TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

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

#### AC POWER CONTROL APPLICATIONS

• R.M.S On-State Current :IT (RMS)=16A

• Gate Trigger Current :I<sub>GT</sub>=30mA Max.

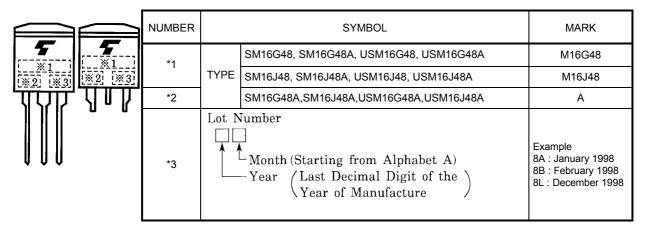
:I<sub>GT</sub>=20mA Max. ("A"Type)

Unit in mm

SM16G48, SM16J48, SM16G48A, SM16J48A	USM16G48, USM16J48, USM16G48A, USM16J48A			
10.3MAX 1.6MAX 0.76 1.6MAX 0.76 1.2 3 2.54±0.25 2.54±0.25 1 2 3 2.54±0.25 2.54±0.25 1 2 3 2.54±0.25 3. GATE	10.3MAX 5.0 0.76 2.54  1. T1 2. T2 (BACK SIDE) 3. GATE			
JEDEC —	JEDEC —			
JEITA —	JEITA —			
TOSHIBA 13-10J1A	TOSHIBA 13-10J2A			

Weight: 1.7g

#### **MARKING**



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

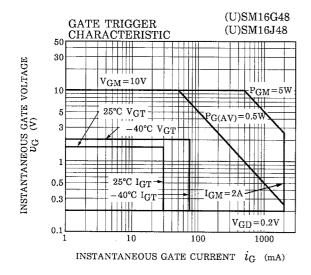
## MAXIMUM RATINGS (Ta=25°C)

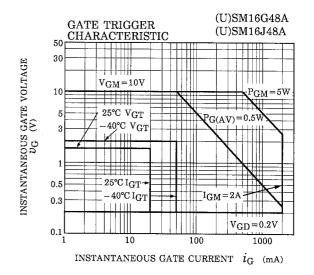
CHARACT	ERISTIC	SYMBOL	RATING	UNIT	
Repetitive Peak Off-State Voltage	(U)SM12G48 (U)SM12G48A	$V_{DRM}$	400	V	
	(U)SM12J48 (U)SM12J48A	¥ DRM	600		
R.M.S On-State Cur	rent	I <sub>T (RMS)</sub>	16	Α	
Peak One Cycle Sur		I <sub>TSM</sub>	150 (50Hz)	А	
Current (Non-Repeti	tive)		165 (60Hz)		
I <sup>2</sup> t Limit Value		1 <sup>2</sup> t	112.5	A <sup>2</sup> s	
Critical Rate of Rise Current	of On-State (Note 1)	di /dt	50	A / μs	
Peak Gate Power Di	ssipation	$P_{GM}$	5	W	
Average Gate Power	r Dissipation	P <sub>G (AV)</sub>	0.5	W	
Peak Forward Gate	Voltage	$V_{GM}$	10	V	
Peak Forward Gate	Current	I <sub>GM</sub>	2	Α	
Junction Temperatur	re	Tj	-40~125	°C	
Storage Temperatur	e Range	T <sub>stg</sub>	-40~125	°C	

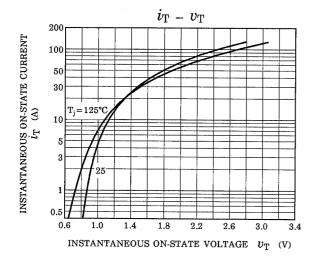
Note 1 :  $V_{DRM}=0.5\times Rated$   $I_{TM}\leq 25A$   $t_{gw}\geq 10\mu s$   $t_{gr}\leq 250ns$   $i_{gp}=I_{GT}\times 2.0$ 

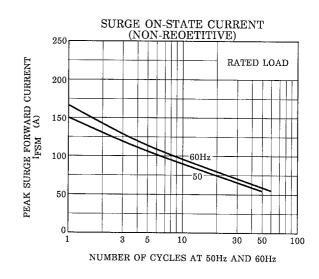
## **ELECTRICAL CHARACTERISTICS (Ta=25°C)**

