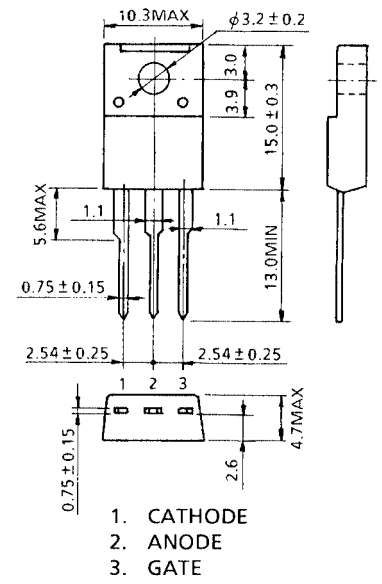
TOSHIBA THYRISTOR SILICON PLANAR TYPE

SF10GZ47,SF10JZ47

MEDIUM POWER CONTROL APPLICATIONS

- Repetitive Peak Off−State Voltage : V_{DRM} = 400,600V
  Repetitive Peak Reverse Voltage : V_{RRM} = 400,600V
- Average On−State Current : $I_{T\ (AV)}$ = 10A
- Isolation Voltage : V_{Isol} = 1500V AC

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	13−10H1B

Weight: 1.7 g

MAXIMUM RATINGS

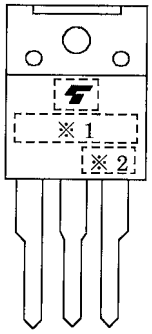
CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off−State Voltage and Repetitive Peak Reverse Voltage	SF10GZ47	V_{DRM} V_{RRM}	400	V
	SF10JZ47		600	
Non−Repetitive Peak Reverse Voltage (Non−Repetitive<5ms, T_j = 0~125°C)	SF10GZ47	V_{RSM}	500	V
	SF10JZ47		720	
Average On−State Current (Half Sine Waveform Tc = 66°C)		$I_{T\ (AV)}$	10	A
R.M.S. On−State Current		$I_{T\ (RMS)}$	16	A
Peak One Cycle Surge On-State Current (Non−Repetitive)		I_{TSM}	160 (50Hz)	A
			176 (60Hz)	
I^2t Limit Value		I^2t	125	A^2s
Critical Rate of Rise of On-State Current (Note 1)		di / dt	100	A / μs
Peak Gate Power Dissipation		P_{GM}	5	W
Average Gate Power Dissipation		$P_{G\ (AV)}$	0.5	W
Peak Forward Gate Voltage		V_{FGM}	10	V
Peak Reverse Gate Voltage		V_{RGM}	−5	V
Peak Forward Gate Current		I_{GM}	2	A
Junction Temperature		T_j	−40~125	°C
Storage Temperature Range		T_{stg}	−40~125	°C
Isolation Voltage (AC, t = 1min.)		V_{Isol}	1500	V

Note 1: di / dt test condition
V_{DRM} = 0.5 × Rated
$I_{TM} \leq$ 30A
$t_{gw} \geq$ 10μs
$t_{gr} \leq$ 250ns
$i_{gp} = I_{GT} \times 2.0$

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

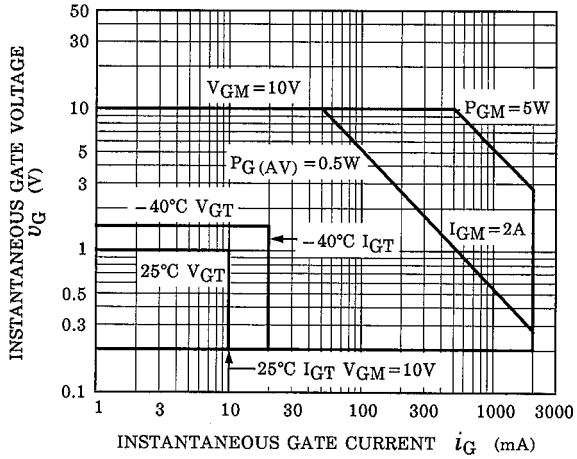
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Repetitive Peak Off−State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	V_{DRM} = V_{RRM} = Rated	—	—	10	μA
Peak On−State Voltage	V_{TM}	I_{TM} = 30A	—	—	1.5	V
Gate Trigger Voltage	V_{GT}	V_D = 6V, R_L = 10Ω	—	—	1.0	V
Gate Trigger Current	I_{GT}		—	—	10	mA
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, Tc = 125°C Exponential Rise	—	50	—	V / μs
Holding Current	I_H	V_D = 6V, I_{TM} = 1A	—	—	40	mA
Latching current	I_L	V_D = 6V, f = 50Hz, t_{gw} = 50μs i_G = 30mA	—	—	50	mA
Thermal Resistance	$R_{th\ (j-c)}$	Junction to Case	—	—	3.4	°C / W

