

## TOSHIBA SOLID STATE AC RELAY

**TSS2G45S, TSS2J45S, TSS2G47S, TSS2J47S**

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

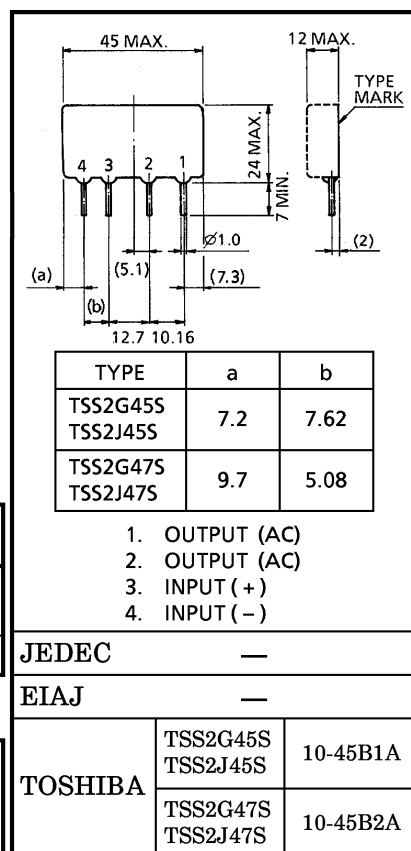
- R.M.S On-State Current :  $I_T(\text{RMS}) = 2\text{A}$
- Repetitive Peak Off-State Voltage :  $V_{\text{DRM}} = 400, 600\text{V}$
- TTL Compatible
- Isolation Voltage :  $2060\text{V AC (}t=1\text{min.)}$
- Including Snubber Network

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

| CHARACTERISTIC                         | SYMBOL           | RATING | UNIT |
|----------------------------------------|------------------|--------|------|
| Control Input Voltage (DC)<br>(Note 1) | $V_F(\text{IN})$ | 6      | V    |
| Control Input Current (DC)             | $I_F(\text{IN})$ | 20     | mA   |

## OUTPUT (LOAD)

|                                                           |                      |                      |           |    |
|-----------------------------------------------------------|----------------------|----------------------|-----------|----|
| Repetitive Peak<br>Off-State Voltage                      | TSS2G45S<br>TSS2G47S | V <sub>DRM</sub>     | 400       | V  |
|                                                           | TSS2J45S<br>TSS2J47S |                      | 600       |    |
| Nominal AC Line<br>Voltage                                | TSS2G45S<br>TSS2G47S | V <sub>AC</sub>      | 120       | V  |
|                                                           | TSS2J45S<br>TSS2J47S |                      | 240       |    |
| R.M.S On-State Current<br>(with air velocity 5m/s)        |                      | I <sub>T</sub> (RMS) | 2         | A  |
| Peak One Cycle Surge On-State<br>Current (Non-Repetitive) |                      | I <sub>TSM</sub>     | 27 (50Hz) | A  |
| Operating Frequency Range                                 |                      | f                    | 45~65     | Hz |
| Isolation Voltage<br>(t=1min., Input to Output)           |                      | BV <sub>S</sub> / AC | 2060      | V  |
| Operating Temperature Range                               |                      | T <sub>opr</sub>     | −30~80    | °C |
| Storage Temperature Range                                 |                      | T <sub>stg</sub>     | −30~80    | °C |



Weight : 11g

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.

