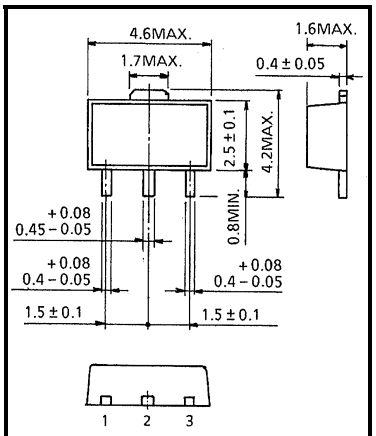
TOSHIBA THYRISTOR SILICON PLANAR TYPE

USF05G49

LOW POWER SWITCHING AND CONTROL APPLICATIONS

- Repetitive Peak Off−State Voltage : V_{DRM} = 400 V
  Repetitive Peak Reverse Voltage : V_{RRM} = 400 V
- Average On−State Current : $I_{T\ (AV)}$ = 500 mA

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	13-5B1A

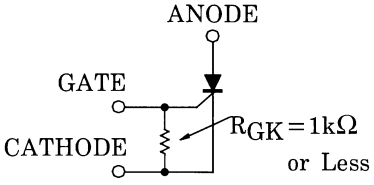
Weight: 0.2 g (typ.)

MAXIMUM RATINGS

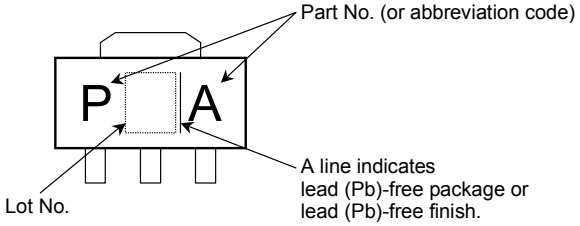
CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off−State Voltage and Repetitive Peak Reverse Voltage	V_{DRM} V_{RRM}	400	V
Non-Repetitive Peak Reverse Voltage (Non−Repetitive<5ms, T_j = 0~125°C)	V_{RSM}	500	V
Average On−State Current (Half Sine Waveform)	$I_{T\ (AV)}$	500	mA
R.M.S On−State Current	$I_{T\ (RMS)}$	800	mA
Peak One Cycle Surge On−State Current (Non−Repetitive)	I_{TSM}	9 (50Hz)	A
		10 (60Hz)	
I^2t Limit Value	I^2t	0.4	A^2s
Critical Rate of Rise of On-State Current (Note 1)	di / dt	10	A / μs
Peak Gate Power Dissipation	P_{GM}	0.1	W
Average Gate Power Dissipation	$P_{G(AV)}$	0.01	W
Peak Forward Gate Voltage	V_{FGM}	3.5	V
Peak Reverse Gate Voltage	V_{RGM}	−5	V
Peak Forward Gate Current	I_{GM}	125	mA
Junction Temperature	T_j	−40~125	°C
Storage Temperature Range	T_{stg}	−40~125	°C

Note 1: di / dt Test condition: i_G = 5mA, t_{gw} = 10μs, t_{gr}≤250ns

Note: Should be used with gate resistance as shown below.



MARKING

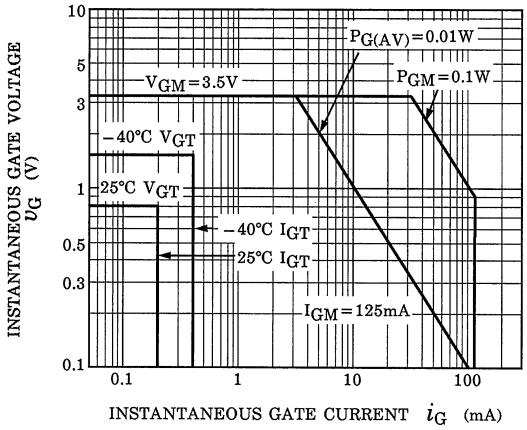


ELECTRICAL CHARACTERISTICS (Ta = 25°C)

