

S101S15V/S101S16V S201S15V/S201S16V

SIP Type SSR with Built-in Snubber Circuit

■ Features

- High radiation resin mold package
 I_T : MAX. $3A_{rms}$
- Isolation voltage between input and output
 V_{iso} : 3 000 V_{rms}
- Built-in zero-cross circuit
(S101S16V/S201S16V)
- Built-in snubber circuit
- Recognized by UL, file No. E94758
Approved by CSA, file No. LR63705

■ Applications

- Air conditioners
- OA equipment

■ Model Line-ups

| | For 100V lines | For 200V lines |
|--------------------------------|-----------------|-----------------|
| No built-in zero-cross circuit | S101S15V | S201S15V |
| Built-in zero-cross circuit | S101S16V | S201S16V |

■ Absolute Maximum Ratings (Ta = 25°C)

| Parameter | Symbol | Ratings | | Unit | |
|--------------------------|---|-------------|------------------------------------|-------------------|------------------|
| | | 100V line | 200V line | | |
| Input | Forward current | I_F | 50 | mA | |
| | Reverse current | V_R | 6 | V | |
| | RMS ON-state current | I_T | 3 ($T_c \leq 100^\circ\text{C}$) | | |
| Output | *1 Peak one cycle surge current | I_{surge} | 30 | A | |
| | Repetitive peak OFF-state voltage | V_{DRM} | 400 | 600 | V |
| | Critical rate of rise of ON-state current | di_T/dt | 40 | | A/ μs |
| | Operating frequency | f | 45 to 65 | | H _Z |
| | Operating temperature | T_{opr} | - 20 to + 80 | | °C |
| | Storage temperature | T_{stg} | - 30 to + 100 | | °C |
| *2 Isolation voltage | V_{iso} | 3.0 | | kV _{rms} | |
| *3 Soldering temperature | T_{sol} | 260 | | °C | |

*1 60H_Z sine wave, $T_j = 25^\circ\text{C}$

*2 AC 60Hz for 1 minute, 40 to 60% RH

Isolation voltage measuring method:

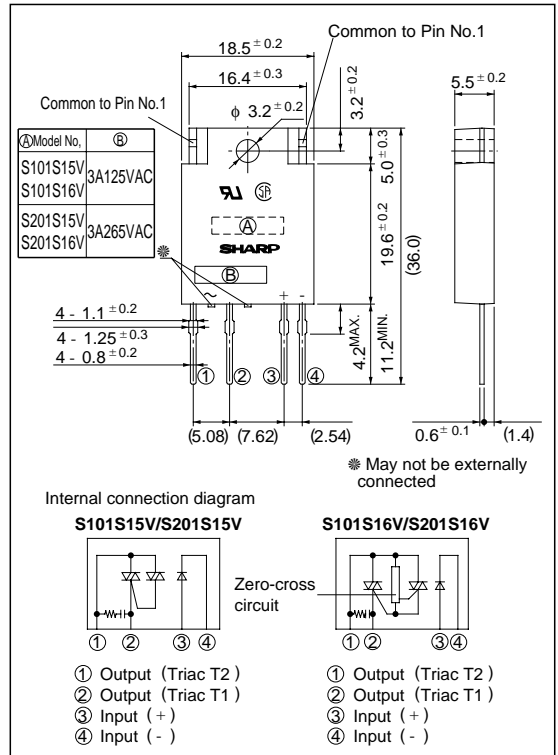
- Dielectric withstand tester, with zero-cross circuit shall be used.
- The waveform of applied voltage shall be sine wave.
- It shall be applied voltage between input and output.

(Input and output shall be short-circuited respectively)

*3 For 10 seconds

■ Outline Dimensions

(Unit : mm)



Electrical Characteristics

(Ta = 25°C)

