

TENTATIVE-RESTRICTIVE DATA

TOSHIBA AC SWITCH

OPTICALLY ISOLATED AC SWITCH WITH ZERO VOLTAGE TURN-ON FUNCTION

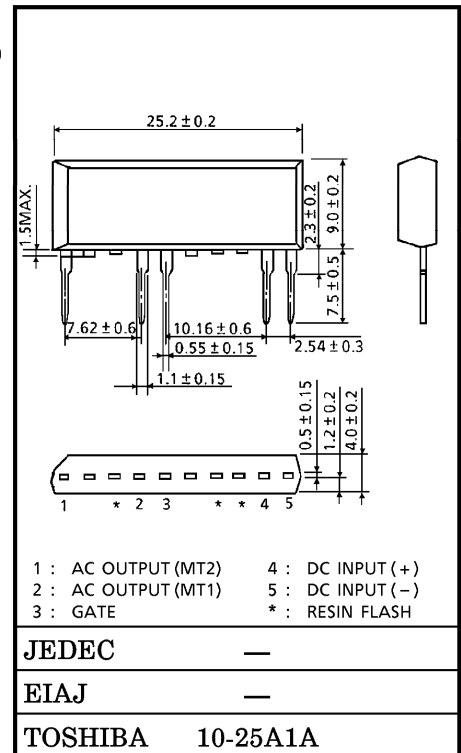
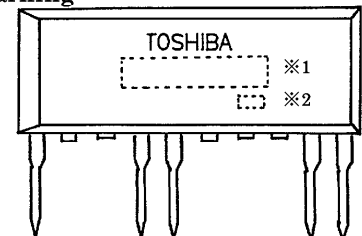
TSA2000G, TSA2000J

- R.M.S. On-State Current : $I_T(\text{RMS}) = 0.1 \sim 2\text{A}$
- Repetitive Peak Off-State Voltage : $V_{\text{DRM}} = 400, 600\text{V}$
- Isolation Voltage between Input to Output : 3000VAC ($t = 1\text{min.}$)
- Thickness of Inner Insulation Material : 0.8mm (Min.)
- Creepage Distances, Clearances for Insulation between Input and Output Side : 6mm (Min.)
- TTL drive is Available

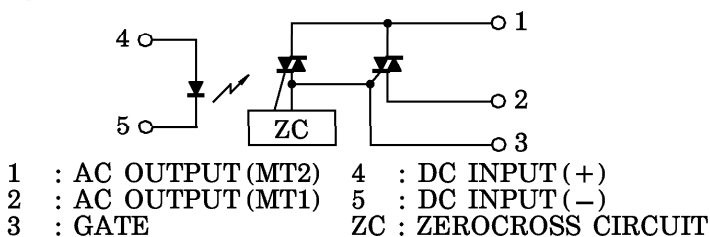
Unit in mm

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
INPUT	Control Input Current	$I_F(\text{IN})$	50	mA
	Forward Current Derating ($T_a \geq 53^\circ\text{C}$)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / $^\circ\text{C}$
	Peak Forward Current (100 μs pulse, 100pps)	I_{FP}	1	A
	Reverse Voltage	V_R	5	V
OUTPUT	Repetitive Peak Off-State Voltage	TSA2000G	400	V
		TSA2000J	600	
	Nominal AC Line Voltage (Note 1)	TSA2000G	80~125	V
		TSA2000J	80~250	
	R.M.S On-State Current (Sine Waveform, R.M.S.)	$I_T(\text{RMS})$	0.1~2	A
	Peak One Cycle Surge On-State Current (Non-Repetitive)	I_{TSM}	20 (50Hz)	A
			22 (60Hz)	
	I^2t Limit Value	I^2t	2	A^2s
Operating Frequency Range		f	45~65	Hz
Operating Temperature Range		T_{opr}	-40~100	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-40~100	$^\circ\text{C}$
Isolation Voltage (Input to Output) Note 2		BV_S	3000	V

Weight : 2g
Marking

EQUIVALENT CIRCUIT



(The cutted pins near by Pin No.1 & No.3 is connecting in electrically with output terminal)

Note 1 : When the voltage larger than applied AC voltage is applied to the device such as 2 phase motor and others, please derating for this maximum rating value.

Note 2 : TEST CONDITION... AC, $t = 60\text{s}$, $\text{RH} \leq 60\%$ Note 3 : Soldering of printed wiring board should be used under 260°C and 10 seconds.

