

TOSHIBA THYRISTOR SILICON PLANAR TYPE

# SF3G48, SF3J48, USF3G48, USF3J48

## MEDIUM POWER CONTROL APPLICATIONS

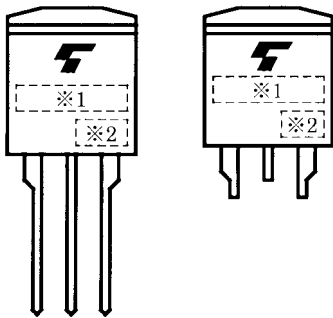
- Repetitive Peak Off-State Voltage :  $V_{DRM} = 400,600V$   
 Repetitive Peak Reverse Voltage :  $V_{RRM} = 400,600V$
- Average On-State Current :  $I_T (AV) = 3A$
- Gate Trigger Current :  $I_{GT} = 10mA \text{ MAX.}$

Unit: mm

SF3G48-SF3J48	USF3G48-USF3J48
<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: 1.7g

## MARKING



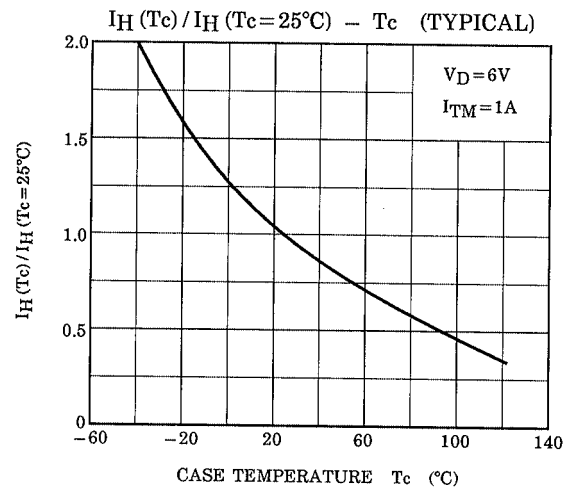
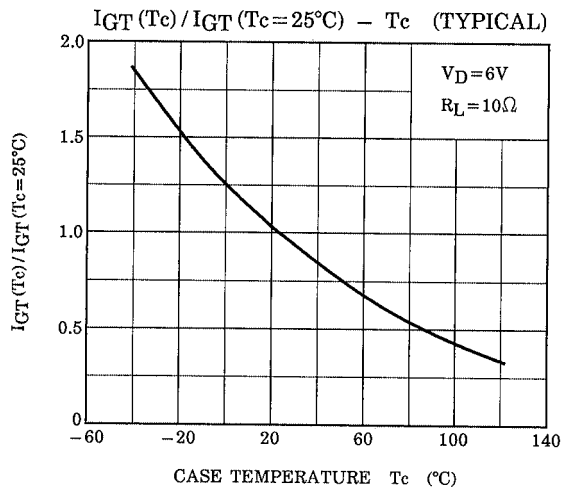
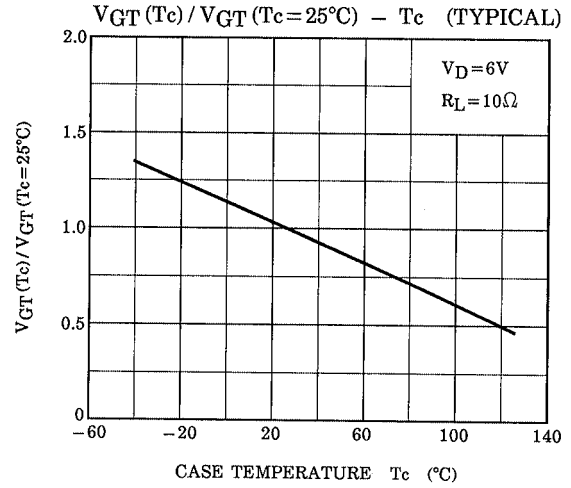
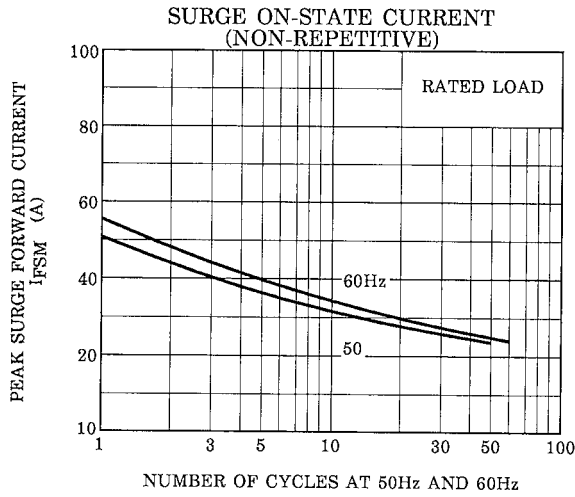
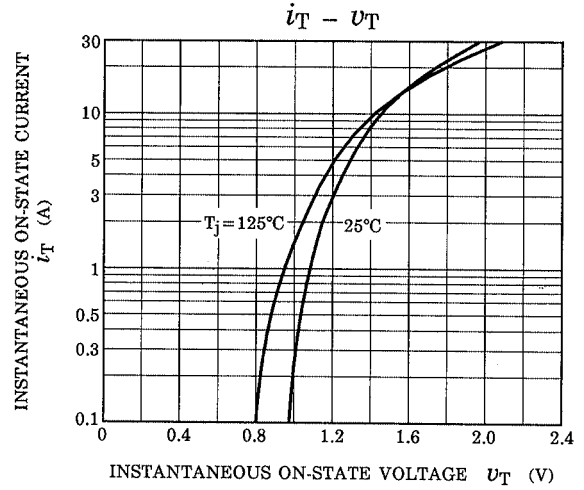
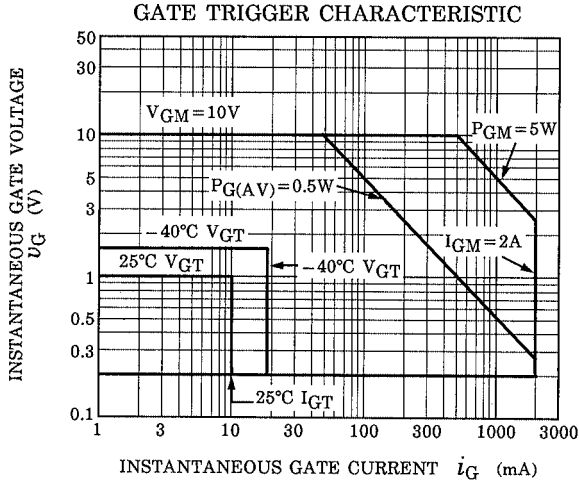
*1	MARK	F3G48	TYPE NAME	SF3G48, USF3G48
		F3J48		SF3J48, USF3J48
*2	Lot Number 			

