

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

SM6G48, USM6G48, SM6J48, USM6J48
SM6G48A, USM6G48A, SM6J48A, USM6J48A

AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage : $V_{DRM}=400, 600V$
- R.M.S On-State Current : $I_T (RMS)=6A$
- Gate Trigger Current
 - : $I_{GT}=30mA$ Max.
 - : $I_{GT}=20mA$ Max. ("A"Type)

Unit : mm

SM6G48, SM6J48, SM6G48A, SM6J48A	
JEDEC	—
EIAJ	—
TOSHIBA	13-10J1A

USM6G48, USM6J48, USM6G48A, USM6J48A	
JEDEC	—
EIAJ	—
TOSHIBA	13-10J2A

MAXIMUM RATINGS

Weight : 1.7g

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	V_{DRM}	400	V
		600	
R. M. S On-State Current	$I_T (RMS)$	6	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	60 (50Hz)	A
		66 (60Hz)	
I^2t Limit Value	I^2t	18	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	°C
Storage Temperature Range	T_{stg}	-40~125	°C

Note 1: $V_{DRM}=0.5 \times \text{Rated}$
 $I_{TM} \leq 9A$
 $t_{gw} \geq 10\mu s$
 $t_{gr} \leq 250ns$
 $i_{gp} = I_{GT} \times 2.0$

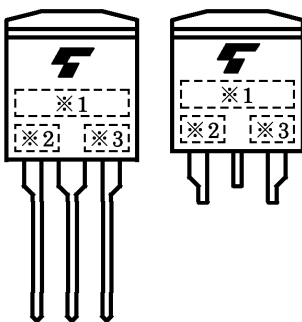
961001EAA2

● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

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)SM6G48 (U)SM6J48	I II III IV I II III IV	I _{GT}	V _D = 12V R _L = 20Ω	T2(+), GATE (+)		—	—	30	mA		
					T2(+), GATE (—)		—	—	30			
					T2(—), GATE (—)		—	—	30			
					T2(—), GATE (+)		—	—	—			
	(U)SM6G48A (U)SM6J48A				T2(+), GATE (+)		—	—	20			
					T2(+), GATE (—)		—	—	20			
					T2(—), GATE (—)		—	—	20			
					T2(—), GATE (+)		—	—	—			
Peak On-State Voltage		V _{TM}	I _{TM} = 9A		—	—	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		—	—	3.2	°C / W				
Critical Rate of Rise of Off-State Voltage	(U)SM6G48 (U)SM6J48	dv / dt	V _{DRM} = Rated, T _j = 125°C Exponential Rise		—	300	—	V / μs				
	(U)SM6G48A (U)SM6J48A				—	200	—					
Critical Rate of Rise of Off-State Voltage at Commutation	(U)SM6G48 (U)SM6J48	(dv / dt) c	V _{DRM} = 400V, T _j = 125°C (di / dt) c = −3.3A / ms		10	—	—	V / μs				
	(U)SM6G48A (U)SM6J48A				4	—	—					

MARKING



NUMBER	SYMBOL		MARK
※ 1	TYPE	SM6G48, SM6G48A, USM6G48, USM6G48A	M6G48
		SM6J48, SM6J48A, USM6J48, USM6J48A	M6J48
※ 2		SM6G48A, SM6J48A, USM6G48A, USM6J48A	A
※ 3	Lot Number		Example 8A: January 1998 8B: February 1998 8L: December 1998
	Month (Starting from Alphabet A) Year (Last Decimal Digit of the Currnet Year)		

961001EAA2'

- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.