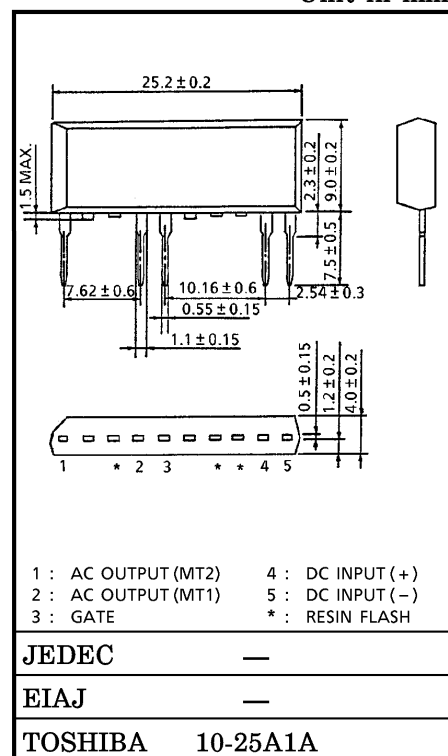


TOSHIBA AC SWITCH OPTICALLY ISOLATED AC SWITCH WITH ZERO VOLTAGE TURN-ON FUNCTION

TSA3001G, TSA3001J

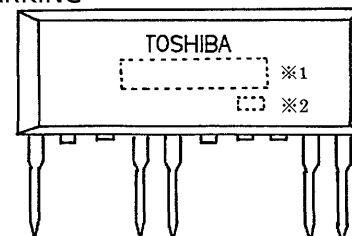
- R.M.S. ON-STATE CURRENT : $I_T(\text{RMS}) = 0.2 \sim 3\text{A}$
- Repetitive Peak Off-State Voltage : $V_{\text{DRM}} = 400, 600\text{V}$
- Isolation Voltage between input to output : 3000VAC ($t = 1\text{min.}$)
- Thickness of inner insulation material : 0.8mm (min.)
- Creepage distances, Clearances for insulation between input and output side : 6mm (min.)
- TTL drive is available

Unit in mm



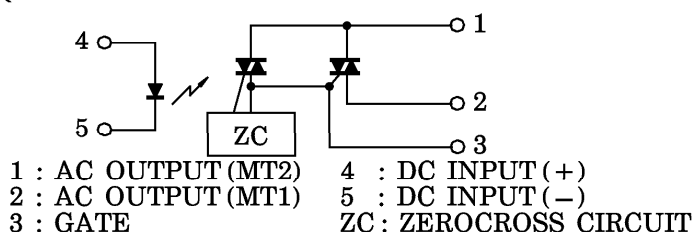
Weight : 2g (TYP.)

MARKING

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

CHARACTERISTIC			SYMBOL	RATING	UNIT
INPUT	Forward Current		I _F (IN)	50	mA
	Forward Current Derating (T _a ≥53℃)		ΔI _F / °C	−0.7	mA / °C
	Peak Forward Current (100μs pulse, 100pps)		I _{FP}	1	A
	Reverse Voltage		V _R	5	V
OUTPUT	Repetitive Peak Off-State Voltage	TSA3001G	V _{DRM}	400	V
		TSA3001J		600	
	Nominal AC Line Voltage (Note 1)	TSA3001G	V _{AC}	80~125	V
		TSA3001J		80~250	
	R.M.S. On-State Current (Sine Waveform, R.M.S.)		I _T (RMS)	0.2~3	A
	Peak One Cycle Surge On-State Current (Non-Repetitive)		I _{TSM}	80 (50Hz)	A
				88 (60Hz)	
I ² t Limit Value		I ² t	32	A ² s	
Operating Frequency Range			f	45~65	Hz
Operating Temperature Range			T _{opr}	−40~100	℃
Storage Temperature Range			T _{stg}	−40~100	℃
Isolation Voltage (Input to Output) Note 2			BV _s	3000	V

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	TSA3001G	TYPE	TSA3001G
		TSA3001J		TSA3001J
※2	Lot Number		Example	
	<div> <div> <div>Month (Starting from Alphabet A)</div> <div>Year (Last Number of the Christian era)</div> </div> </div>		<div> <div>3A : January 1993</div> <div>3B : February 1993</div> <div>3L : December 1993</div> </div>	

