

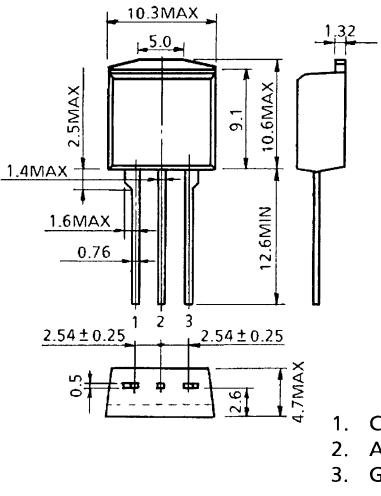
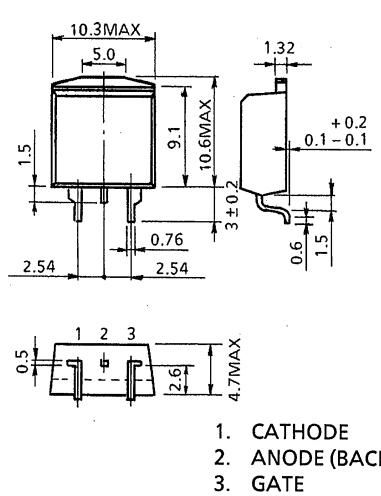
TOSHIBA Thyristor Silicon Planar Type

SF5G48, SF5J48, USF5G48, USF5J48

Medium power control applications

- Repetitive peak off-state voltage: $V_{DRM} = 400V, 600V$
Repetitive peak reverse voltage: $V_{RRM} = 400V, 600V$
- Average on-state current: $I_T (AV) = 5A$
- Gate trigger current: $I_{GT} = 10mA$ Max.

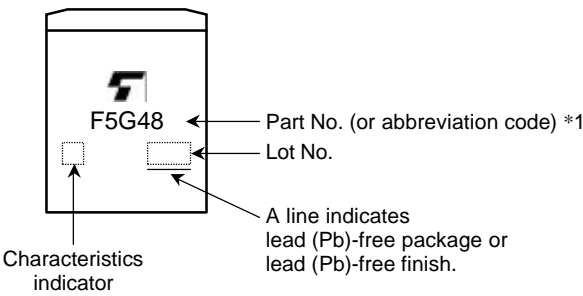
Unit: mm

SF5G48-SF5J48	USF5G48-USF5J48
 <p>1. CATHODE 2. ANODE 3. GATE</p>	 <p>1. CATHODE 2. ANODE (BACK SIDE) 3. GATE</p>
JEDEC ?	JEDEC ?
JEITA ?	JEITA ?
TOSHIBA 13- 10J1B	TOSHIBA 13- 10J2B

Weight: 1.5g

Weight: 1.4g

Marking



*1	Part No. (or abbreviation code)	Part No.
	F5G48	SF5G48, USF5G48
	F5J48	SF5J48, USF5J48

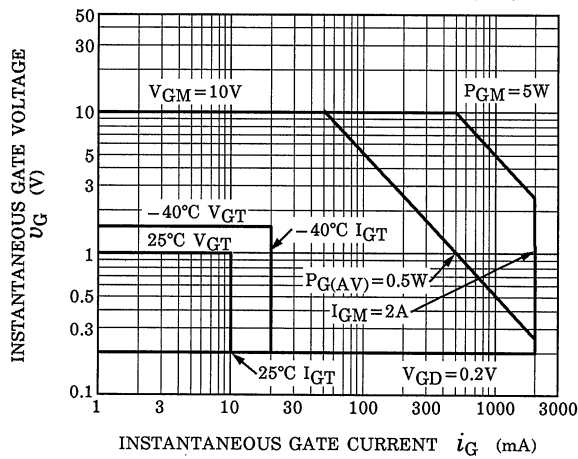
Maximum Ratings

Characteristic		Symbol	Rating	Unit
Repetitive peak off-state voltage and repetitive peak reverse voltage	SF5G48	V_{DRM} V_{RRM}	400	V
	USF5G48		600	
	SF5J48			
	USF5J48			
Non-repetitive peak reverse voltage (non-repetitive < 5ms $T_j = 0\sim 125^{\circ}\text{C}$)	SF5G48	V_{RSM}	500	V
	USF5G48		720	
	SF5J48			
	USF5J48			
Average on-state current		I_T (AV)	5	A
rms on-state current		I_T (RMS)	7.8	A
Peak one cycle surge on-state current (non- repetitive)		I_{TSM}	80 (50Hz)	A
			88 (60Hz)	
I^2t limit value		I^2t	32	A^2s
Critical rate of rise of on-state current (Note 1)		di/dt	100	$\text{A}/\mu\text{s}$
Peak gate power dissipation		P_{GM}	5	W
Average gate power dissition		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	$^{\circ}\text{C}$
Strage temperature range		T_{stg}	- 40~125	$^{\circ}\text{C}$

