

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

## SM8G48, USM8G48, SM8J48, USM8J48 SM8G48A, USM8G48A, SM8J48A, USM8J48A

### AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 400, 600V$
- R.M.S On-State Current :  $I_T (RMS) = 8A$
- Gate Trigger Current
  - :  $I_{GT} = 30mA$  Max.
  - :  $I_{GT} = 20mA$  Max. ("A" Type)

Unit: mm

SM8G48, SM8J48, SM8G48A, SM8J48A	USM8G48, USM8J48, USM8G48A, USM8J48A
JEDEC —	JEDEC —
JEITA —	JEITA —
TOSHIBA 13-10J1A	TOSHIBA 13-10J2A

Weight: 1.7g

### MAXIMUM RATINGS

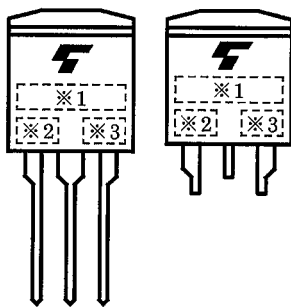
CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	$V_{DRM}$	400	V
		600	
R.M.S On-State Current	$I_T (RMS)$	8	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	80 (50Hz)	A
		88 (60Hz)	
$I^2t$ Limit Value	$I^2t$	32	$A^2s$
Critical Rate of Rise of On-State Current (Note 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 Forward Gate Voltage	$V_{GM}$	10	V
Peak Forward Gate Current	$I_{GM}$	2	A
Junction Temperature	$T_j$	-40~125	$^{\circ}C$
Storage Temperature Range	$T_{stg}$	-40~125	$^{\circ}C$

Note 1:  $V_{DRM} = 0.5 \times \text{Rated}$   
 $I_{TM} \leq 12A$   
 $t_{gw} \geq 10\mu s$   
 $t_{gr} \leq 250ns$   
 $i_{gp} = I_{GT} \times 2.0$

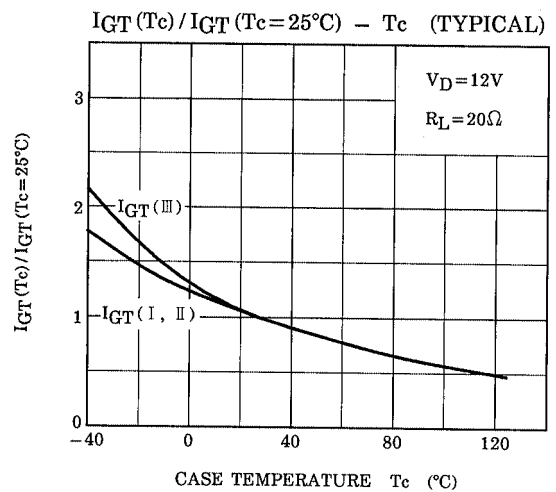
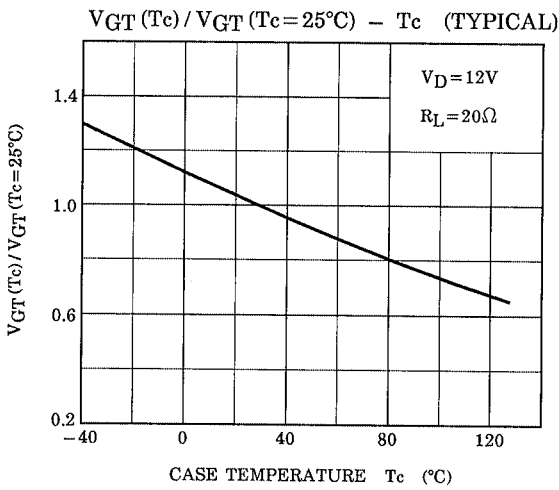
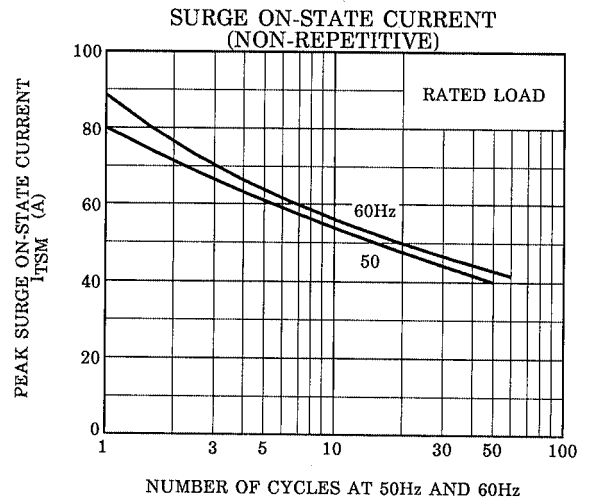
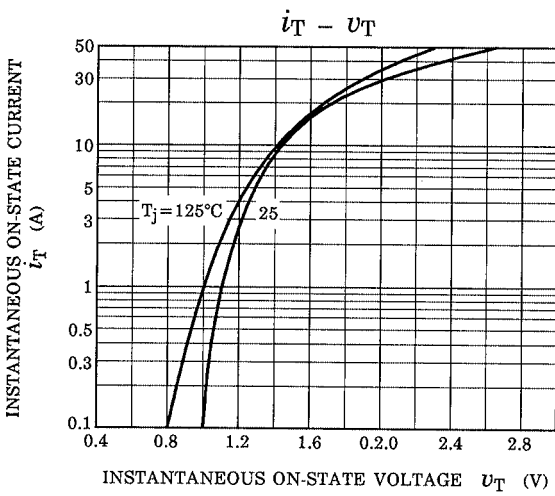
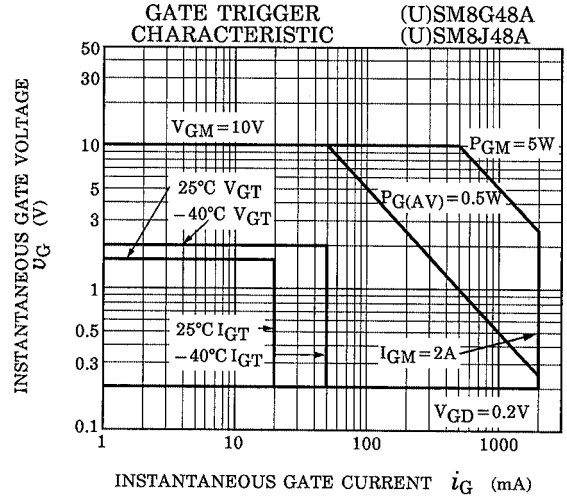
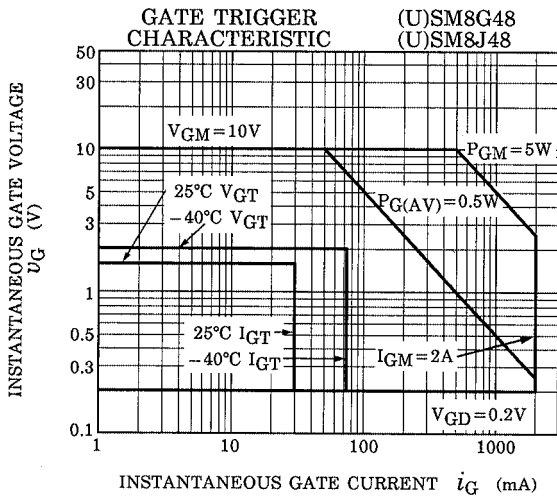
### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