NUMBER	SYMBOL		MARK	
*1	TYPE	TSA2000G	TYPE	TSA2000G
		TSA2000J		TSA2000J
*2	Lot Number		Example	
	Month (Starting from) (Alphabet A) Year (Last Number of) (the Christian era)		3A : January 1993 3B : February 1993 3L : December 1993	

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
INPUT	Forward Voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Capacitance	C_T	$V_T = 0\text{V}$, $f = 1\text{MHz}$	—	20	—	pF
OUTPUT	Peak Off-State Current	I_{DRM}	$V_{\text{DRM}} = \text{Rated}$	—	—	10	μA
	Peak On-State Voltage	V_{TM}	$I_{\text{TM}} = 3\text{A}$	—	—	1.5	V
	Holding Current	I_H	$V_D = 6\text{V}$, Beginning Current = 1A	—	—	25	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{DRM}} = \text{Rated}$	—	2000	—	$\text{V} / \mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$(dv/dt)_c$	$V_D = 400\text{V}$, $-di/dt = 20\text{A/ms}$	—	20	—	$\text{V} / \mu\text{s}$
	Thermal Resistance	Junction to Lead	$R_{\text{th(j-l)}}$	—	—	22	$^\circ\text{C/W}$
		Junction to Ambient	$R_{\text{th(j-a)}}$	—	—	90	$^\circ\text{C/W}$

COUPLED ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_D = 6\text{V}$, $R_L = 20\Omega$	—	—	10	mA
Inhibit Voltage	V_{IH}	$I_F = 10\text{mA}$, $R_L = 20\Omega$	—	38	50	V
Capacitance (Input to output)	C_S	$V_S = 0\text{V}$, $f = 1\text{MHz}$	—	0.5	—	pF
Isolation Resistance	R_S	$V = 500\text{V}$, $R_H \leq 60\%$	10^9	—	—	Ω
Turn-off Time	t_{off}	OUTPUT : Sine Waveform	—	—	3 / 4	cycle

