

# SM12G45, SM12J45, SM12G45A, SM12J45A

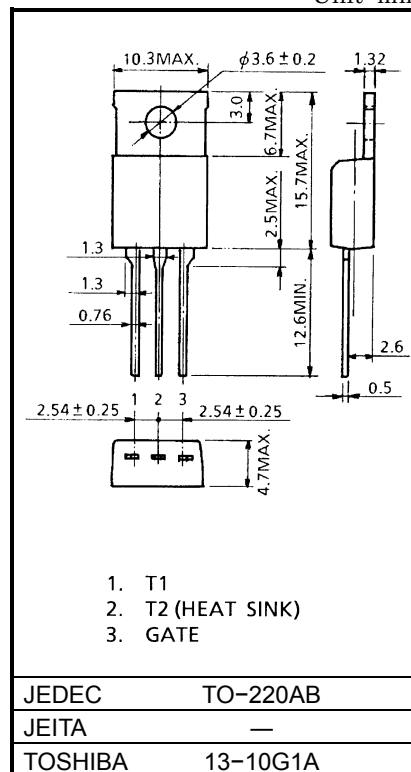
## AC POWER CONTROL APPLICATIONS

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

## MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage	SM12G45 SM12G45A	400	V
	SM12J45 SM12J45A	600	
R.M.S On-State Current (Full Sine Waveform $T_c = 98^\circ C$ )	$I_T (RMS)$	12	A
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	120 (50Hz)	A
		132 (60Hz)	
$I^2 t$ Limit Value ( $t = 1 \sim 10ms$ )	$I^2 t$	72	$A^2 s$
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	$T_j$	$-40 \sim 125$	$^\circ C$
Storage Temperature Range	$T_{stg}$	$-40 \sim 125$	$^\circ C$