| Parameter | | Symbol | Condition | MIN. | TYP. | MAX. | Unit | |
|--|--|--------------------------------|--|--|------------------|------------------|------------------|-------------------|
| Input | Forward voltage | V _F | I _F = 20mA | - | 1.2 | 1.4 | V | |
| | Reverse current | I _R | V _R = 3V | - | - | 10 ⁻⁴ | A | |
| Output | ON-state voltage | V _T | Resistance load, I _F = 20mA, I _T = 1.5A _{rms} | - | - | 1.5 | V _{rms} | |
| | Minimum operating current | S101S15V/S16V S201S15V/S16V | I _{OP} | V _{OUT} = 120V _{rms} | - | - | 50 | mA _{rms} |
| | | | | V _{OUT} = 240V _{rms} | - | - | - | - |
| | Open circuit leak current | S101S15V/S16V S201S15V/S16V | I _{leak} | V _{OUT} = 120V _{rms} | - | - | 5 | mA _{rms} |
| | | | | V _{OUT} = 240V _{rms} | - | - | 10 | - |
| | Critical rate of rise of OFF-state voltage | | dV/dt | V _D = 2/3V _{DRM} | 30 | - | - | V/μs |
| Commutation critical rate of rise of OFF-state voltage | | (dV/dt) _c | T _J = 125°C, V _D = 400V, dI _T /d _t = -1.5A/ms | 4 | - | - | V/μs | |
| Transfer characteristics | Minimum trigger current | S101S15V/S201S15V | I _{FT} | V _D = 12V, R _L = 30Ω | - | - | 15 | mA |
| | | S101S16V/S201S16V | | V _D = 6V, R _L = 30Ω | - | - | - | - |
| | Isolation resistance | | R _{ISO} | DC500V, R _H = 40 to 60% | 10 ¹⁰ | - | - | Ω |
| | Zero-cross voltage | S101S16V | V _{OX} | I _F = 15mA | - | - | 35 | V |
| | | S201S16V | | | - | - | 35 | - |
| | Turn-on time | S101S15V/S201S15V | ton | AC50H _Z | - | - | 1 | ms |
| | | S101S16V/S201S16V | | | - | - | 10 | - |
| | Turn-off time | | toff | AC50H _Z | - | - | 10 | ms |
| Thermal resistance Between junction and case | | R _{th(j-c)} | - | - | 6 | - | °C/W | |
| Thermal resistance Between junction and ambient | | R _{th(j-a)} | - | - | 45 | - | °C/W | |

