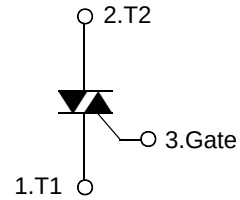
BTA12-600B

Bi-Directional Triode Thyristor

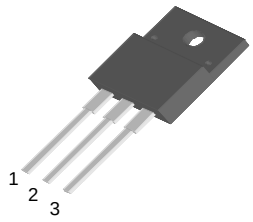
Symbol



Features

- ◆ Repetitive Peak Off-State Voltage : 600V
- ◆ R.M.S On-State Current ($I_{T(RMS)}$= 12 A)
- ◆ High Commutation dv/dt
- ◆ Isolation Voltage (V_{ISO} = 1500V AC)

TO-220F



Absolute Maximum Ratings (T_J = 25°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 = 79 °C	12	A
I_{TSM}	Surge On-State Current	One Cycle, 50Hz/60Hz, Peak, Non-Repetitive	119/130	A
I^2t	I^2t		71	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
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

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	—	—	2.0	mA
V_{TM}	Peak On-State Voltage		I_T = 20 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 = -6.0 A/ms, V_D=2/3 V_{DRM}	10	—	—	V/μs
I_H	Holding Current			—	20	—	mA
$R_{th(j-c)}$	Thermal Impedance		Junction to case	—	—	3.3	°C/W

