TOSHIBA Thyristor Silicon Planar Type

SF5G49, SF5J49, USF5G49, USF5J49

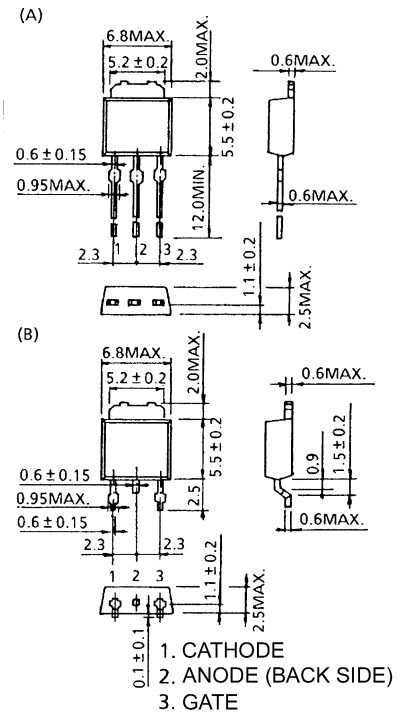
Midium Power Control Applications

- Repetitive peak off-state voltage: V_{DRM} = 400, 600 V
  Repetitive peak reverse voltage: V_{RRM} = 400, 600 V
- Average on-state current: $I_{T\ (AV)}$ = 5 A
- Gate trigger current: I_{GT} = 70 μA max

Maximum Ratings

Characteristics		Symbol	Rating	Unit
Repetitive peak off-state voltage and Repetitive peak reverse voltage (R_{GK} = 330 Ω)	SF5G49 USF5G49	V_{DRM} V_{RRM}	400	V
	SF5J49 USF5J49		600	
Non-repetitive peak reverse voltage (non-repetitive < 5 ms, T_j = 0~125°C, R_{GK} = 330 Ω)	SF5G49 USF5G49	V_{RSM}	400	V
	SF5J49 USF5J49		600	
Average on-state current		$I_{T\ (AV)}$	5	A
R.M.S on-state current		$I_{T\ (RMS)}$	7.8	A
Peak one cycle surge on-state current (non-repetitive)		I_{TSM}	65 (50 Hz)	A
I^2t limit value		I^2t	20	A^2s
Peak gate power dissipation		P_{GM}	0.5	W
Average gate power dissipation		$P_{G\ (AV)}$	0.05	W
Peak forward gate voltage		V_{FGM}	5	V
Peak reverse gate voltage		V_{RGM}	–5	V
Peak forward gate current		I_{GM}	200	mA
Junction temperature		T_j	–40~125	°C
Storage temperature range		T_{stg}	–40~125	°C

Unit in mm



JEDEC	—	
EIAJ	—	
TOSHIBA	SF5G49 SF5J49	(A) 13-7F1A
	USF5G49 USF5J49	(B) 13-7F2A

Weight: (A) 0.36 g (typ.)
(B) 0.28 g (typ.)

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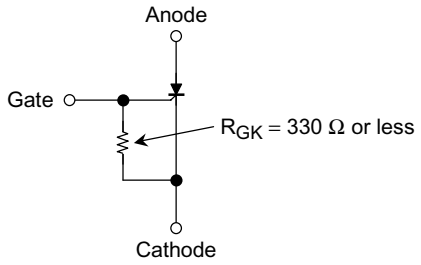
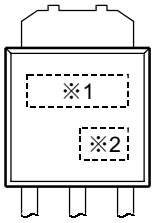
Note: Should be used with gate resistance as follows