MARKING

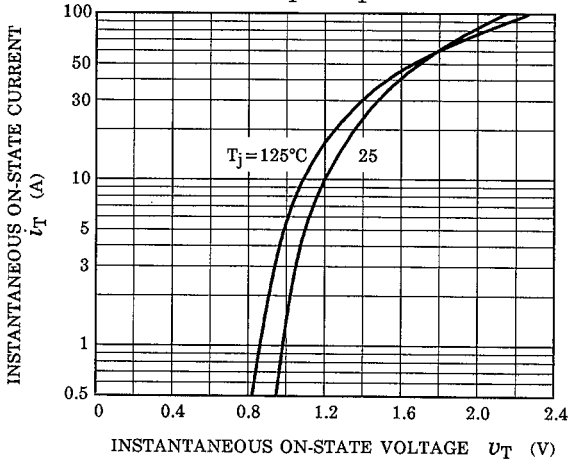


*1	MARK	F10GZ47	TYPE NAME	SF10GZ47
		F10JZ47		SF10JZ47
*2	Lot Number □□ Month (Starting from Alphabet A) Year (Last Decimal Digit of the Current Year)		Example 8A : January 1998 8B : February 1998 8L : December 1998	

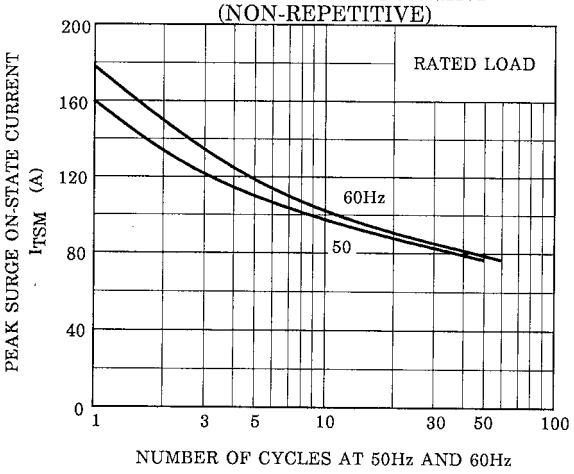
GATE TRIGGER CHARACTERISTIC



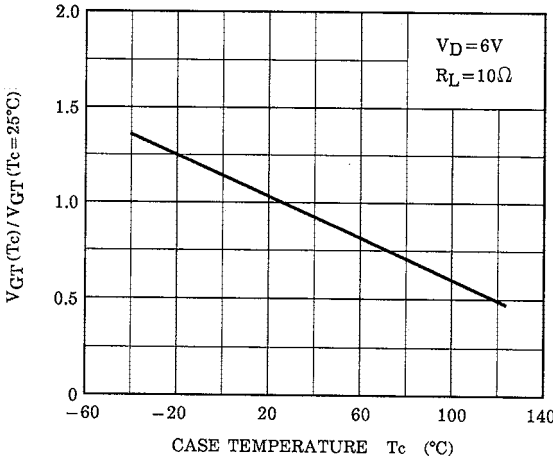
i_T – v_T



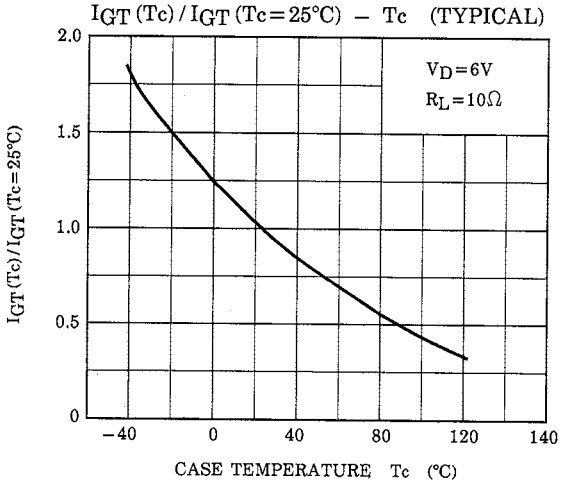
SURGE ON-STATE CURRENT (NON-REPETITIVE)



