

TOSHIBA BI-DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

SM12G45, SM12J45, SM12G45A, SM12J45A

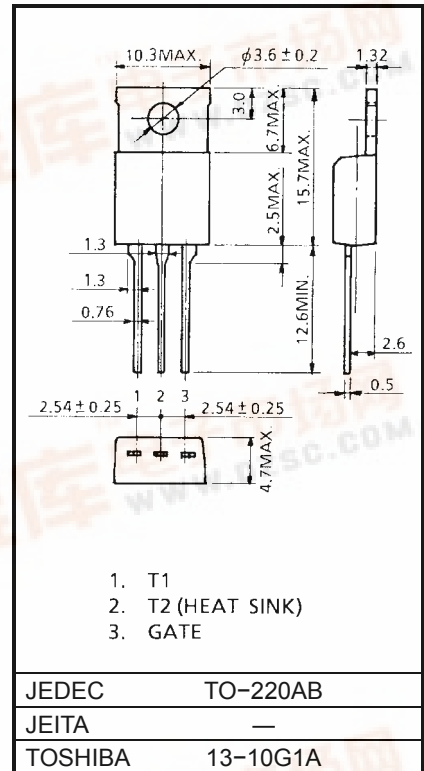
AC POWER CONTROL APPLICATIONS

- 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	V_{DRM}	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^2t Limit Value ($t = 1\sim 10ms$)		I^2t	72	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	$^\circ C$