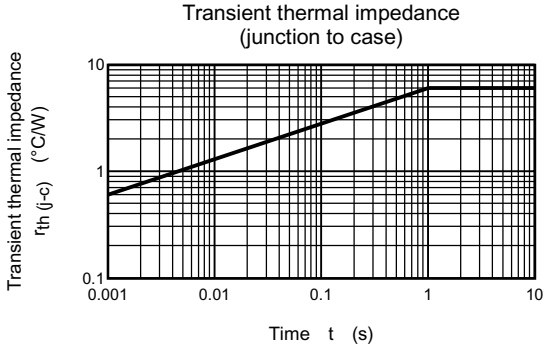
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Repetitive peak off-state current and Repetitive peak reverse current	I_{DRM} I_{RRM}	V_{DRM} = V_{RRM} = Rated R_{GK} = 330 Ω	—	—	20	μA
Peak on-state voltage	V_{TM}	I_{TM} = 12 A	—	—	1.6	V
Gate trigger voltage	V_{GT}	V_D = 6 V, R_L = 100 Ω R_{GK} = 330 Ω	—	—	0.8	V
Gate trigger current	I_{GT}		3	—	70	μA
Gate non-trigger voltage	V_{GD}	V_D = Rated × 2/3, Tc = 125°C	0.2	—	—	V
Critical rate of rise of off-state voltage	dv/dt	V_{DRM} = Rated × 2/3, Tc = 75°C R_{GK} = 330 Ω, Exponential rise	—	50	—	V/μs
Holding current	I_H	R_L = 100 Ω, R_{GK} = 330 Ω	—	2.5	—	mA
Thermal resistance (junction to case)	$R_{th\ (j-c)}$	DC	—	—	6.0	°C/W

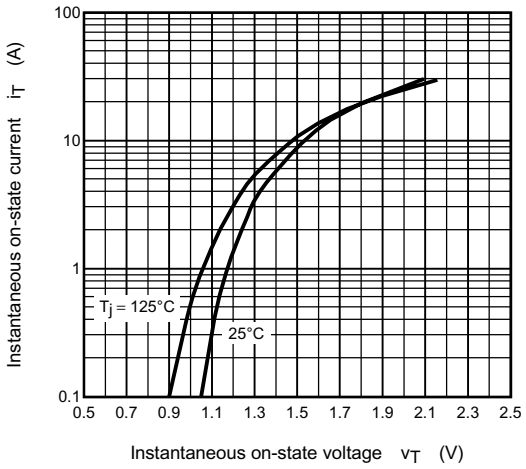
Marking



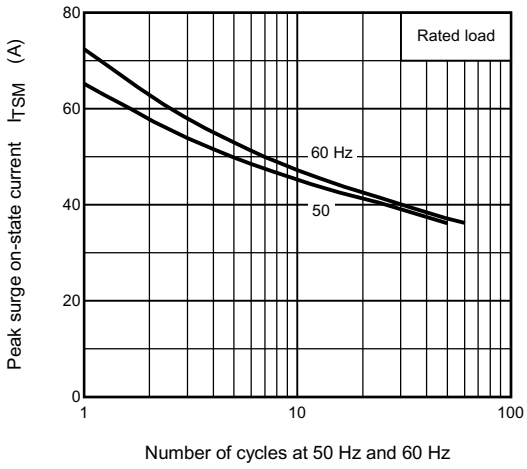
※1	Mark	F5G49	Type Name	SF5G49, USF5G49
		F5J49		SF5J49, USF5J49
※2	Lot Number □□ Month (starting from alphabet A) Year (last decimal digit of the current year)			



