

SM8G45, SM8J45, SM8G45A, SM8J45A

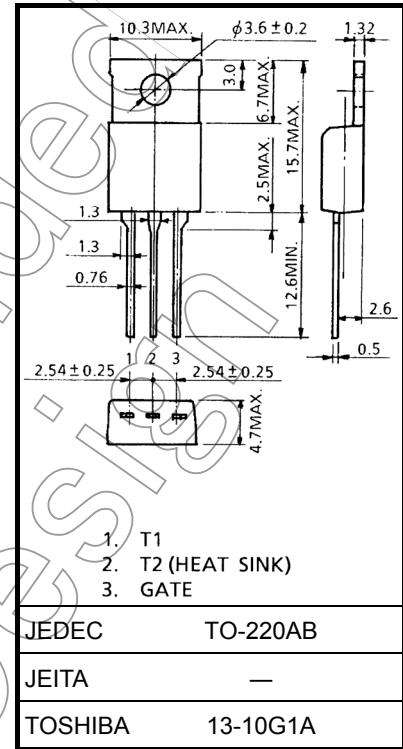
AC POWER CONTROL APPLICATIONS

Unit: mm

- Repetitive Peak Off-State Voltage: $V_{DRM} = 400V, 600V$
- R.M.S On-State Current: $I_T (RMS) = 8A$
- High Commutating (dv / dt)

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM8G45 SM8G45A	V_{DRM}	400	V
	SM8J45 SM8J45A		600	
R.M.S On-State Current (Full Sine Waveform $T_c = 105^{\circ}C$)		I_T (RMS)	8	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		I_{TSM}	80 (50Hz)	A
			88 (60Hz)	
I^2t Limit Value		I^2t	32	A^2s
Critical Rate of Rise of On-State Current		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_{GM}	10	V
Peak Gate Current		I_{GM}	2	A
Junction Temperature		T_j	-40~125	$^{\circ}C$
Storage Temperature Range		T_{stg}	-40~125	$^{\circ}C$



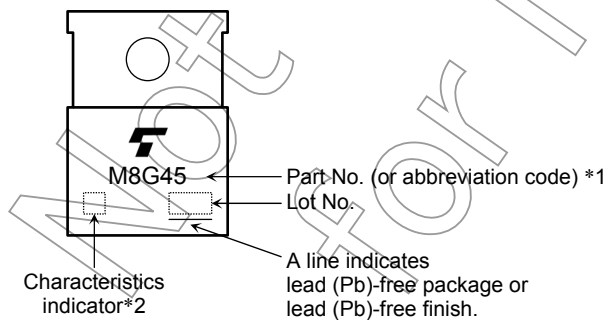
Weight: 2.0 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

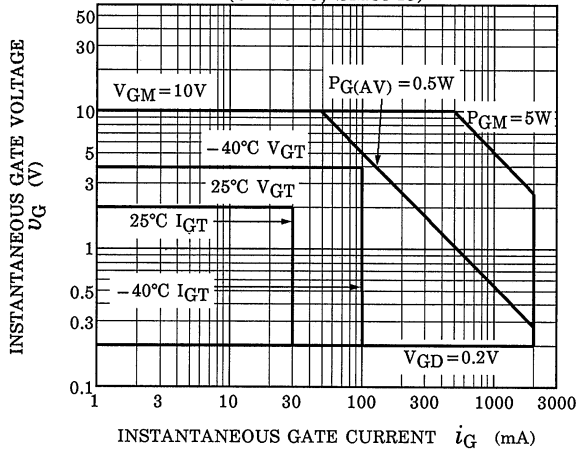
CHARACTERISTIC			SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current			I_{DRM}	V_{DRM} = Rated, T_j = 125°C		—	—	2	mA
Gate Trigger Voltage	SM8G45 SM8J45	I	V_{GT}	V_D = 12V R_L = 20Ω	T2 (+), Gate (+)	—	—	2	V
		II			T2 (+), Gate (-)	—	—	2	
		III			T2 (-), Gate (-)	—	—	2	
		IV			T2 (-), Gate (+)	—	—	—	
	SM8G45A SM8J45A	I			T2 (+), Gate (+)	—	—	1.5	
		II			T2 (+), Gate (-)	—	—	1.5	
		III			T2 (-), Gate (-)	—	—	1.5	
		IV			T2 (-), Gate (+)	—	—	—	
Gate Trigger Current	SM8G45 SM8J45	I	I_{GT}	V_D = 12V R_L = 20Ω	T2 (+), Gate (+)	—	—	30	mA
		II			T2 (+), Gate (-)	—	—	30	
		III			T2 (-), Gate (-)	—	—	30	
		IV			T2 (-), Gate (+)	—	—	—	
	SM8G45A SM8J45A	I			T2 (+), Gate (+)	—	—	20	
		II			T2 (+), Gate (-)	—	—	20	
		III			T2 (-), Gate (-)	—	—	20	
		IV			T2 (-), Gate (+)	—	—	—	
Peak On-State Voltage			V_{TM}	I_{TM} = 12A		—	—	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		—	—	2.0	°C / W
Critical Rate of Rise of Off-State Voltage at Commutation	SM8G45 SM8J45	(dv / dt) c		V_{DRM} = 400V, (di / dt) c = -4.5A / ms T_j = 125°C	10	—	—	V / μs	
	SM8G45A SM8J45A				4	—	—		

