

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

SM3GZ47, SM3JZ47

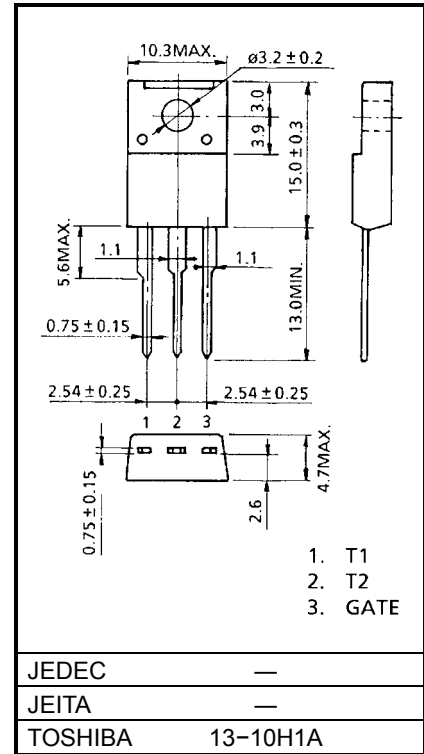
AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage : $V_{DRM} = 400, 600V$
- R.M.S ON-State Current : $I_T (RMS) = 3A$
- High Commutating (dv / dt)
- Isolation Voltage : $V_{ISOL} = 1500V AC$

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM3GZ47	400	V
	SM3JZ47	600	
R.M.S On-State Current (Full Sine Waveform $T_c = 110^\circ C$)	$I_T (RMS)$	3	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	30 (50Hz)	A
		33 (60Hz)	
$I^2 t$ Limit Value ($t = 1 \sim 10ms$)	$I^2 t$	4.5	$A^2 s$
Critical Rate of Rise of On-State Current (Note 1)	di / dt	50	A / μs
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	$-40 \sim 125$	$^\circ C$
Storage Temperature Range	T_{stg}	$-40 \sim 125$	$^\circ C$
Isolation Voltage (AC, $t = 1min.$)	V_{ISOL}	1500	V

Unit: mm



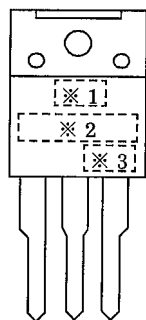
Weight: 1.7g

Note 1: di / dt test condition
 $V_{DRM} = 0.5 \times \text{Rated}$
 $I_{TM} \leq 4.5A$
 $t_{gw} \geq 10\mu s$
 $t_{gr} \leq 250ns$
 $i_{gp} = I_{GT} \times 2.0$

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

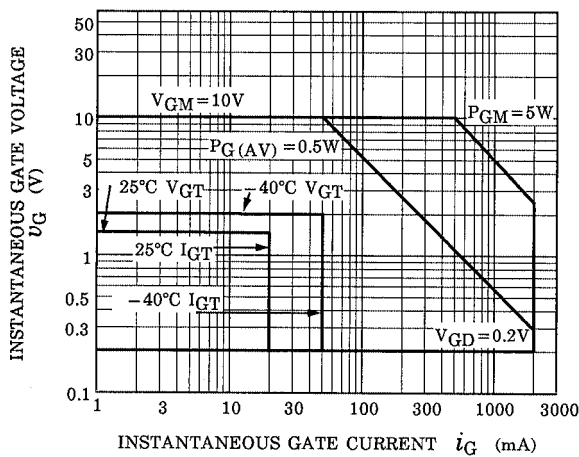
CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current		I_{DRM}	$V_{DRM} = \text{Rated}$		—	—	20	μA
Gate Trigger Voltage	I	V_{GT}	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2 (+), Gate (+)	—	—	1.5	V
	II			T2 (+), Gate (-)	—	—	1.5	
	III			T2 (-), Gate (-)	—	—	1.5	
	IV			T2 (-), Gate (+)	—	—	—	
Gate Trigger Current	I	I_{GT}	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2 (+), Gate (+)	—	—	20	mA
	II			T2 (+), Gate (-)	—	—	20	
	III			T2 (-), Gate (-)	—	—	20	
	IV			T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage		V_{TM}	$I_{TM} = 4.5\text{A}$		—	—	1.5	V
Gate Non-Trigger Voltage		V_{GD}	$V_D = \text{Rated}$, $T_c = 125^\circ\text{C}$		0.2	—	—	V
Holding Current		I_H	$V_D = 12\text{V}$, $I_{TM} = 1\text{A}$		—	—	30	mA
Thermal Resistance		$R_{th(j-c)}$	Junction to Case, AC		—	—	4.2	$^\circ\text{C} / \text{W}$
Critical Rate of Rise of Off-State Voltage		dv / dt	$V_{DRM} = \text{Rated}$, $T_j = 125^\circ\text{C}$ Exponential Rise		—	300	—	$\text{V} / \mu\text{s}$
Critical Rate of Rise of Off-State Voltage at Commutation		$(dv / dt)_c$	$V_{DRM} = 400\text{V}$, $T_j = 125^\circ\text{C}$ $(di / dt)_c = -2.0\text{A} / \text{ms}$		10	—	—	$\text{V} / \mu\text{s}$