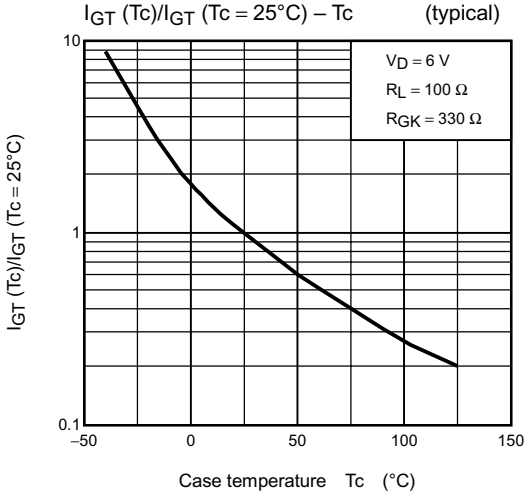
$i_T - v_T$



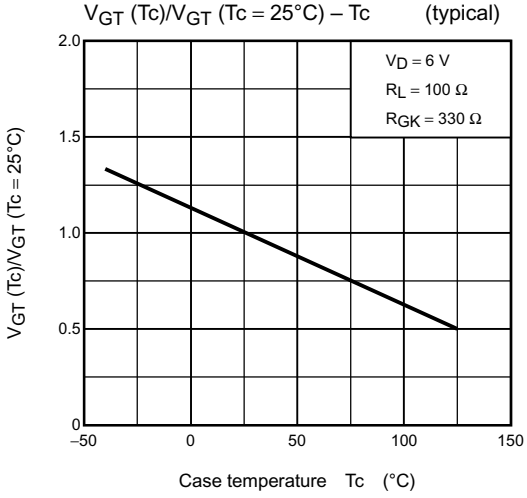
Surge on-state current (non-repetitive)



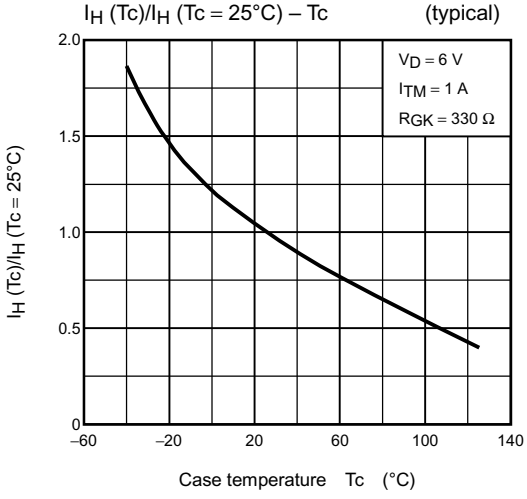
I_{GT} (Tc)/I_{GT} (Tc = 25°C) – Tc (typical)



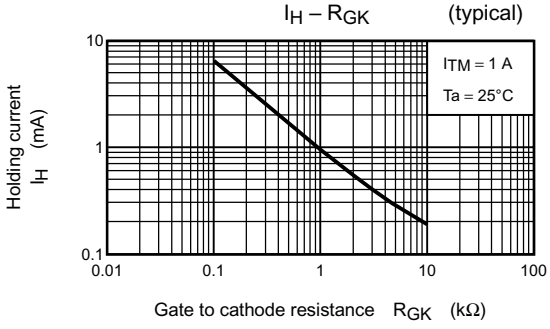
V_{GT} (Tc)/V_{GT} (Tc = 25°C) – Tc (typical)



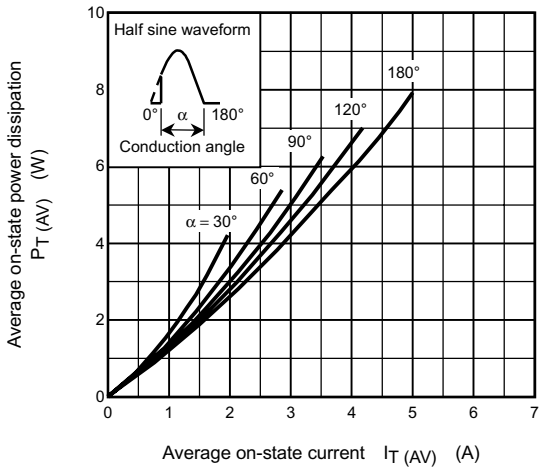
I_H (Tc)/I_H (Tc = 25°C) – Tc (typical)