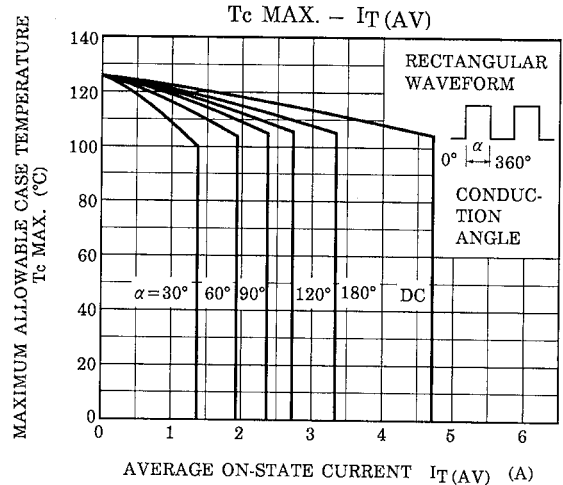
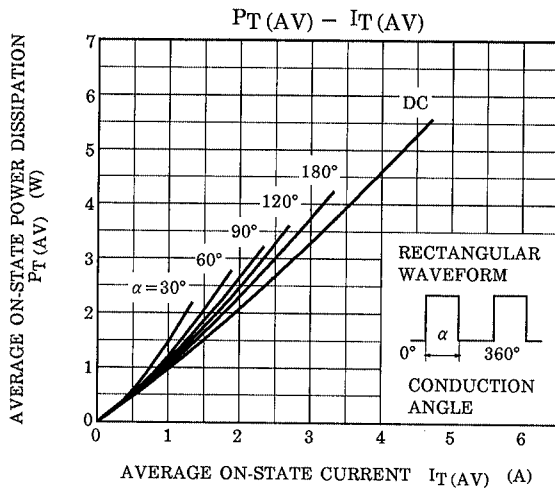
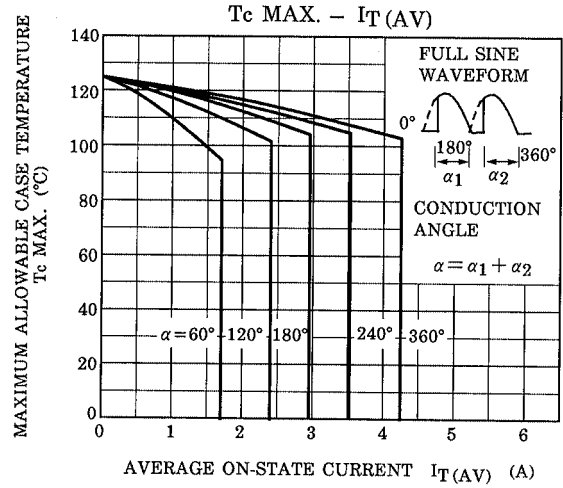
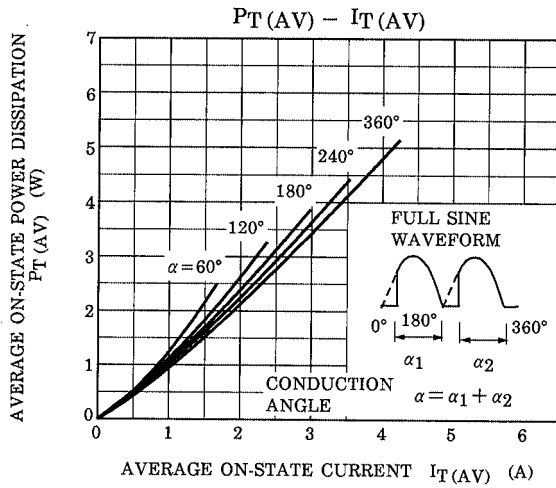
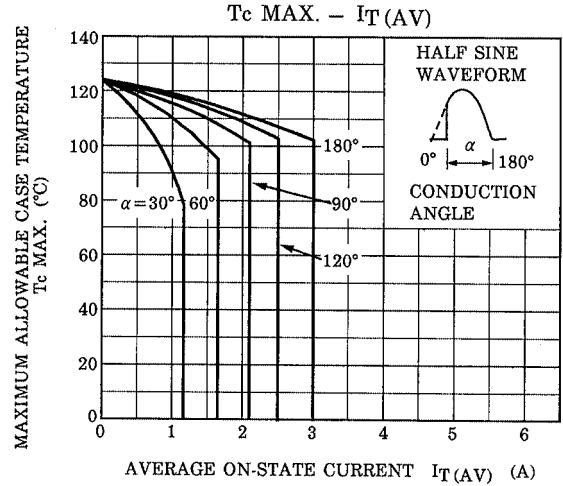
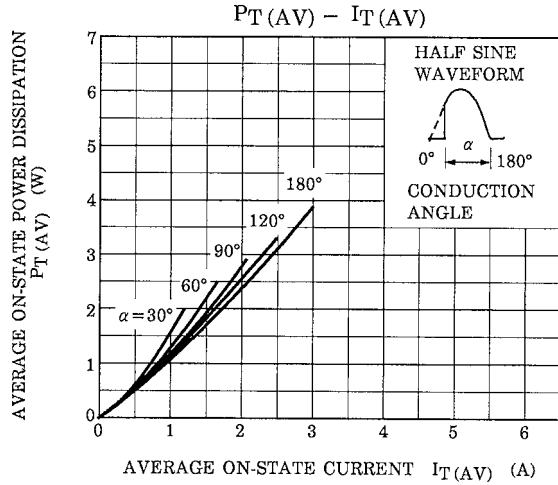
**MAXIMUM RATINGS**

