

SM12GZ47, SM12JZ47, SM12GZ47A, SM12JZ47A

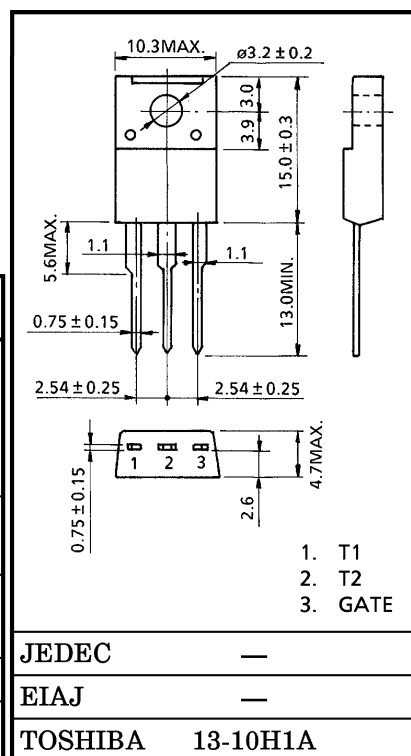
AC POWER CONTROL APPLICATIONS

Unit in mm

- 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-state Current (Full Sine Waveform $TC=72^{\circ}C$)		$I_T(RMS)$	12	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		I_{TSM}	120 (50Hz)	A
			132 (60Hz)	
I^2t Limit Value		I^2t	72	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 Gate Voltage		V_{FGM}	10	V
Peak Gate Current		I_{GM}	2	A
Junction Temperature		T_j	$-40\sim 125$	$^{\circ}C$
Storage Temperature Range		T_{stg}	$-40\sim 125$	$^{\circ}C$
Isolation Voltage (AC, $t=1min.$)		V_{Isol}	1500	V



Weight : 1.7g

Note 1 : di/dt test condition $V_{DRM}=0.5 \times \text{Rated}$ $I_{TM} \leq 17A$ $t_{gw} \geq 10\mu s$ $t_{gr} \leq 250ns$ $i_{gp} = I_{GT} \times 2.0$

