

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

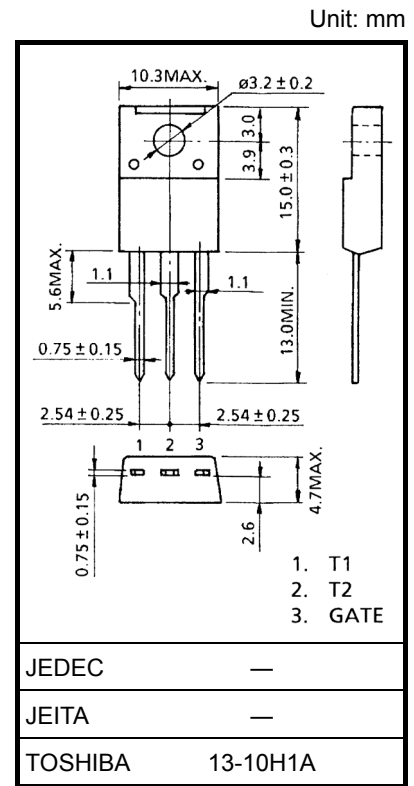
## SM2GZ47, SM2GZ47A, SM2JZ47, SM2JZ47A

### AC POWER CONTROL APPLICATIONS

- $I_T$  (RMS) = 1A ( $T_a = 65^\circ\text{C}$  without radiator)
- Gate Trigger Current:  $I_{GT} = 5\text{mA Max. (TYPE "A")}$
- Repetitive Peak Off-State Voltage:  $V_{DRM} = 400\text{V, } 600\text{V}$
- R.M.S On-State Current:  $I_T$  (RMS) = 2A ( $T_c = 110^\circ\text{C}$ )
- Isolation Voltage:  $V_{ISOL} = 1500\text{V (AC, } t = 60\text{s)}$

### ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SM2GZ47 SM2GZ47A	400	V
	SM2JZ47 SM2JZ47A	600	
R.M.S On-State Current (Full Sine Waveform)	$T_c = 110^\circ\text{C}$	2	A
	$T_a = 65^\circ\text{C}$	1	
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	8 (50Hz)	A
		8.8 (60Hz)	
I2t Limit Value	$I_2t$	0.32	A2s
Peak Gate Power Dissipation	$P_{GM}$	3	W
Average Gate Power Dissipation	$P_G (AV)$	0.3	W
Peak Gate Voltage	$V_{FGM}$	10	V
Peak Gate Current	$I_{GM}$	1.6	A
Junction Temperature	$T_j$	-40~125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40~125	$^\circ\text{C}$
Isolation Voltage (AC, $t = 1\text{min.}$ )	$V_{ISOL}$	1500	V

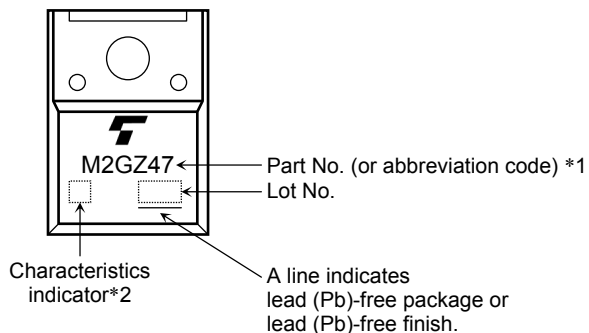


Weight: 1.7 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

### MARKING

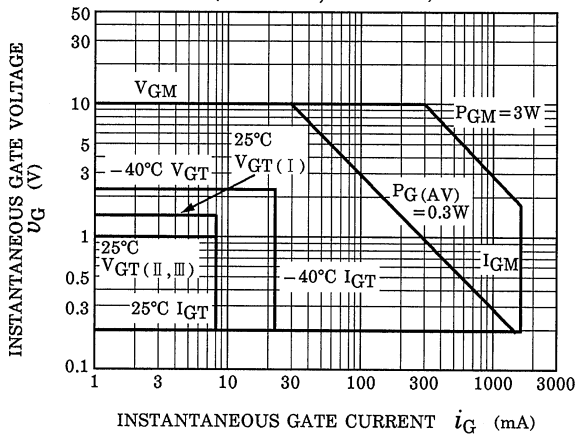


	Part No. (or abbreviation code)	Part No.
*1	M2GZ47	SM2GZ47, SM2GZ47A
	M2JZ47	SM2JZ47, SM2JZ47A
*2	Nothing	SM2GZ47, SM2JZ47
	A	SM2GZ47A, SM2JZ47A

