

SM16GZ47, SM16JZ47, SM16GZ47A, SM16JZ47A

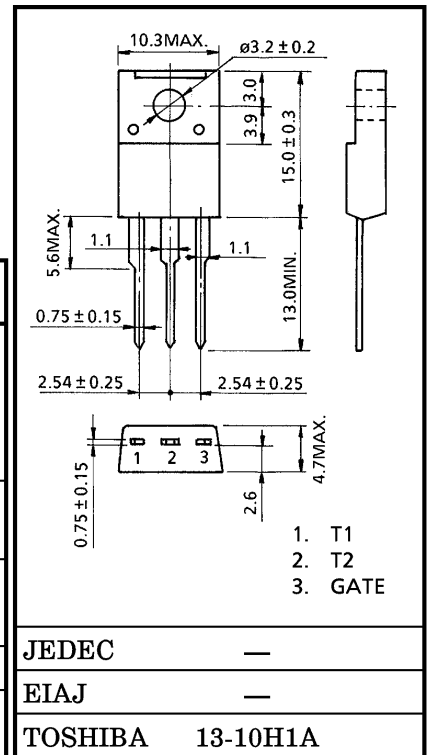
AC POWER CONTROL APPLICATIONS

Unit in mm

- Repetitive Peak Off-State Voltage : $V_{DRM}=400, 600V$
- R.M.S On-State Current : $I_T(RMS)=16A$
- High Commutating (dv / dt)
- Isolation Voltage : $V_{ISOL}=1500V AC$

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM16GZ47 SM16GZ47A	V_{DRM}	400	V
	SM16JZ47 SM16JZ47A		600	
R.M.S On-State Current (Full Sine Waveform Tc=73°C)		$I_T(RMS)$	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 / μ s
Peak Gate Power Dissipation		P_{GM}	5	W
Average Gate Power Dissipation		$P_G(AV)$	0.5	W
Peak Gate Voltage		V_{GM}	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=1 min.)		V_{ISOL}	1500	V



Weight : 1.7g

Note 1 : di / dt Test condition

$V_{DRM} = 0.5 \times \text{Rated}$

$I_{TM} \leq 25A$

$t_{gw} \geq 10\mu s$

$t_{gr} \leq 250ns$

$i_{GP} = I_{GT} \times 2.0$

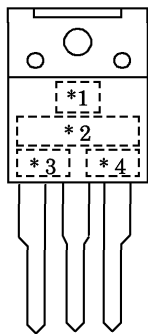
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

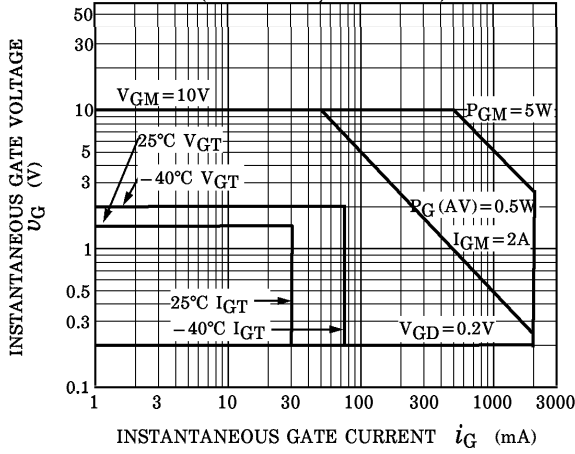
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Repetitive Peak Off-State Current		I_{DRM}	$V_{DRM} = \text{Rated}$	—	—	20	μA	
Gate Trigger Voltage	I	V_{GT}	$V_D = 12V, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	1.5	V
	II			T2 (+), Gate (-)	—	—	1.5	
	III			T2 (-), Gate (-)	—	—	1.5	
	IV			T2 (-), Gate (+)	—	—	—	
Gate Trigger Current	SM16GZ47 SM16JZ47	I_{GT}	$V_D = 12V, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	30	mA
				T2 (+), Gate (-)	—	—	30	
				T2 (-), Gate (-)	—	—	30	
				T2 (-), Gate (+)	—	—	—	
	SM16GZ47A SM16JZ47A			T2 (+), Gate (+)	—	—	20	
				T2 (+), Gate (-)	—	—	20	
				T2 (-), Gate (-)	—	—	20	
				T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage		V_{TM}	$I_{TM} = 25A$	—	—	1.5	V	
Gate Non-Trigger Voltage		V_{GD}	$V_D = \text{Rated}, T_c = 125^\circ C$	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	—	—	2.5	$^\circ C / W$	
Critical Rate of Rise of Off-State Voltage	SM16GZ47 SM16JZ47	dv / dt	$V_{DRM} = \text{Rated}, T_j = 125^\circ C$ Exponential Rise	—	300	—	V / μs	
	SM16GZ47A SM16JZ47A			—	200	—		
Critical Rate of Rise of Off-State Voltage at Commutation	SM16GZ47 SM16JZ47	$(dv / dt)_c$	$V_{DRM} = 400V, T_j = 125^\circ C$ $(di / dt)_c = -8.7A / ms$	10	—	—	V / μs	
	SM16GZ47A SM16JZ47A			4	—	—		

