

TOSHIBA THYRISTOR SILICON PLANAR TYPE

# SF10GZ47, SF10JZ47

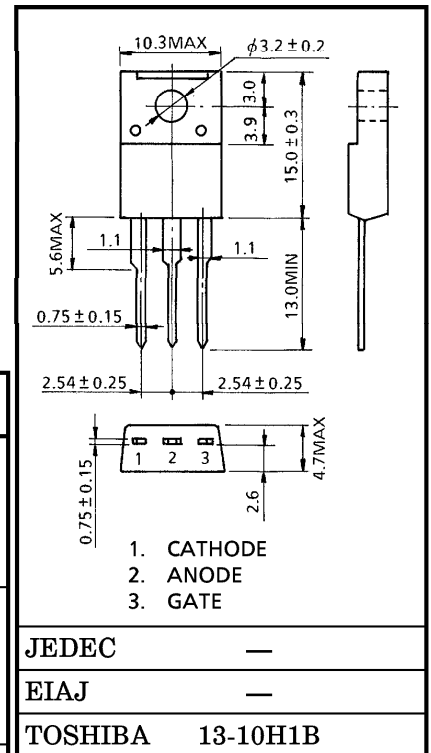
MEDIUM POWER CONTROL APPLICATIONS

Unit in mm

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

**MAXIMUM RATINGS**

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SF10GZ47	$V_{DRM}$	400	V
	SF10JZ47	$V_{RRM}$	600	
Non-Repetitive Peak Reverse Voltage (Non-Repetitive < 5ms, $T_j = 0 \sim 125^\circ C$ )	SF10GZ47	$V_{RSM}$	500	V
	SF10JZ47		720	
Average On-State Current (Half Sine Waveform $T_c = 66^\circ C$ )		$I_{T(AV)}$	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 <sup>2</sup> t Limit Value		I <sup>2</sup> t	125	A <sup>2</sup> s
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	°C
Storage Temperature Range		$T_{stg}$	-40~150	°C
Isolation Voltage (AC, t=1min.)		$V_{Isol}$	1500	V



Weight : 1.7g

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

961001EAA2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

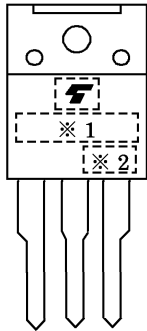
● The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

● The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

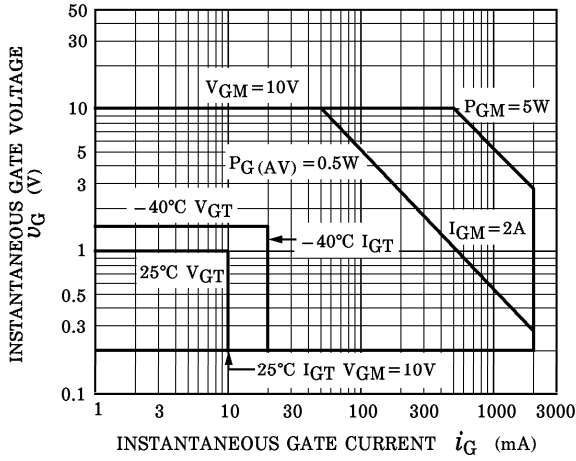
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current and Repetitive Peak Reverse Current	$I_{DRM}$ $I_{RRM}$	$V_{DRM} = V_{RRM} = \text{Rated}$	—	—	10	$\mu A$
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 30A$	—	—	1.5	V
Gate Trigger Voltage	$V_{GT}$	$V_D = 6V, R_L = 10\Omega$	—	—	1.0	V
Gate Trigger Current	$I_{GT}$		—	—	10	mA
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = \text{Rated} \times 2/3, T_c = 125^\circ C$	0.2	—	—	V
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{DRM} = \text{Rated}, T_c = 125^\circ C$ Exponential Rise	—	50	—	$V/\mu s$
Holding Current	$I_H$	$V_D = 6V, I_{TM} = 1A$	—	—	40	mA
Latching current	$I_L$	$V_D = 6V, f = 50Hz, t_{gw} = 50\mu s$ $i_G = 30mA$	—	—	50	mA
Thermal Resistance	$R_{th(j-c)}$	Junction to Case	—	—	3.4	$^\circ C/W$