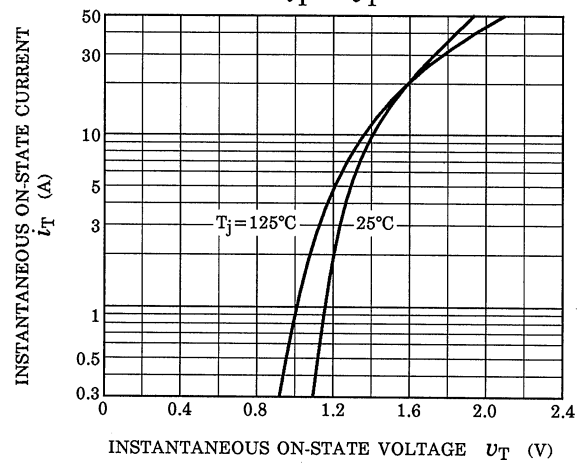
 Note 1: $V_{DRM} = 0.5 \times \text{Rated}$
 $I_{TM} = 15\text{A}$
 $t_{gw} = 10\mu\text{s}$
 $t_{gr} = 250\text{ns}$
 $i_{gp} = I_{GT} \times 2.0$
Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Repetitive peak off-state current and repetitive peak reverse	I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM} = \text{Rated}$?	?	10	μA
Peak on-state voltage	V_{TM}	$I_{TM} = 15\text{A}$?	?	1.5	V
Gate trigger voltage	V_{GT}	$V_D = 6\text{V}, R_L = 10\Omega$?	?	1.0	V
Gate trigger current	I_{GT}		?	?	10	mA
Gate non-trigger voltage	V_{GD}	$V_D = \text{Rated} \times 2/3, T_c = 125^\circ\text{C}$	0.2	?	?	V
Critical rate of rise of off-state voltage	dv/dt	$V_{DRM} = \text{Rated}, T_c = 125^\circ\text{C}$ Exponential rise	?	50	?	$\text{V}/\mu\text{s}$
Holding current	I_H	$V_D = 6\text{V}, I_{TM} = 1\text{A}$?	?	40	mA
Latching current	I_L	$V_D = 6\text{V}, f = 50\text{Hz}$ $t_{gw} = 50\mu\text{s}, i_G = 30\text{mA}$?	?	50	mA
Thermal resistance	$R_{th} (j-c)$	Junction to case, DC	?	?	3.2	$^\circ\text{C}/\text{W}$

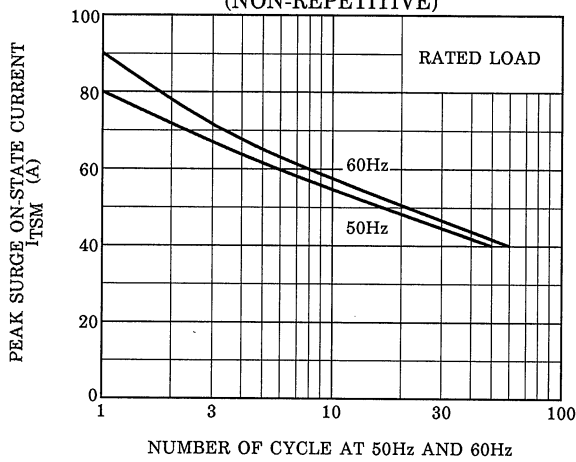
GATE TRIGGER CHARACTERISTIC



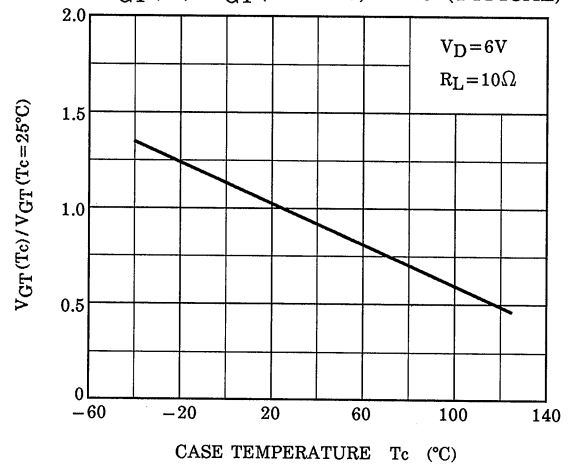
$i_T - v_T$



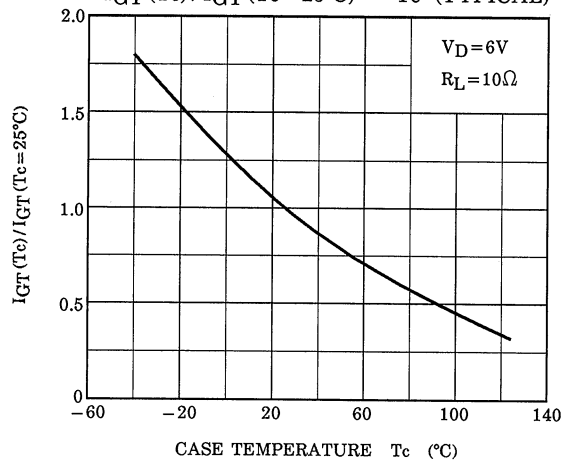
SURGE ON-STATE CURRENT (NON-REPETITIVE)