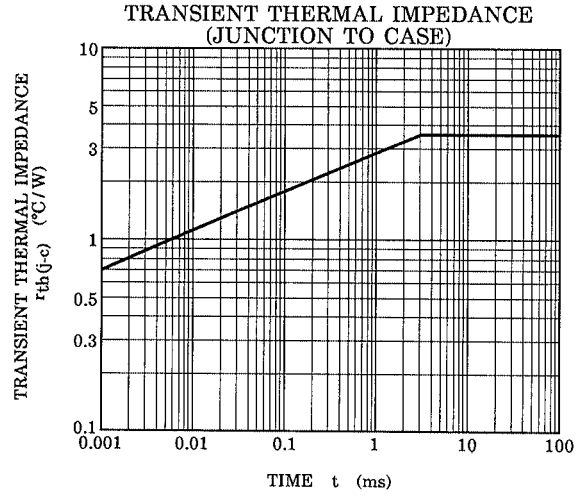
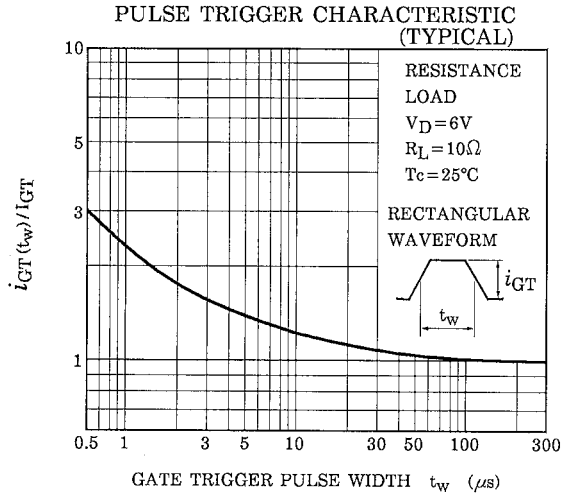
CHARACTERISTIC	SYMBOL	RATING	UNIT	
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SF3G48 USF3G48	$V_{DRM}$ $V_{RRM}$	400	V
	SF3J48 USF3J48		600	
Non-Repetitive Peak Reverse Voltage (Non-Repetitive <5ms, $T_j = 0\sim 125^\circ\text{C}$ )	SF3G48 USF3G48	$V_{RSM}$	500	V
	SF3J48 USF3J48		720	
Average On-State Current	$I_T (AV)$	3	A	
R.M.S On-State Current	$I_T (RMS)$	4.7	A	
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	50 (50Hz)	A	
		55 (60Hz)		
$I^2t$ Limit Value	$I^2t$	12.5	$A^2s$	
Critical Rate of Rise of On-State Current (Note 1)	$di / dt$	100	$A / \mu s$	
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	$^\circ\text{C}$	
Storage Temperature Range	$T_{stg}$	-40~125	$^\circ\text{C}$	

Note 1:  $V_{DRM} = 0.5 \times \text{Rated}$  $I_{TM} \leq 12A$  $t_{gw} \geq 10\mu s$  $t_{gr} \leq 250ns$  $i_{gp} = I_{GT} \times 2.0$ **ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM} = \text{Rated}$	—	—	10	$\mu A$
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 12A$	—	—	1.5	V
Gate Trigger Voltage	$V_{GT}$	$V_D = 6V, R_L = 10\Omega$	—	—	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	—	$V / \mu s$
Holding Current	$I_H$	$V_D = 6V, I_{TM} = 1A$	—	—	40	mA
Latching Current	$I_L$	$V_D = 6V, f = 50\text{Hz}$ $t_{gw} = 50\mu s, i_G = 30\text{mA}$	—	—	50	mA
Thermal Resistance	$R_{th (j-c)}$	Junction to Case, DC	—	—	3.6	$^\circ\text{C} / W$







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