

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

**SM8GZ47, SM8JZ47, SM8GZ47A, SM8JZ47A**

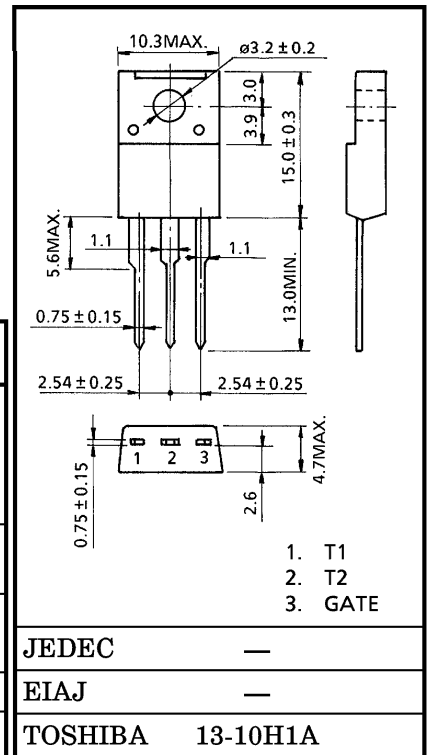
AC POWER CONTROL APPLICATIONS

Unit in mm

- Repetitive Peak Off-State Voltage :  $V_{DRM}=400, 600V$
- R.M.S On-State Current :  $I_T(RMS)=8A$
- High Commutating (dv / dt)
- Isolation Voltage :  $V_{ISOL}=1500V AC$

MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM8GZ47 SM8GZ47A	$V_{DRM}$	400	V
	SM8JZ47 SM8JZ47A		600	
R.M.S On-State Current (Full Sine Waveform $T_c=83^\circ C$ )		$I_T(RMS)$	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	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		$V_{GM}$	10	V
Peak Gate Current		$I_{GM}$	2	A
Junction Temperature		$T_j$	-40~125	$^\circ C$
Storage Temperature Range		$T_{stg}$	-40~125	$^\circ C$
Isolation Voltage (AC, t=1min.)		$V_{ISOL}$	1500	V



Weight : 1.7g

Note 1 : di / dt Test Condition

$V_{DRM}=0.5 \times \text{Rated}$

$I_{TM} \leq 12A$

$t_{gw} \geq 10\mu s$

$t_{gr} \leq 250ns$

$i_{GP}=I_{GT} \times 2.0$

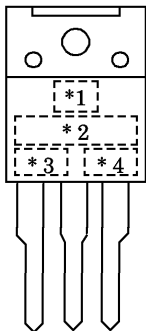
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

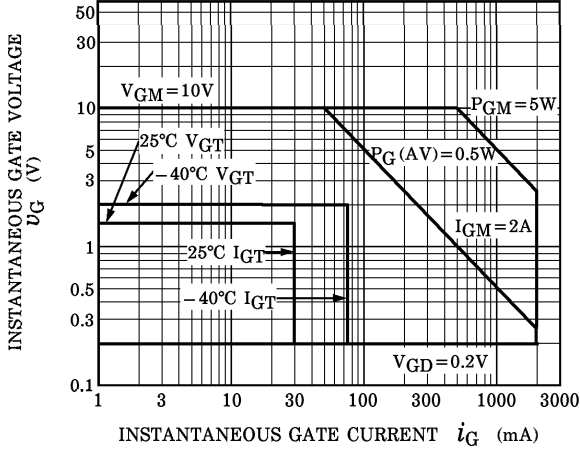
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current		$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	20	$\mu A$	
Gate Trigger Voltage		$V_{GT}$	$V_D = 12V, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	1.5	V
				T2 (+), Gate (-)	—	—	1.5	
				T2 (-), Gate (-)	—	—	1.5	
				T2 (-), Gate (+)	—	—	—	
Gate Trigger Current	SM8GZ47 SM8JZ47	$I_{GT}$	$V_D = 12V, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	30	mA
				T2 (+), Gate (-)	—	—	30	
				T2 (-), Gate (-)	—	—	30	
				T2 (-), Gate (+)	—	—	—	
	SM8GZ47A SM8JZ47A			T2 (+), Gate (+)	—	—	20	
				T2 (+), Gate (-)	—	—	20	
				T2 (-), Gate (-)	—	—	20	
				T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage		$V_{TM}$	$I_{TM} = 12A$	—	—	1.5	V	
Gate Non-Trigger Voltage		$V_{GD}$	$V_D = \text{Rated}, T_c = 125^\circ C$	0.2	—	—	V	
Holding Current		$I_H$	$V_D = 12V, I_{TM} = 1A$	—	—	50	mA	
Thermal Resistance		$R_{th(j-c)}$	Junction to Case, AC	—	—	3.6	$^\circ C / W$	
Critical Rate of Rise of Off-State Voltage	SM8GZ47 SM8JZ47	$dv / dt$	$V_{DRM} = \text{Rated}, T_j = 125^\circ C$ Exponential Rise	—	300	—	V / $\mu s$	
	SM8GZ47A SM8JZ47A			—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	SM8GZ47 SM8JZ47	$(dv / dt)_c$	$V_{DRM} = 400V, T_j = 125^\circ C$ $(di / dt)_c = -4.5A / ms$	10	—	—	V / $\mu s$	
	SM8GZ47A SM8JZ47A			4	—	—		