MARKING

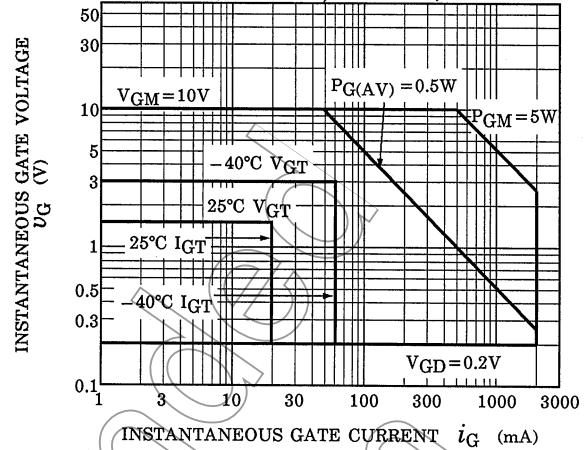


	Part No. (or abbreviation code)	Part No.
*1	M8G45	SM8G45, SM8G45A
	M8J45	SM8J45, SM8J45A
*2	Nothing	SM8G45, SM8J45
	M8J45A	SM8G45A, SM8J45A

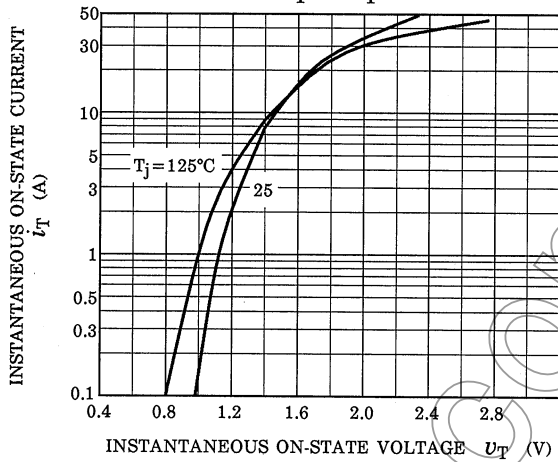
GATE TRIGGER CHARACTERISTIC
(SM8G45, SM8J45)



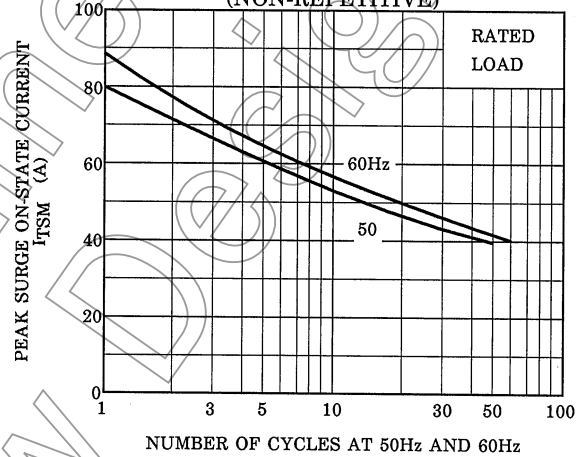
GATE TRIGGER CHARACTERISTIC
(SM8G45A, SM8J45A)