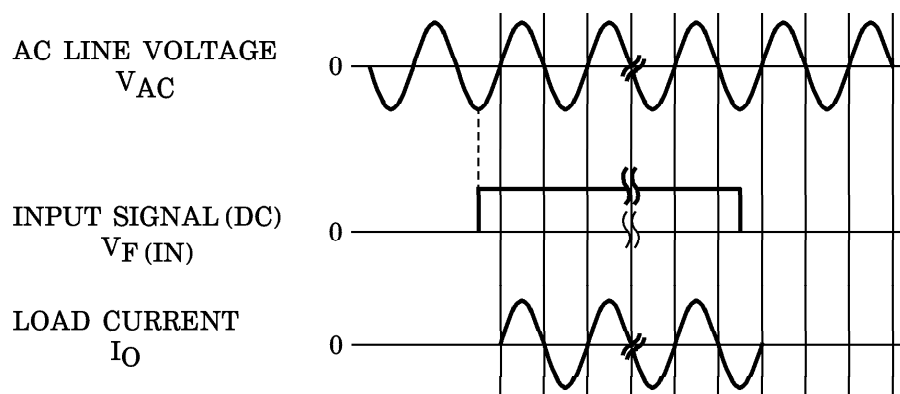
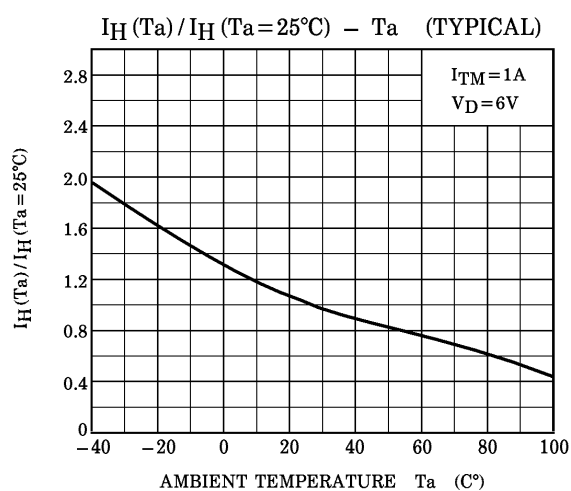
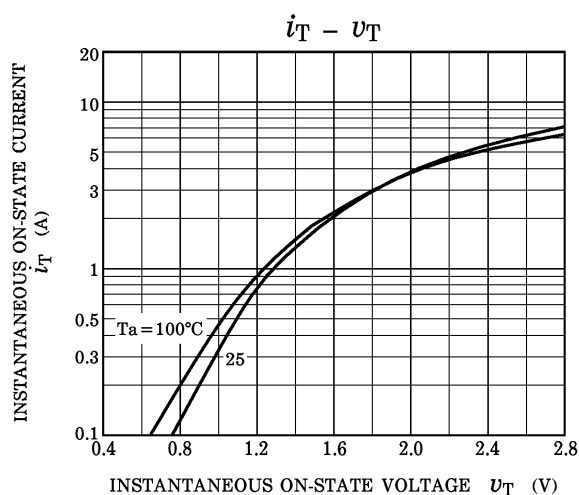
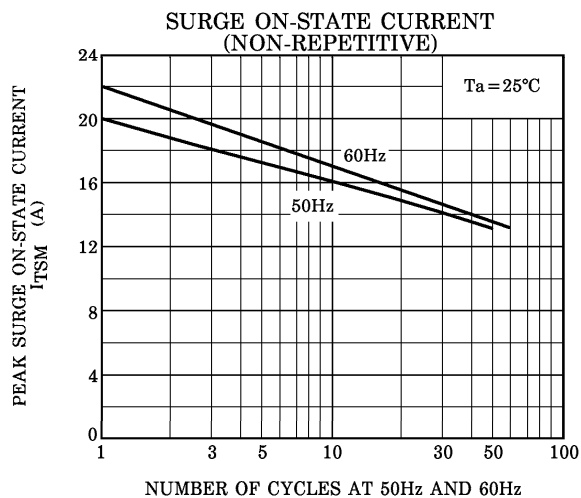
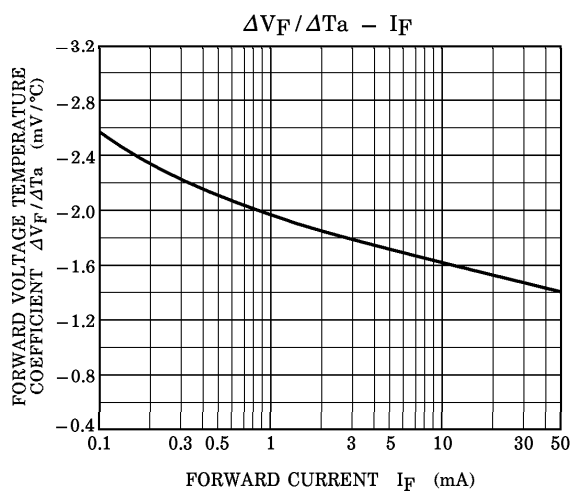
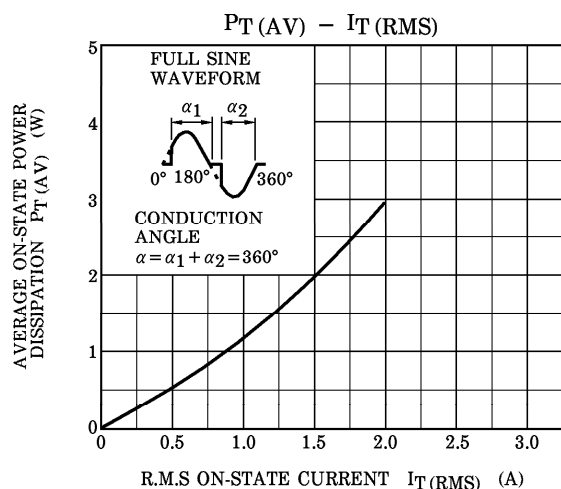
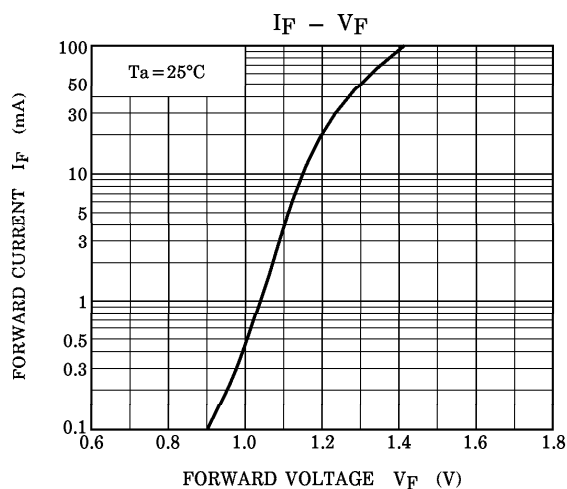
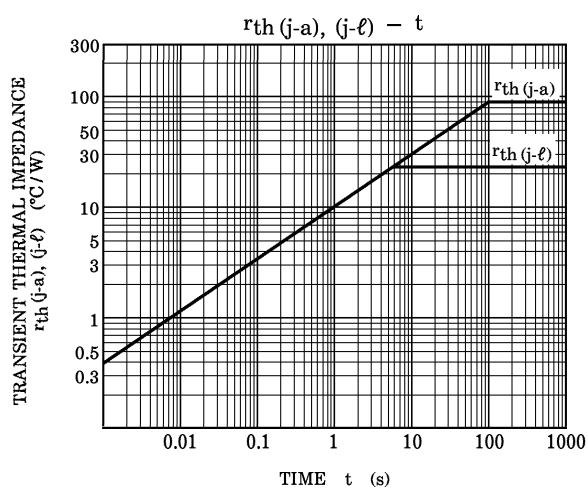