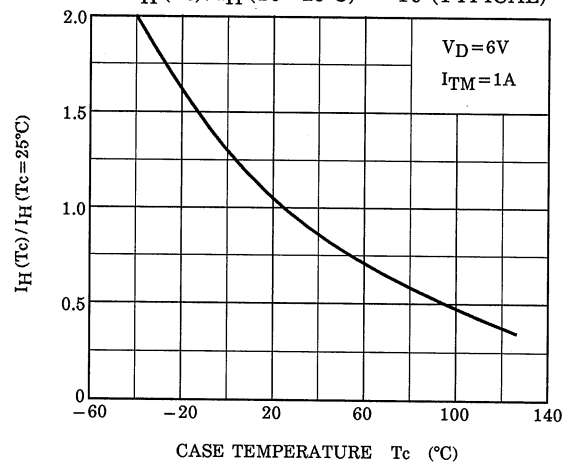
$V_{GT}(T_c) / V_{GT}(T_c=25^\circ C) - T_c$ (TYPICAL)

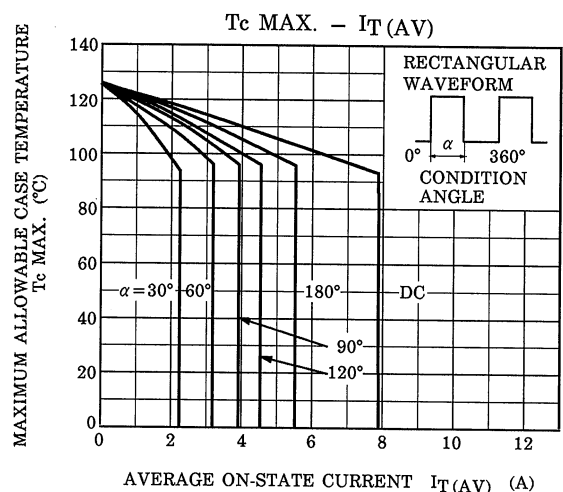
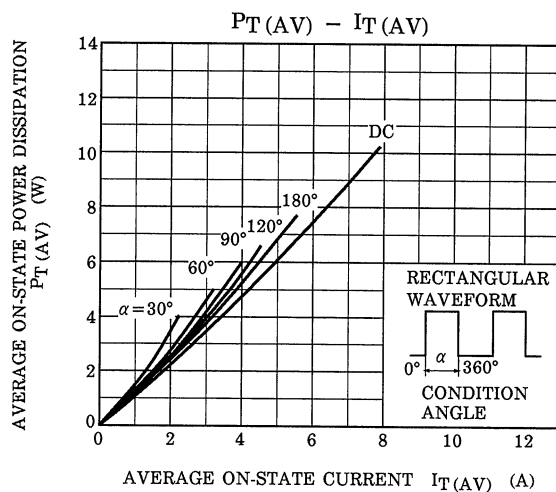
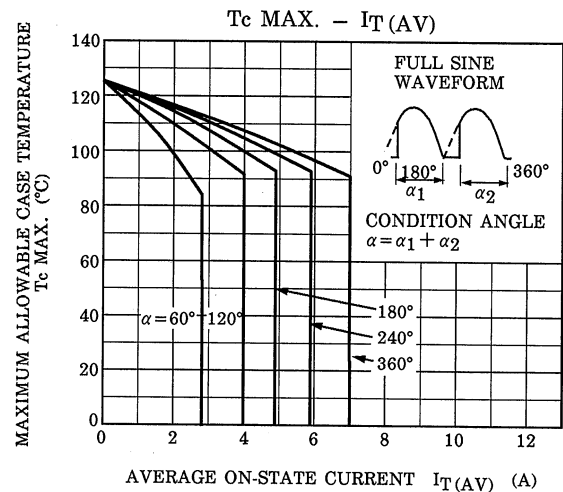
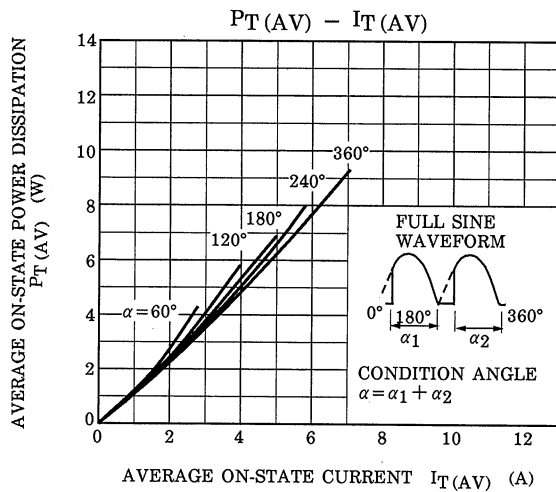
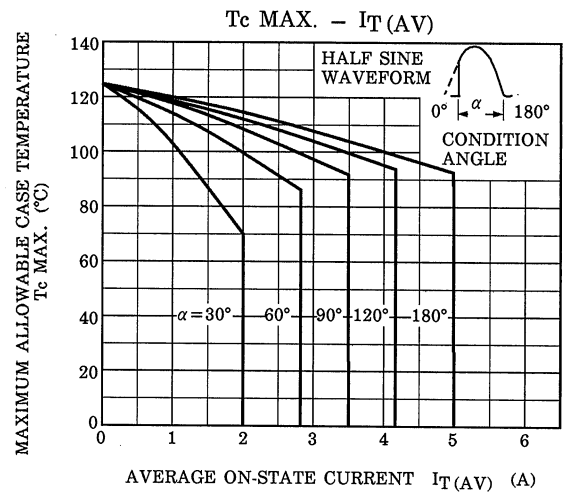
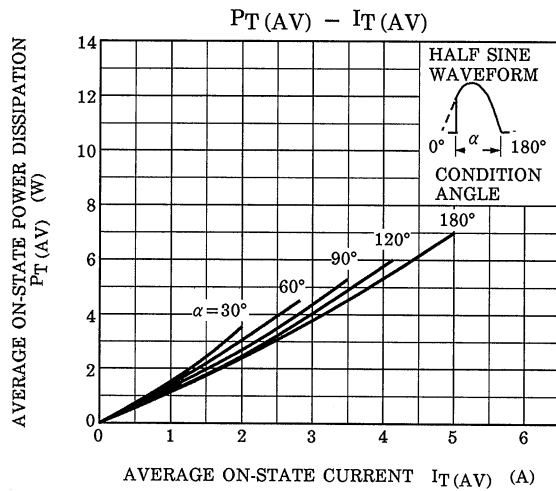