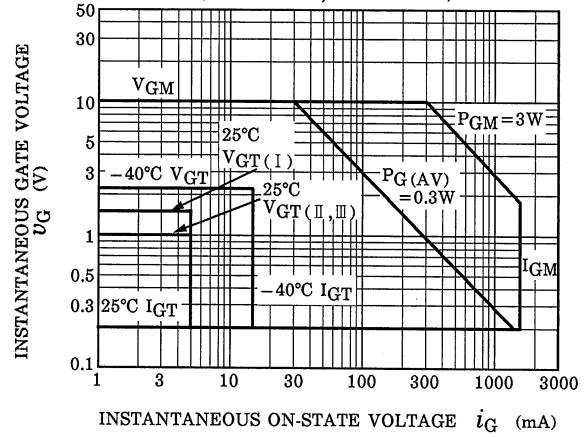
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT		
Repetitive Peak Off-State Current		$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	20	$\mu\text{A}$		
Gate Trigger Voltage	I	$V_{GT}$	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2 (+), Gate (+)	—	—	1.5	V	
	II			T2 (+), Gate (-)	—	—	1		
	III			T2 (-), Gate (-)	—	—	1		
	IV			T2 (-), Gate (+)	—	—	—		
Gate Trigger Current	SM2GZ47 SM2JZ47	$I_{GT}$	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2 (+), Gate (+)	—	—	8	mA	
				II	T2 (+), Gate (-)	—	—		8
				III	T2 (-), Gate (-)	—	—		8
				IV	T2 (-), Gate (+)	—	—		—
	SM2GZ47A SM2JZ47A			I	T2 (+), Gate (+)	—	—		5
				II	T2 (+), Gate (-)	—	—		5
				III	T2 (-), Gate (-)	—	—		5
				IV	T2 (-), Gate (+)	—	—		—
Peak On-State Voltage		$V_{TM}$	$I_{TM} = 3\text{A}$	—	—	1.7	V		
Gate Non-Trigger Voltage		$V_{GD}$	$V_D = \text{Rated}, T_c = 125^\circ\text{C}$	0.2	—	—	V		
Holding Current		$I_H$	$R_L = 100\Omega$	—	—	10	mA		
Thermal Resistance		$R_{th(j-a)}$	Junction to Ambient, AC	—	—	55	$^\circ\text{C} / \text{W}$		

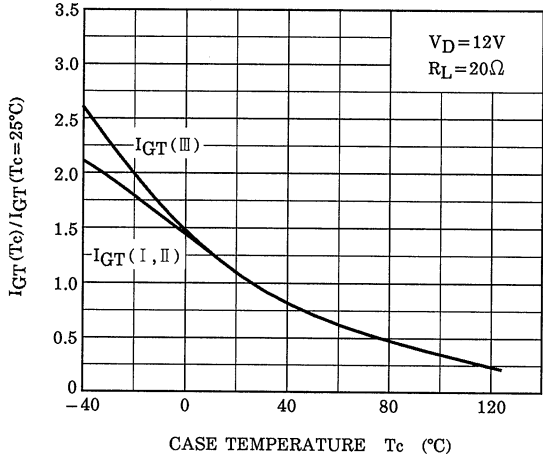
GATE TRIGGER CHARACTERISTIC  
(SM2GZ47, SM2JZ47)



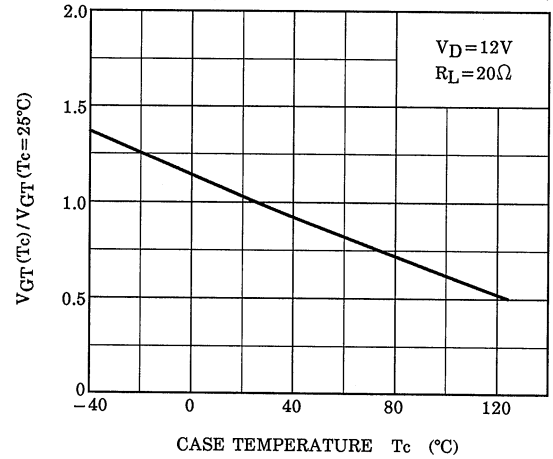
GATE TRIGGER CHARACTERISTIC  
(SM2GZ47A, SM2JZ47A)