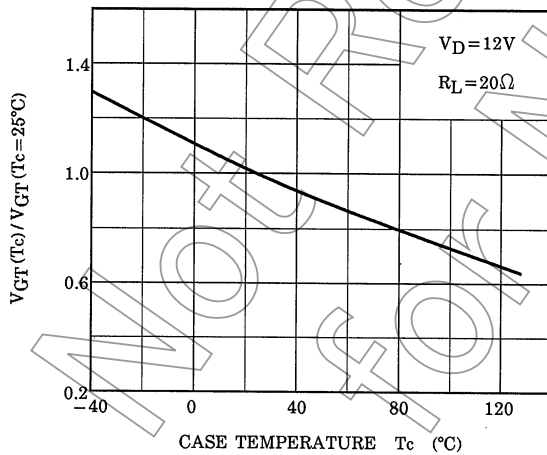
$i_T - v_T$



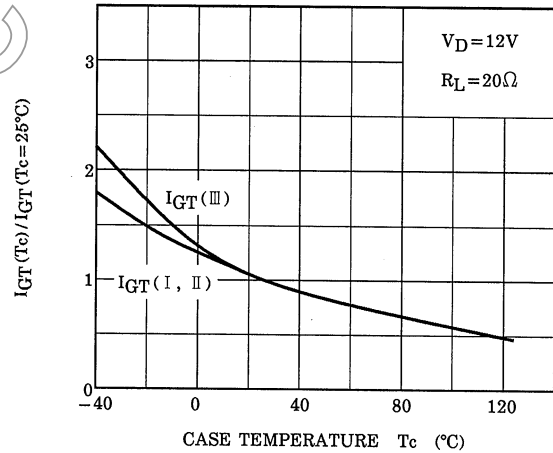
SURGE ON-STATE CURRENT
(NON-REPETITIVE)

