

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

# SM1G43,SM1J43

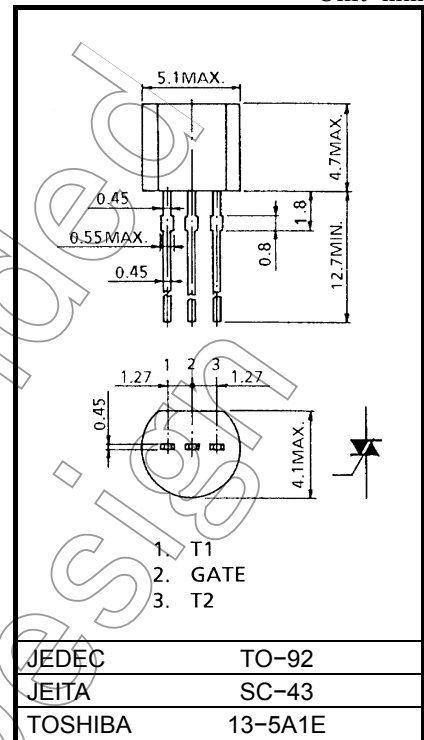
Unit: mm

## AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 400, 600V$
- R.M.S On-State Current :  $I_T (RMS) = 1A$
- Higt Commutating (dv / dt)

## ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM1G43	$V_{DRM}$	400	V
	SM1J43		600	
R.M.S On-State Current (Full Sine Waveform $T_c = 74^\circ C$ )		$I_T (RMS)$	1.0	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		$I_{TSM}$	8 (50Hz)	A
			8.8 (60Hz)	
$I^2t$ Limit Value		$I^2t$	0.32	$A^2s$
Peak Gate Power Dissipation		$P_{GM}$	1	W
Average Gate Power Dissipation		$P_G (AV)$	0.1	W
Peak Gate Voltage		$V_{GM}$	6	V
Peak Gate Current		$I_{GM}$	0.5	A
Junction Temperature		$T_j$	-40~125	$^\circ C$
Storage Temperature Range		$T_{stg}$	-40~125	$^\circ C$



Weight: 0.2g

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.

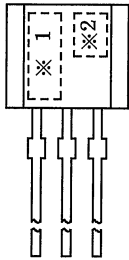
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Not for sale

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

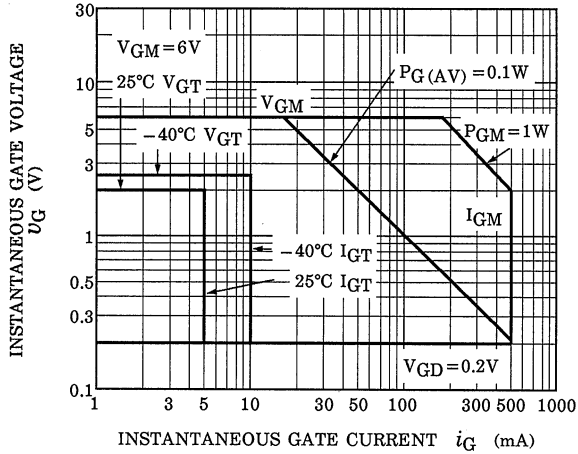
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current	$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	10	$\mu\text{A}$	
Gate Trigger Voltage	I	$V_D = 12\text{V}$ , $R_L = 20\Omega$	T2 (+), Gate (+)		—	2	V
	II		T2 (+), Gate (-)		—	2	
	III		T2 (-), Gate (-)		—	2	
	IV		T2 (-), Gate (+)		—	2	
Gate Trigger Current	I	$V_D = 12\text{V}$ , $R_L = 20\Omega$	T2 (+), Gate (+)		—	5	mA
	II		T2 (+), Gate (-)		—	5	
	III		T2 (-), Gate (-)		—	5	
	IV		T2 (-), Gate (+)		—	10	
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 1.5\text{A}$	—	—	1.5	V	
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = \text{Rated}$ , $T_c = 125^\circ\text{C}$	0.2	—	—	V	
Holding Current	$I_H$	$V_D = 12\text{V}$ , $I_{TM} = 1\text{A}$	—	—	10	mA	
Thermal Resistance	$R_{th(j-c)}$	Junction to Case, AC	—	—	40	$^\circ\text{C}/\text{W}$	
Thermal Resistance	$R_{th(j-a)}$	Junction to Ambient, AC	—	—	180	$^\circ\text{C}/\text{W}$	