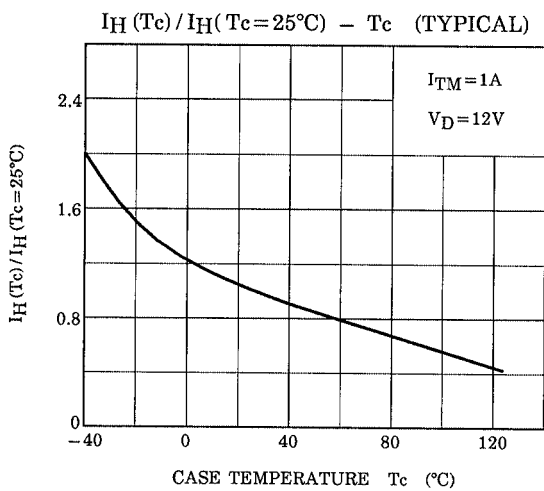
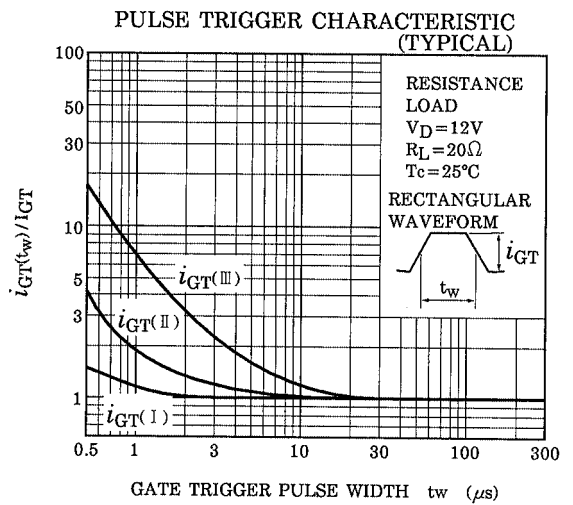
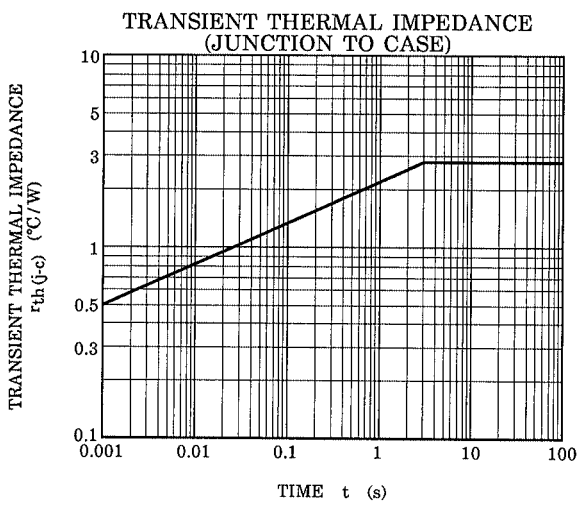
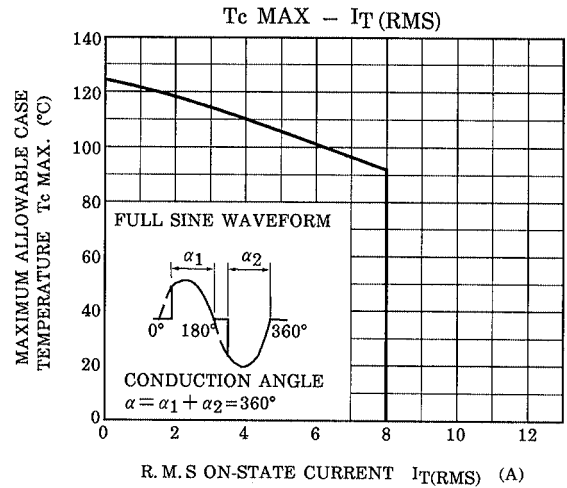
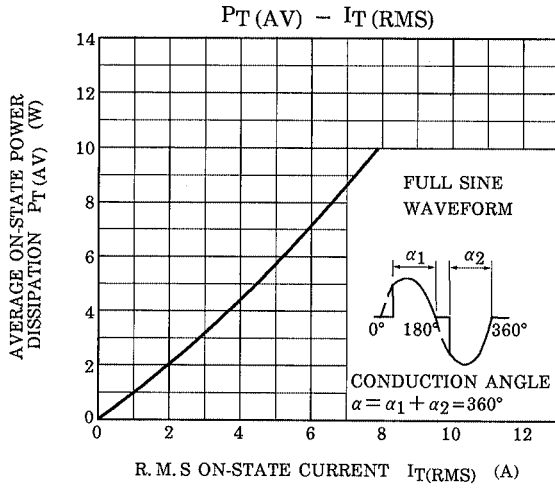
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current		$I_{DRM}$	$V_{DRM} = \text{Rated}$	—	—	20	$\mu\text{A}$	
Gate Trigger Voltage	I	$V_{GT}$	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2 (+), Gate (+)	—	—	1.5	V
	II			T2 (+), Gate (-)	—	—	1.5	
	III			T2 (-), Gate (-)	—	—	1.5	
	IV			T2 (-), Gate (+)	—	—	—	
Gate Trigger Current	(U)SM8G48 (U)SM8J48	$I_{GT}$	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2 (+), Gate (+)	—	—	30	mA
				T2 (+), Gate (-)	—	—	30	
				T2 (-), Gate (-)	—	—	30	
				T2 (-), Gate (+)	—	—	—	
	(U)SM8G48A (U)SM8J48A			T2 (+), Gate (+)	—	—	20	
				T2 (+), Gate (-)	—	—	20	
				T2 (-), Gate (-)	—	—	20	
				T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage		$V_{TM}$	$I_{TM} = 12\text{A}$	—	—	1.5	V	
Gate Non-Trigger Voltage		$V_{GD}$	$V_D = \text{Rated}, T_c = 125^\circ\text{C}$	0.2	—	—	V	