MARKING

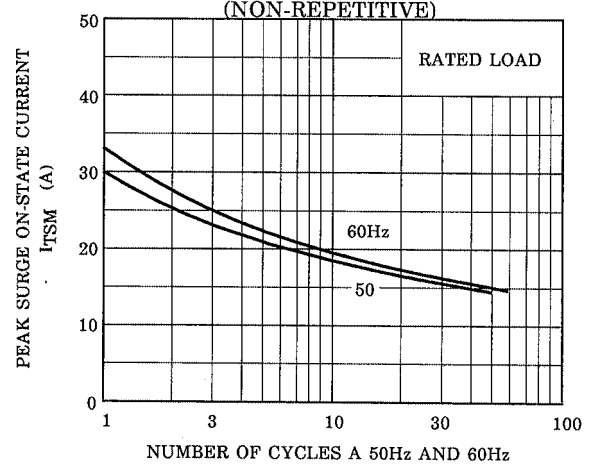


NUMBER	SYMBOL		MARK
* 1	TOSHIBA PRODUCT MARK		
* 2	TYPE	SM3GZ47	M3GZ47
		SM3JZ47	M3JZ47
* 3	Lot Number Month (Starting from Alphabet A) Year (Last Decimal Digit of the Current Year)		Example 8A : January 1998 8B : February 1998 8L : December 1998

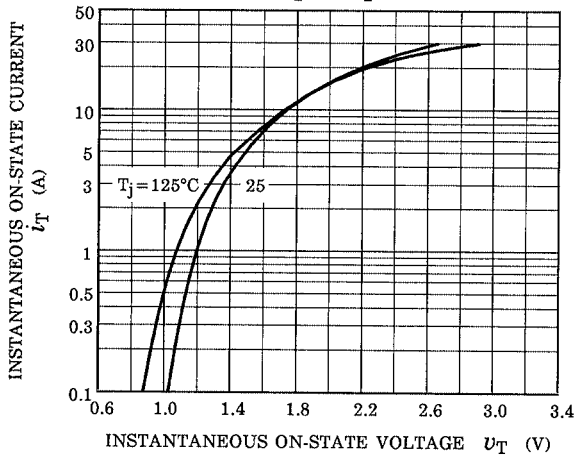
GATE TRIGGER CHARACTERISTIC



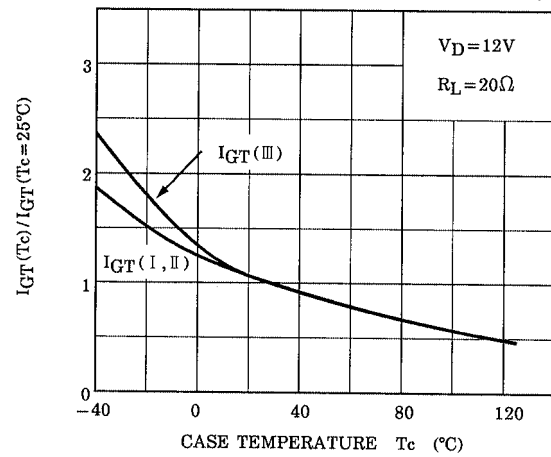
SURGE ON-STATE CURRENT (NON-REPETITIVE)



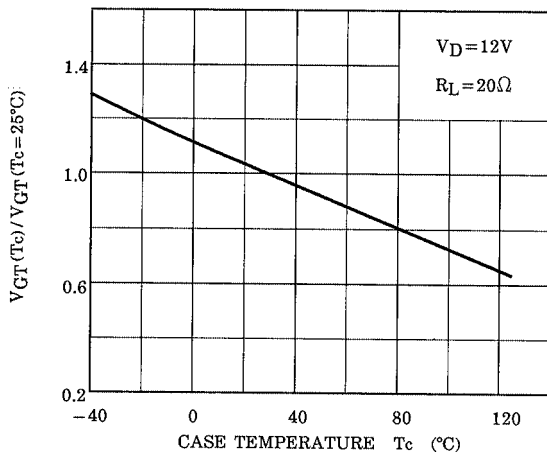
$i_T - v_T$



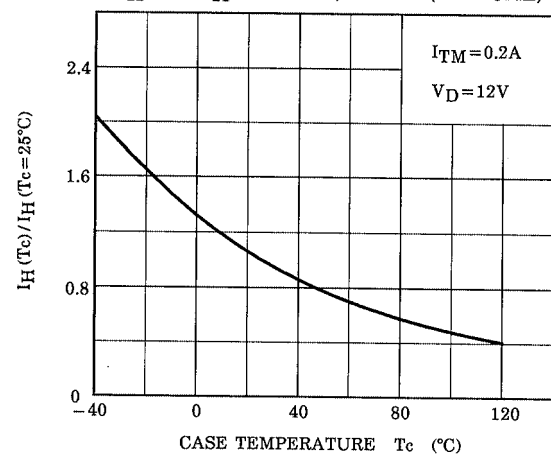
$I_{GT}(T_c) / I_{GT}(T_c = 25^\circ C) - T_c$ (TYPICAL)

