TOSHIBA SOLID STATE AC RELAY

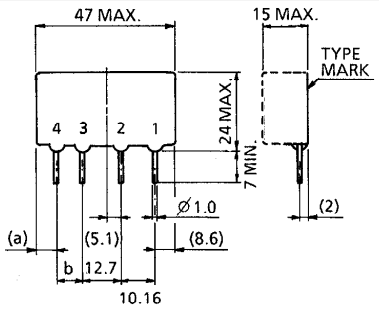
TSS1G45S, TSS1J45S, TSS1G47S, TSS1J47S

OPTICALLY ISOLATED, ZERO VOLTAGE TURN-ON,
ZERO CURRENT TURN-OFF, NORMALLY OPEN SSR

COMPUTER PERIPHERALS
MACHINE TOOL CONTROLS
PROCESS CONTROL SYSTEMS
TRAFFIC CONTROL SYSTEMS

- R.M.S On-State Current : $I_{T(RMS)}$=1A
- Repetitive Peak Off-State Voltage : V_{DRM}=400, 600V
- TTL Compatible
- Isolation Voltage : 2060V AC (t=1min.)
- Including Snubber Network

Unit in mm



TYPE	a	b
TSS1G45S TSS1J45S	7.2	7.62
TSS1G47S TSS1J47S	9.7	5.08

1. OUTPUT (AC)
2. OUTPUT (AC)
3. INPUT (+)
4. INPUT (−)

JEDEC	—	
EIAJ	—	
TOSHIBA	TSS1G45S TSS1J45S	10-45B1A
	TSS1G47S TSS1J47S	10-45B2A

Weight : 11g

MAXIMUM RATINGS (Ta = 25°C)

INPUT (CONTROL)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Control Input Voltage (DC) (Note 1)	$V_{F(IN)}$	6	V
Control Input Current (DC)	$I_{F(IN)}$	20	mA

OUTPUT (LOAD)

Repetitive Peak Off-State Voltage	TSS1G45S TSS1G47S	V_{DRM}	400	V
	TSS1J45S TSS1J47S		600	
Nominal AC Line Voltage	TSS1G45S TSS1G47S	V_{AC}	120	V
	TSS1J45S TSS1J47S		240	
R.M.S On-State Current		$I_{T(RMS)}$	1	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		I_{TSM}	12 (50Hz)	A
Operating Frequency Range		f	45~65	Hz
Isolation Voltage (t=1min., Input to Output)		BV_S / AC	2060	V
Operating Temperature Range		T_{opr}	−30~80	°C
Storage Temperature Range		T_{stg}	−30~80	°C

Note 1 : Driving input rating : Insert an external resistance into SSR when the power supply over 6V is used.

Note 2 : Mounting : Soldering of printed wiring board should be used under 260°C and 10 second.

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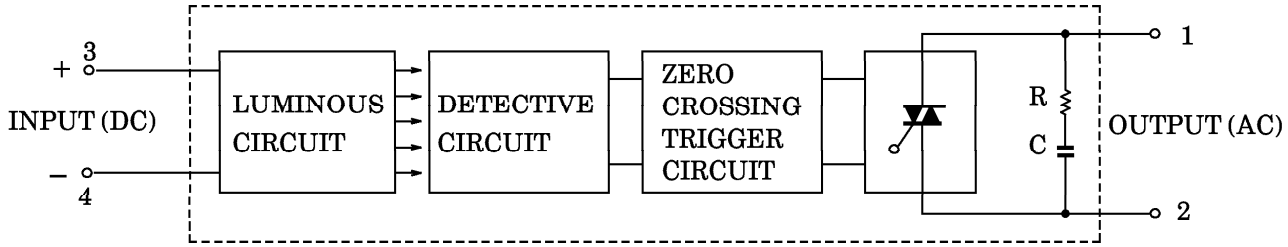
ELECTRICAL CHARACTERISTICS (Ta = 25°C)
INPUT (CONTROL)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Pick Up Voltage	V_{FT}	$V_{AC}=100V_{rms}$ Resistive Load (RL = 100Ω)	—	—	4.5	V
Drop Out Voltage	V_{FD}		1.0	—	—	V
Input Resistance	R (IN)		—	300	—	Ω

OUTPUT (LOAD)