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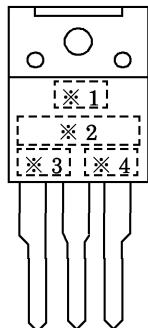
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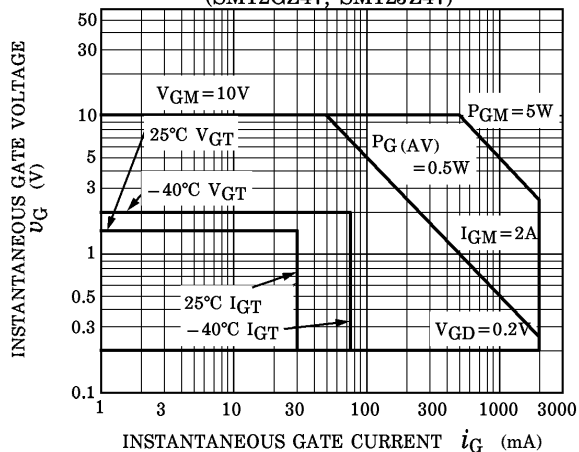
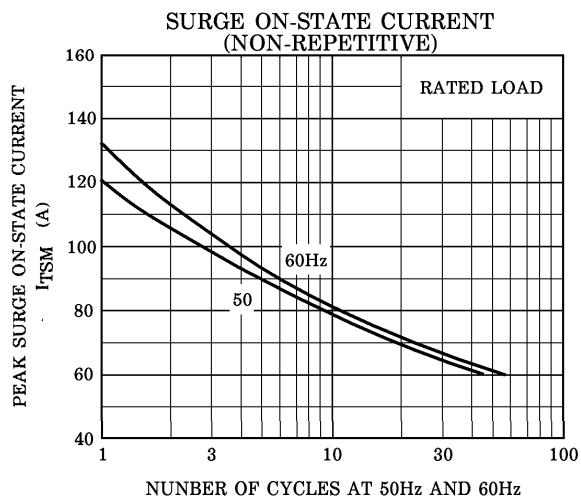
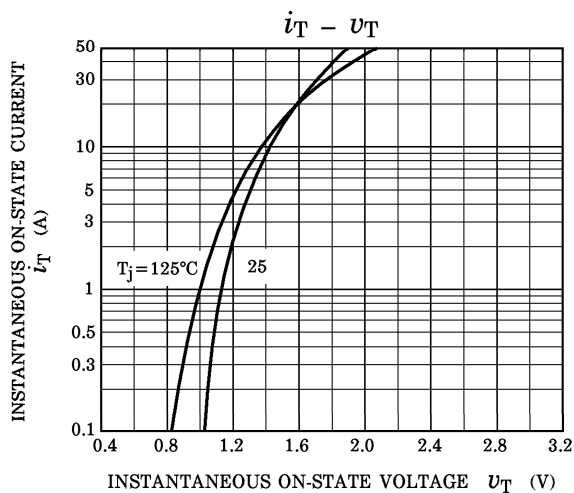
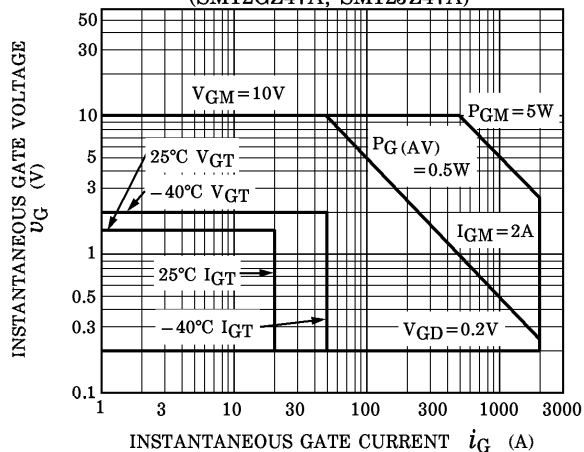
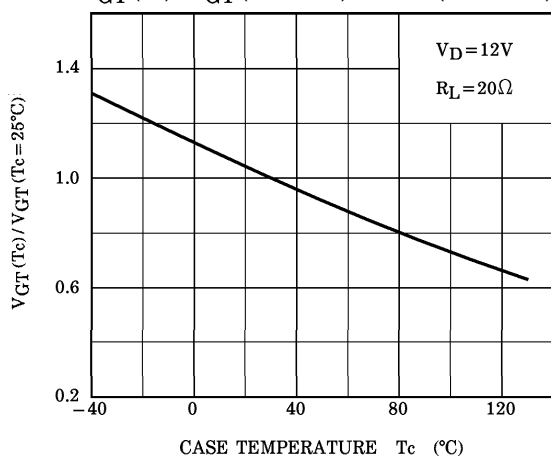
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Repetitive Peak Off-State Current		I_{DRM}	$V_{\text{DRM}} = \text{Rated}$		—	—	20	μA
Gate Trigger Voltage	I	V_{GT}	$V_{\text{D}} = 12\text{V}, R_{\text{L}} = 20\Omega$	T2(+), Gate(+)	—	—	1.5	V
	II			T2(+), Gate(—)	—	—	1.5	
	III			T2(—), Gate(—)	—	—	1.5	
	IV			T2(—), Gate(+)	—	—	—	
Gate Trigger Current	I	I_{GT}	$V_{\text{D}} = 12\text{V}, R_{\text{L}} = 20\Omega$	T2(+), Gate(+)	—	—	30	mA
	II			T2(+), Gate(—)	—	—	30	
	III			T2(—), Gate(—)	—	—	30	
	IV			T2(—), Gate(+)	—	—	—	
	I			T2(+), Gate(+)	—	—	20	
	II			T2(+), Gate(—)	—	—	20	
	III			T2(—), Gate(—)	—	—	20	
	IV			T2(—), Gate(+)	—	—	—	
Peak On-State Voltage		V_{TM}	$I_{\text{TM}} = 17\text{A}$		—	—	1.5	V
Gate Non-Trigger Voltage		V_{GD}	$V_{\text{D}} = \text{Rated}, T_{\text{c}} = 125^{\circ}\text{C}$		0.2	—	—	V
Holding Current		I_{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		—	—	3.0	$^{\circ}\text{C} / \text{W}$
Critical Rate of Rise of Off-State Voltage	SM12GZ47 SM12JZ47	dv / dt	$V_{\text{DRM}} = \text{Rated}, T_{\text{j}} = 125^{\circ}\text{C}$ Exponential Rise		—	300	—	$\text{V} / \mu\text{s}$
	SM12GZ47A SM12JZ47A				—	200	—	
Critical Rate of Rise of Off-State Voltage at Commutation	SM12GZ47 SM12JZ47	$(dv / dt)_{\text{c}}$	$V_{\text{DRM}} = 400\text{V}, T_{\text{j}} = 125^{\circ}\text{C}$ $(dv / dt)_{\text{c}} = -6.5\text{A} / \text{ms}$		10	—	—	$\text{V} / \mu\text{s}$
	SM12GZ47A SM12JZ47A				4	—	—	

MARKING



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

GATE TRIGGER CHARACTERISTIC
(SM12GZ47, SM12JZ47)GATE TRIGGER CHARACTERISTIC
(SM12GZ47A, SM12JZ47A) $V_{GT}(T_c)/V_{GT}(T_c=25^\circ C) - T_c$ (TYPICAL) $I_{GT}(T_c)/I_{GT}(T_c=25^\circ C) - T_c$ (TYPICAL)