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

| CHARACTERISTIC   | SYMBOL          | TEST CONDITION                                                                  | MIN. | TYP. | MAX. | UNIT |
|------------------|-----------------|---------------------------------------------------------------------------------|------|------|------|------|
| Pick Up Voltage  | V <sub>FT</sub> | V <sub>AC</sub> = 100V <sub>rms</sub><br>Resistive Load (R <sub>L</sub> = 100Ω) | —    | —    | 4.5  | V    |
| Drop Out Voltage | V <sub>FD</sub> |                                                                                 | 1.0  | —    | —    | V    |
| Input Resistance | R (IN)          |                                                                                 | —    | 300  | —    | Ω    |

OUTPUT (LOAD)

|                           |                      |                  |                                                                                 |    |                 |       |        |
|---------------------------|----------------------|------------------|---------------------------------------------------------------------------------|----|-----------------|-------|--------|
| Off-State Leakage Current | TSS2G45S<br>TSS2G47S | I <sub>OL</sub>  | V <sub>W</sub> (RMS) = 100V <sub>rms</sub> , f=50Hz                             | —  | —               | 1     | mA     |
|                           | TSS2J45S<br>TSS2J47S |                  | V <sub>W</sub> (RMS) = 200V <sub>rms</sub> , f=50Hz                             | —  | —               | 2     |        |
| Peak On-State Voltage     |                      | V <sub>TM</sub>  | I <sub>TM</sub> = 4.5A                                                          | —  | —               | 1.5   | V      |
| Peak Turn-On Voltage      |                      | V <sub>ON</sub>  | V <sub>AC</sub> = 100V <sub>rms</sub> (Fig.2)                                   | —  | —               | 5     | V      |
| dv / dt (Off-State)       |                      | dv / dt          | V <sub>DRM</sub> = 0.7 × Rated                                                  | 50 | —               | —     | V / μs |
| dv / dt (Commutating)     |                      | (dv / dt) c      | V <sub>DRM</sub> = 0.7 × Rated, I <sub>T</sub> = 2A                             | 2  | —               | —     | V / μs |
| Turn-On Time              |                      | t <sub>on</sub>  | V <sub>AC</sub> = 100V <sub>rms</sub><br>Resistive Load (R <sub>L</sub> = 100Ω) | —  | —               | 1 / 2 | Cycle  |
| Turn-Off Time             |                      | t <sub>off</sub> |                                                                                 | —  | —               | 1 / 2 | Cycle  |
| Isolation Resistance      |                      | R <sub>S</sub>   | V = 1kV, R.H = 40~60%                                                           | —  | 10 <sup>9</sup> | —     | Ω      |

EQUIVALEN CIRCUIT

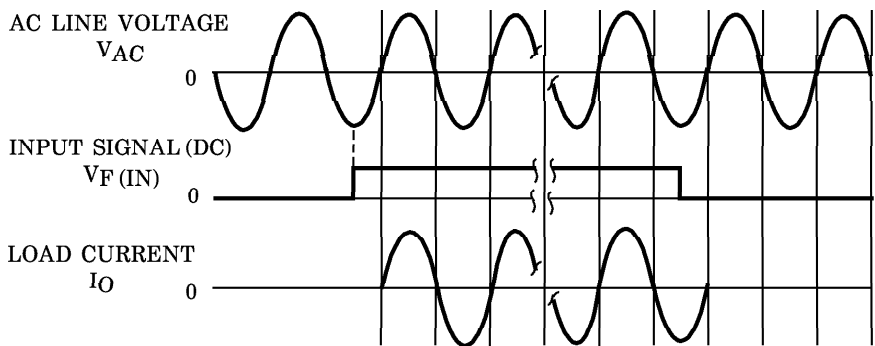
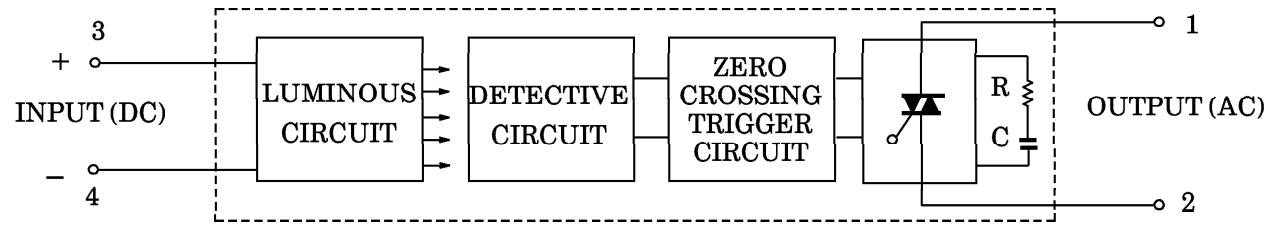