Unit: mm

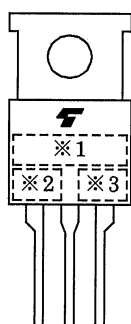


Weight: 2.0g

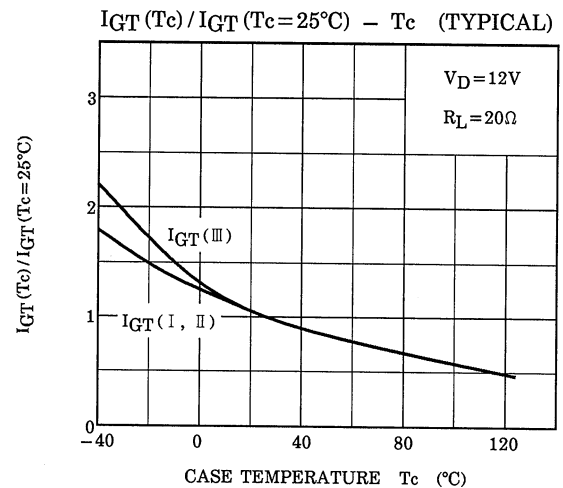
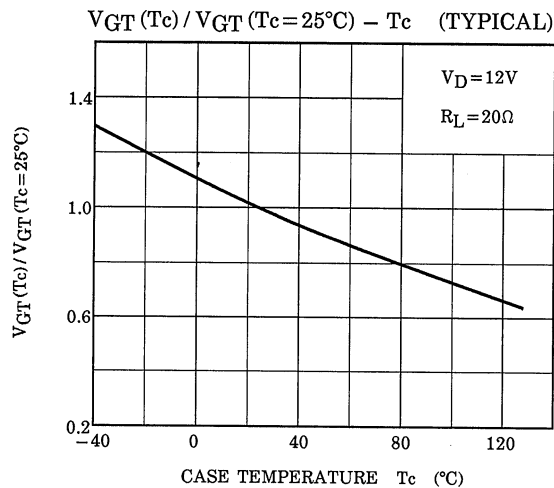
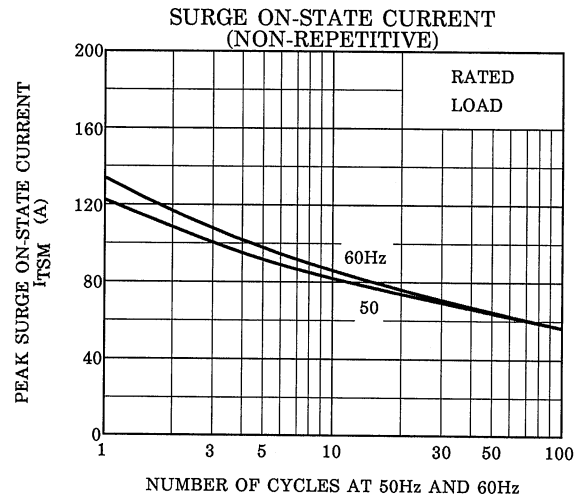
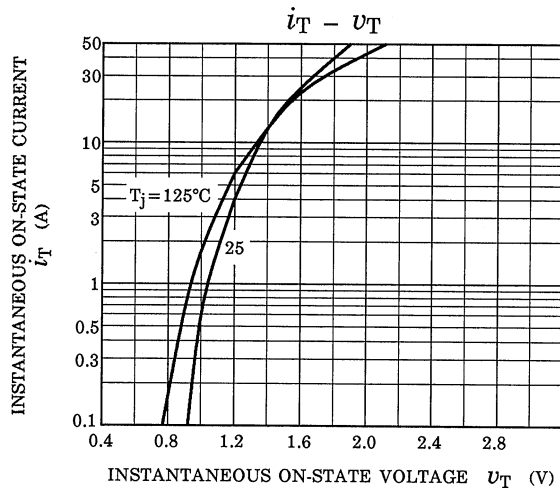
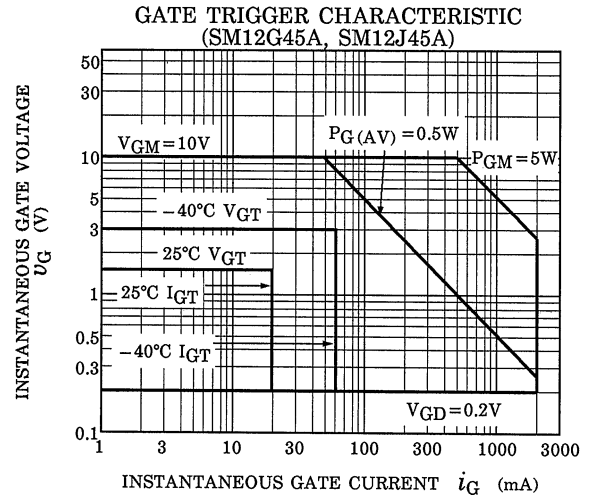
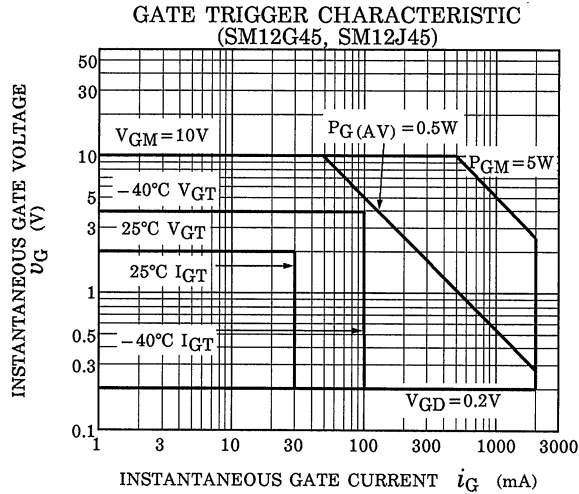
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