Off-State Leakage Current	TSS1G45S TSS1G47S	I_{OL}	$V_{AC}=100V_{rms}$, f = 50Hz	—	—	1	mA
	TSS1J45S TSS1J47S		$V_{AC}=200V_{rms}$, f = 50Hz	—	—	2	
Peak On-State Voltage		V_{TM}	$I_{T\,(RMS)}=6A$	—	—	2.6	V
Peak Turn-On Voltage		V_{ON}	$V_{AC}=100V_{rms}$ (Fig.2)	—	—	5	V
dv / dt (Off-State)		dv / dt	$V_{DRM}=0.7\times$Rated	50	—	—	V / μs
dv / dt (Commutating)		(dv / dt) c	$V_{DRM}=0.7\times$Rated, $I_T=1A$	2	—	—	V / μs
Turn-On Time		t_{on}	$V_{AC}=100V_{rms}$ Resistive Load ($R_L=100\Omega$)	—	—	1 / 2	Cycle
Turn-Off Time		t_{off}		—	—	1 / 2	Cycle
Isolation Resistance		R_S	V = 1kV, R.H = 40~60%	—	10^9	—	Ω

EQUIVALENT CIRCUIT



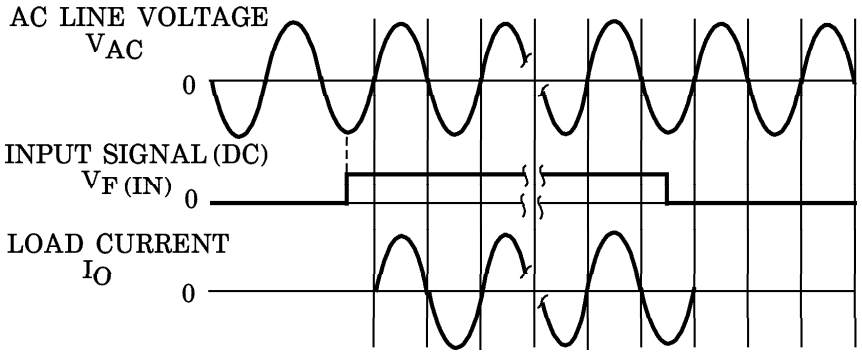


Fig.1 ZERO VOLTAGE SWITCHING WAVEFORM

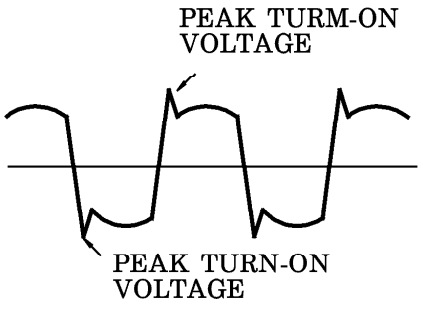


Fig.2 PEAK TURN-ON VOLTAGE WAVEFOM

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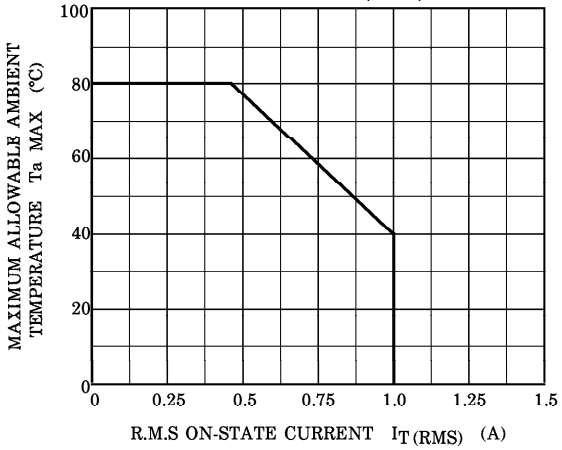
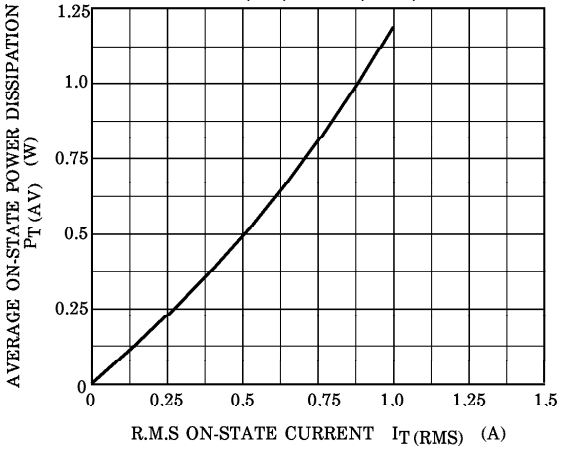
Ta MAX – $I_{T\,(RMS)}$



$P_{T\,(AV)}$ – $I_{T\,(RMS)}$



SURGE ON-STATE CURRENT (NON-REPETITIVE)