

TOSHIBA AC SWITCH OPTICALLY ISOLATED AC SWITCH

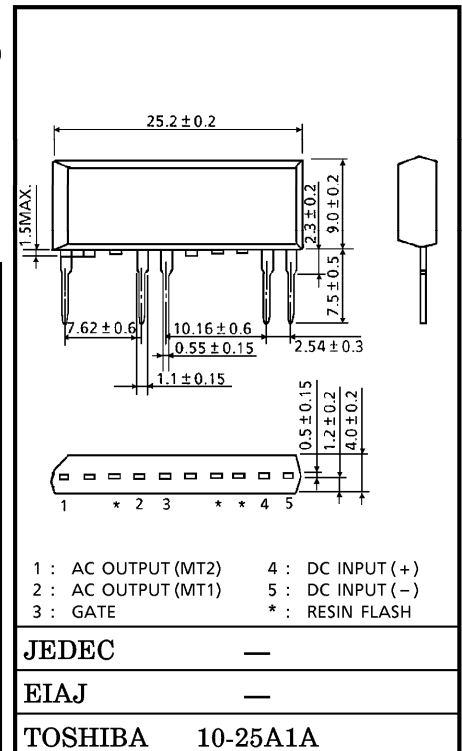
TSA2100G, TSA2100J

- 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

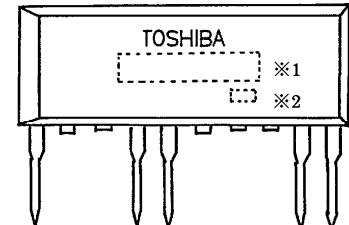
MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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	TSA2100G	400	V
		TSA2100J	600	
	Nominal AC Line Voltage (Note 1)	TSA2100G	80~125	V
		TSA2100J	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) 22 (60Hz)	A
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

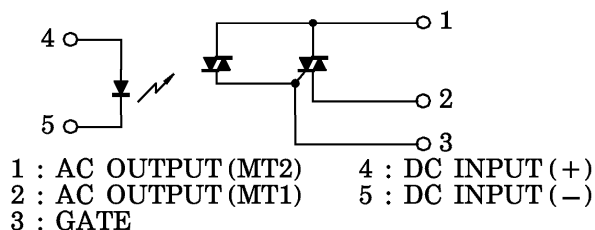


Weight : 2g

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	TSA2100G	TYPE	TSA2100G
		TSA2100J		TSA2100J
※2	Lot Number		Example	
	<div> <div> <div></div> <div></div> </div> <div> <div>Month (Starting from)</div> <div>(Alphabet A)</div> </div> <div> <div>Year (Last Number of)</div> <div>(the Christian era)</div> </div> </div>		<div>3A : January 1993</div> <div>3B : February 1993</div> <div>3L : December 1993</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}	$I_{\text{TM}} = 3.0\text{A}$	—	—	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	$^{\circ}\text{C/W}$

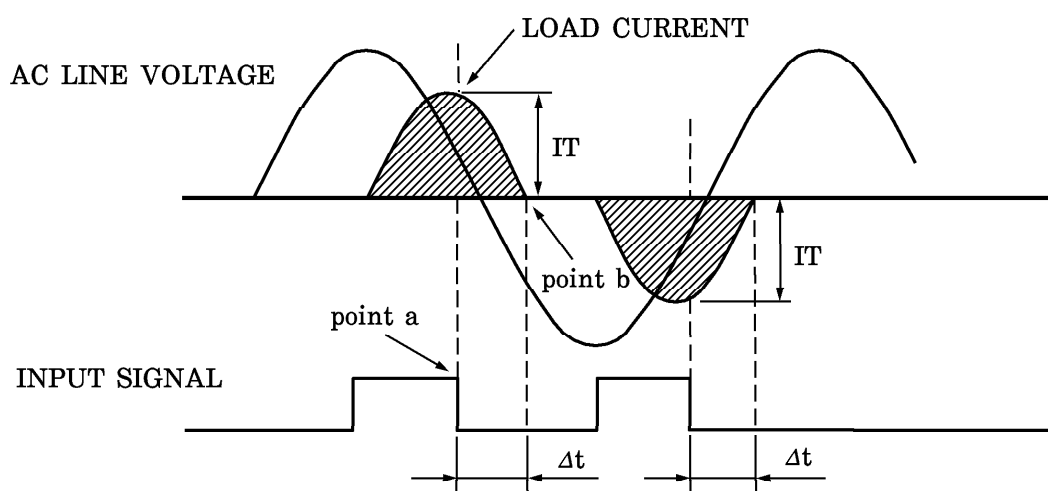
COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