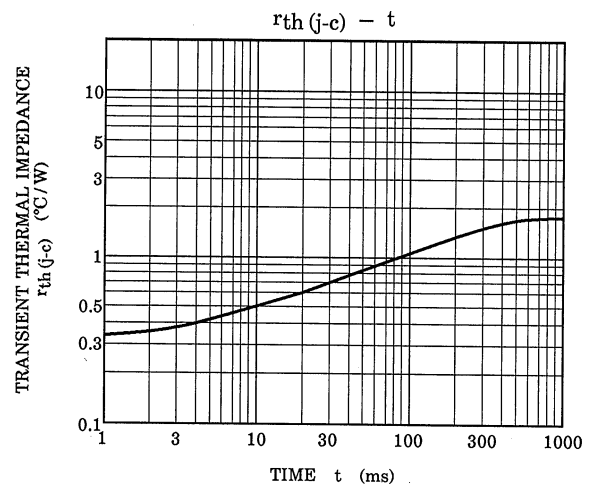
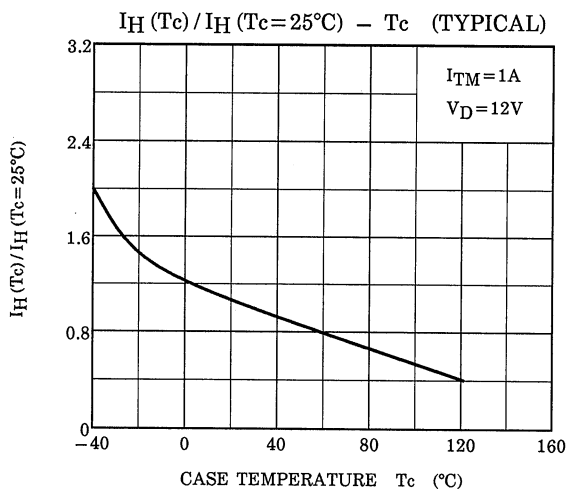
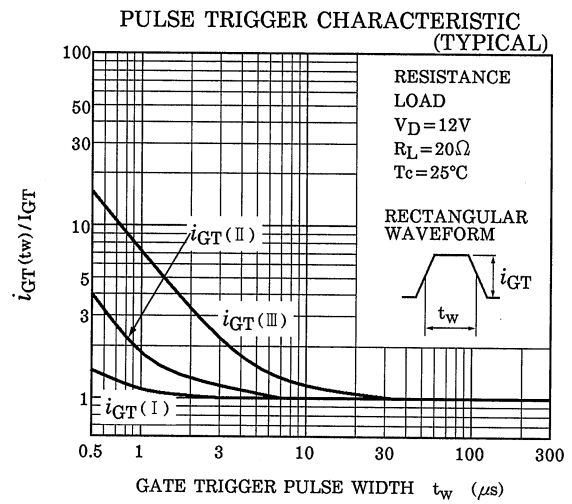
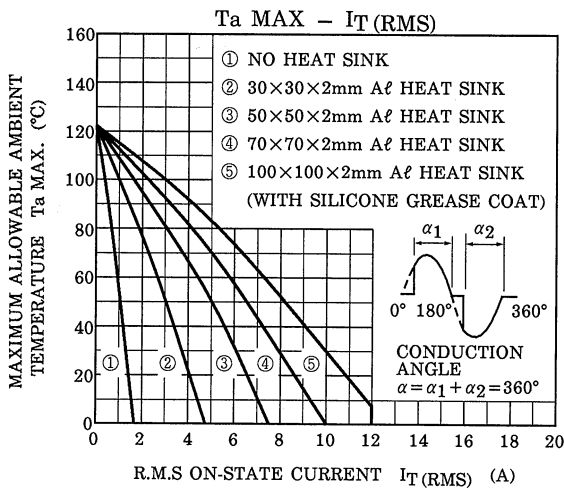
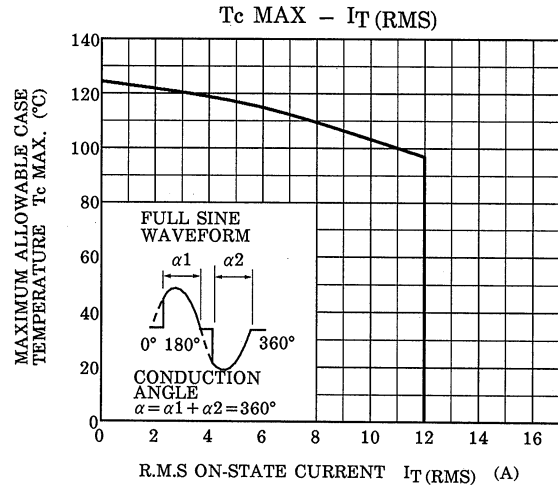
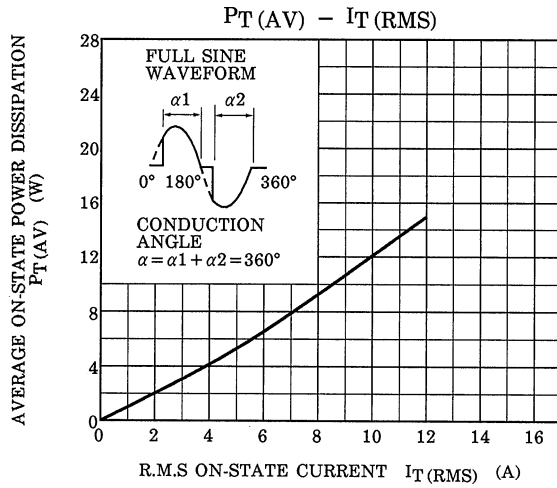
CHARACTERISTIC			SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Repetitive Peak Off-State Current			I <sub>DRM</sub>	V <sub>DRM</sub> =Rated, T <sub>j</sub> = 125°C		—	—	2	mA
Gate Trigger Voltage	SM12G45 SM12J45	I	V <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 20Ω	T2 (+) , Gate (+)	—	—	2	V
		II			T2 (+) , Gate (—)	—	—	2	
		III			T2 (—) , Gate (—)	—	—	2	
		IV			T2 (—) , Gate (+)	—	—	—	
	SM12G45A SM12J45A	I			T2 (+) , Gate (+)	—	—	1.5	
		II			T2 (+) , Gate (—)	—	—	1.5	
		III			T2 (—) , Gate (—)	—	—	1.5	
		IV			T2 (—) , Gate (+)	—	—	—	
Gate Trigger Current	SM12G45 SM12J45	I	I <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 20Ω	T2 (+) , Gate (+)	—	—	30	mA
		II			T2 (+) , Gate (—)	—	—	30	
