

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

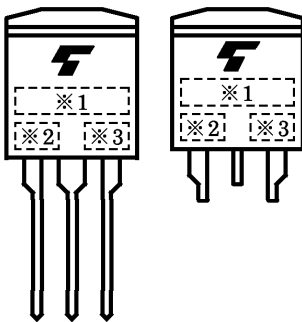
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
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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current		$I_{\text{DRM}}$	$V_{\text{DRM}}$ = Rated		—	—	20	$\mu\text{A}$
Gate Trigger Voltage		I	$V_{\text{D}} = 12\text{V}$ $R_{\text{L}} = 20\Omega$	T2(+), GATE (+)	—	—	1.5	V
		II		T2(+), GATE (—)	—	—	1.5	
		III		T2(—), GATE (—)	—	—	1.5	
		IV		T2(—), GATE (+)	—	—	—	
Gate Trigger Current	(U)SM6G48 (U)SM6J48	I	$V_{\text{D}} = 12\text{V}$  $R_{\text{L}} = 20\Omega$	T2(+), GATE (+)	—	—	30	mA
		II		T2(+), GATE (—)	—	—	30	
		III		T2(—), GATE (—)	—	—	30	
		IV		T2(—), GATE (+)	—	—	—	
	(U)SM6G48A (U)SM6J48A	I		T2(+), GATE (+)	—	—	20	
		II		T2(+), GATE (—)	—	—	20	
		III		T2(—), GATE (—)	—	—	20	
		IV		T2(—), GATE (+)	—	—	—	
Peak On-State Voltage		$V_{\text{TM}}$	$I_{\text{TM}} = 9\text{A}$		—	—	1.5	V
Gate Non-Trigger Voltage		$V_{\text{GD}}$	$V_{\text{D}}$ = Rated, $T_{\text{c}} = 125^{\circ}\text{C}$		0.2	—	—	V
Holding Current		$I_{\text{H}}$	$V_{\text{D}} = 12\text{V}$ , $I_{\text{TM}} = 1\text{A}$		—	—	50	mA
Thermal Resistance		$R_{\text{th}}(\text{j-c})$	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	$V_{\text{DRM}}$ = Rated, $T_{\text{j}} = 125^{\circ}\text{C}$ Exponential Rise		—	300	—	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	$V_{\text{DRM}} = 400\text{V}$ , $T_{\text{j}} = 125^{\circ}\text{C}$ (di / dt) c = $-3.3\text{A} / \text{ms}$		10	—	—	V / $\mu\text{s}$
	(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  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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