

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

SM3G48, USM3G48, SM3J48, USM3J48

AC POWER CONTROL APPLICATIONS

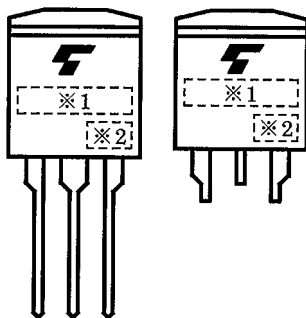
- Repetitive Peak Off-State Voltage : $V_{DRM}=400, 600V$
- R.M.S On-State Current : $I_T (RMS)=3A$
- Gate Trigger Current : $I_{GT}=20mA \text{ Max.}$

Unit in mm

SM3G48, SM3J48		USM3G48, USM3J48	
JEDEC	—	JEDEC	—
JEITA	—	JEITA	—
TOSHIBA	13-10J1A	TOSHIBA	13-10J2A

Weight : 1.7g

MARKING



NUMBER	SYMBOL		MARK
*1	TYPE	SM3G48, USM3G48	M3G48
		SM3J48, USM3J48	M3J48
*2	Lot Number Month (Starting from Alphabet A) Year (Last Decimal Digit of the Year of Manufacture)		Example 8A : January 1998 8B : February 1998 8L : December 1998

MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	(U)SM3G48	V _{DRM}	400	V
	(U)SM3J48		600	
R.M.S On-State Current		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		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 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_{DRM}=0.5×Rated