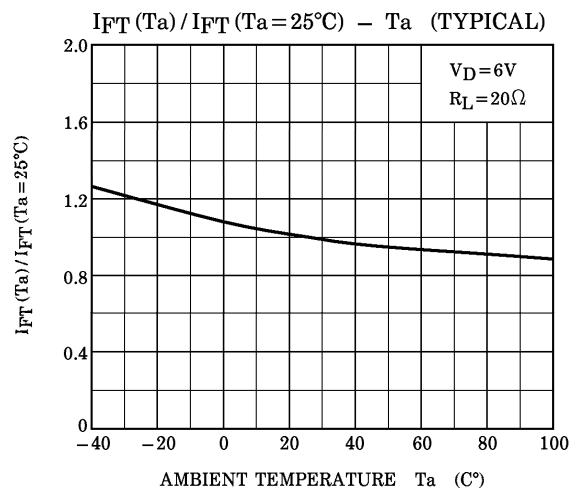
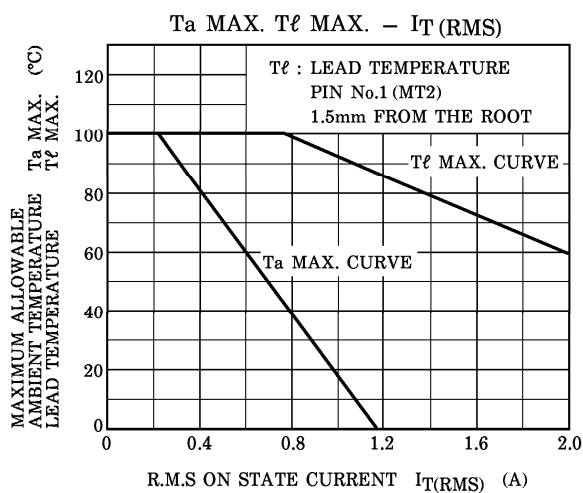
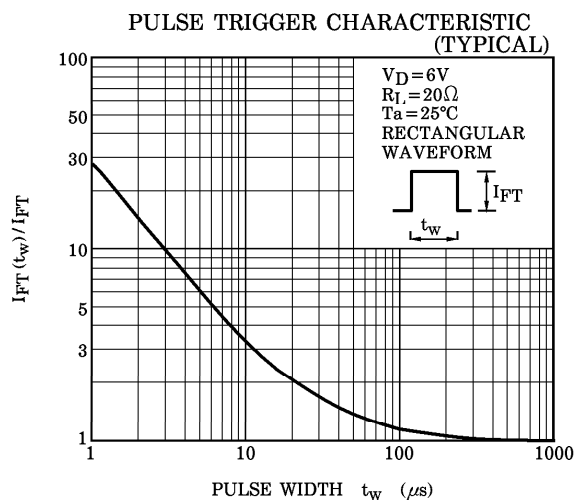
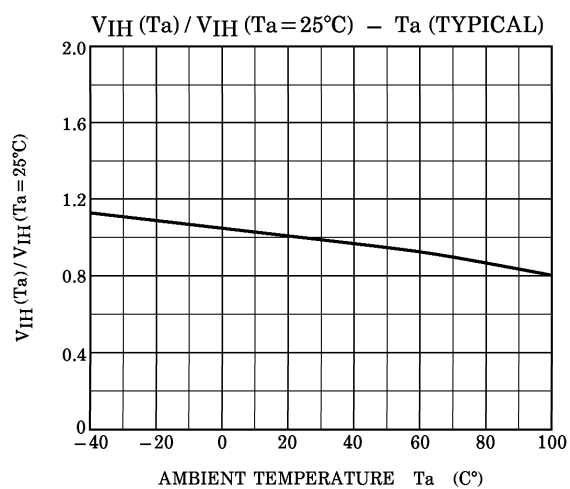


Fig.1 ZERO VOLTAGE SWITCHING WAVEFORM





RESTRICTIONS ON PRODUCT USE

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