

TOSHIBA SM16(G,J)48, USM16(G,J)48, SM16(G,J)48A, USM16(G,J)48A

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

SM16G48, USM16G48, SM16J48, USM16J48 SM16G48A, USM16G48A, SM16J48A, USM16J48A

AC POWER CONTROL APPLICATIONS

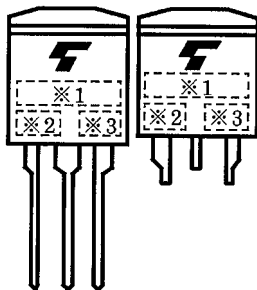
- Repetitive Peak Off-State Voltage :V_{DRM}=400, 600V
- R.M.S On-State Current :I_T (RMS)=16A
- Gate Trigger Current :I_{GT}=30mA Max.
:I_{GT}=20mA Max. ("A"Type)

Unit in mm

SM16G48, SM16J48, SM16G48A, SM16J48A	USM16G48, USM16J48, USM16G48A, USM16J48A
JEDEC —	JEDEC —
JEITA —	JEITA —
TOSHIBA 13-10J1A	TOSHIBA 13-10J2A

Weight : 1.7g

MARKING



NUMBER	SYMBOL	MARK
*1	SM16G48, SM16G48A, USM16G48, USM16G48A	M16G48
	SM16J48, SM16J48A, USM16J48, USM16J48A	M16J48
*2	SM16G48A, SM16J48A, USM16G48A, USM16J48A	A
*3	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

TOSHIBA SM16(G,J)48,USM16(G,J)48,SM16(G,J)48A,USM16(G,J)48A

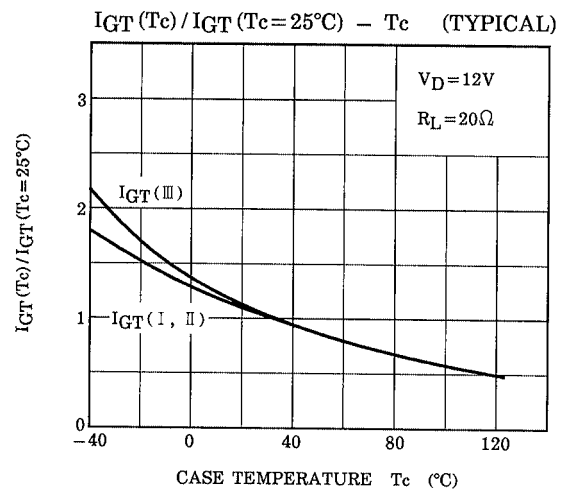
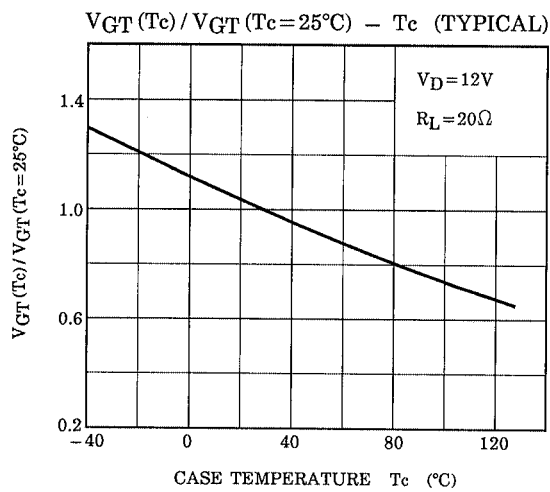
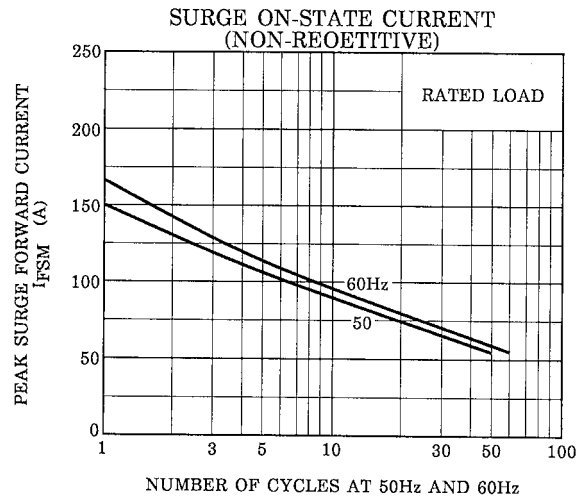
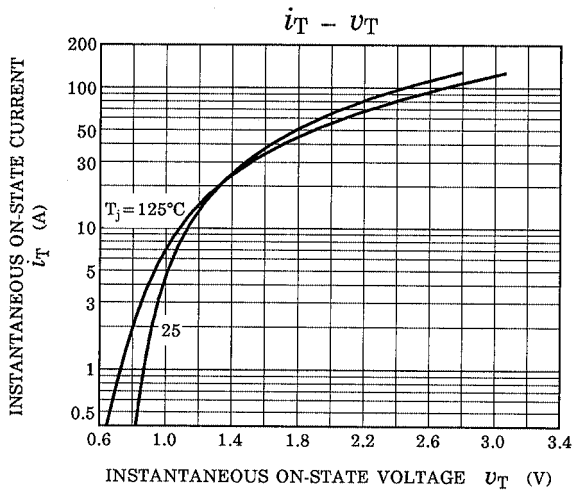
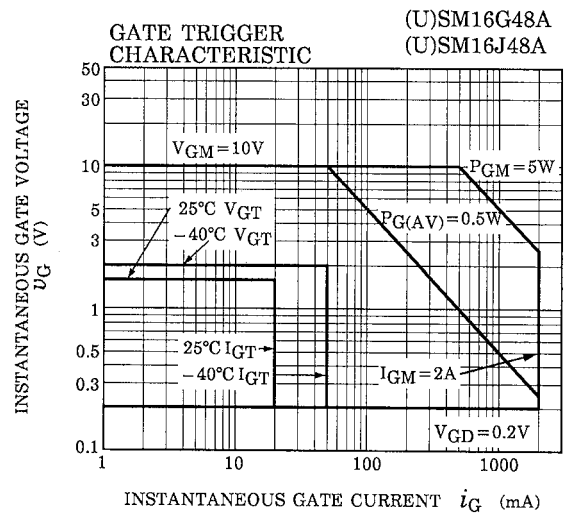
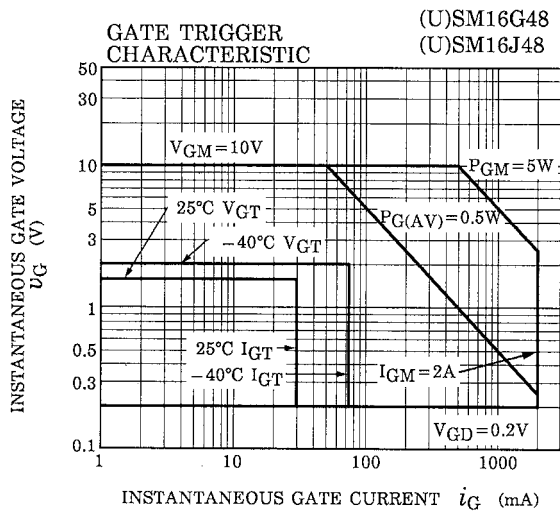
MAXIMUM RATINGS (Ta=25°C)

