

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: $V_{DRM} = 400V, 600V$
- 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	
<p>Top view dimensions: 10.3MAX, 5.0, 1.32, 2.5MAX, 9.1, 10.6MAX, 1.4MAX, 1.6MAX, 0.76, 12.6MIN, 2.54 ± 0.25, 0.5, 2.6, 4.7MAX.</p> <p>Bottom view labels: 1, 2, 3, 2.54 ± 0.25.</p>		<p>Top view dimensions: 10.3MAX, 5.0, 1.32, 2.5MAX, 9.1, 10.6MAX, 1.4MAX, 1.6MAX, 0.76, 12.6MIN, 2.54 ± 0.25, 0.5, 2.6, 4.7MAX.</p> <p>Bottom view labels: 1, 2, 3, 2.54 ± 0.25.</p>	
<p>1. T1</p> <p>2. T2</p> <p>3. GATE</p>		<p>1. T1</p> <p>2. T2 (BACK SIDE)</p> <p>3. GATE</p>	
JEDEC	—	JEDEC	—
JEITA	—	JEITA	—
TOSHIBA	13-10J1A	TOSHIBA	13-10J2A

Weight: 1.7g

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	(U)SM8G48 (U)SM8G48A	V_{DRM}	400	V
	(U)SM8J48 (U)SM8J48A		600	
R.M.S On-State Current		$I_{\text{T}} \text{ (RMS)}$	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 / μs
Peak Gate Power Dissipation		P_{GM}	5	W
Average Gate Power Dissipation		$P_{\text{G}} \text{ (AV)}$	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	°C
Storage Temperature Range		T_{stg}	-40~125	°C

Note 1: $V_{\text{DRM}} = 0.5 \times \text{Rated}$

$$I_{\text{TM}} \leq 12\text{A}$$

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

$$t_{\text{gr}} \leq 250\text{ns}$$

$$I_{\text{gp}} = I_{\text{GT}} \times 2.0$$

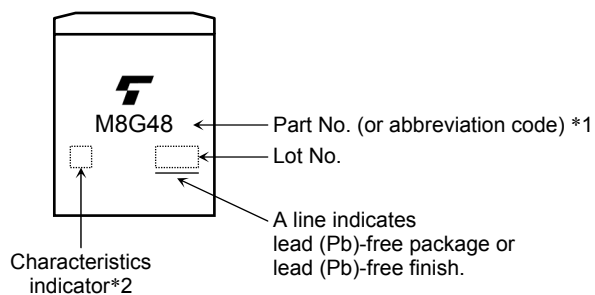
Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

