I



Test Procedure II



Test Procedure III

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TO-220F Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	10.4		10.6	0.409		0.417
B	6.40		6.44	0.252		0.254
C	9.55		9.81	0.376		0.386
D	13.47		13.73	0.530		0.540
E	6.05		6.15	0.238		0.242
F	1.26		1.36	0.050		0.054
G	3.17		3.43	0.125		0.135
H	1.87		2.13	0.074		0.084
I	2.57		2.83	0.101		0.111
J						
K						
L		2.54			0.100	
M		5.08			0.200	
N						
O	2.51		2.62	0.099		0.103
	1.25		1.55	0.049		0.061
	0.45		0.63	0.018		0.025
	0.6		1.0	0.024		0.039
ϕ		3.7			0.146	
ϕ 1		3.2			0.126	
ϕ 2		1.5			0.059	