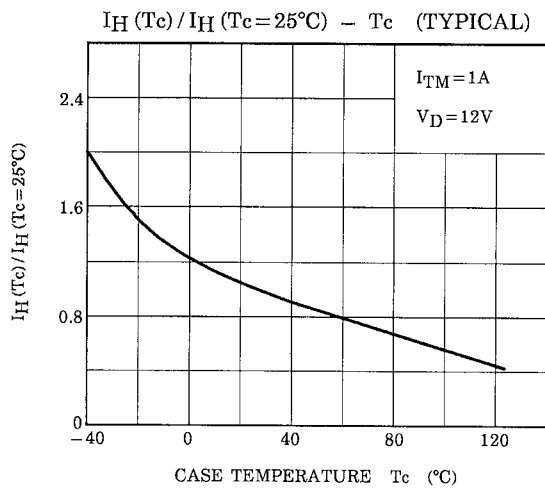
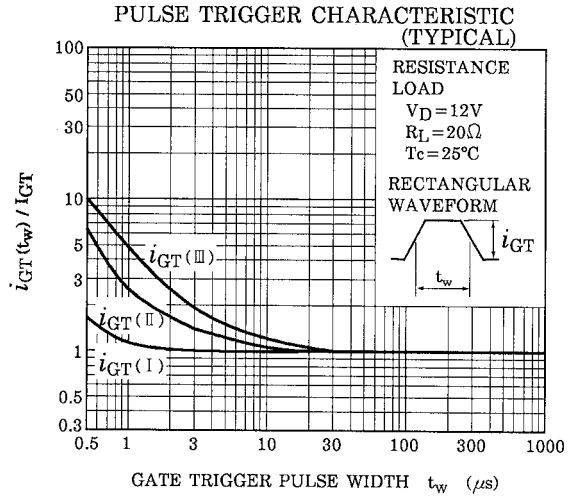
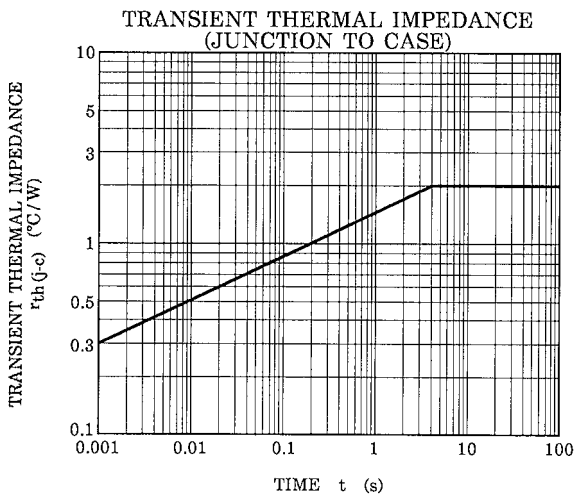
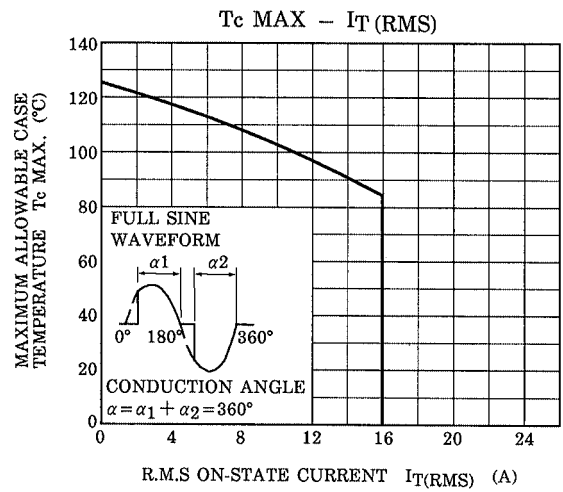
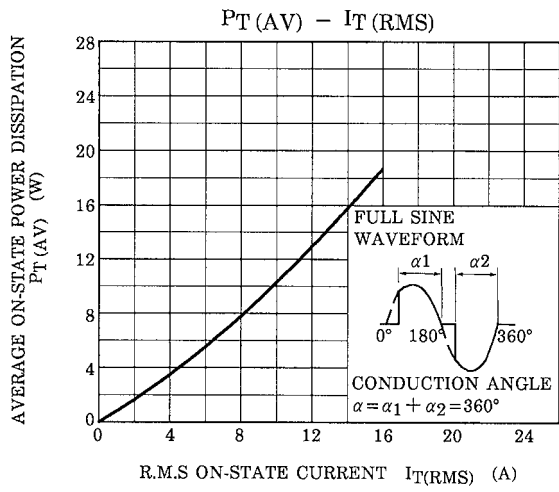
CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	(U)SM12G48 (U)SM12G48A	V _{DRM}	400	V
	(U)SM12J48 (U)SM12J48A		600	
R.M.S On-State Current		I _T (RMS)	16	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		I _{TSM}	150 (50Hz)	A
			165 (60Hz)	
I ² t Limit Value		I ² t	112.5	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}≤25A
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 II III IV	V _{GT} V _D =12V R _L =20Ω	T2 (+), Gate (+)	—	—	1.5	V
				T2 (+), Gate (-)	—	—	1.5	
				T2 (-), Gate (-)	—	—	1.5	
				T2 (-), Gate (+)	—	—	—	
Gate Trigger Current	(U)SM16G48 (U)SM16J48	I II III IV	V _{GT} V _D =12V R _L =20Ω	T2 (+), Gate (+)	—	—	30	mA
				T2 (+), Gate (-)	—	—	30	
				T2 (-), Gate (-)	—	—	30	
				T2 (-), Gate (+)	—	50	—	
	(U)SM16G48A (U)SM16J48A	I II III IV		T2 (+), Gate (+)	—	—	20	
				T2 (+), Gate (-)	—	—	20	
				T2 (-), Gate (-)	—	—	20	
				T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage		V _{TM}	I _{TM} =17A	—	—	1.5	—	
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	—	—	2.0	°C / W	
Critical Rate of Rise of Off-State Voltage	(U)SM16G48 (U)SM16J48	dv / dt	V _{DRM} =Rated, T _j =125°C Exponential Rise	—	300	—	V / μs	
	(U)SM16G48A (U)SM16J48A			—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	(U)SM16G48 (U)SM16J48	(dv / dt) c	V _{DRM} =400V, T _j =125°C (di / dt) c=-8.7A / ms	10	—	—	V / μs	
	(U)SM16G48A (U)SM16J48A			4	—	—		





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