ELECTRICAL CHARACTERISTICS (Ta = 25°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}	$I_{\text{TM}} = 12\text{A}$	—	—	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	$(dv/dt)_c$	$V_D = 400\text{V}$ $-di/dt = 30\text{A/ms}$	—	30	—	$\text{V} / \mu\text{s}$
	Thermal Resistance	Junction to Lead	$R_{\text{th}}(j-\ell)$	—	—	20	$^{\circ}\text{C/W}$
		Junction to Ambient	$R_{\text{th}}(j-a)$	—	—	85	$^{\circ}\text{C/W}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°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

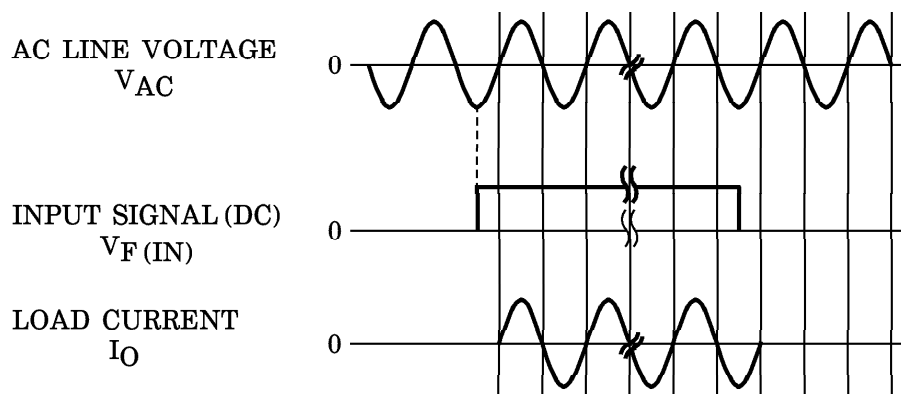
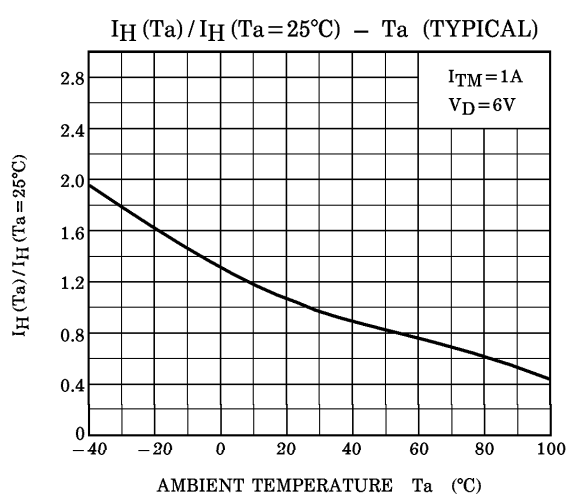
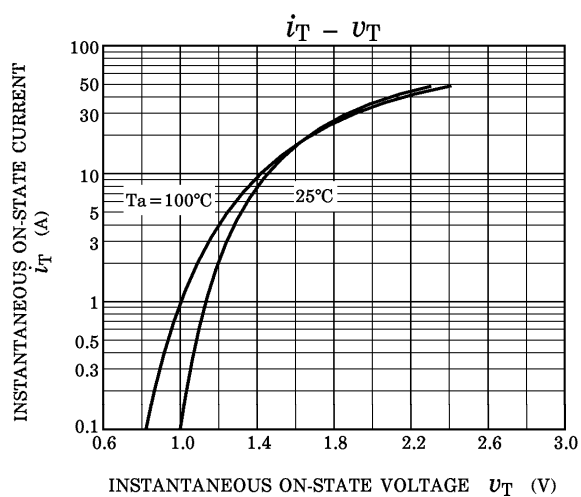
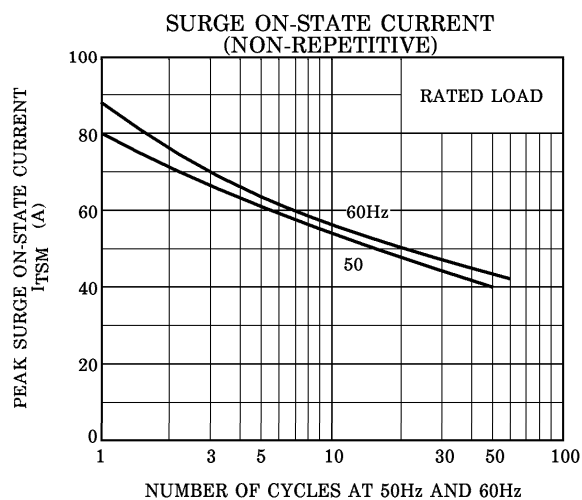
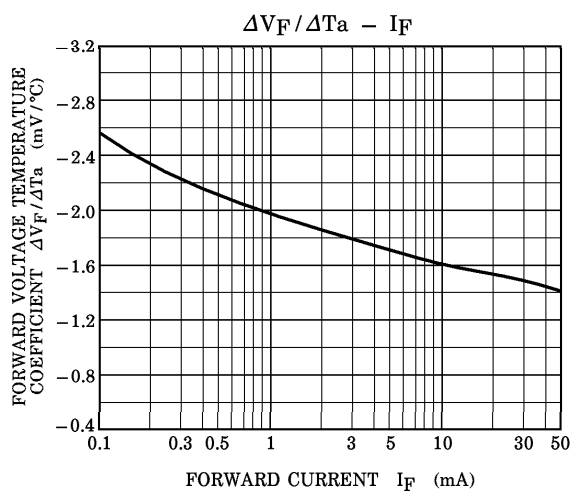