I_{TM}≤4.5A

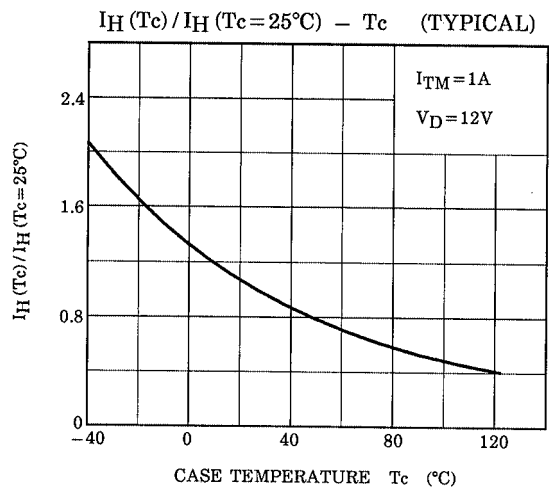
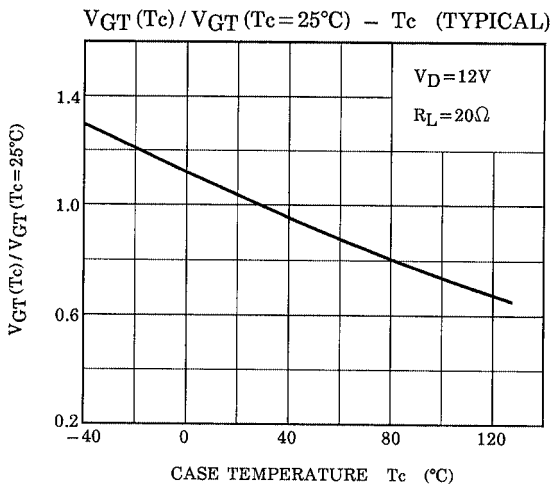
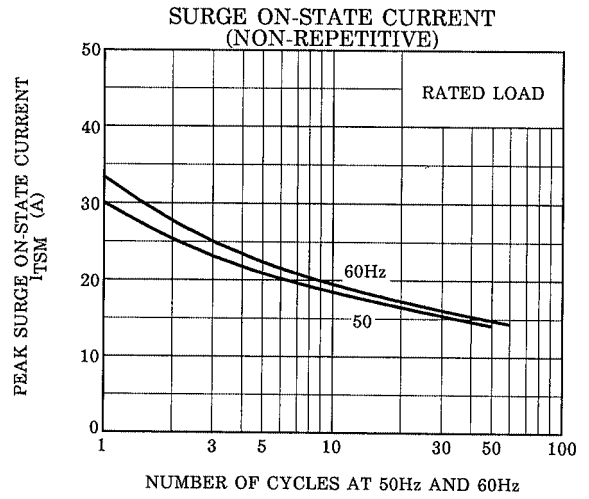
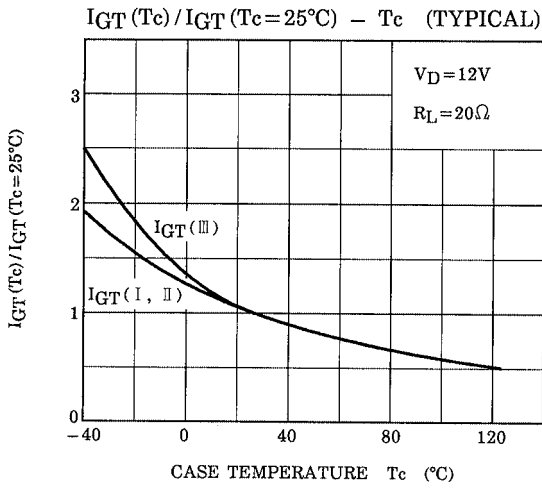
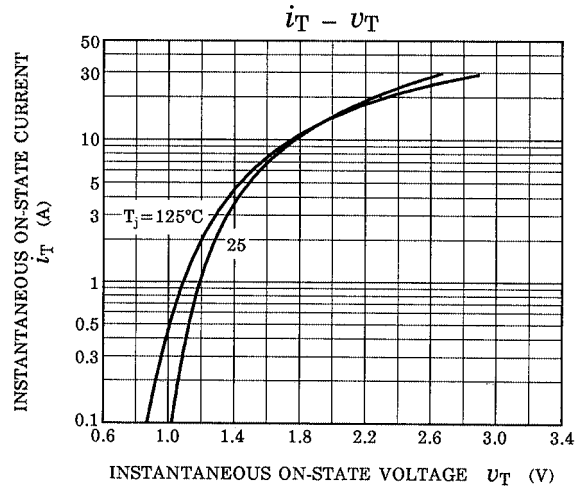
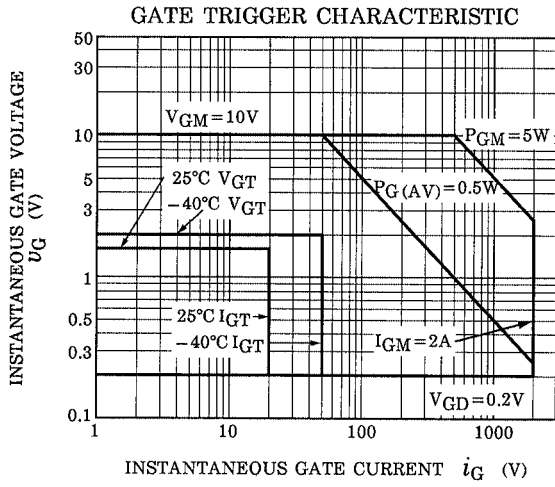
t_{gw}≥10μs