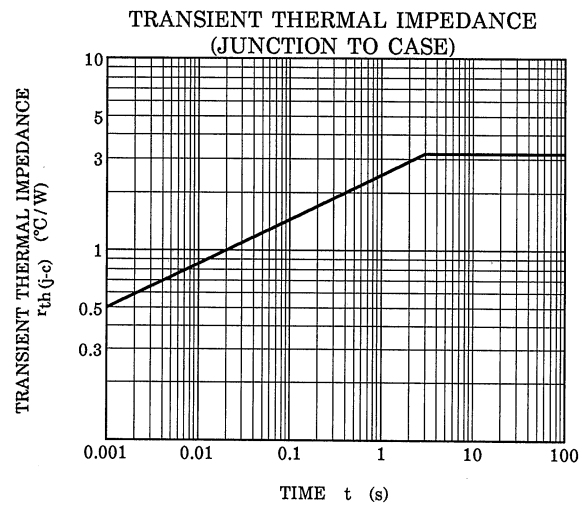
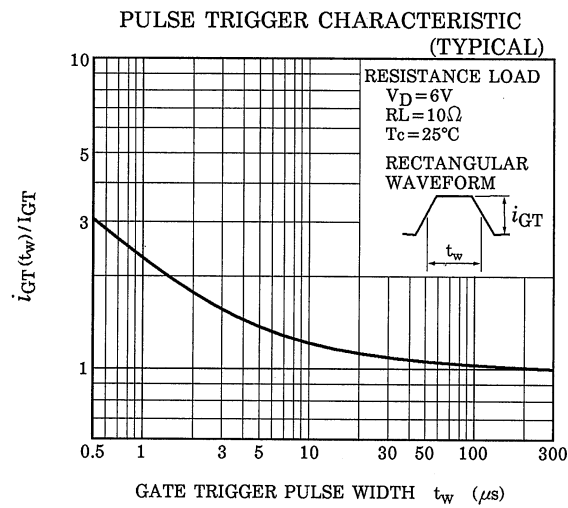
$I_{GT}(T_c) / I_{GT}(T_c=25^\circ C) - T_c$ (TYPICAL)



$I_H(T_c) / I_H(T_c=25^\circ C) - T_c$ (TYPICAL)







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