

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

**SM6GZ47, SM6JZ47, SM6GZ47A, SM6JZ47A**

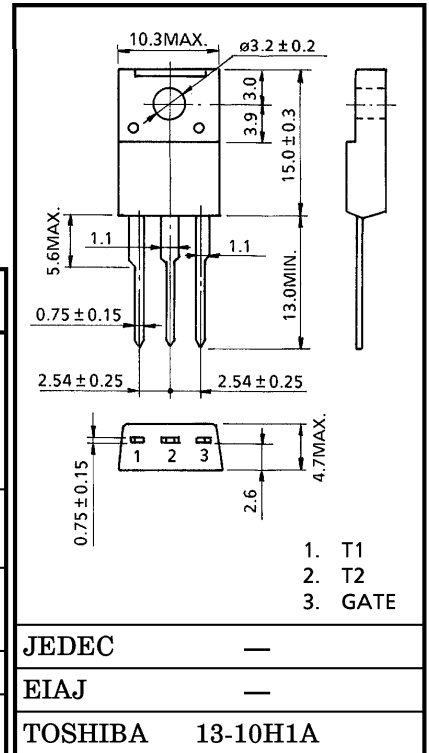
AC POWER CONTROL APPLICATIONS

Unit in mm

- Repetitive Peak Off-State Voltage :  $V_{DRM}=400, 600V$
- R.M.S On-State Current :  $I_T(RMS)=6A$
- High Commutating (dv / dt)
- Isolation Voltage :  $V_{ISOL}=1500V AC$

MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SM6GZ47 SM6GZ47A	$V_{DRM}$	400	V
	SM6JZ47 SM6JZ47A		600	
R.M.S. On-State Current (Full Sine Waveform $T_c=90^\circ C$ )		$I_T(RMS)$	6	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		$I_{TSM}$	60 (50Hz)	A
			66 (60Hz)	
I <sup>2</sup> t Limit Value		$I^2t$	18	A <sup>2</sup> s
Critical Rate of Rise of On-State Current (Note 1)		di / dt	50	A / $\mu s$
Peak Gate Power Dissipation		$P_{GM}$	5	W
Average Gate Power Dissipation		$P_G(AV)$	0.5	W
Peak Gate Voltage		$V_{FGM}$	10	V
Peak 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



Weight : 1.7g

Note 1 : di / dt test condition  
 $V_{DRM}=0.5 \times \text{Rated}$   
 $I_{TM} \leq 9A$   
 $t_{gw} \geq 10 \mu s$   
 $t_{gr} \leq 250ns$   
 $i_{gp} = I_{GT} \times 2.0$

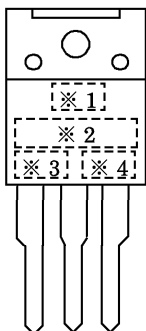
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

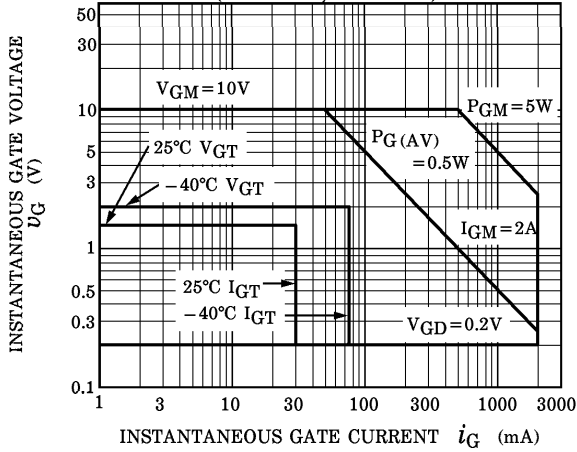
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current		I <sub>DRM</sub>	V <sub>DRM</sub> = Rated	—	—	20	μA	
Gate Trigger Voltage	I	V <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 20Ω	T2(+), Gate (+)	—	—	1.5	V
	II			T2(+), Gate (-)	—	—	1.5	
	III			T2(-), Gate (-)	—	—	1.5	
	IV			T2(-), Gate (+)	—	—	—	
Gate Trigger Current	SM6GZ47 SM6JZ47	I <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 20Ω	T2(+), Gate (+)	—	—	30	mA
				T2(+), Gate (-)	—	—	30	
				T2(-), Gate (-)	—	—	30	
				T2(-), Gate (+)	—	—	—	
	SM6GZ47A SM6JZ47A			T2(+), Gate (+)	—	—	20	
				T2(+), Gate (-)	—	—	20	
				T2(-), Gate (-)	—	—	20	
				T2(-), Gate (+)	—	—	—	
Peak On-State Voltage		V <sub>TM</sub>	I <sub>TM</sub> = 9A	—	—	1.5	V	
Gate Non-Trigger Voltage		V <sub>GD</sub>	V <sub>D</sub> = Rated, T <sub>c</sub> = 125°C	0.2	—	—	V	
Holding Current		I <sub>H</sub>	V <sub>D</sub> = 12V, I <sub>TM</sub> = 1A	—	—	50	mA	
Thermal Resistance		R <sub>th(j-c)</sub>	Junction to Case	—	—	3.8	°C/W	
Critical Rate of Rise of Off-State Voltage	SM6GZ47 SM6JZ47	dv / dt	V <sub>DRM</sub> = Rated, T <sub>j</sub> = 125°C Exponential Rise	—	300	—	V / μs	
	SM6GZ47A SM6JZ47A			—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	SM6GZ47 SM6JZ47	(dv / dt) <sub>c</sub>	V <sub>DRM</sub> = 400V, T <sub>j</sub> = 125°C (di / dt) <sub>c</sub> = -3.3A / ms	10	—	—	V / μs	
	SM6GZ47A SM6JZ47A			4	—	—		