## MARKING

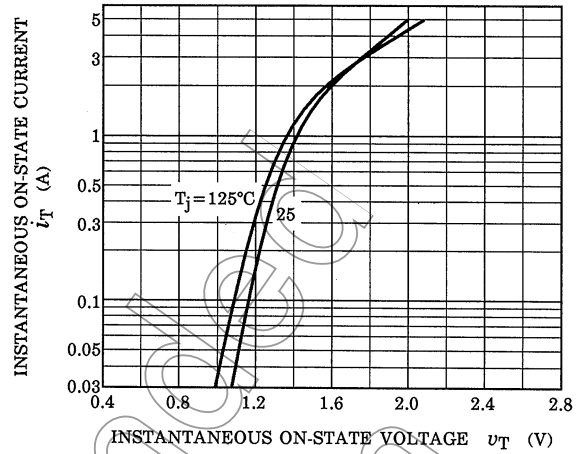


NUMBER	SYMBOL	MARK
*1	TYPE	SM1G43
		SM1J43
*2	Lot Number  Month (Starting from Alphabet A)  Year (Last Decimal Digit of the Current Year)	Example 8A : January 1998 8B : February 1998 8L : December 1998

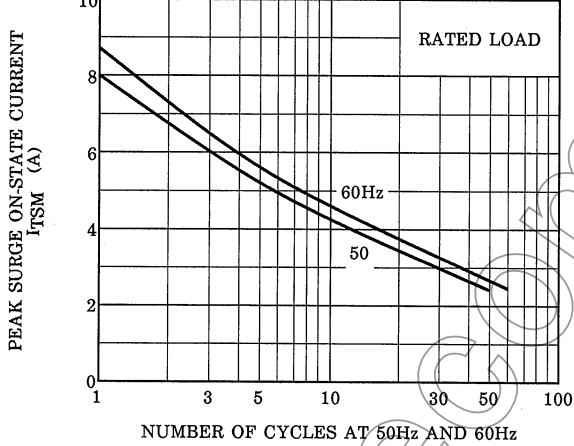
GATE TRIGGER CHARACTERISTIC



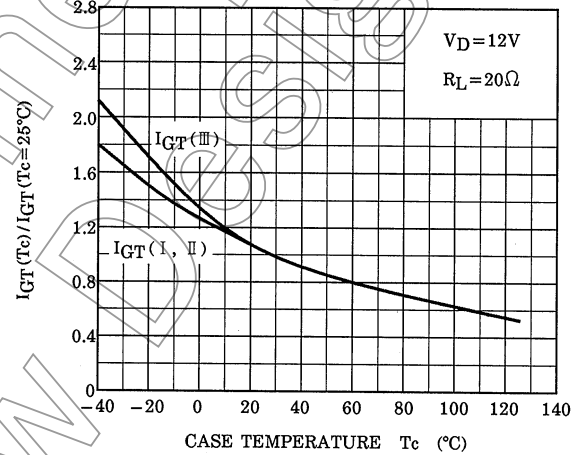
$i_T - v_T$



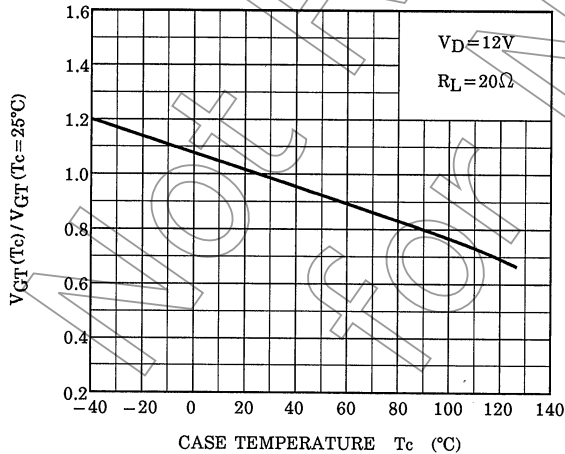
SURGE ON-STATE CURRENT (NON-REPETITIVE)



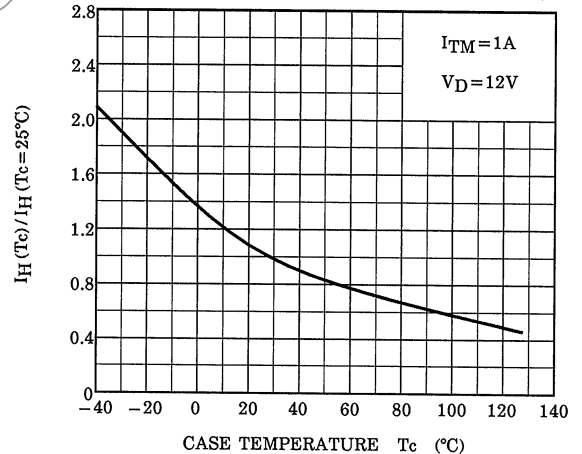
$I_{GT}(T_c) / I_{GT}(T_c = 25^\circ C) - T_c$  (TYPICAL)