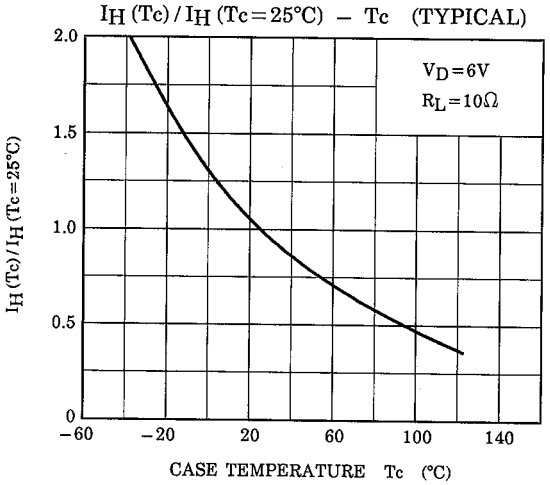
V_{GT} (Tc) / V_{GT} (Tc=25°C) – Tc (TYPICAL)



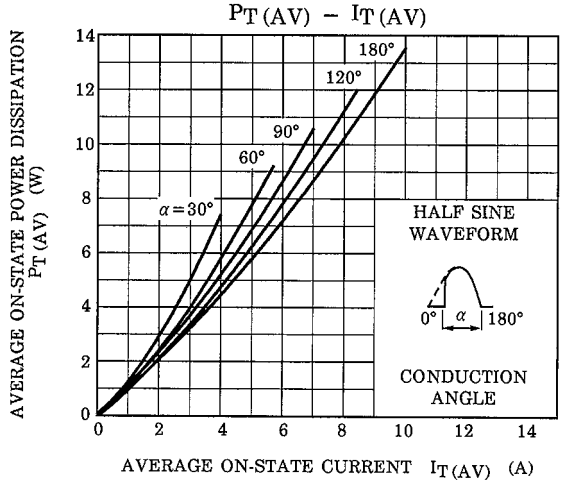
I_{GT} (Tc) / I_{GT} (Tc=25°C) – Tc (TYPICAL)



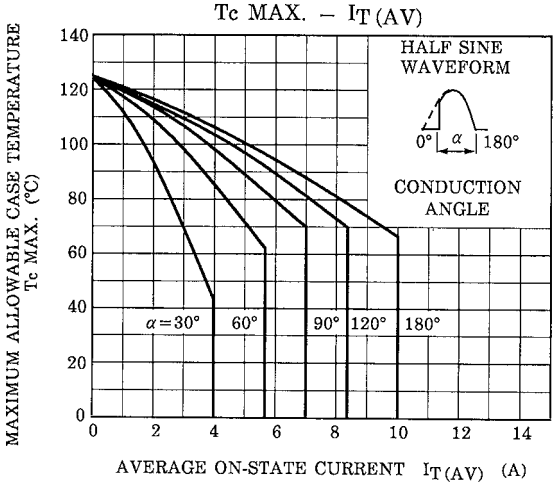
I_H (Tc) / I_H (Tc=25°C) – Tc (TYPICAL)



