

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 —
EIAJ —	EIAJ —
TOSHIBA 13-10J1A	TOSHIBA 13-10J2A

MAXIMUM RATINGS (Ta = 25°C)

Weight : 1.7g

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	(U)SM16G48 (U)SM16G48A	V_{DRM}	400	V
	(U)SM16J48 (U)SM16J48A		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^2t	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) $V_{DRM} = 0.5 \times \text{Rated}$
 $I_{TM} \leq 25A$
 $t_{gw} \geq 10\mu s$
 $t_{gr} \leq 250ns$
 $i_{gp} = I_{GT} \times 2.0$

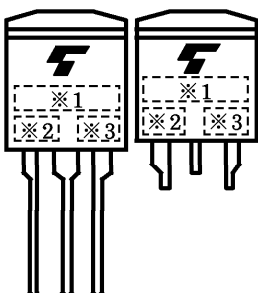
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current		I_{DRM}	$V_{DRM} = \text{Rated}$	—	—	20	μA	
Gate Trigger Voltage		V_{GT}	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2(+), GATE(+)	—	—	1.5	V
				T2(+), GATE(-)	—	—	1.5	
				T2(-), GATE(-)	—	—	1.5	
				T2(-), GATE(+)	—	1.0	—	
Gate Trigger Current	(U)SM16G48 (U)SM16J48	I_{GT}	$V_D = 12\text{V}$ $R_L = 20\Omega$	T2(+), GATE(+)	—	—	30	mA
				T2(+), GATE(-)	—	—	30	
				T2(-), GATE(-)	—	—	30	
				T2(-), GATE(+)	—	50	—	
	(U)SM16G48A (U)SM16J48A			T2(+), GATE(+)	—	—	20	
				T2(+), GATE(-)	—	—	20	
				T2(-), GATE(-)	—	—	20	
				T2(-), GATE(+)	—	30	—	
Peak On-State Voltage		V_{TM}	$I_{TM} = 25\text{A}$	—	—	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	—	—	2.0	$^\circ\text{C}/\text{W}$	
Critical Rate of Rise of Off-State Voltage	(U)SM16G48 (U)SM16J48	dv/dt	$V_{DRM} = \text{Rated}, T_j = 125^\circ\text{C}$ Exponential Rise	—	300	—	V / μs	
	(U)SM16G48A (U)SM16J48A			—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	(U)SM16G48 (U)SM16J48	$(dv/dt)_c$	$V_{DRM} = 400\text{V}, T_j = 125^\circ\text{C}$ $(di/dt)_c = -8.7\text{A/ms}$	10	—	—	V / μs	
	(U)SM16G48A (U)SM16J48A			4	—	—		

MARKING

NUMBER		SYMBOL	MARK
※ 1	TYPE	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 Current Year)		Example 8A: January 1998 8B: February 1998 8L: December 1998

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