

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)	$I_{TSM}$
66 (60Hz)					
I <sup>2</sup> t Limit Value	$I^2t$	18	A <sup>2</sup> s		
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:  $V_{DRM} = 0.5 \times \text{Rated}$   
 $I_{TM} \leq 9A$   
 $t_{gw} \leq 10\mu s$   
 $t_{gr} \leq 250ns$   
 $i_{gp} = I_{GT} \times 2.0$

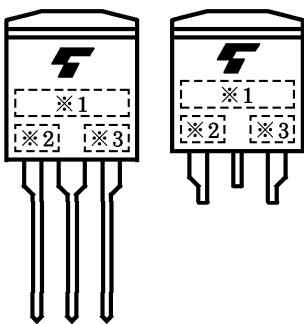
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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)SM6G48	$I_{GT}$	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2(+), GATE(+)	—	—	30	mA	
				II	T2(+), GATE(-)	—	—		30
				III	T2(-), GATE(-)	—	—		30
				IV	T2(-), GATE(+)	—	—		—
	(U)SM6G48A			I	T2(+), GATE(+)	—	—		20
				II	T2(+), GATE(-)	—	—		20
				III	T2(-), GATE(-)	—	—		20
				IV	T2(-), GATE(+)	—	—		—
Peak On-State Voltage		$V_{TM}$	$I_{TM} = 9\text{A}$	—	—	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	—	—	3.2	$^\circ\text{C}/\text{W}$		
Critical Rate of Rise of Off-State Voltage	(U)SM6G48 (U)SM6J48	$dv/dt$	$V_{DRM} = \text{Rated}$ , $T_j = 125^\circ\text{C}$ Exponential Rise	—	300	—	$\text{V}/\mu\text{s}$		
	(U)SM6G48A (U)SM6J48A			—	200	—			
Critical Rate of Rise of Off-State Voltage at Commutation	(U)SM6G48 (U)SM6J48	$(dv/dt)_c$	$V_{DRM} = 400\text{V}$ , $T_j = 125^\circ\text{C}$ $(di/dt)_c = -3.3\text{A/ms}$	10	—	—	$\text{V}/\mu\text{s}$		
	(U)SM6G48A (U)SM6J48A			4	—	—			

MARKING



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

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