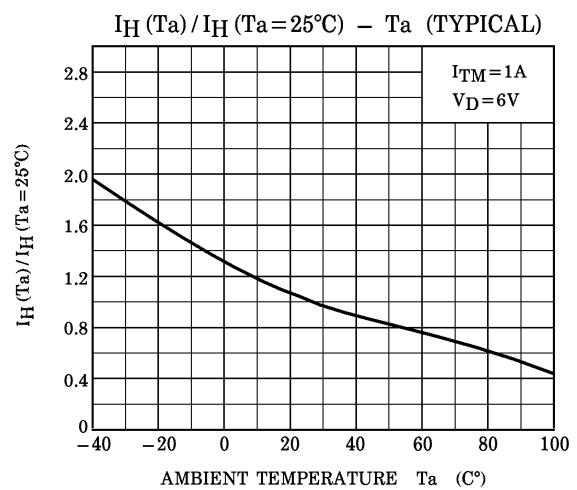
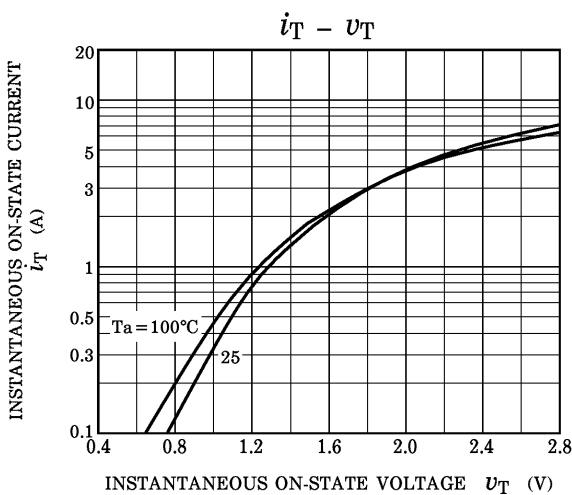
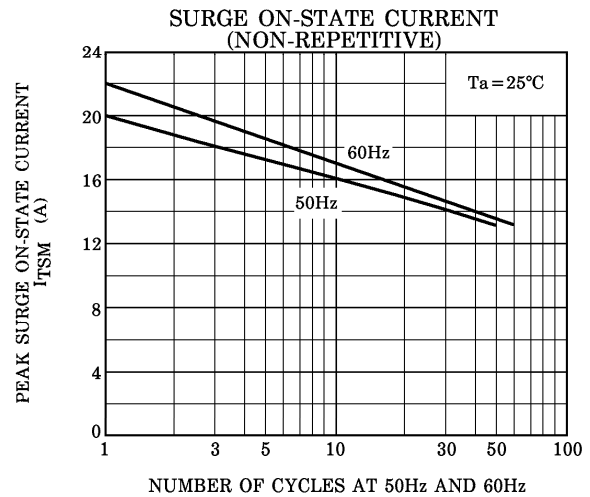
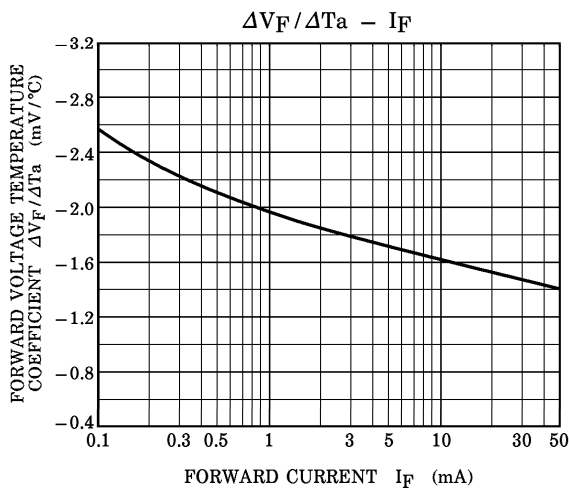
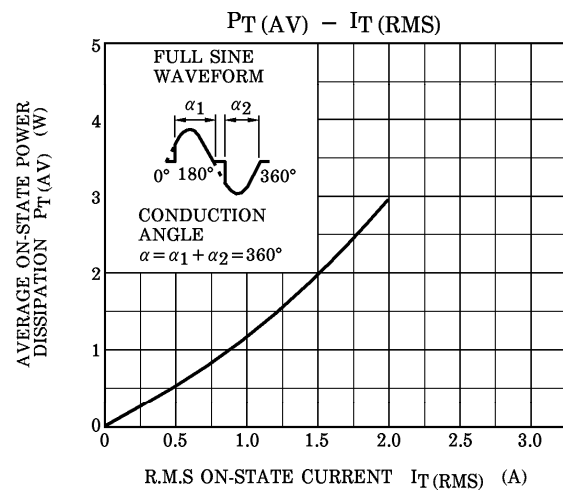
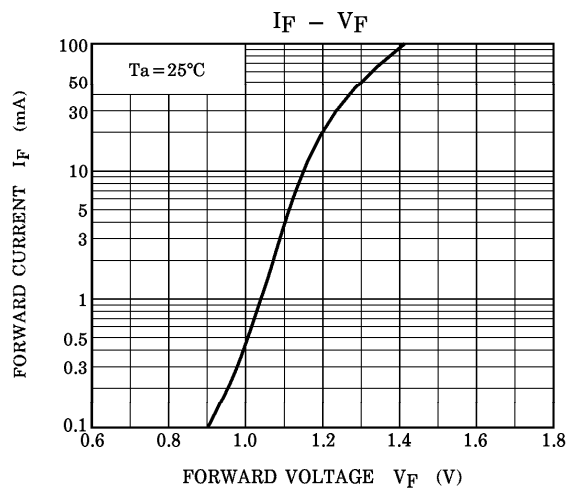
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_D = 6\text{V}$, $R_L = 20\Omega$	—	—	10	mA
Capacitance (Input to output)	C_S	$V_S = 0\text{V}$, $f = 1\text{MHz}$	—	0.5	—	pF
Isolation Resistance	R_S	$V = 500\text{V}$, $R_H \leq 60\%$	10^9	—	—	Ω
Turn-off Time	t_{off}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