MARKING

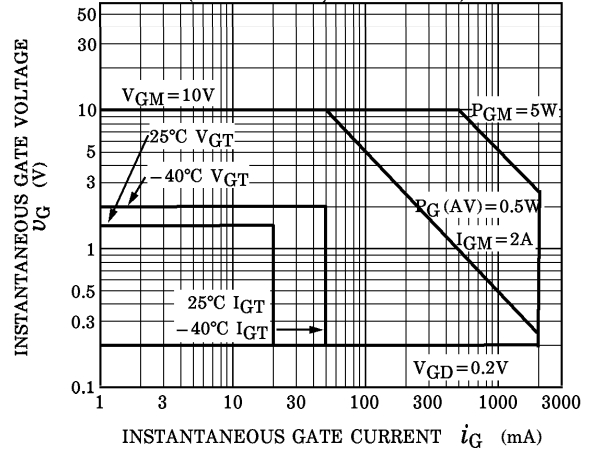


* NUMBER	SYMBOL	MARK
* 1	Toshiba Product Mark	
* 2	TYPE	SM16GZ47, SM16GZ47A
		SM16JZ47, SM16JZ47A
		SM16GZ47A, SM16JZ47A
* 3		A
* 4	Lot Number	Example 8A : January 1998 8B : February 1998 8L : December 1998

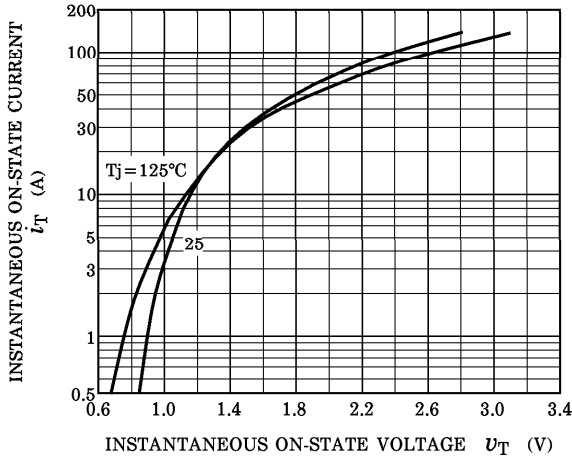
GATE TRIGGER CHARACTERISTIC
(SM16GZ47, SM16JZ47)



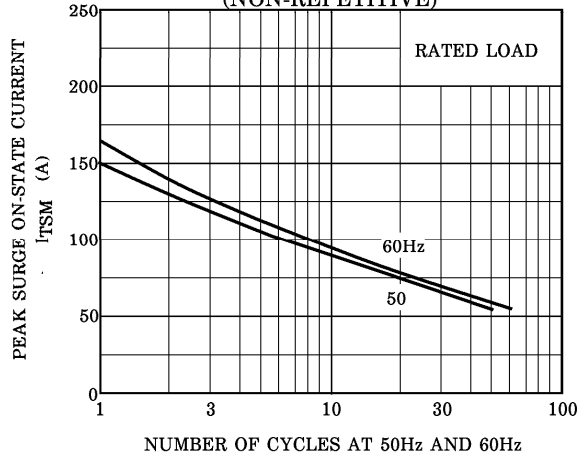
GATE TRIGGER CHARACTERISTIC
(SM16GZ47A, SM16JZ47A)



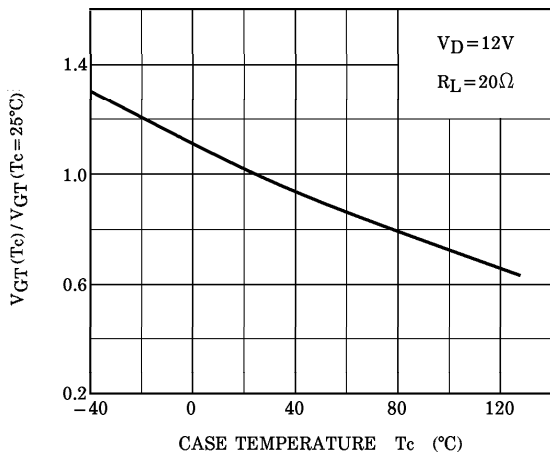
$i_T - v_T$



SURGE ON-STATE CURRENT
(NON-REPETITIVE)



$V_{GT}(T_c) / V_{GT}(T_c = 25^\circ\text{C}) - T_c$ (TYPICAL)



$I_{GT}(T_c) / I_{GT}(T_c = 25^\circ\text{C}) - T_c$ (TYPICAL)