Fig.1 ZERO VOLTAGE SWITCHING WAVEFORM

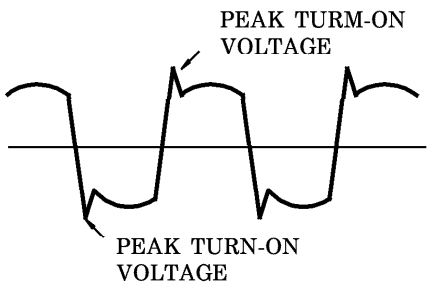
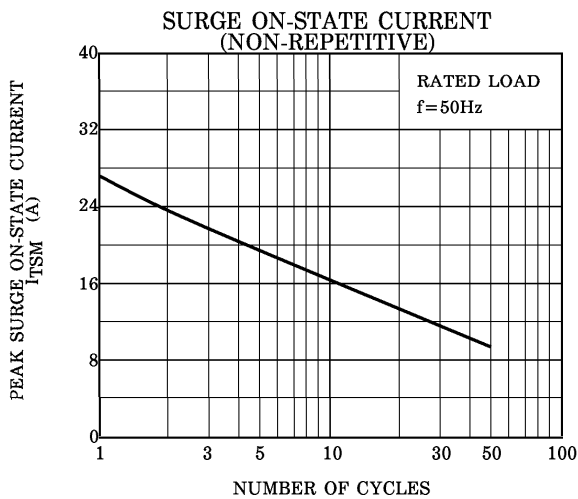
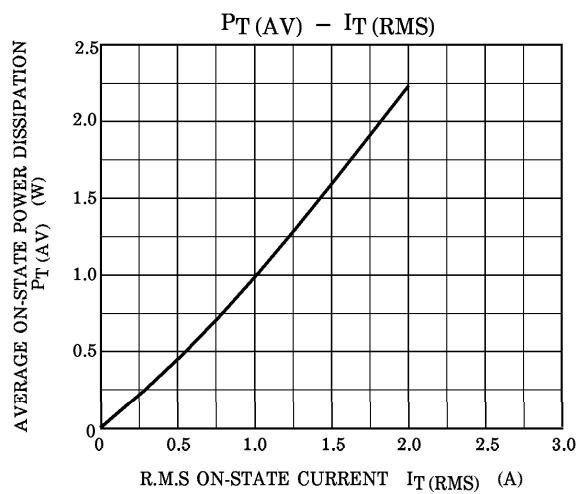
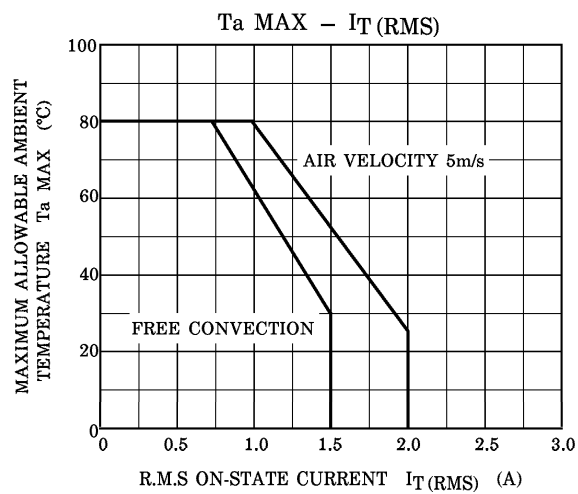


Fig.2 PEAK TURN-ON VOLTAGE WAVEFOM



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