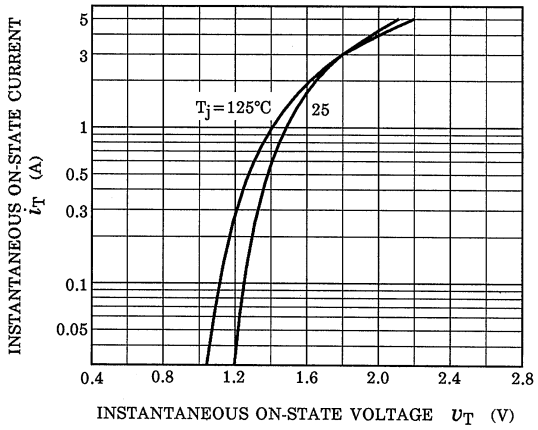
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Repetitive Peak Off−State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$ = Rated	—	—	10	μA
Peak On−State Voltage	V_{TM}	I_{TM} = 1A	—	—	1.5	V
Gate Trigger Voltage	V_{GT}	V_D = 6V, R_L = 100Ω R_{GK} = 1kΩ	—	—	0.8	V
Gate Trigger Current	I_{GT}		—	—	200	μA
Holding Current	I_H	I_{TM} = 500mA, V_D = 6V R_{GK} = 1kΩ	—	—	6	mA
Critical Rate of Rise of Off−State Voltage	d_V / dt	V_{DRM} = Rated, R_{GK} = 1kΩ Exponential Rise	—	200	—	V / μs
Gate Turn−On Time	t_{gt}	V_D = Rated, i_G = 5mA R_{GK} = 1kΩ	—	—	1.5	μs
Thermal Resistance	$R_{th(j-a)}$	Junction to Ambient	—	—	70	°C / W

Note: Thermal Resistance Test Condition
Use 0.6×30×30mm Alumina Plate

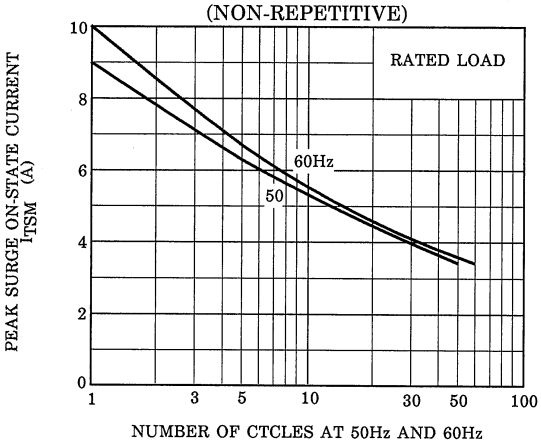
GATE TRIGGER CHARACTERISTIC



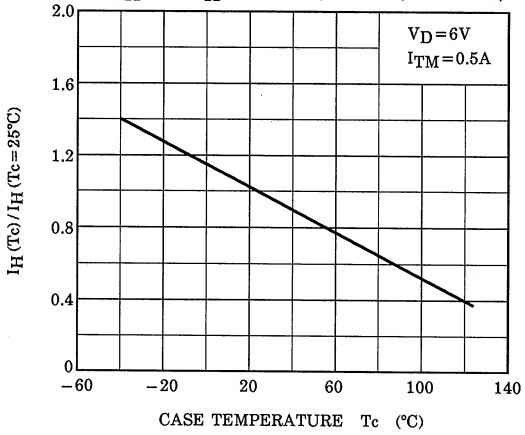
i_T – v_T



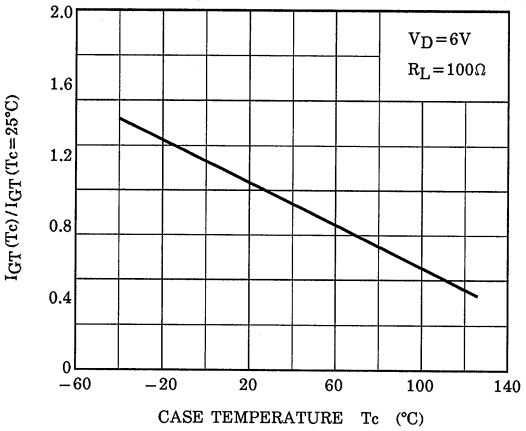
SURGE ON-STATE CURRENT
(NON-REPETITIVE)