MARKING

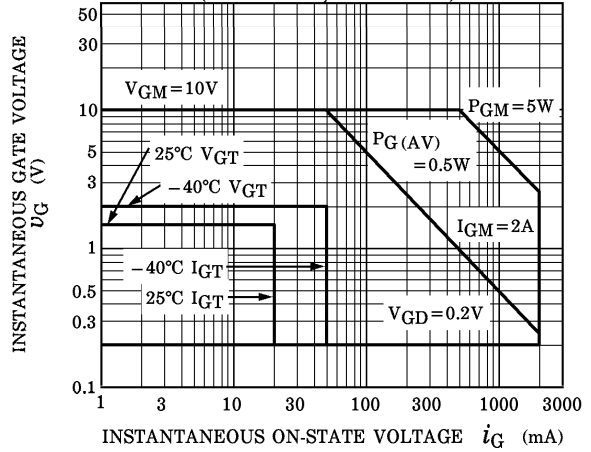


※ NUMBER	SYMBOL	MARK
※1	TOSHIBA PRODUCT MARK	
※2	TYPE	SM6GZ47, SM6GZ47A
		SM6JZ47, SM6JZ47A
		SM6GZ47A, SM6JZ47A
※3		A
※4	Lot Number <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="margin-left: 5px;">Month (Starting from Alphabet A)</div> </div> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="margin-left: 5px;">Year (Last Decimal Digit of the Current Year)</div> </div>	Example 8A : January 1998 8B : February 1998 8L : December 1998

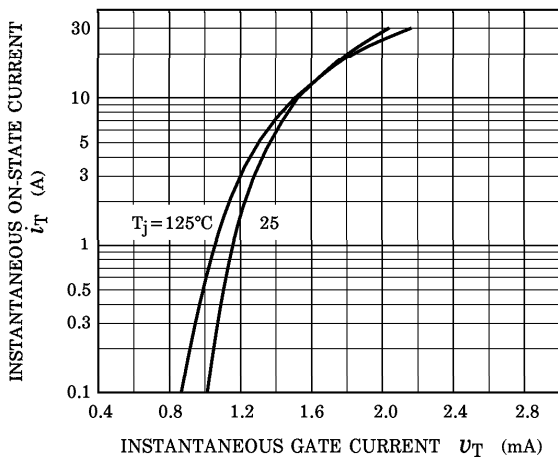
GATE TRIGGER CHARACTERISTIC (SM6GZ47, SM6JZ47)



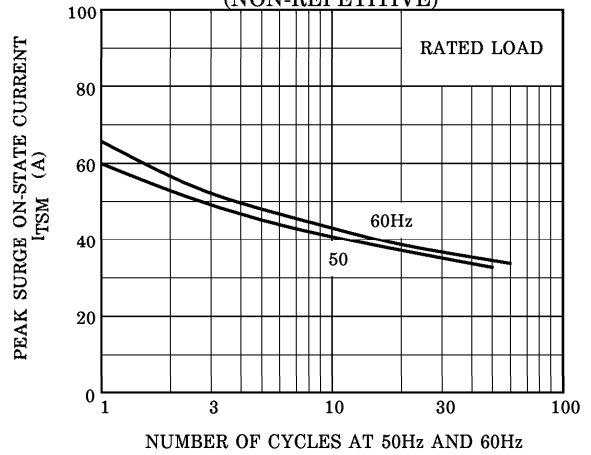
GATE TRIGGER CHARACTERISTIC (SM6GZ47A, SM6JZ47A)



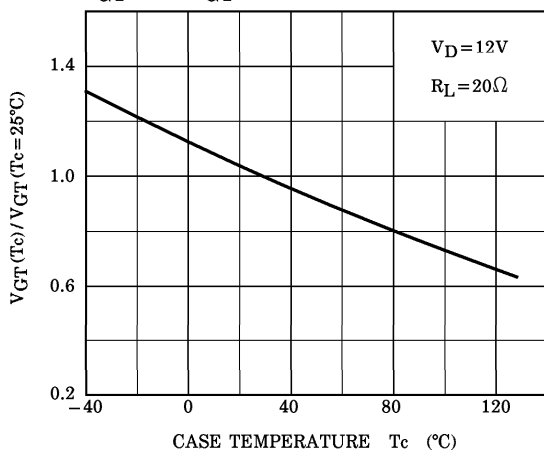
$i_T - v_T$



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)