Fig 1. Gate Characteristics

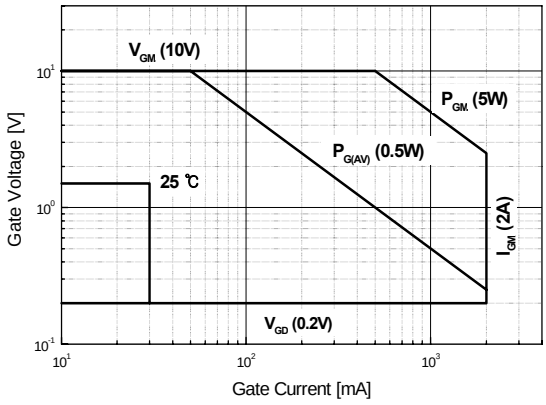


Fig 2. On-State Voltage

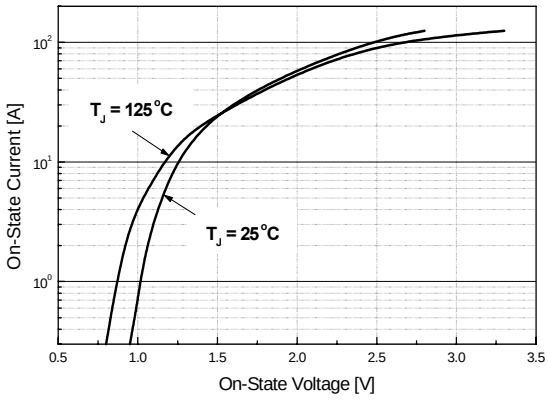


Fig 3. On State Current vs. Maximum Power Dissipation

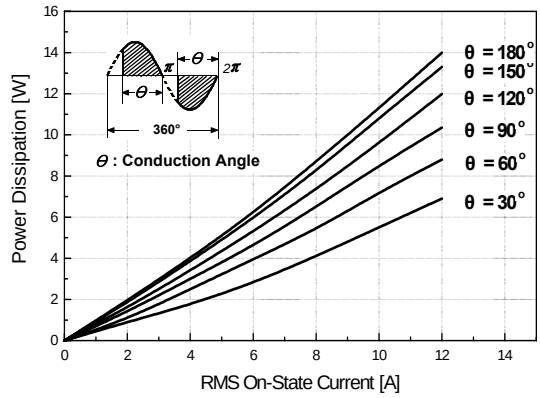


Fig 4. On State Current vs. Allowable Case Temperature

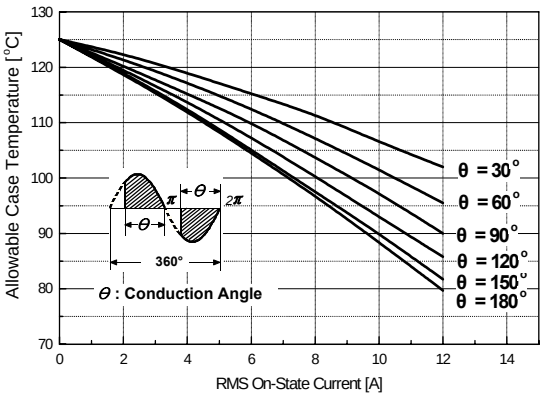


Fig 5. Surge On-State Current Rating (Non-Repetitive)

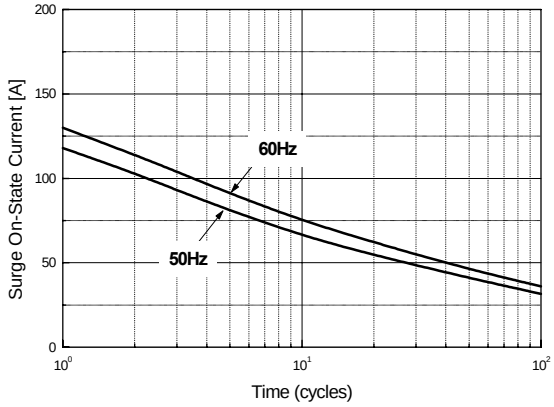


Fig 6. Gate Trigger Voltage vs. Junction Temperature

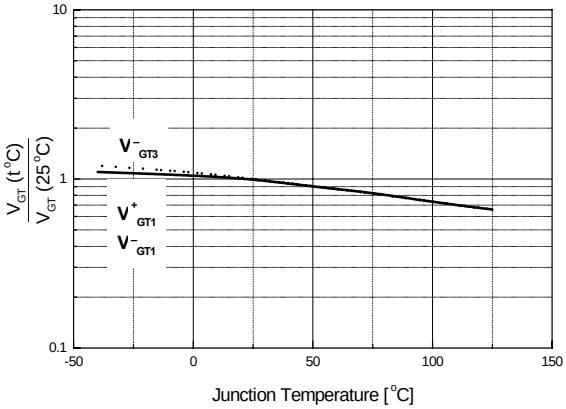


Fig 7. Gate Trigger Current vs. Junction Temperature

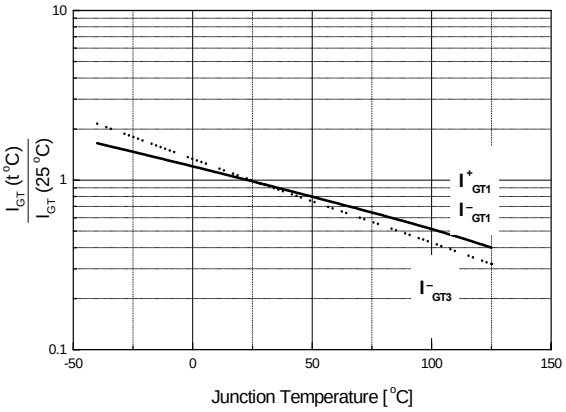


Fig 8. Transient Thermal Impedance

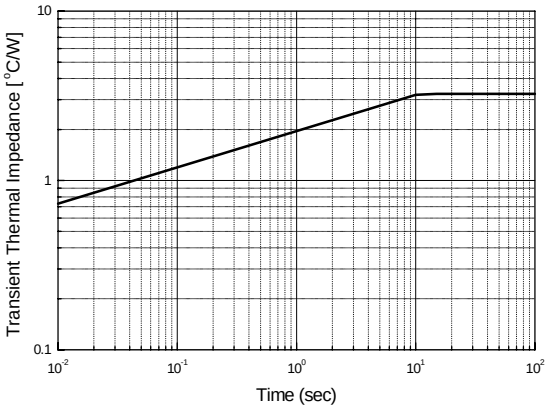
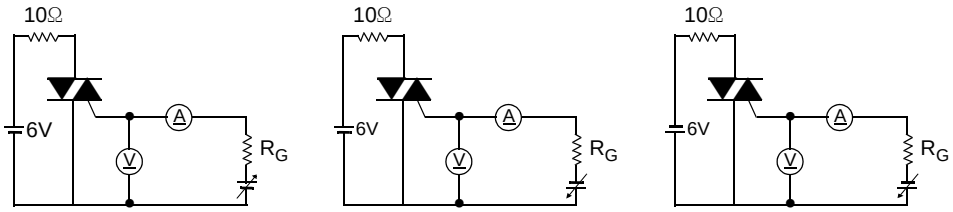