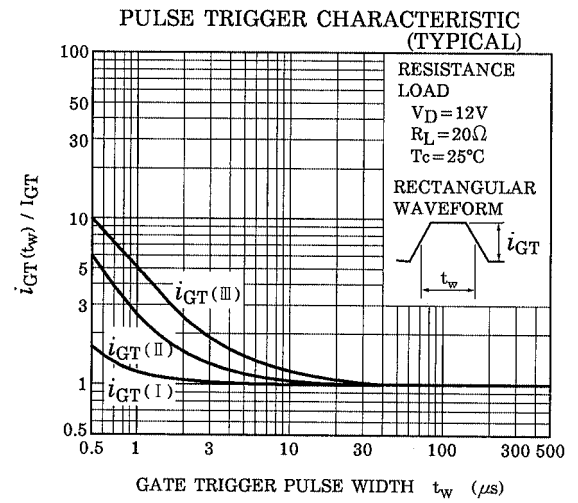
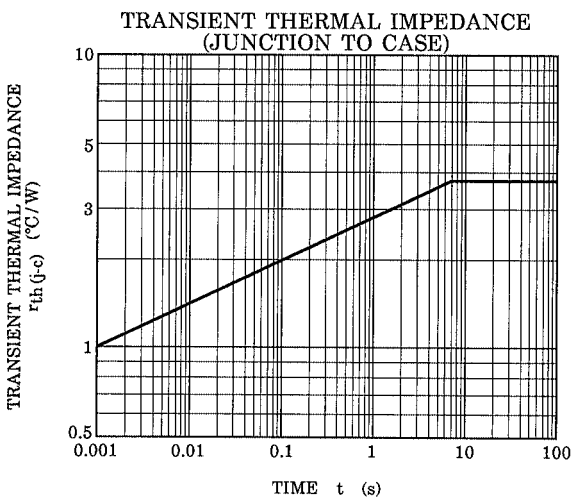
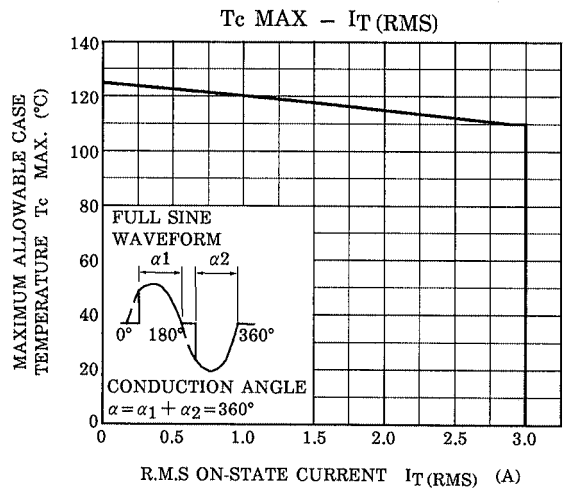
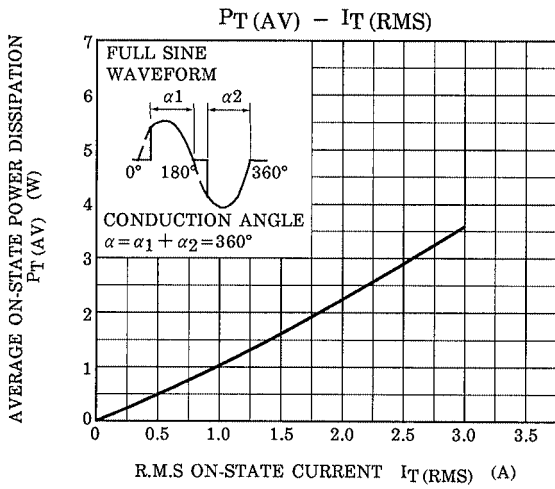
t_{gr}≤250ns

i_{gp}=I_{GT}×2.0

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	I	I _{GT}	V _D =12V R _L =20Ω	T2 (+), Gate (+)	—	—	20	mA
	II			T2 (+), Gate (-)	—	—	20	
	III			T2 (-), Gate (-)	—	—	20	
	IV			T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage		V _{TM}	I _{TM} =4.5A	—	—	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	—	—	30	mA	
Thermal Resistance		R _{th (j-c)}	Junction to Case, AC	—	—	3.6	°C / W	
Critical Rate of Rise of Off-State Voltage		dv / dt	V _{DRM} =Rated, T _j =125°C Exponential Rise	—	300	—	V / μs	
Critical Rate of Rise of Off-State Voltage at Commutation		(dv / dt) c	V _{DRM} =400V, T _j =125°C (di / dt) c=-2.0A / ms	10	—	—	V / μs	





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