

SM12GZ47, SM12JZ47, SM12GZ47A, SM12JZ47A

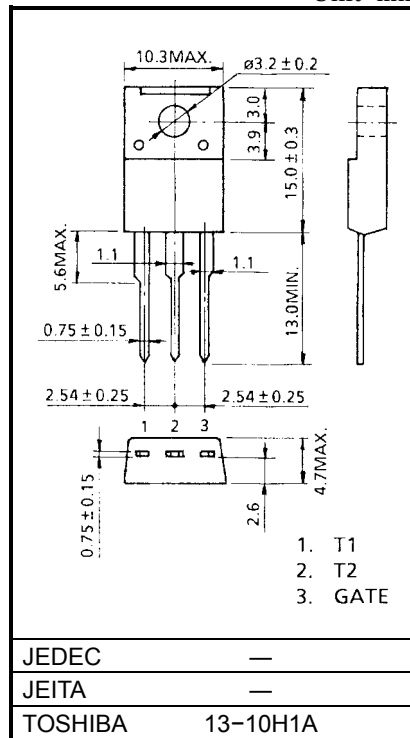
AC POWER CONTROL APPLICATIONS

- Repetitive Peak off-State Voltage : $V_{DRM} = 400, 600V$
- R.M.S On-State Current : $I_T (RMS) = 12A$
- High Commutating (dv / dt)
- Isolation Voltage : $V_{Isol} = 1500V AC$

MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage and Repetitive Peak Reverse Voltage	SM12GZ47 SM12GZ47A	V _{DRM}	400	V
	SM12JZ47 SM12JZ47A		600	
R. M. S. On-tate Current (Full Sine Waveform TC = 72°C)		I _T (RMS)	12	A
Peak One Cylce Surge On-State Current (Non-Repetitive)		I _{TSM}	120 (50Hz)	A
			132 (60Hz)	
I ² _t Limit Value		I ² _t	72	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 Gate Voltage		V _{FGM}	10	V
Peak Gate Current		I _{GM}	2	A
Junction Temperature		T _j	-40~125	°C
Storage Temperature Range		T _{stg}	-40~125	°C
Isolation Voltage (AC, t = 1min.)		V _{Isol}	1500	V

Unit: mm



Weight: 1.7g

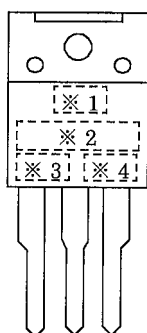
 Note 1: di / dt test condition

 $V_{DRM} = 0.5 \times \text{Rated}$
 $I_{TM} \leq 17A$
 $t_{gw} \geq 10\mu s$
 $t_{gr} \leq 250ns$
 $i_{gp} = I_{GT} \times 2.0$