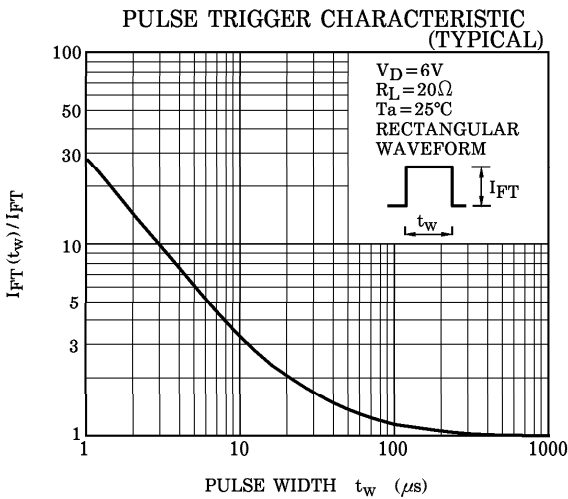
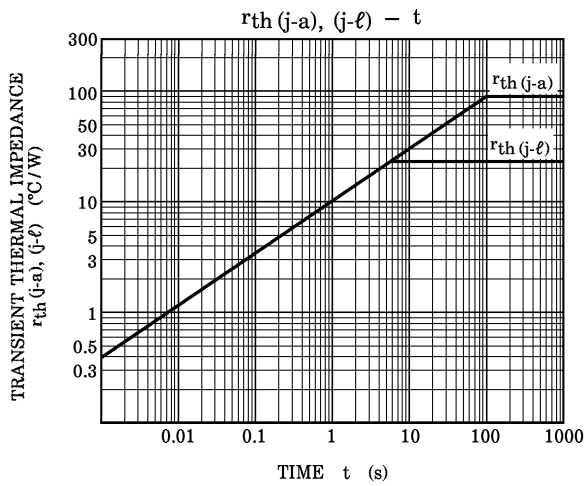
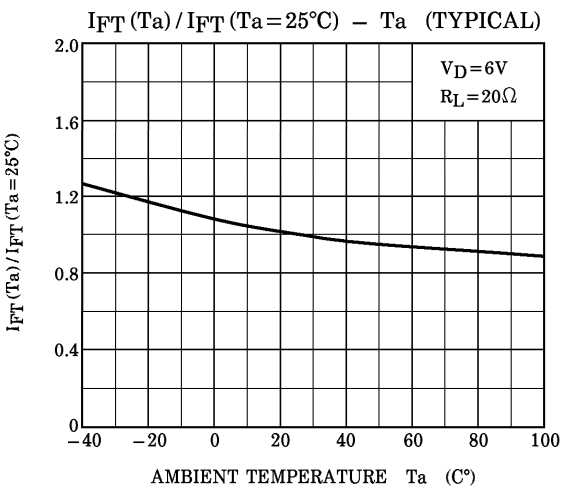
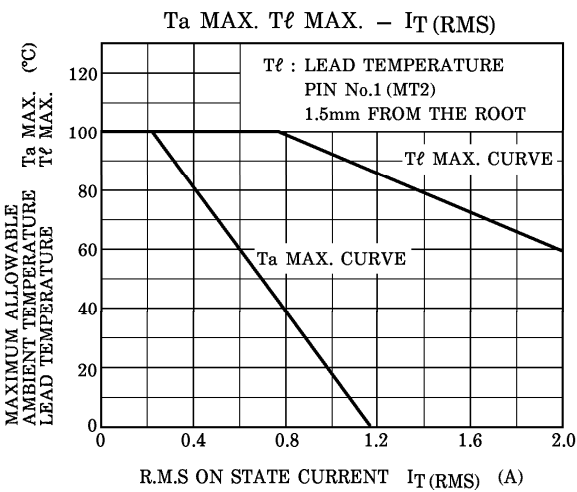
<REMARK>

PHASE CONTROL APPLICATION

In case of using in phase control application. Δt must be at least 1ms (Δt : The time starting from the end of INPUT SIGNAL “point a” to the point at which load current become ZERO “point b”). And, Load current “IT” at “point a” must be at least double the maximum Holding Current (IH) specification in each operating temperature.







RESTRICTIONS ON PRODUCT USE

000707EAA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the "Handling Guide for Semiconductor Devices," or "TOSHIBA Semiconductor Reliability Handbook" etc..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury ("Unintended Usage"). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer's own risk.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.