

TOSHIBA SOLID STATE AC RELAY

TSS5G45S, TSS5J45S

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

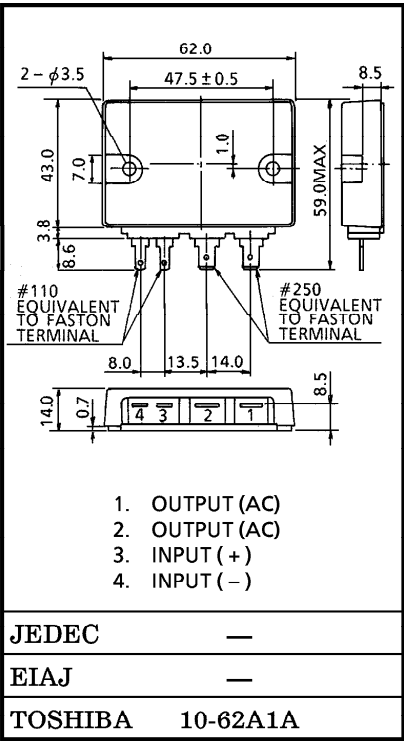
Unit in mm

COMPUTER PERIPHERALS  
MACHINE TOOL CONTROLS  
PROCESS CONTROL SYSTEMS  
TRAFFIC CONTROL SYSTEMS

- R.M.S On-State Current :  $I_T(RMS)=5A$
- Repetitive Peak Off-State Voltage :  $V_{DRM}=400, 600V$
- TTL Compatible
- Isolation Voltage : 1500V AC (t=1min.)
- Including Snubber Network

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



Weight : 50g

OUTPUT (LOAD)

Repetitive Peak Off-State Voltage	TSS5G45S	V <sub>DRM</sub>	400	V
	TSS5J45S		600	
Nominal AC Line Voltage	TSS5G45S	V <sub>AC</sub>	120	V
	TSS5J45S		240	
R.M.S On-State Current		I <sub>T</sub> (RMS)	5	A
Peak One Cycle Surge On-State Current (Non-Repetitive)		I <sub>TSM</sub>	70 (50Hz)	A
Operating Frequency Range		f	45~65	Hz
Isolation Voltage (t=1min., Input to Output and Input/Output to Base)		BV <sub>S</sub> / AC	1500	V
Operating Temperature Range		T <sub>opr</sub>	−30~80	°C
Storage Temperature Range		T <sub>stg</sub>	−30~80	°C

- Note 1 : Driving input rating : Insert an external resistance into SSR when the power supply over 6V is used.
- Note 2 : Don't dip the SSR body into the organic solvent like Trichloroethylene, when washing the flux on the terminal.
- Note 3 : For installation of SSR, use spring-wahers, etc., to prevent screws from loosening.

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● TOSHIBA is continually working to improve the quality and the 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 observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product 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 products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

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 ( $R_L=100\Omega$ )	—	—	4.5	V
Drop Out Voltage	$V_{FD}$		1.0	—	—	V
Input Resistance	$R(IN)$		—	300	—	$\Omega$

OUTPUT (LOAD)

Off-State Leakage Current	TSS5G45S	$I_{OL}$	$V_{AC}=100V_{rms}, f=50Hz$	—	—	7	mA
	TSS5J45S		$V_{AC}=200V_{rms}, f=50Hz$	—	—	14	
Peak On-State Voltage	$V_{TM}$	$I_{TM}=12A$		—	—	1.9	V
Peak Turn-On Voltage	$V_{ON}$	$V_{AC}=100V_{rms}, f=50Hz$ (Fig.2)		—	—	7	V
$dv/dt$ (Off-State)	$dv/dt$	$V_{DRM}=0.7\times\text{Rated}$		50	—	—	$V/\mu s$
$dv/dt$ (Commutaing)	$(dv/dt)_c$	$V_{DRM}=0.7\times\text{Rated}, I_T=8A$		2	—	—	$V/\mu s$
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	
Isolation Resistance	$R_S$	$V=1kV, R.H=40\sim60\%$		—	$10^9$	—	$\Omega$
Thermal Resistance	$R_{th(j-c)}$	AC		—	—	5	$^{\circ}C/W$

EQUIVALEN CIRCUIT

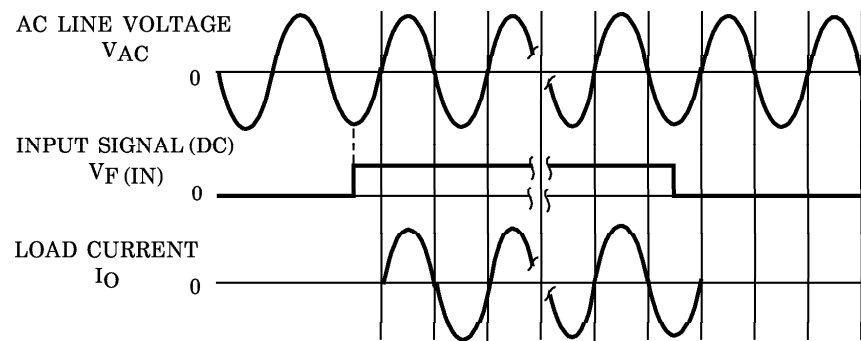
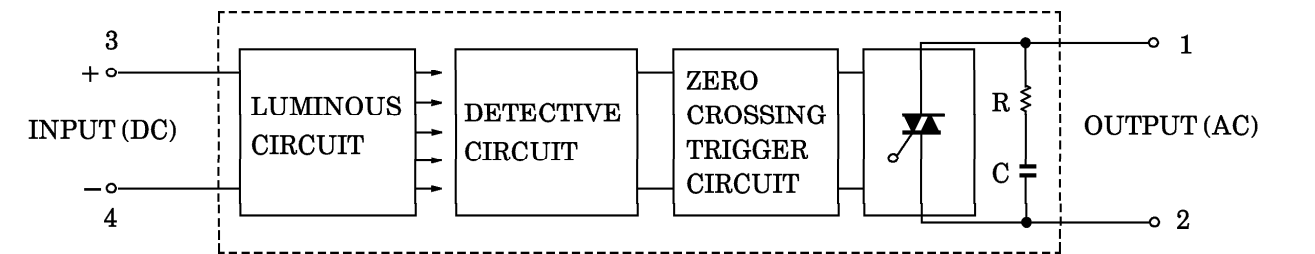


Fig.1 ZERO VOLTAGE SWITCHING WAVEFORM

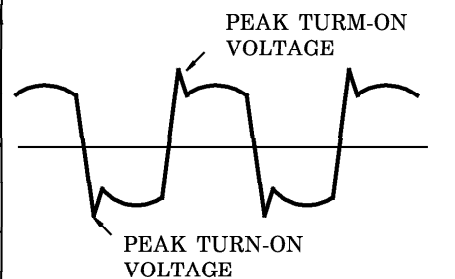


Fig.2 PEAK TURN-ON VOLTAGE WAVEFOM

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