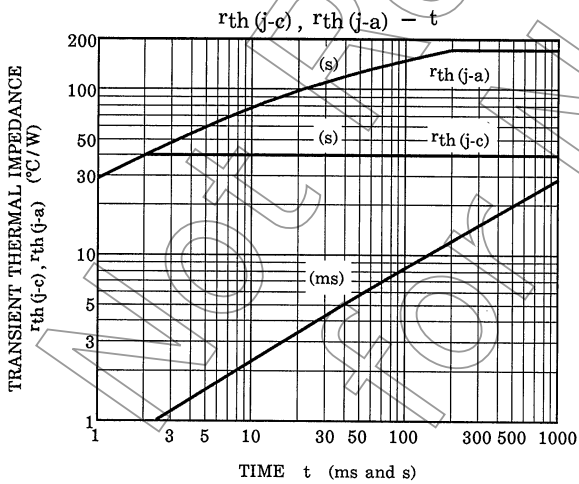
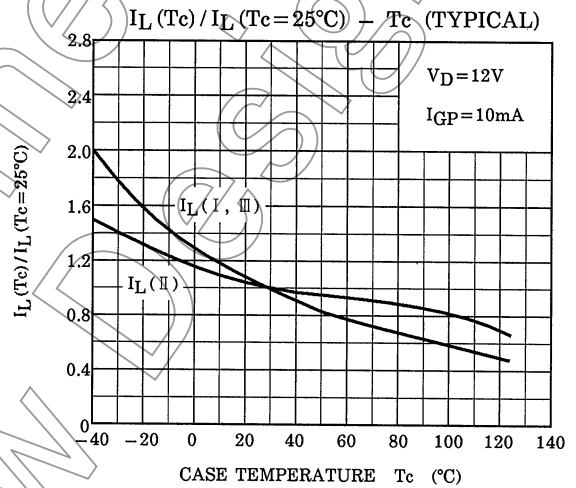
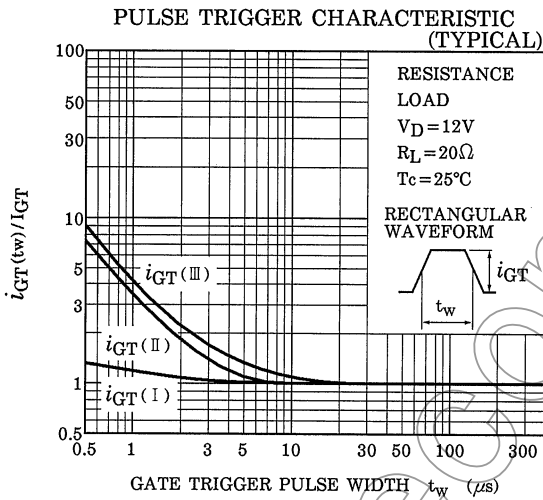
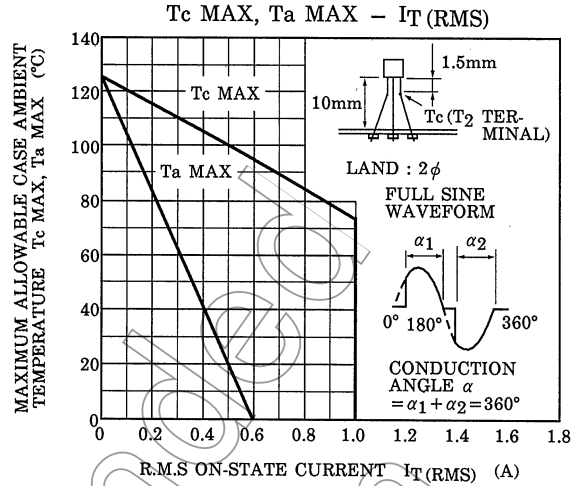
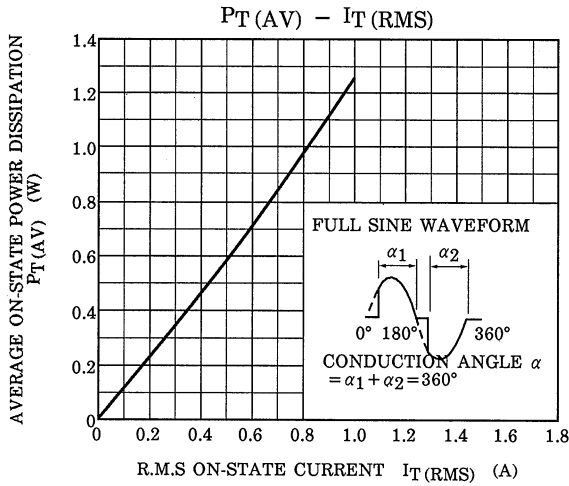


$V_{GT}(T_c) / V_{GT}(T_c = 25^\circ C) - T_c$  (TYPICAL)



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





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20070701-EN

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