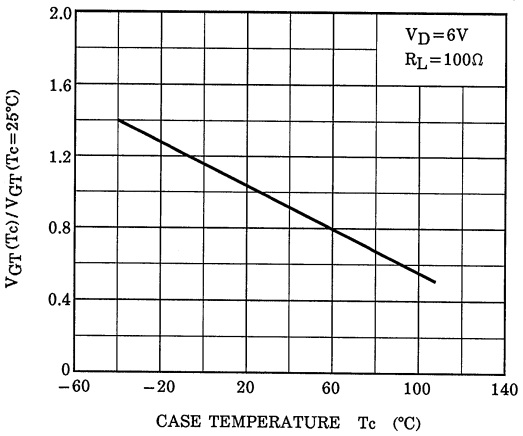
I_H (Tc) / I_H (Tc=25°C) – Tc (TYPICAL)



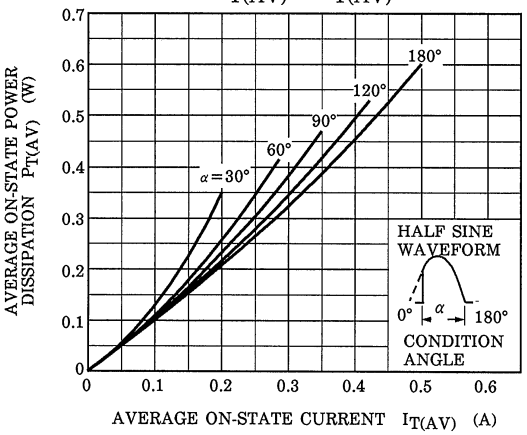
I_{GT} (Tc) / I_{GT} (Tc=25°C) – Tc (TYPICAL)



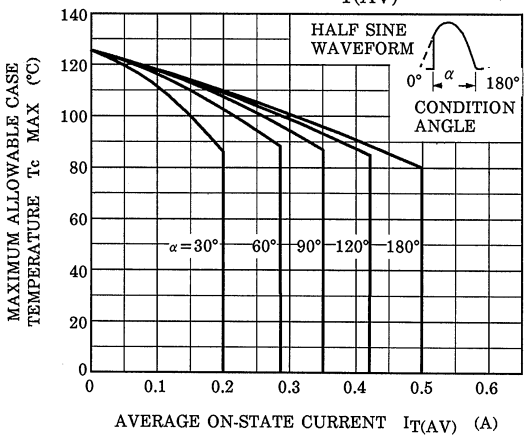
V_{GT} (Tc) / V_{GT} (Tc=25°C) – Tc (TYPICAL)