Fig. 1 RMS ON-state Current vs. Ambient Temperature

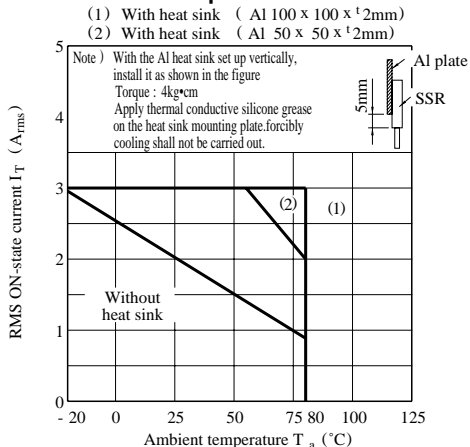


Fig. 2 RMS ON-state Current vs. Case Temperature

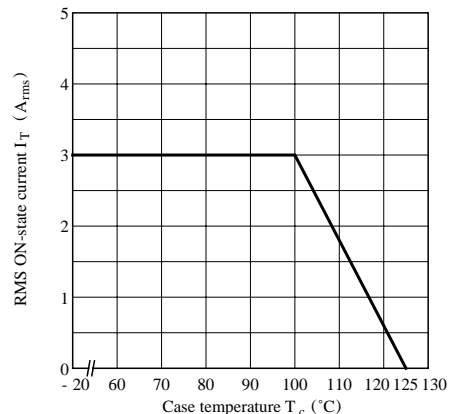


Fig. 3 Forward Current vs. Ambient Temperature

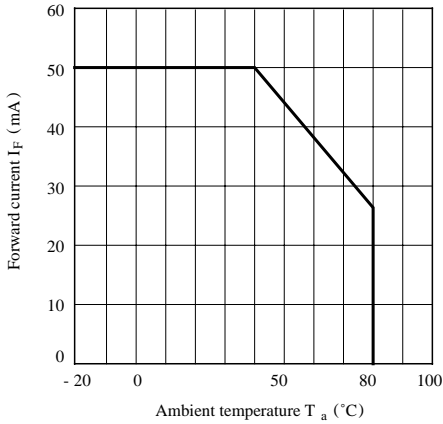


Fig. 5 Forward Current vs. Forward Voltage

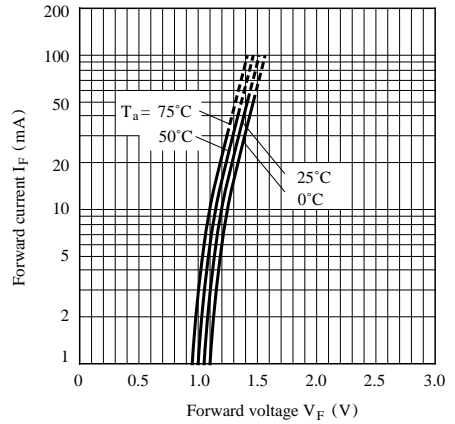


Fig. 5 Surge Current vs. Power-on cycle

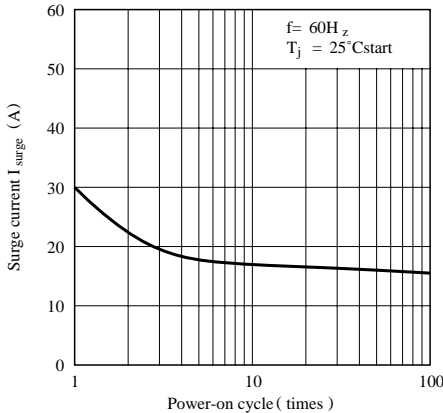


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

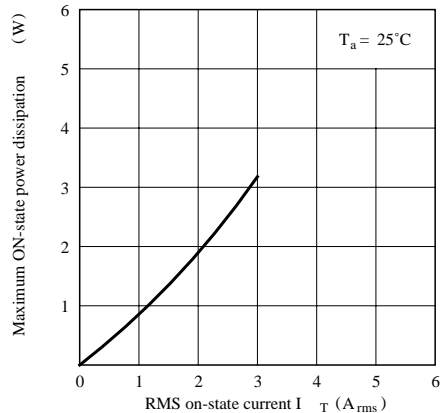


Fig. 7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S15V/S201S15V)

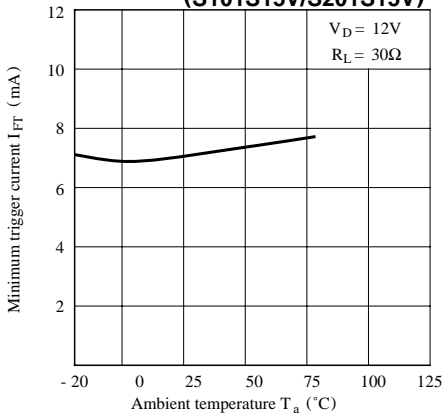


Fig. 7-b Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S16V/S201S16V)

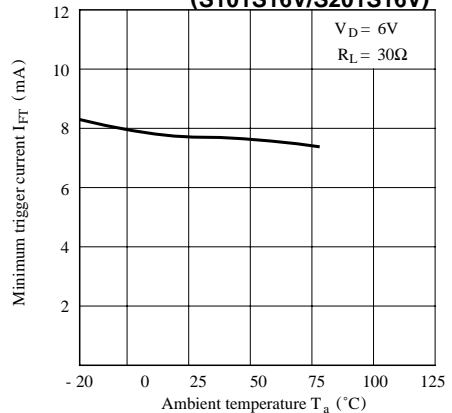


Fig. 8-a Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(S101S15V, S101S16V)

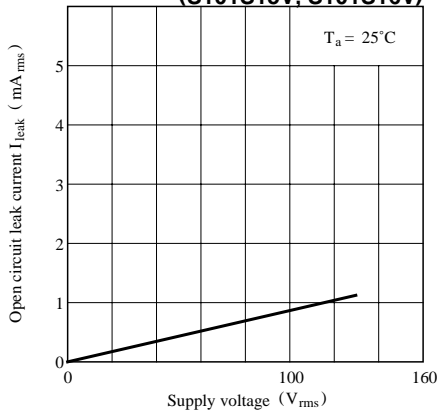
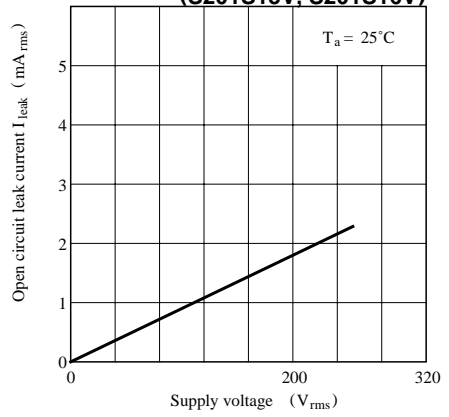


Fig. 8-b Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(S201S15V, S201S16V)



● Please refer to the chapter “Precautions for Use.”