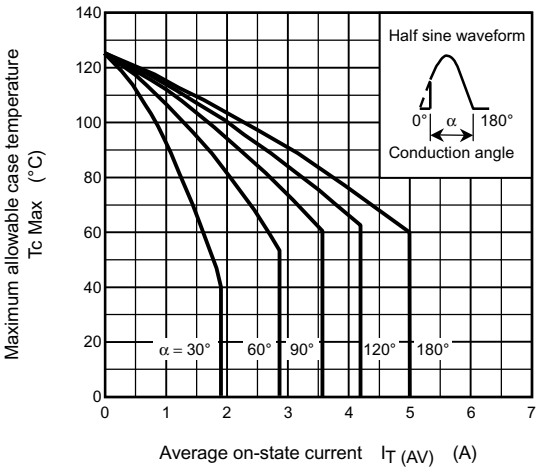
$I_H - R_{GK}$ (typical)



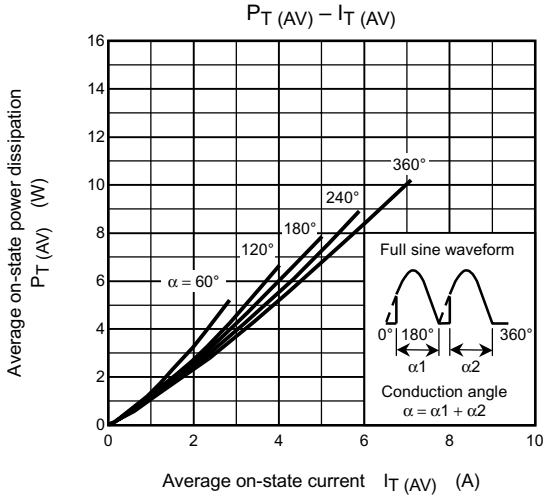
$P_{T\,(AV)} - I_{T\,(AV)}$



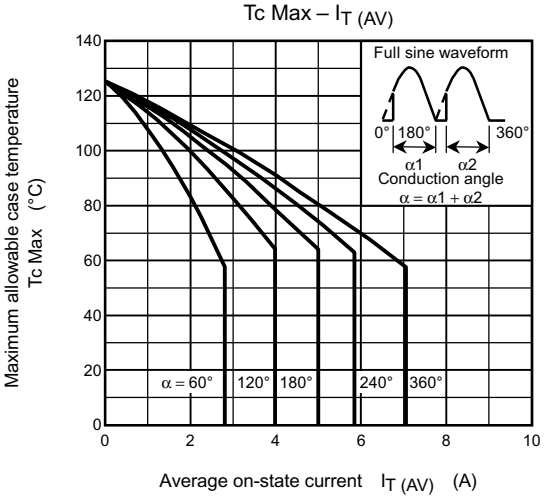
$Tc\ Max - I_{T\,(AV)}$



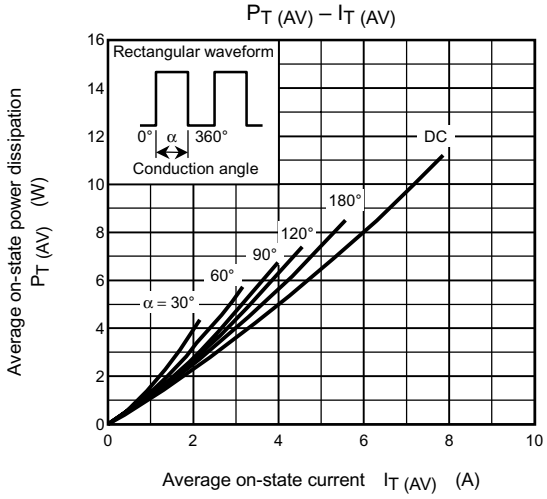
$P_{T\,(AV)} - I_{T\,(AV)}$