MARKING

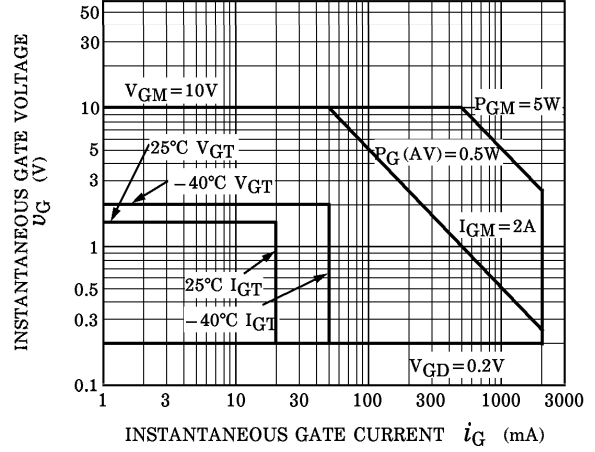


* NUMBER	SYMBOL	MARK
* 1	Toshiba Product Mark	
* 2	TYPE	SM8GZ47, SM8GZ47A
		SM8JZ47, SM8JZ47A
		SM8GZ47A, SM8JZ47A
* 3	Lot Number	A
* 4	Lot Number  Month ( Starting from Alphabet A ) Year ( Last Decimal Digit of the Current Year )	Example 8A : January 1998 8B : February 1998 8L : December 1998

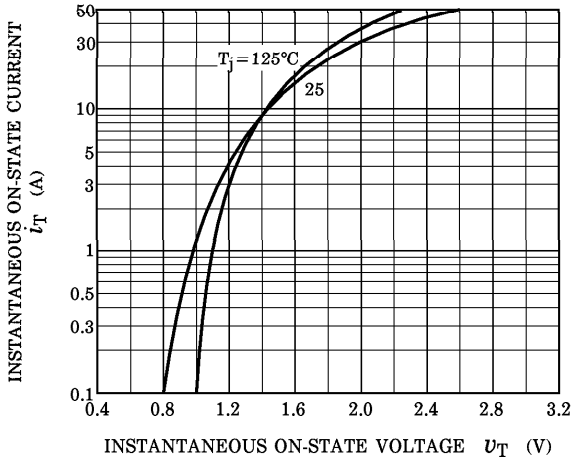
**GATE TRIGGER CHARACTERISTIC**  
(SM8GZ47, SM8JZ47)



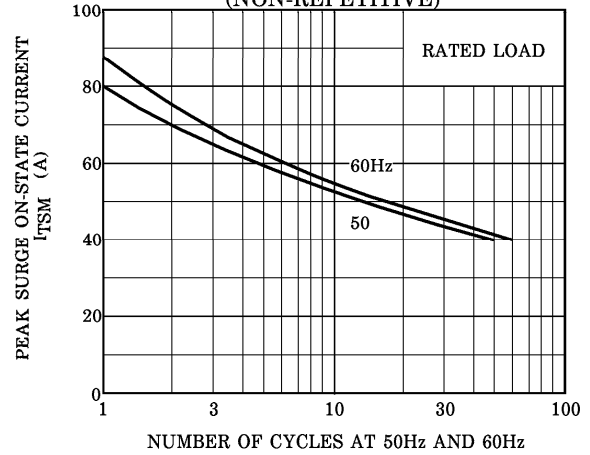
**GATE TRIGGER CHARACTERISTIC**  
(SM8GZ47A, SM8JZ47A)



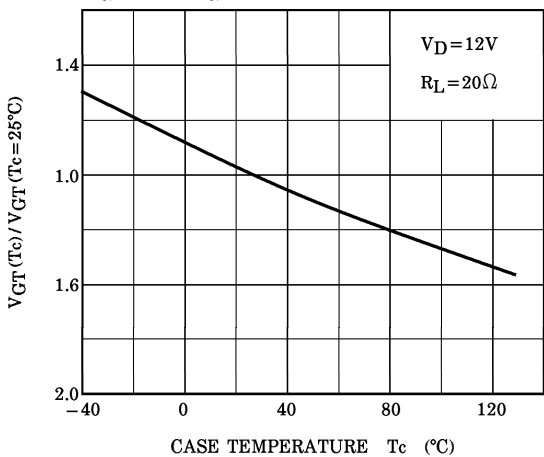
**$i_T - v_T$**



**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)**