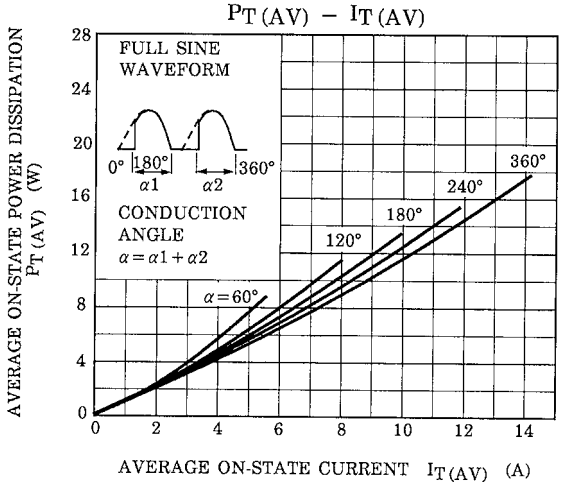
$P_{T(AV)} - I_{T(AV)}$



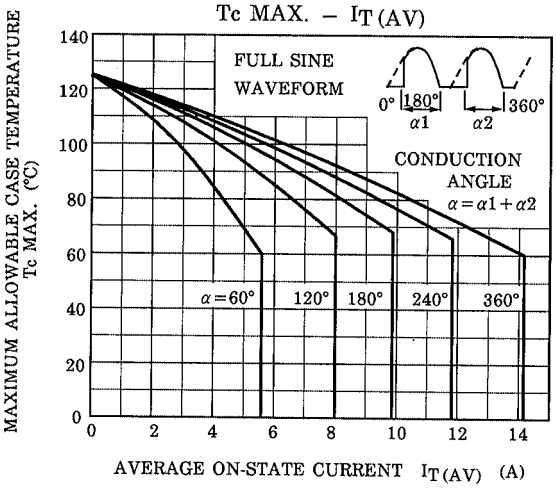
T_c MAX. $- I_{T(AV)}$



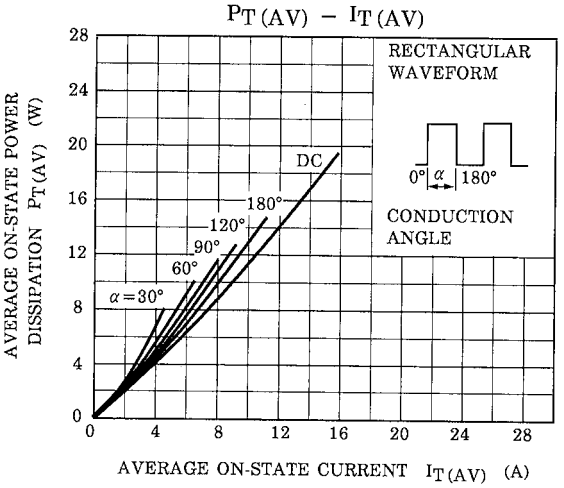
$P_{T(AV)} - I_{T(AV)}$



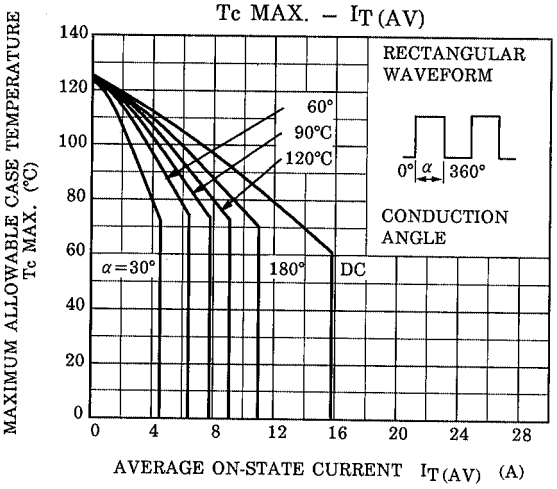
T_c MAX. $- I_{T(AV)}$

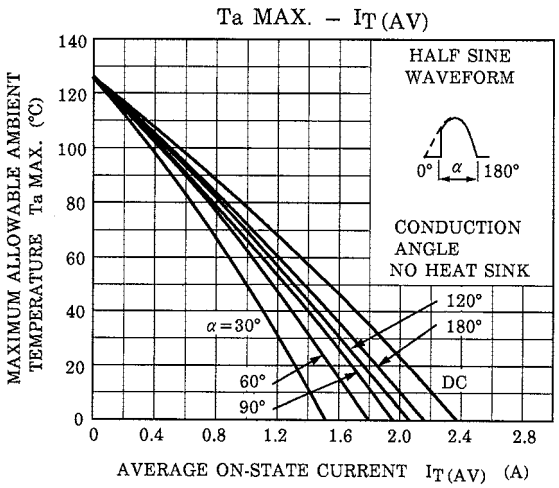


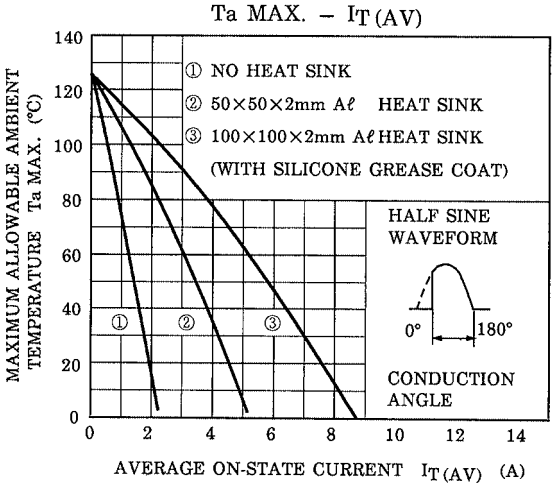
$P_{T(AV)} - I_{T(AV)}$

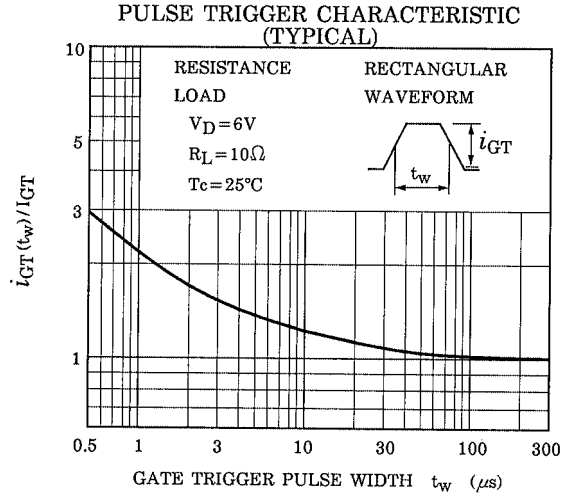


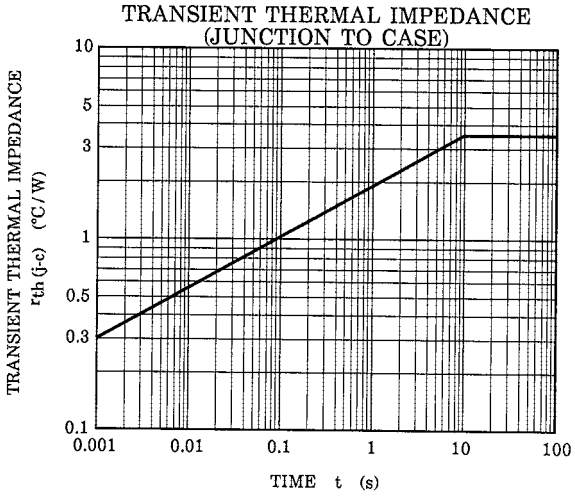
T_c MAX. $- I_{T(AV)}$




Ta MAX. – IT (AV)
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE Ta MAX. (°C)
HALF SINE WAVEFORM
0° α 180°
CONDUCTION ANGLE
NO HEAT SINK
α=30°
60°
90°
120°
180°
DC
AVERAGE ON-STATE CURRENT IT (AV) (A)


Ta MAX. – IT (AV)
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE Ta MAX. (°C)
① NO HEAT SINK
② 50×50×2mm Aℓ HEAT SINK
③ 100×100×2mm Aℓ HEAT SINK
(WITH SILICONE GREASE COAT)
HALF SINE WAVEFORM
0° 180°
CONDUCTION ANGLE
AVERAGE ON-STATE CURRENT IT (AV) (A)


PULSE TRIGGER CHARACTERISTIC (TYPICAL)
RESISTANCE LOAD
VD=6V
RL=10Ω
Tc=25°C
RECTANGULAR WAVEFORM
iGT
tw
iGT (tw)/IGT
GATE TRIGGER PULSE WIDTH tw (μs)


TRANSIENT THERMAL IMPEDANCE (JUNCTION TO CASE)
TRANSIENT THERMAL IMPEDANCE rth (j-c) (°C/W)
TIME t (s)

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