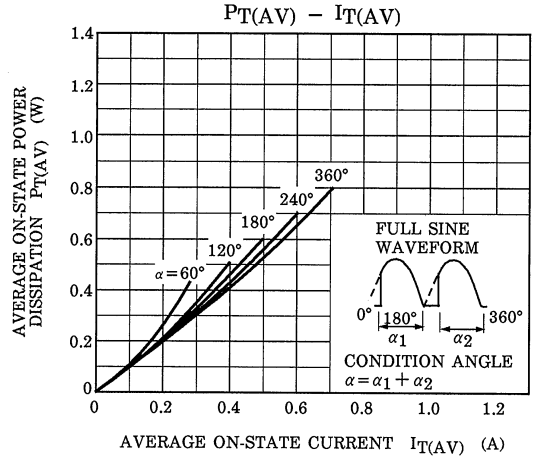
$P_{T(AV)} - I_{T(AV)}$



T_a MAX $- I_{T(AV)}$



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



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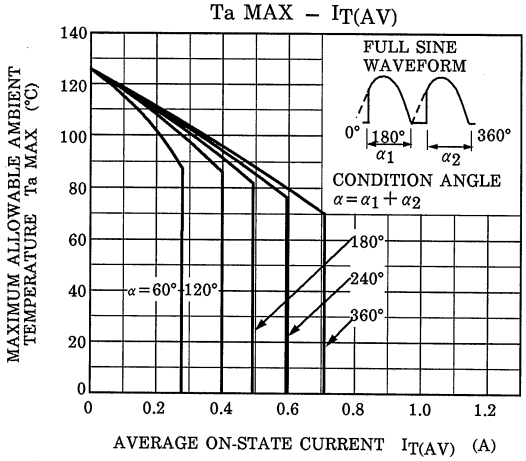
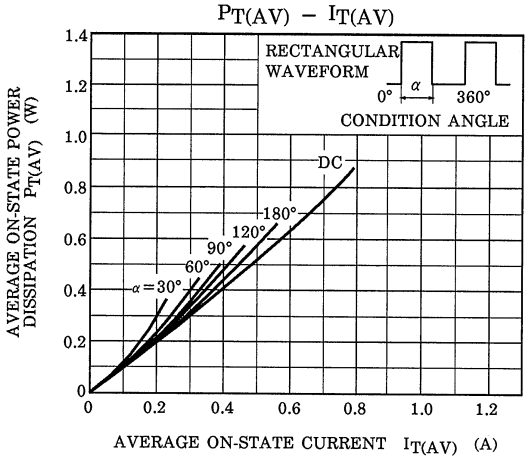
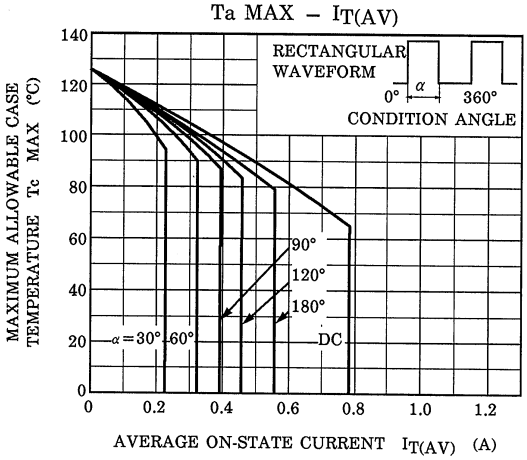


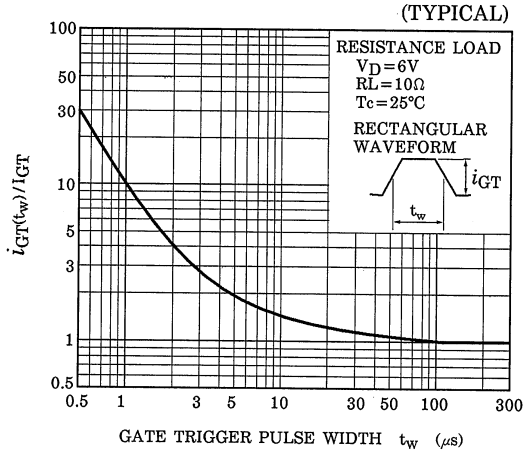
$P_{T(AV)} - I_{T(AV)}$



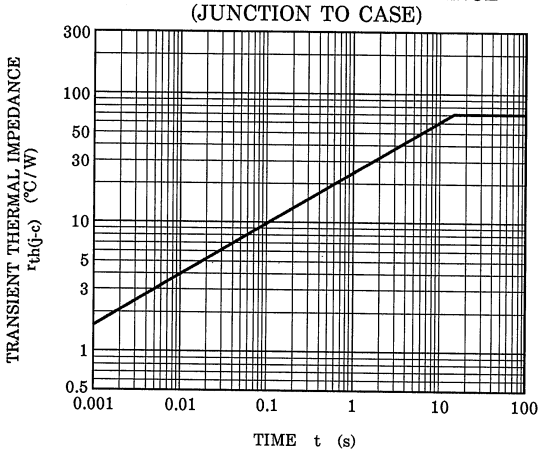
T_a MAX $- I_{T(AV)}$



PULSE TRIGGER CHARACTERISTIC
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE
(JUNCTION TO CASE)



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