Unit: mm

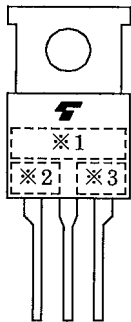


Weight: 2.0g

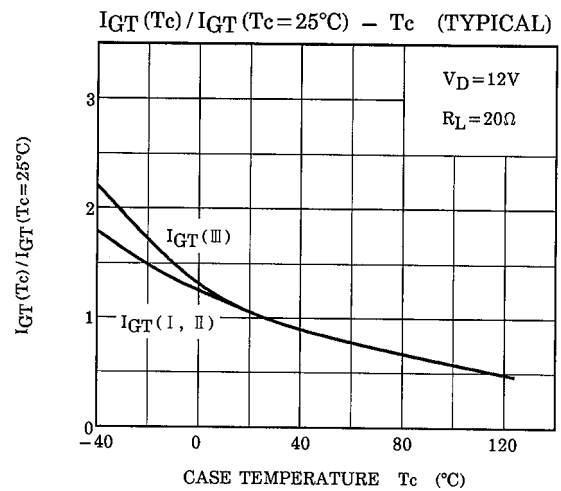
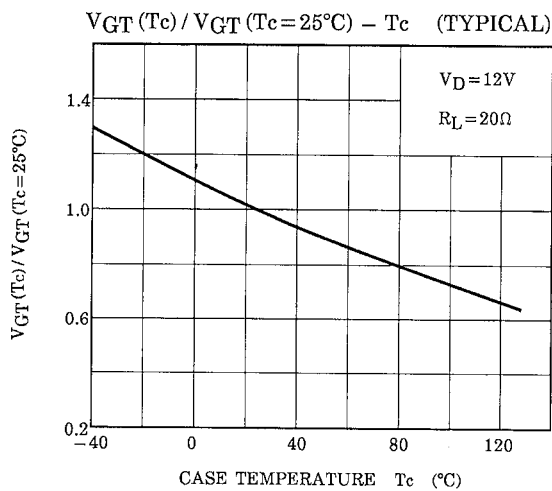
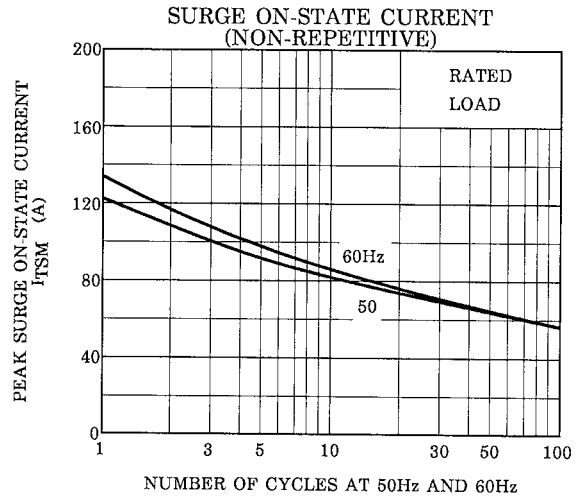
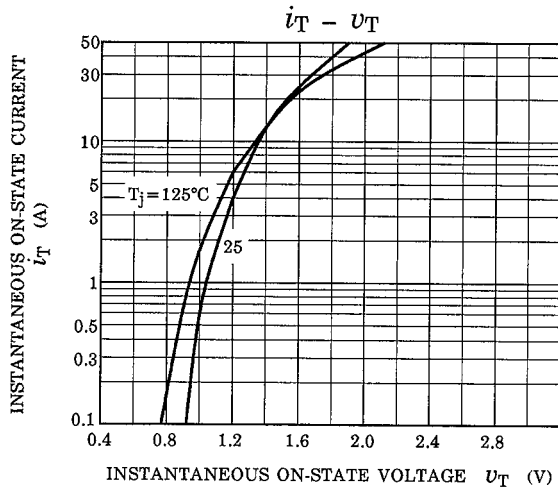
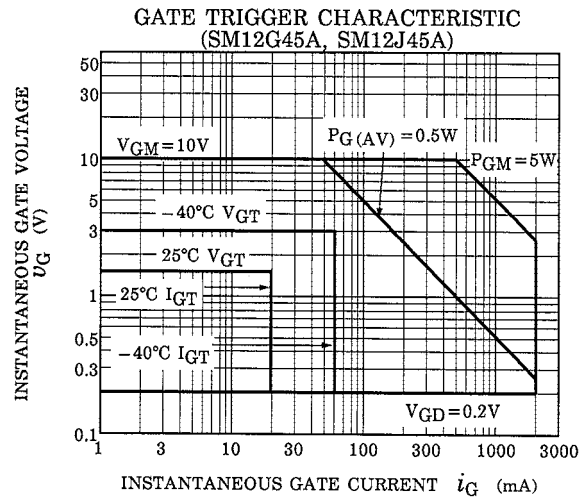
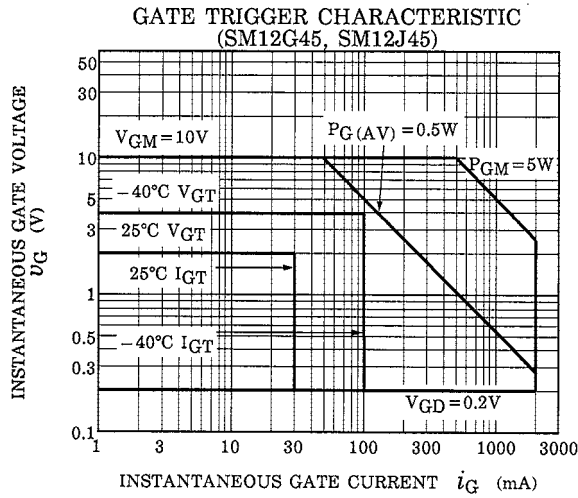
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