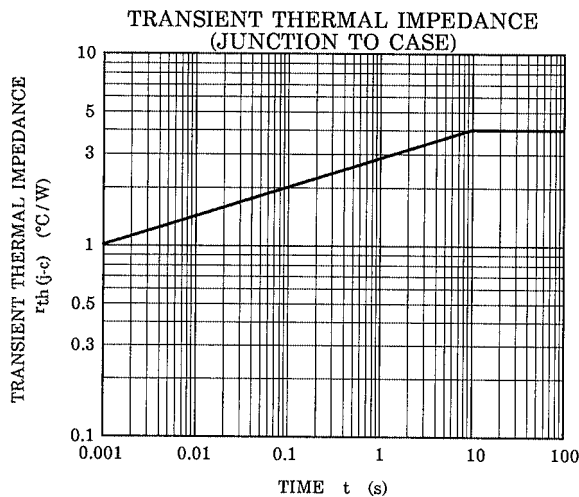
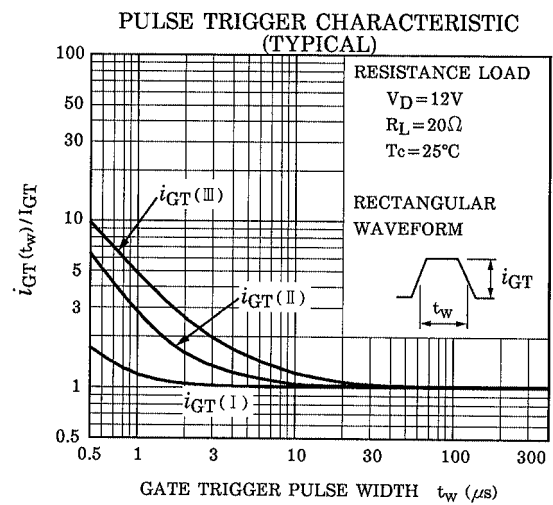
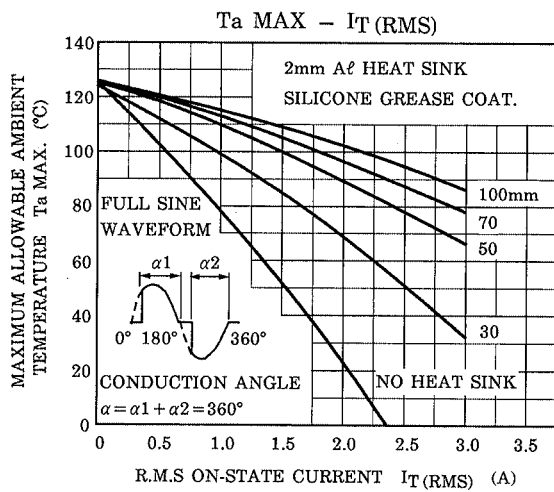
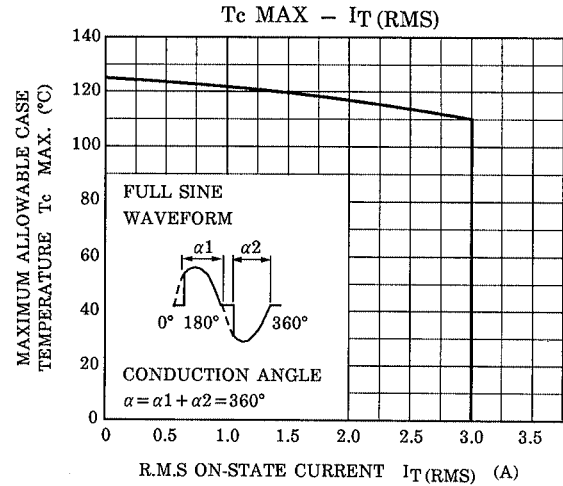
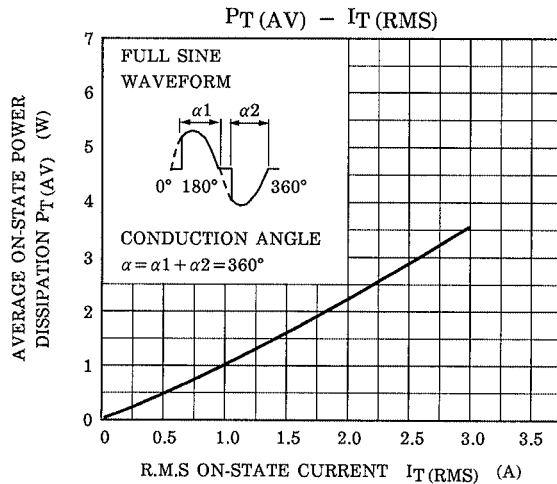


$V_{GT}(T_c) / V_{GT}(T_c = 25^\circ C) - T_c$ (TYPICAL)



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





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