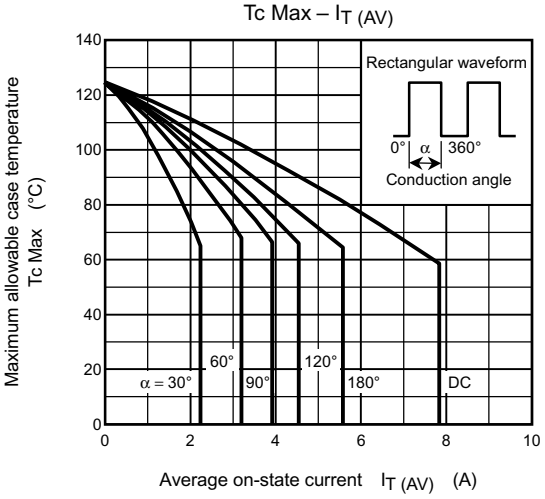
$Tc\ Max - I_{T\,(AV)}$



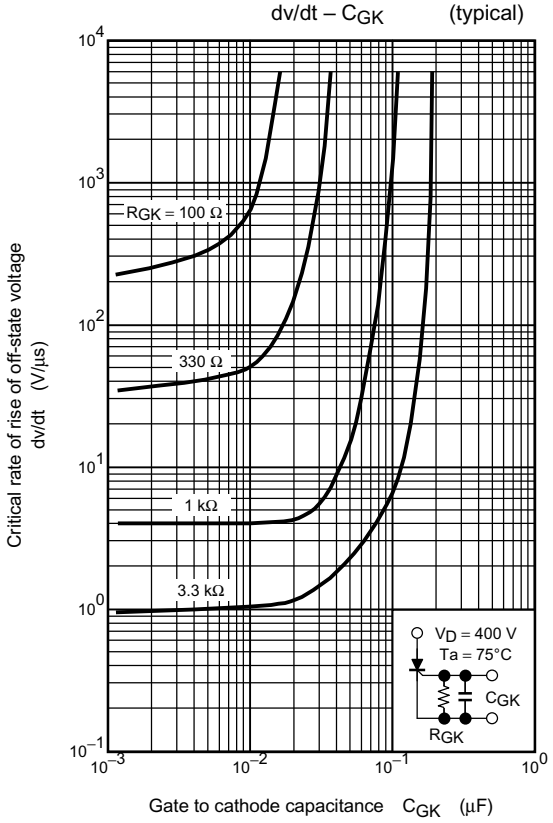
$P_{T\,(AV)} - I_{T\,(AV)}$



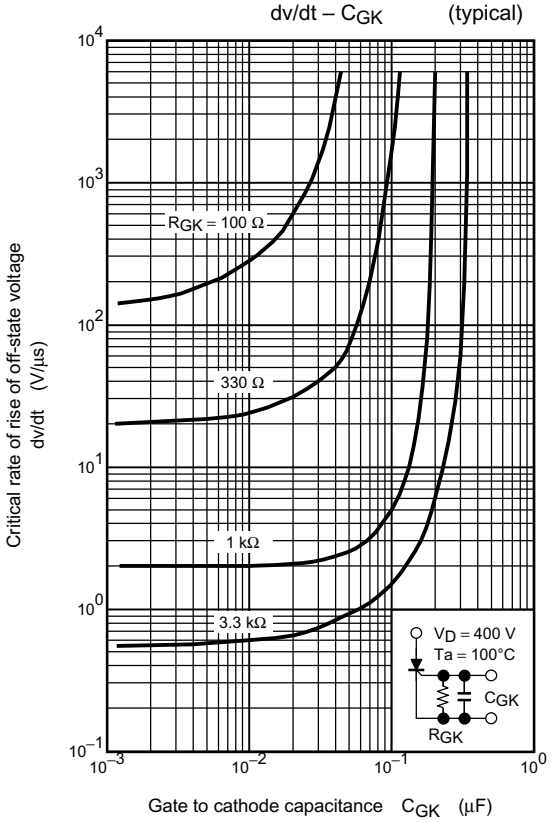
$Tc\ Max - I_{T\,(AV)}$



dv/dt – C_{GK} (typical)



dv/dt – C_{GK} (typical)



V_{BO} (Tc)/V_{BO} (Tc = 25°C) – Tc (typical)