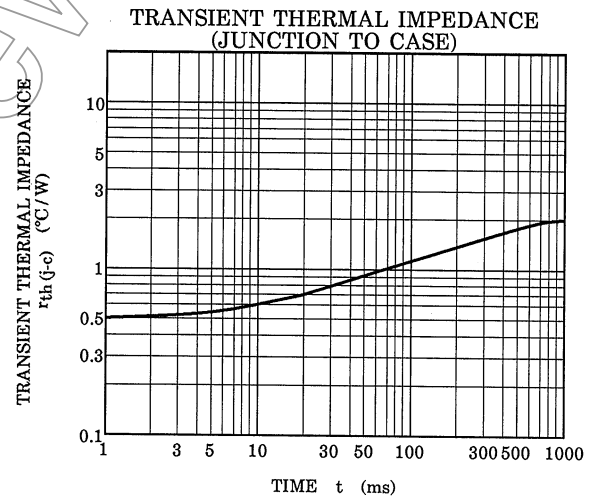
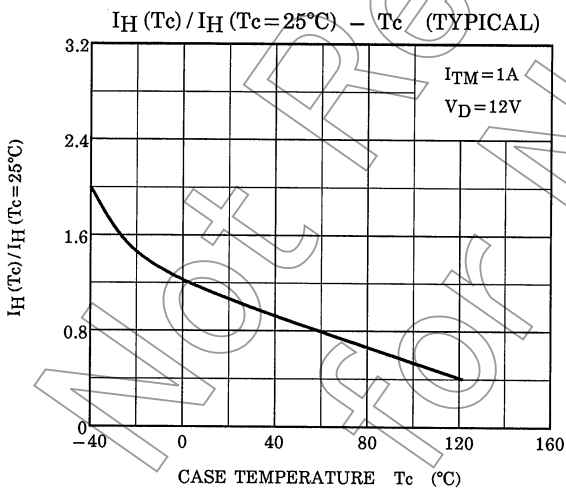
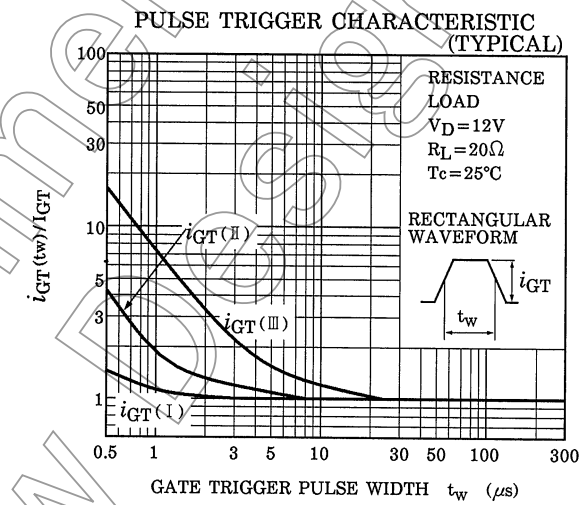
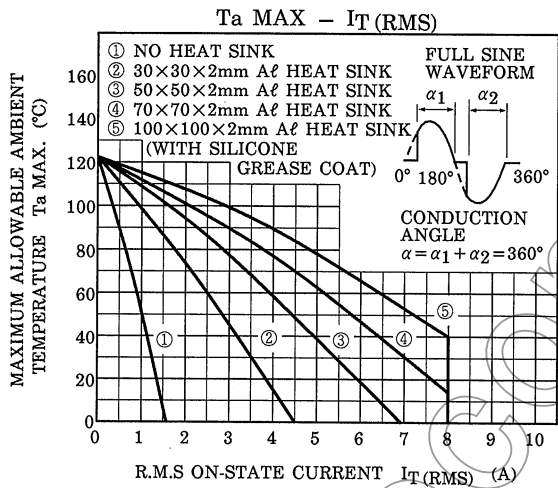
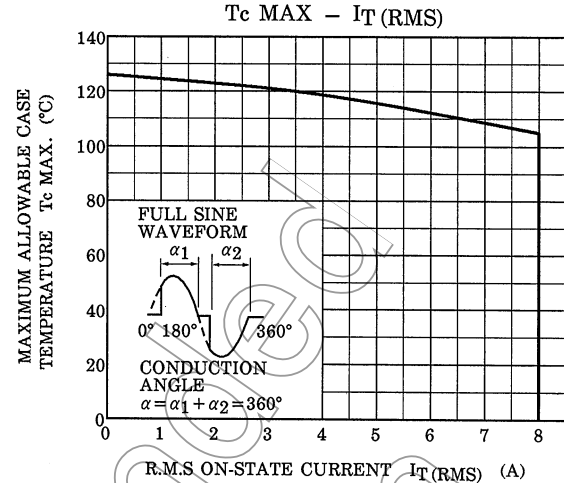
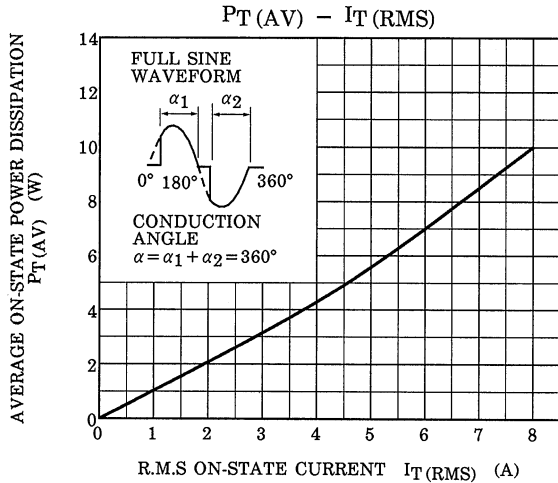


$V_{GT}(T_c) / V_{GT}(T_c = 25^\circ\text{C}) - T_c$ (TYPICAL)



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





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20070701-EN

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