Holding Current		$I_H$	$V_D = 12\text{V}, I_{TM} = 1\text{A}$	—	—	50	mA	
Thermal Resistance		$R_{th(j-c)}$	Junction to Case, AC	—	—	2.8	$^\circ\text{C} / \text{W}$	
Critical Rate of Rise of Off-State Voltage	(U)SM8G48 (U)SM8J48	$dv / dt$	$V_{DRM} = \text{Rated}, T_j = 125^\circ\text{C}$ Exponential Rise	—	300	—	V / $\mu\text{s}$	
	(U)SM8G48A (U)SM8J48A			—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	(U)SM8G48 (U)SM8J48	$(dv / dt)_c$	$V_{DRM} = 400\text{V}, T_j = 125^\circ\text{C}$ $(di / dt)_c = -4.5\text{A} / \text{ms}$	10	—	—	V / $\mu\text{s}$	
	(U)SM8G48A (U)SM8J48A			4	—	—		

### MARKING



NUMBER	SYMBOL	MARK
* 1	SM8G48, SM8G48A, USM8G48, USM8G48A	M8G48
	SM8J48, SM8J48A, USM8J48, USM8J48A	M8J48
* 2	SM8G48A, SM8J48A, USM8G48A, USM8J48A	A
* 3	<p>Lot Number</p> <p>Month (Starting from Alphabet A)</p> <p>Year (Last Decimal Digit of the Current Year)</p>	<p>Example</p> <p>8A : January 1998</p> <p>8B : February 1998</p> <p>8L : December 1998</p>





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