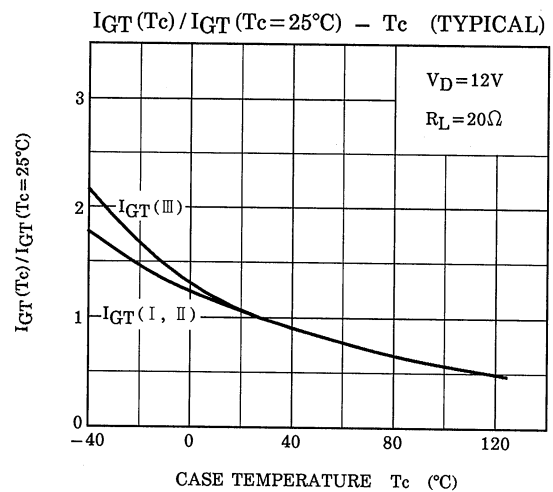
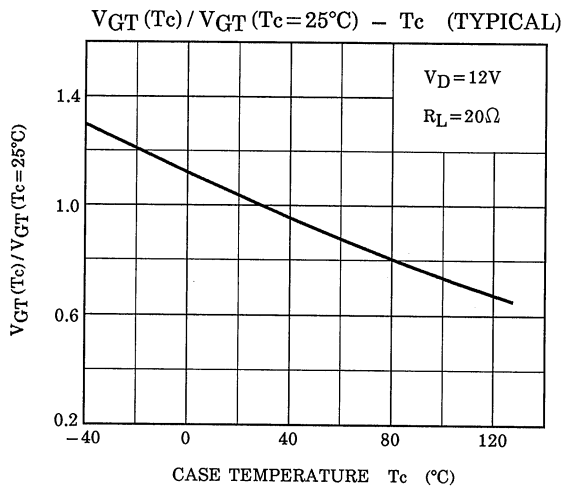
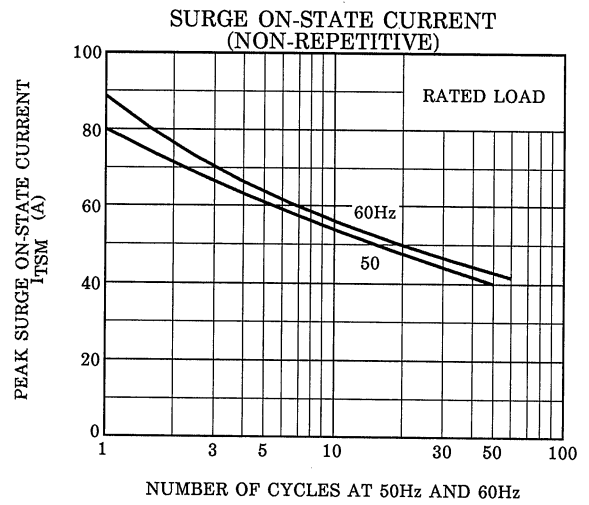
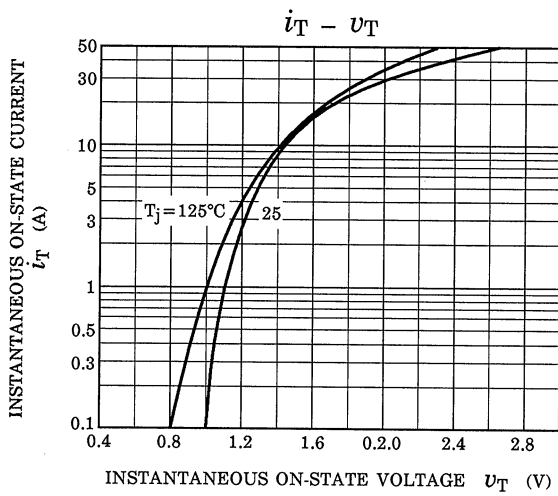
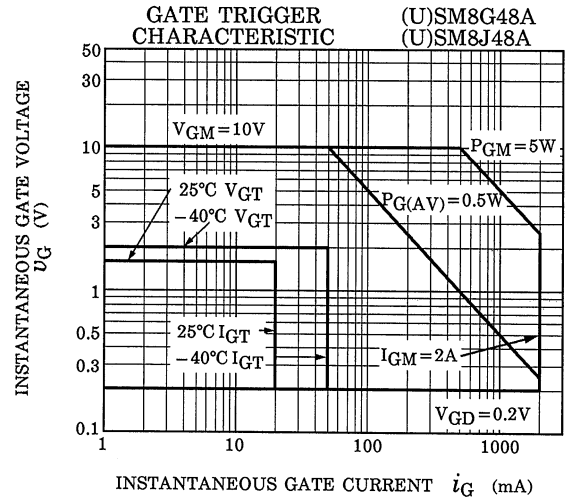
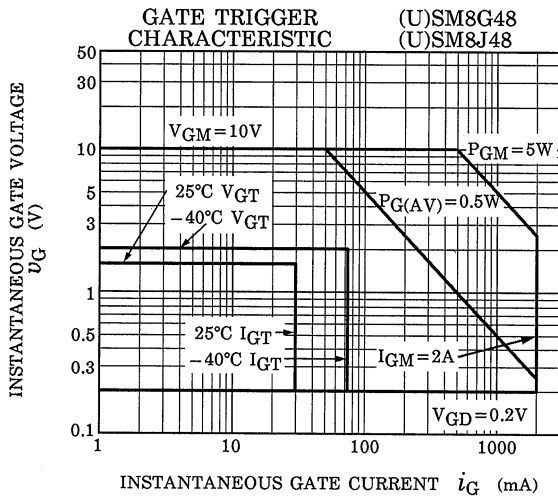
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