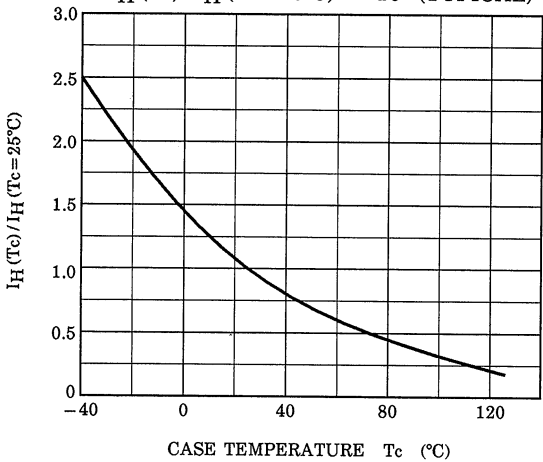
$I_{GT}(T_c)/I_{GT}(T_c=25^\circ C) - T_c$  (TYPICAL)



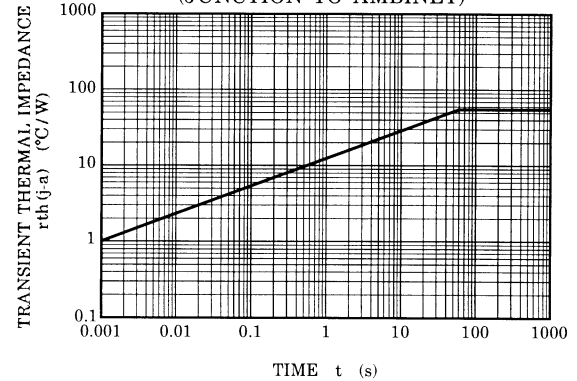
$V_{GT}(T_c)/V_{GT}(T_c=25^\circ C) - T_c$  (TYPICAL)

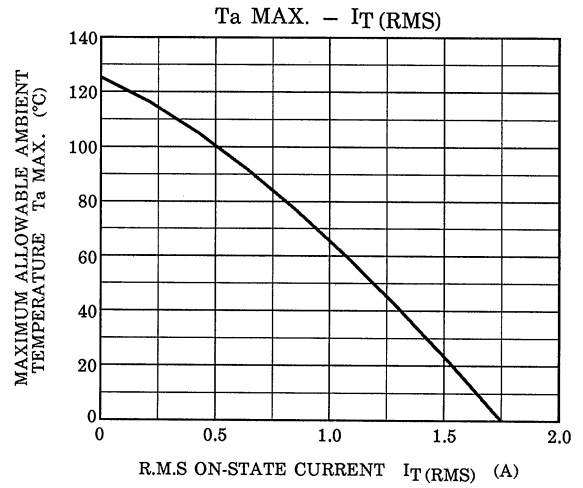
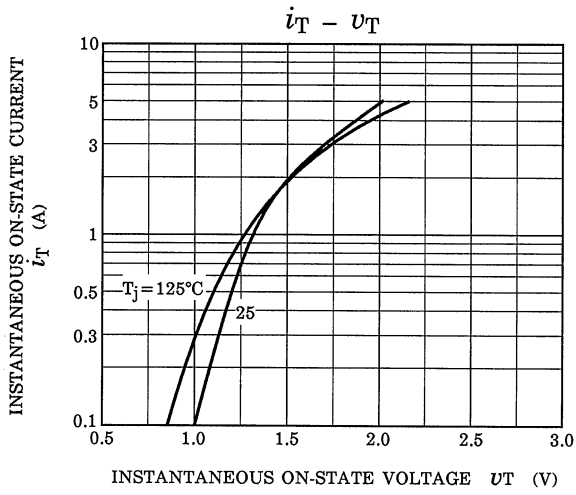


$I_H(T_c)/I_H(T_c=25^\circ C) - T_c$  (TYPICAL)



TRANSIENT THERMAL IMPEDANCE  
(JUNCTION TO AMBIENT)





<CONDITION>

- ◆ NO HEAT SINK
- ◆ LEAD FORMING : LB182
- ◆ PRINT BOARD

(  $t = 1.6\text{mm}$   
SOLDER LAND :  $2\text{mm}\phi$  )

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20070701-EN

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