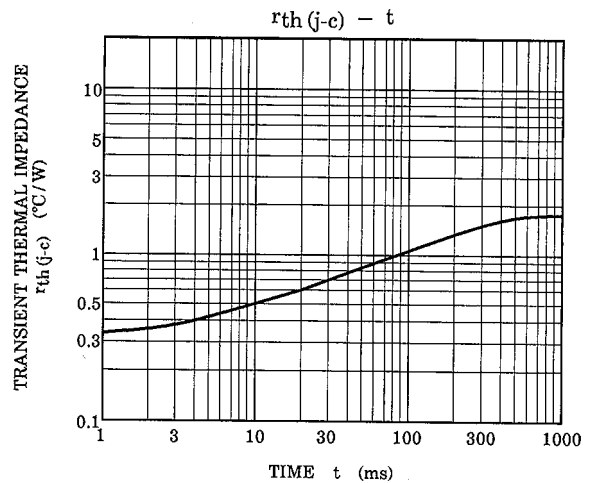
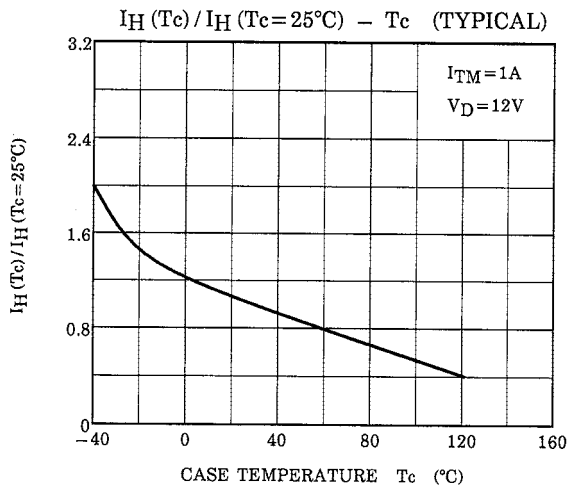
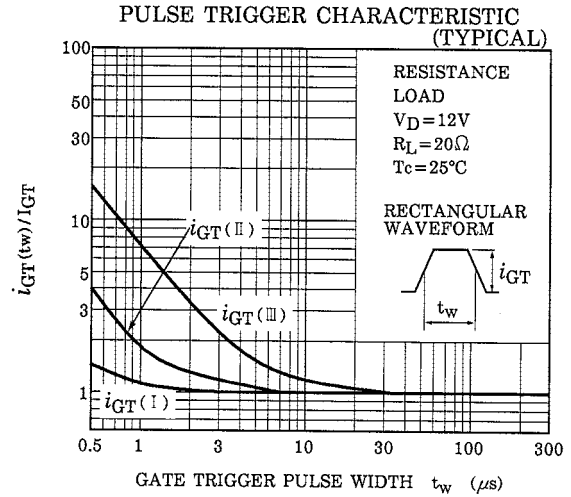
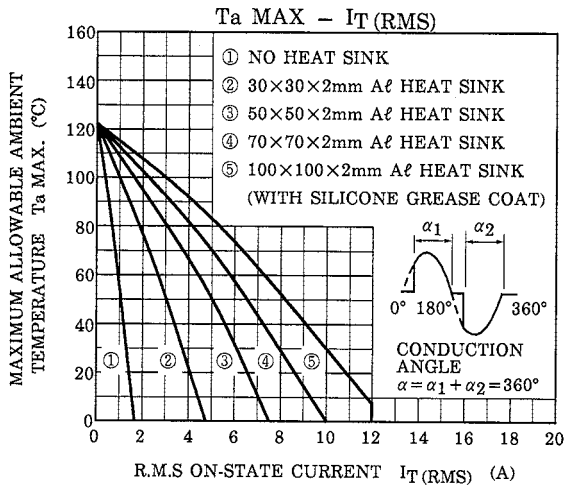
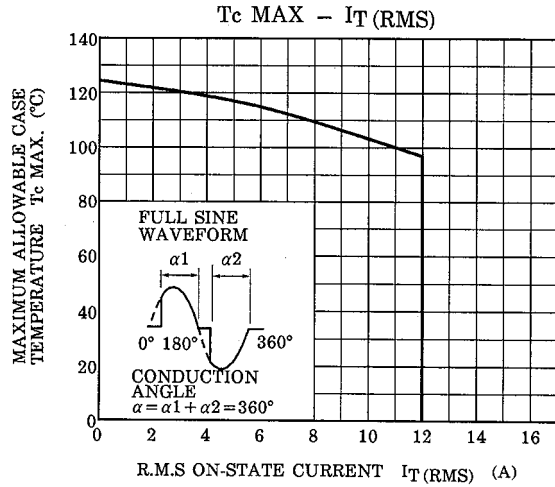
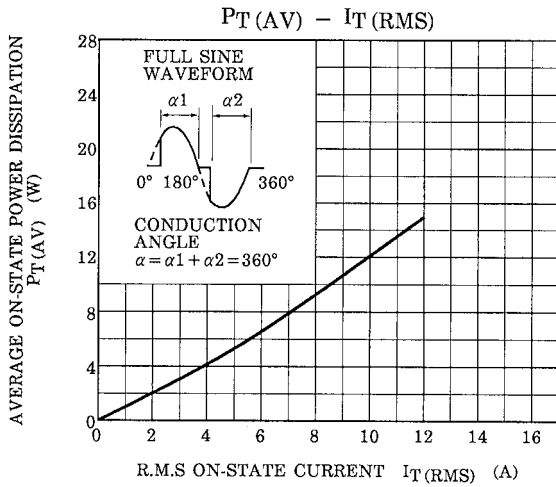
CHARACTERISTIC			SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Repetitive Peak Off-State Current			I_{DRM}	$V_{DRM} = \text{Rated}, T_j = 125^\circ\text{C}$	—	—	2	mA	
Gate Trigger Voltage	SM12G45 SM12J45	I	V_{GT}	$V_D = 12\text{V}, R_L = 20\Omega$	T2 (+), Gate (+)	—	—	2	V
		II			T2 (+), Gate (-)	—	—	2	
		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_{GT}	$V_D = 12\text{V}, R_L = 20\Omega$	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_{TM}	$I_{TM} = 17\text{A}$	—	—	1.5	V	
Gate Non-Trigger Voltage			V_{GD}	$V_D = \text{Rated}, T_c = 125^\circ\text{C}$	0.2	—	—	V	
Holding Current			I_H	$V_D = 12\text{V}, I_{TM} = 1\text{A}$	—	—	50	mA	
Thermal Resistance			$R_{th(j-c)}$	Junction to Case, AC	—	—	1.8	$^\circ\text{C} / \text{W}$	
Critical Rate of Rise of Off-State Voltage at Commutation	SM12G45 SM12J45	$(dv / dt)_c$	$V_{DRM} = 400\text{V}$ $(di / dt)_c = -6.5\text{A} / \text{ms}$	10	—	—	V / μs		
	SM12G45A SM12J45A			4	—	—			

MARKING



NUMBER	SYMBOL	MARK
*1	TYPE	SM12G45, SM12G45A
		SM12J45, SM12J45A
*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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