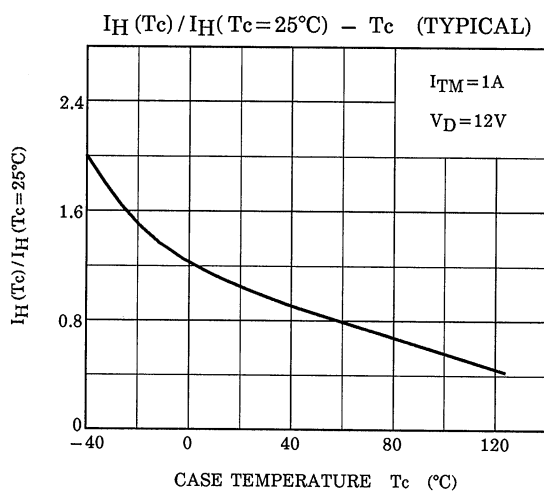
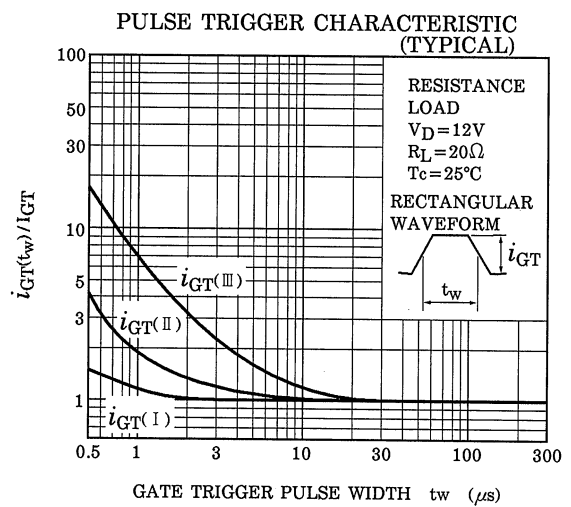
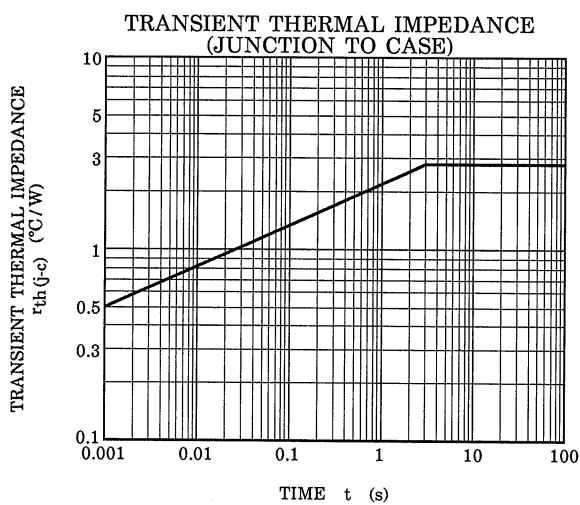
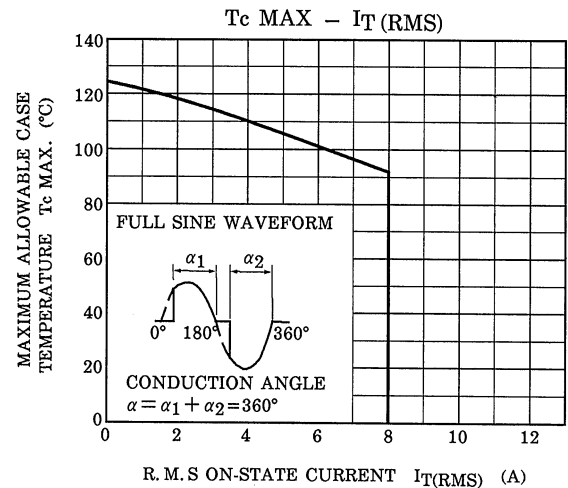
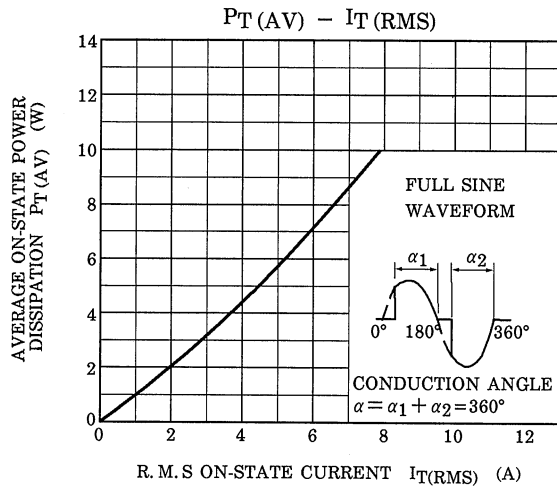
CHARACTERISTIC			SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current			I _{DRM}	V _{DRM} = Rated		—	—	20	μA
Gate Trigger Voltage		I	V _{GT}	V _D = 12V R _L = 20Ω	T2 (+), Gate (+)	—	—	1.5	V
		II			T2 (+), Gate (–)	—	—	1.5	
		III			T2 (–), Gate (–)	—	—	1.5	
		IV			T2 (–), Gate (+)	—	—	—	
Gate Trigger Current	(U)SM8G48 (U)SM8J48	I	I _{GT}	V _D = 12V R _L = 20Ω	T2 (+), Gate (+)	—	—	30	mA
		II			T2 (+), Gate (–)	—	—	30	
		III			T2 (–), Gate (–)	—	—	30	
		IV			T2 (–), Gate (+)	—	—	—	
	(U)SM8G48A (U)SM8J48A	I			T2 (+), Gate (+)	—	—	20	
		II			T2 (+), Gate (–)	—	—	20	
		III			T2 (–), Gate (–)	—	—	20	
		IV			T2 (–), Gate (+)	—	—	—	
Peak On-State Voltage			V _{TM}	I _{TM} = 12A		—	—	1.5	V
Gate Non-Trigger Voltage			V _{GD}	V _D = Rated, T _c = 125°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		—	—	2.8	°C / W
Critical Rate of Rise of Off-State Voltage	(U)SM8G48 (U)SM8J48	dv / dt	V _{DRM} = Rated, T _j = 125°C Exponential Rise	—	300	—	V / μs		
	(U)SM8G48A (U)SM8J48A			—	200	—			
Critical Rate of Rise of Off-State Voltage at Commutation	(U)SM8G48 (U)SM8J48	(dv / dt) c	V _{DRM} = 400V, T _j = 125°C (di / dt) c = –4.5A / ms	10	—	—	V / μs		
	(U)SM8G48A (U)SM8J48A			4	—	—			

MARKING



	Part No. (or abbreviation code)	Part No.
*1	M8G48	SM8G48, SM8G48A
		USM8G48, USM8G48A
	M8J48	SM8J48, SM8J48A
		USM8J48, USM8J48A
*2	Nothing	SM8G48, SM8J48
		USM8G48, USM8J48
	A	SM8G48A, SM8J48A
		USM8G48A, USM8J48A





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