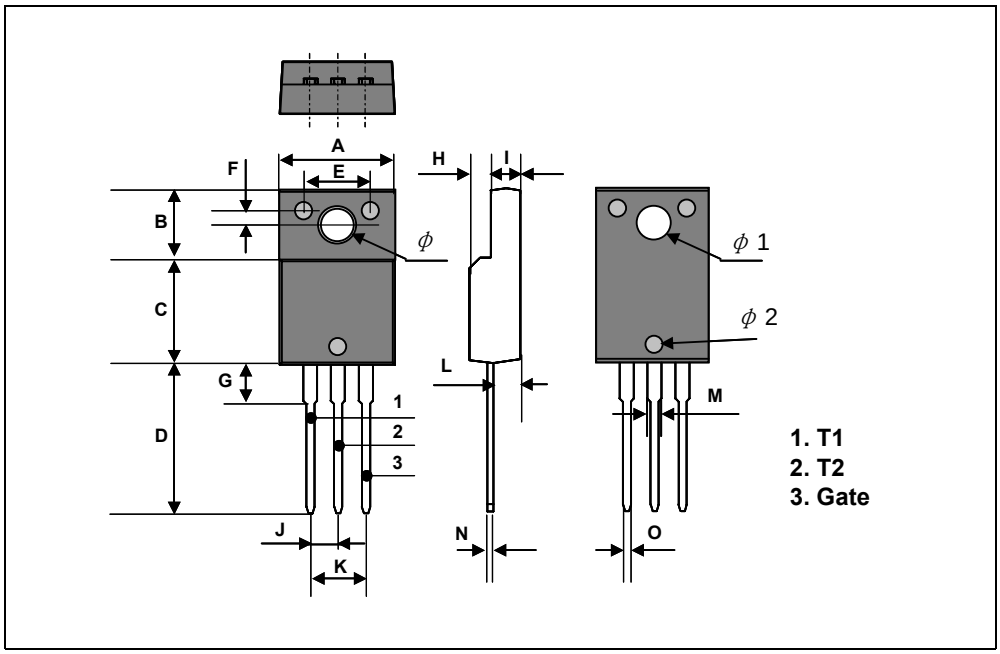
Fig 9. Gate Trigger Characteristics Test Circuit



Test Procedure Ⅰ　　Test Procedure Ⅱ　　Test Procedure Ⅲ

TO-220F Package Dimension

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	10.4		10.6	0.409		0.417
B	6.18		6.44	0.243		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		2.54			0.100	
K		5.08			0.200	
L	2.51		2.62	0.099		0.103
M	1.25		1.55	0.049		0.061
N	0.45		0.63	0.018		0.025
O	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	



TO-220F Package Dimension, Forming

Dim.	mm			Inch		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	10.4		10.6	0.409		0.417
B	6.18		6.44	0.243		0.254
C	9.55		9.81	0.376		0.386
D	8.4		8.66	0.331		0.341
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		2.54			0.100	
K		5.08			0.200	
L	2.51		2.62	0.099		0.103
M	1.25		1.55	0.049		0.061
N	0.45		0.63	0.018		0.025
O	0.6		1.0	0.024		0.039
P		5.0			0.197	
ϕ		3.7			0.146	
ϕ 1		3.2			0.126	
ϕ 2		1.5			0.059