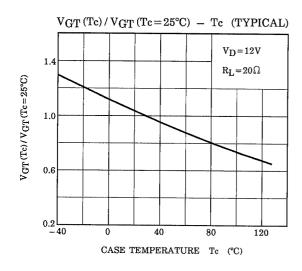
CHARACTERISTIC			SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current		I <sub>DRM</sub>	V <sub>DRM</sub> =Rated		-	_	20	μА		
Gate Trigger Voltage  II  III  IV		\/	V <sub>D</sub> =12V	T2 (+) , Gate (+)	_	_	1.5	V		
				T2 (+) , Gate (-)	1	_	1.5			
		III	$V_{GT}$	$R_L=20\Omega$	T2 (-) , Gate (-)	-	_	1.5	V	
		IV			T2 (-) , Gate (+)	-	_	_		
		(U)SM16G48 (U)SM16J48			V <sub>D</sub> =12V	T2 (+) , Gate (+)	-	_	30	
	(U)SN					T2 (+) , Gate (-)	_	_	30	
	(U)SN					T2 (-) , Gate (-)	-	_	30	
				la-		T2 (-) , Gate (+)	-	50	_	
Current		(U)SM16G48A (U)SM16J48A	I	l <sub>GT</sub>	R <sub>L</sub> =20Ω	T2 (+) , Gate (+)	-	_	20	mA
	(U)SN		Ш			T2 (+) , Gate (-)	_	_	20	
	(U)SN		III			T2 (-) , Gate (-)	_	_	20	
						T2 (-) , Gate (+)	-	_	_	] ]
Peak On-State Voltage		$V_{TM}$	I <sub>TM</sub> =17A		-	_	1.5	_		
Gate Non-Trigger Voltage			V <sub>GD</sub>	V <sub>D</sub> =Rated, Tc=125°C		0.2	_	_	V	
Holding Current		lΗ	V <sub>D</sub> =12V, I <sub>TM</sub> =1A		-	_	50	mA		
Thermal Resistance		R <sub>th (j-c)</sub>	Junction to Case, AC		-	_	2.0	°C/W		
Critical Rate of Rise of Off-State Voltage		(U)SM16G48 (U)SM16J48 (U)SM16G48A (U)SM16J48A		dv / dt	V <sub>DRM</sub> =Rated, T <sub>j</sub> =125°C Exponential Rise		_	300	_	- V / μs
	:						_	200	_	
Critical Rate of Rise of Off-State Voltage at Commutation		(U)SM16G48 (U)SM16J48		(dv / dt) c	V <sub>DRM</sub> =400V, T <sub>i</sub> =125°C		10			V / μs
	al	(U)SM16G (U)SM16J4	48A 18A	(uv / ut) C	(di / dt) c=-8.7Å / ms		4	_	_	ν / μδ

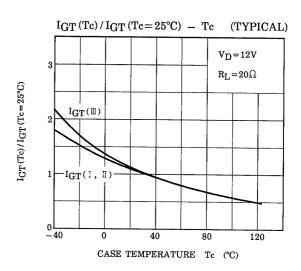




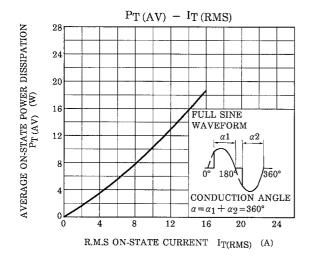


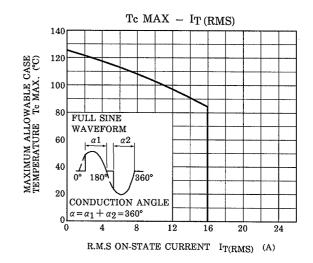


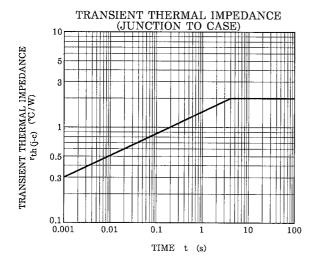


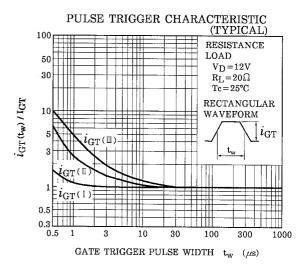


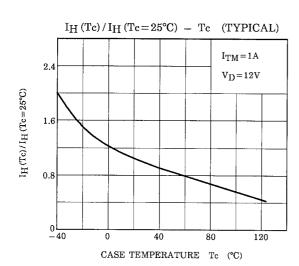
# **TOSHIBA** SM16(G,J)48,USM16(G,J)48,SM16(G,J)48A,USM16(G,J)48A











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