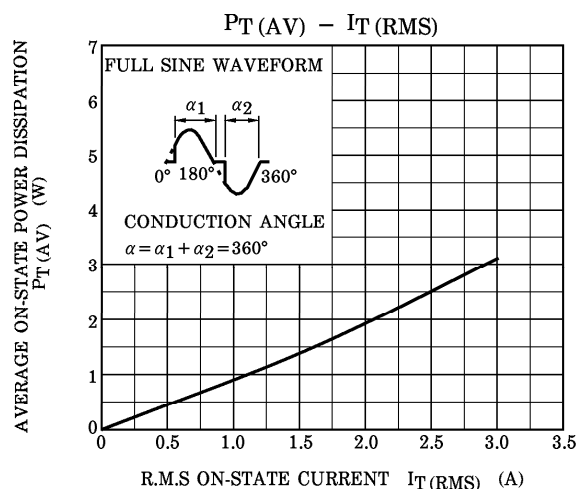
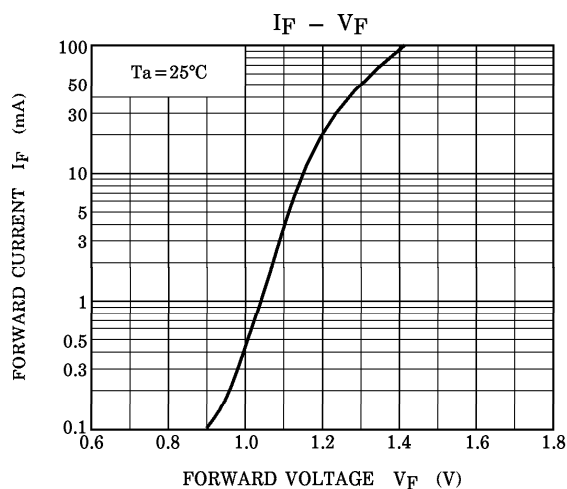
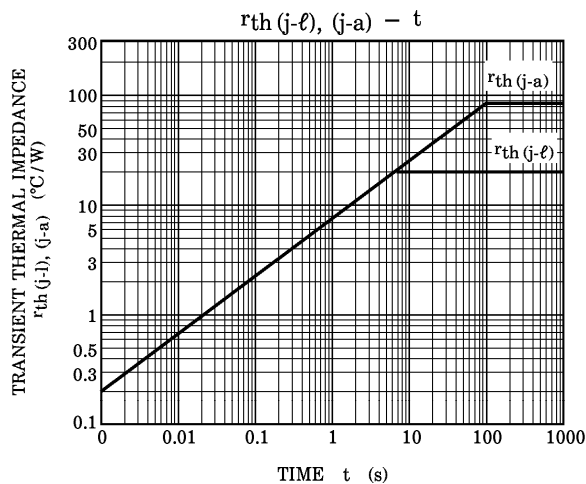
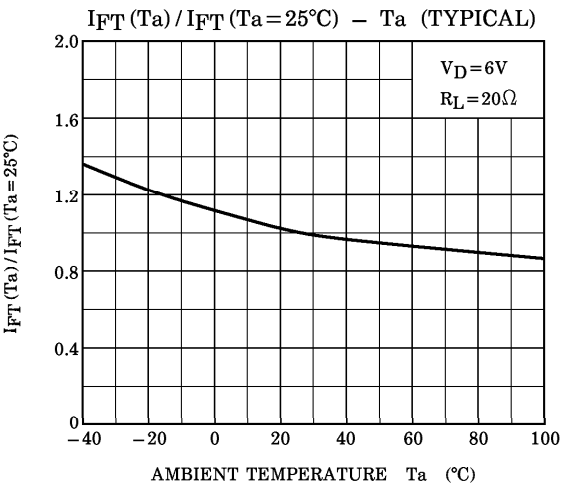
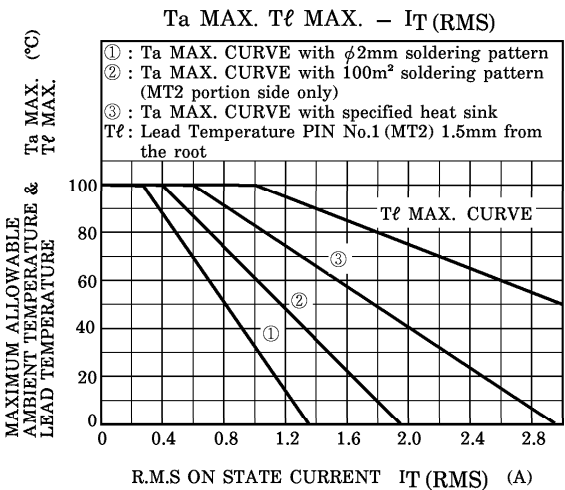
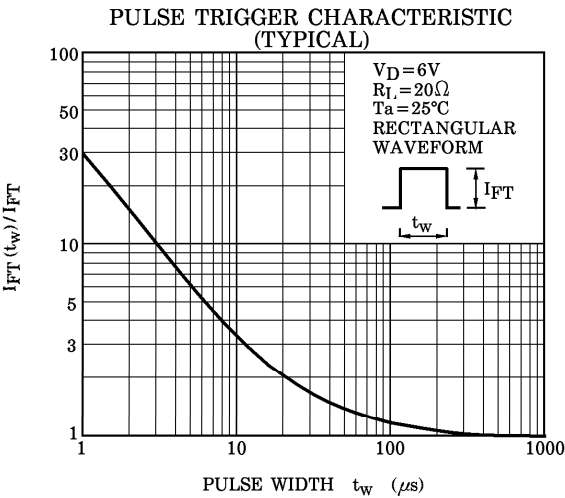
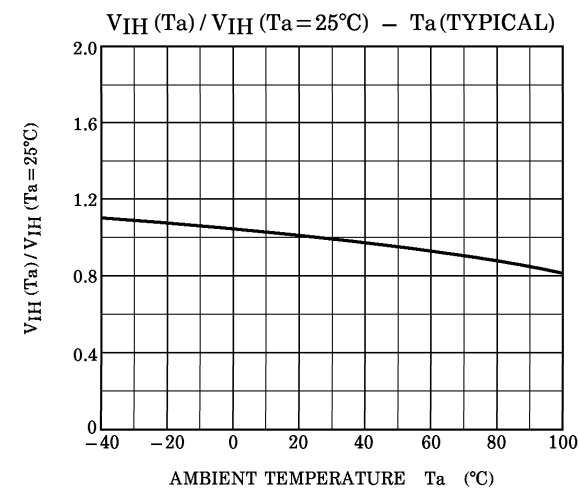


Fig.1 ZERO VOLTAGE SWITCHING WAVEFORM





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