		III			T2 (—) , Gate (—)	—	—	30	
		IV			T2 (—) , Gate (+)	—	—	—	
	SM12G45A SM12J45A	I			T2 (+) , Gate (+)	—	—	20	
		II			T2 (+) , Gate (—)	—	—	20	
		III			T2 (—) , Gate (—)	—	—	20	
		IV			T2 (—) , Gate (+)	—	—	—	
Peak On-State Voltage			V <sub>TM</sub>	I <sub>TM</sub> = 17A		—	—	1.5	V
Gate Non-Trigger Voltage			V <sub>GD</sub>	V <sub>D</sub> = Rated, T <sub>c</sub> = 125°C		0.2	—	—	V
Holding Current			I <sub>H</sub>	V <sub>D</sub> = 12V, I <sub>TM</sub> = 1A		—	—	50	mA
Thermal Resistance			R <sub>th (j-c)</sub>	Junction to Case, AC		—	—	1.8	°C / W
Critical Rate of Rise of Off-State Voltage at Commutation	SM12G45 SM12J45	(dv / dt) c	V <sub>DRM</sub> = 400V (di / dt) c = - 6.5A / ms	10	—	—	V / μs		
	SM12G45A SM12J45A			4	—	—			

## MARKING



NUMBER	SYMBOL		MARK
*1	TYPE	SM12G45, SM12G45A	M12G45
		SM12J45, SM12J45A	M12J45
*2		SM12G45A, SM12J45A	A
*3	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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