MARKING

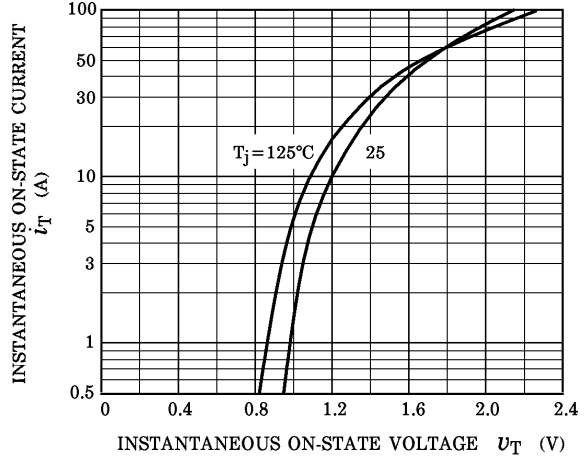


※1	MARK	F10GZ47	TYPE NAME	SF10GZ47
		F10JZ47		SF10JZ47
※2	Lot Number		Example	
	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px; margin-right: 5px; margin-left: 10px;"></div> <div style="margin-left: 10px;"> <p>Month (Starting from Alphabet A)</p> <p>Year (Last Decimal Digit of the Current Year)</p> </div> </div>	<p>8A : January 1998</p> <p>8B : February 1998</p> <p>8L : December 1998</p>		

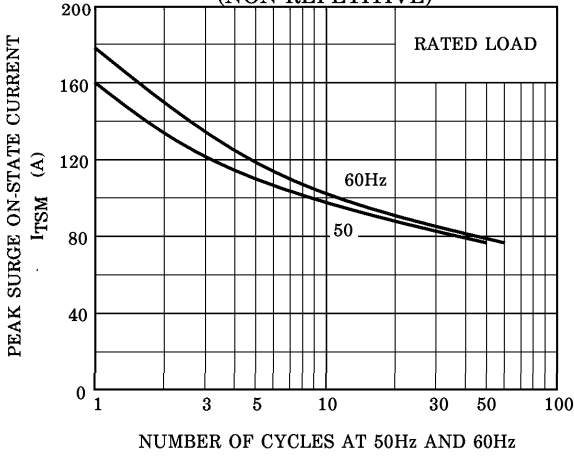
GATE TRIGGER CHARACTERISTIC



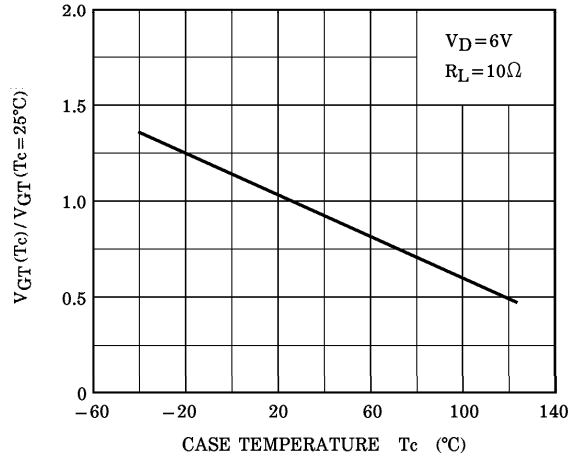
$i_T - v_T$



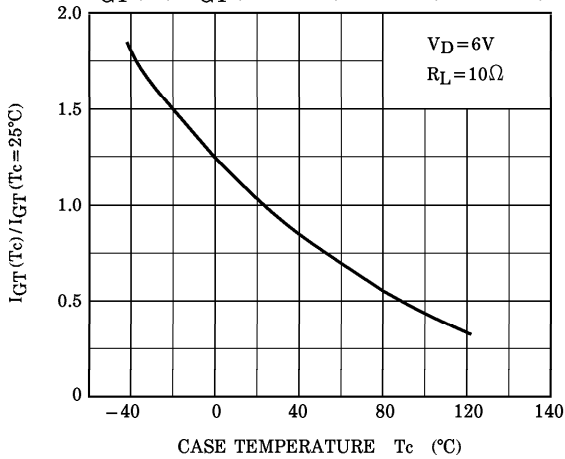
SURGE ON-STATE CURRENT (NON-REPETITIVE)



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



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



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