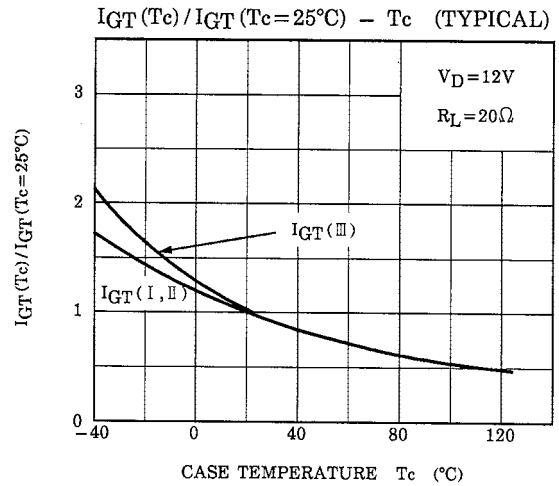
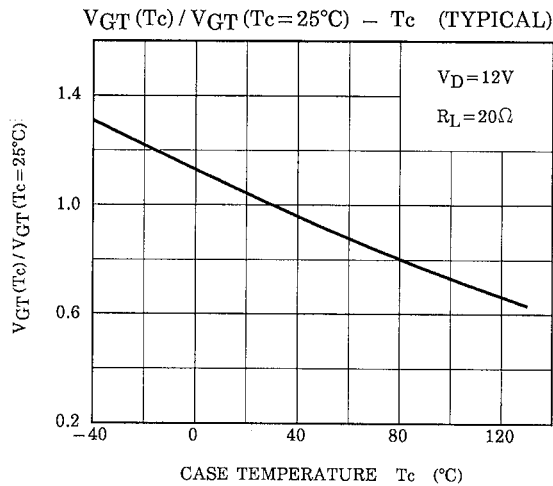
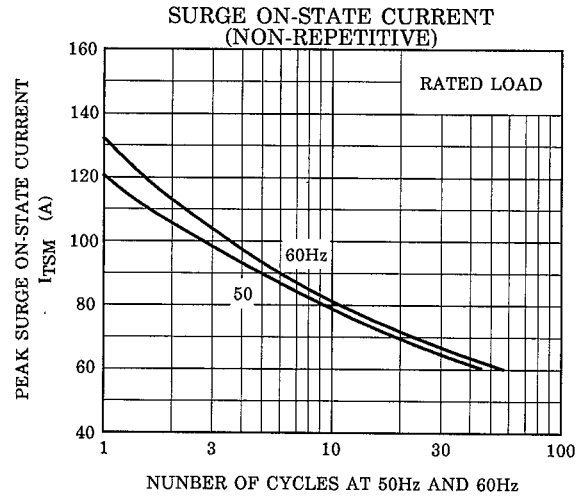
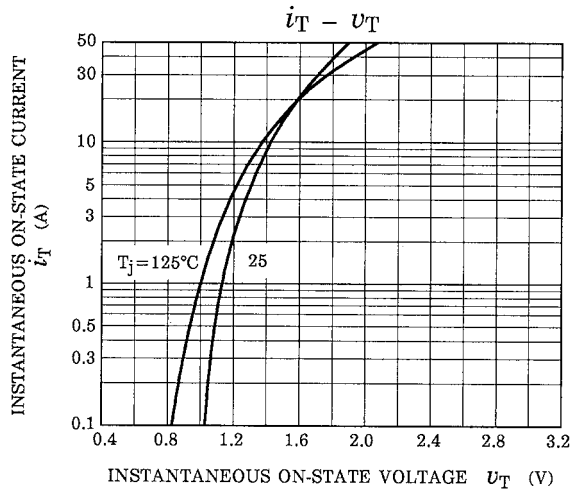
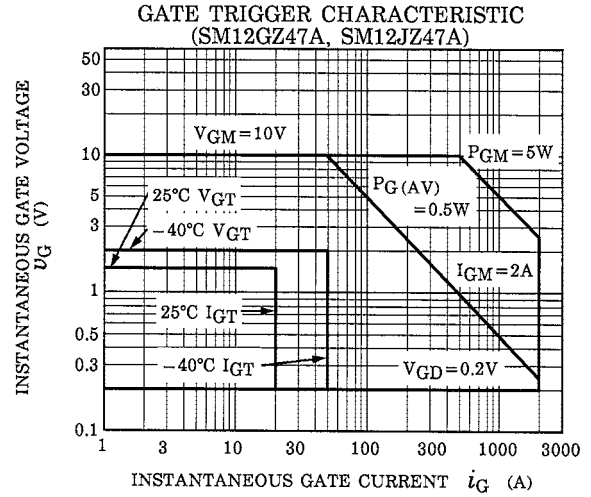
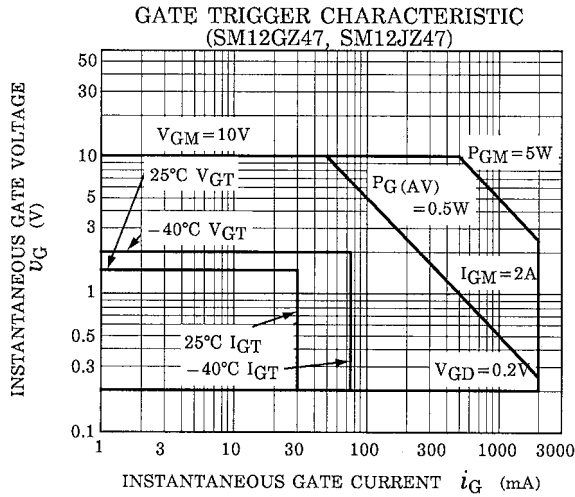
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

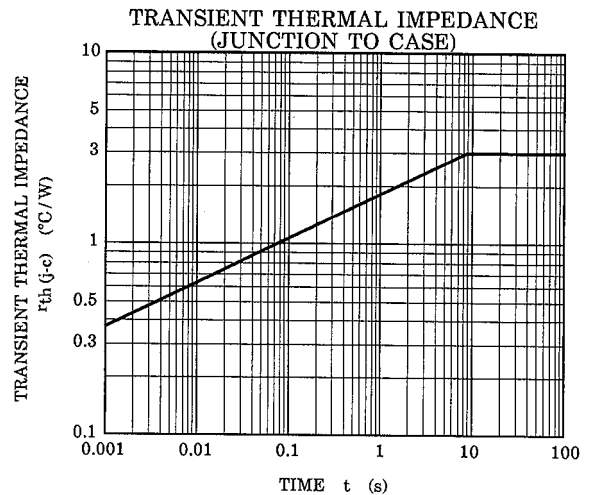
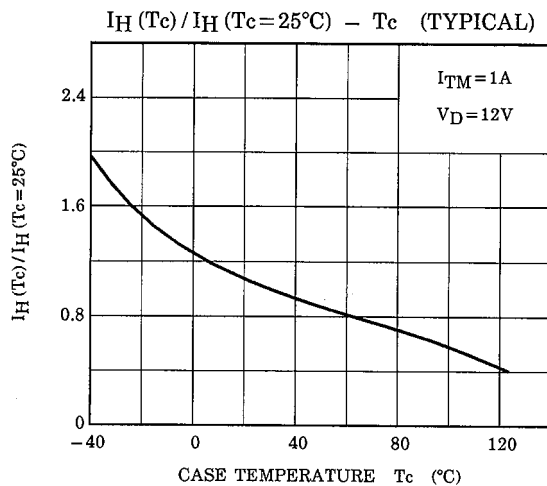
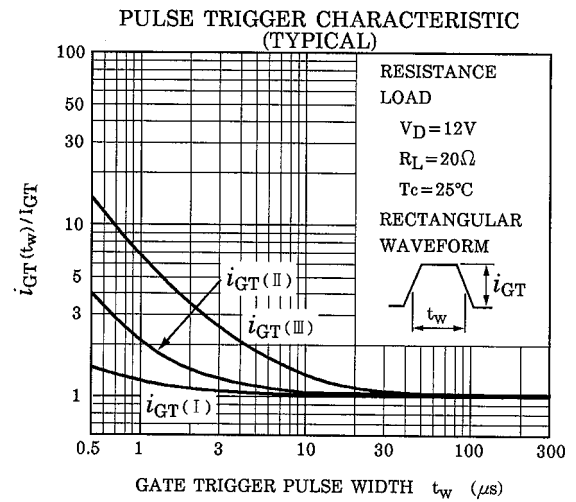
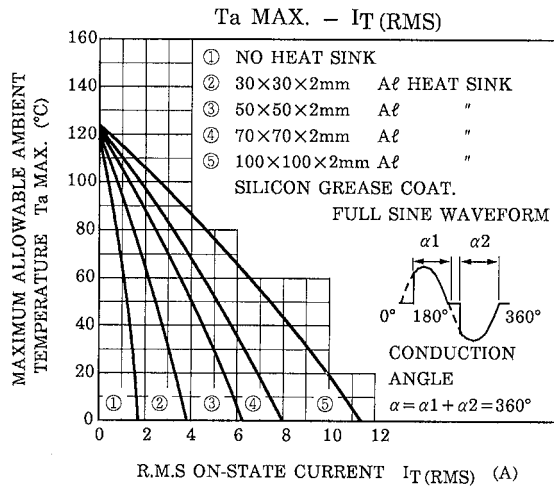
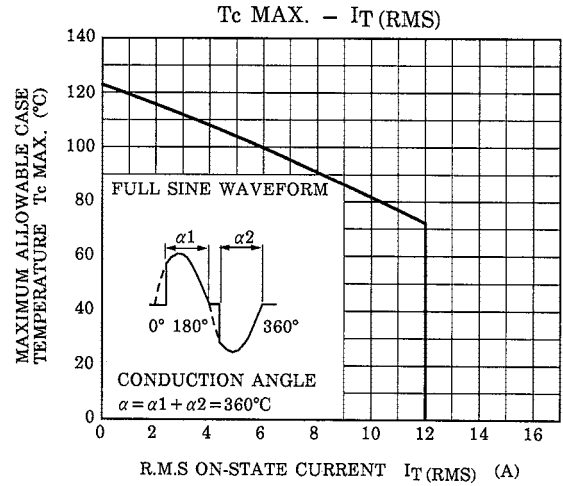
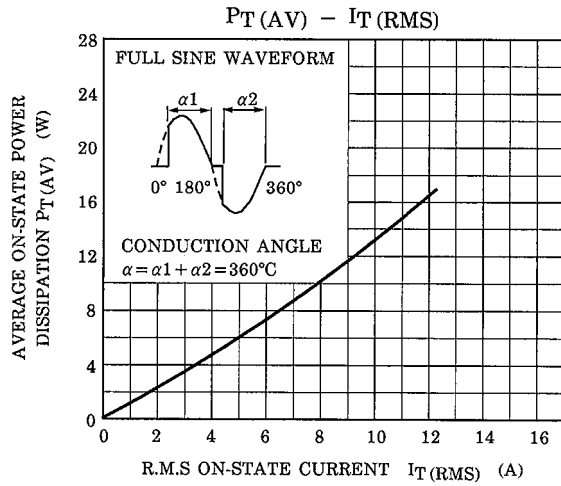
CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current		I _{DRM}	V _{DRM} = Rated		—	—	20	μA	
Gate Trigger Voltage		I	V _{GT}	V _D = 12V, R _L = 20Ω	T2 (+) , Gate (+)	—	—	1.5	V
		II			T2 (+) , Gate (–)	—	—	1.5	
		III			T2 (–) , Gate (–)	—	—	1.5	
		IV			T2 (–) , Gate (+)	—	—	—	
Gate Trigger Current	SM12GZ47 SM12JZ47	I	I _{GT}	V _D = 12V, R _L = 20Ω	T2 (+) , Gate (+)	—	—	30	mA
		II			T2 (+) , Gate (–)	—	—	30	
		III			T2 (–) , Gate (–)	—	—	30	
		IV			T2 (–) , Gate (+)	—	—	—	
	SM12GZ47A SM12JZ47A	I			T2 (+) , Gate (+)	—	—	20	
		II			T2 (+) , Gate (–)	—	—	20	
		III			T2 (–) , Gate (–)	—	—	20	
		IV			T2 (–) , Gate (+)	—	—	—	
Peak On-State Voltage		V _{TM}	I _{TM} = 17A		—	—	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		—	—	3.0	°C / W	
Critical Rate of Rise of Off-State Voltage	SM12GZ47 SM12JZ47	dv / dt	V _{DRM} = Rated, T _j = 125°C Exponential Rise		—	300	—	V / μs	
	SM12GZ47A SM12JZ47A				—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	SM12GZ47 SM12JZ47	(dv / dt) c	V _{DRM} = 400V, T _j = 125°C (di / dt) c = – 6.5A / ms		10	—	—	V / μs	
	SM12GZ47A SM12JZ47A				4	—	—		

MARKING



*NUMBER	SYMBOL		MARK
*1	TOSHIBA PRODUCT MARK		
*2	TYPE	SM12GZ47, SM12GZ47A	M12GZ47
		SM12JZ47, SM12JZ47A	M12JZ47
*3	SM12GZ47A, SM12JZ47A		A
*4	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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