

# S101S15V/S101S16V S201S15V/S201S16V

## SIP Type SSR with Built-in Snubber Circuit

### ■ Features

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

### ■ Applications

1. Air conditioners
2. OA equipment

### ■ Model Line-ups

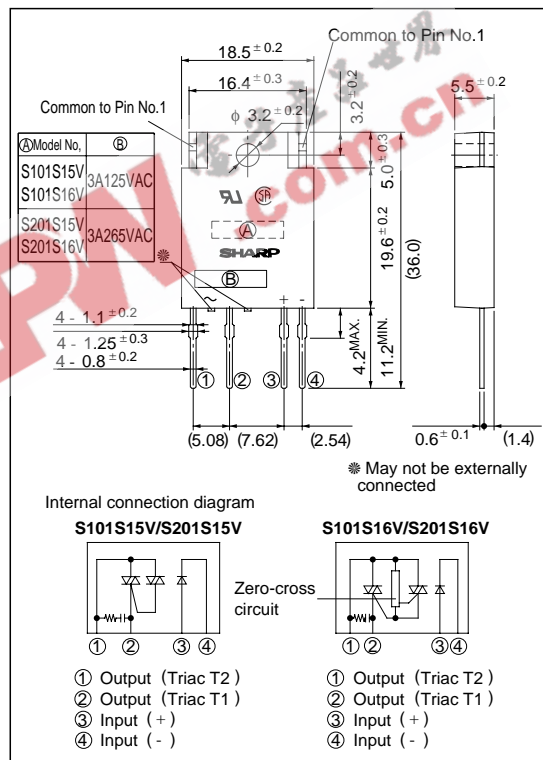
	For 100V lines	For 200V lines
No built-in zero-cross circuit	<b>S101S15V</b>	<b>S201S15V</b>
Built-in zero-cross circuit	<b>S101S16V</b>	<b>S201S16V</b>

### ■ 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	$V$
Output	RMS ON-state current	$I_T$	3 ( $T_c \leq 100^\circ C$ )	$A_{rms}$
	*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	$A/\mu s$
	Operating frequency	$f$	45 to 65	$Hz$
Operating temperature		$T_{opr}$	- 20 to + 80	$^\circ C$
Storage temperature		$T_{stg}$	- 30 to + 100	$^\circ C$
*2 Isolation voltage		$V_{iso}$	3.0	$kV_{rms}$
*3 Soldering temperature		$T_{sol}$	260	$^\circ C$

### ■ Outline Dimensions

(Unit : mm)

\*1 60Hz sine wave,  $T_j = 25^\circ C$ 

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

Isolation voltage measuring method:

(1) Dielectric withstand tester, with zero-cross circuit shall be used.

(2) The waveform of applied voltage shall be sine wave.

(3) It shall be applied voltage between input and output.

(Input and output shall be short-circuited respectively)

\*3 For 10 seconds

## ■ Electrical Characteristics

(Ta = 25°C)

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	$V_F$	$I_F = 20\text{mA}$	-	1.2	1.4	V	
	Reverse current	$I_R$	$V_R = 3\text{V}$	-	-	$10^{-4}$	A	
ON-state voltage		$V_T$	Resistance load, $I_F = 20\text{mA}$ , $I_T = 1.5\text{A}_{\text{rms}}$	-	-	1.5	$\text{V}_{\text{rms}}$	
Output	Minimum operating current	S101S15V/16V	$V_{\text{OUT}} = 120\text{V}_{\text{rms}}$	-	-	50	$\text{mA}_{\text{rms}}$	
		S201S15V/16V	$V_{\text{OUT}} = 240\text{V}_{\text{rms}}$	-	-	50	$\text{mA}_{\text{rms}}$	
	Open circuit leak current	S101S15V/16V	$V_{\text{OUT}} = 120\text{V}_{\text{rms}}$	-	-	5	$\text{mA}_{\text{rms}}$	
		S201S15V/16V	$V_{\text{OUT}} = 240\text{V}_{\text{rms}}$	-	-	10	$\text{mA}_{\text{rms}}$	
Critical rate of rise of OFF-state voltage		$dV/dt$	$V_D = 2/3V_{\text{DRM}}$	30	-	-	$\text{V}/\mu\text{s}$	
Commutation critical rate of rise of OFF-state voltage		$(dV/dt)_c$	$T_j = 125^\circ\text{C}$ , $V_D = 400\text{V}$ , $dI_T/dt = -1.5\text{A}/\text{ms}$	4	-	-	$\text{V}/\mu\text{s}$	
Transfer characteristics	Minimum trigger current	S101S15V/S201S15V	$I_{\text{FT}}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	-	-	15	mA
		S101S16V/S201S16V	$I_{\text{FT}}$	$V_D = 6\text{V}$ , $R_L = 30\Omega$	-	-	15	mA
	Isolation resistance		$R_{\text{ISO}}$	$\text{DC}500\text{V}$ , $R_H = 40$ to $60\%$	$10^{10}$	-	-	$\Omega$
	Zero-cross voltage	S101S16V	$V_{\text{OX}}$	$I_F = 15\text{mA}$	-	-	35	V
		S201S16V			-	-	35	V
	Turn-on time	S101S15V/S201S15V	$t_{\text{on}}$	AC50Hz	-	-	1	ms
		S101S16V/S201S16V			$t_{\text{on}}$	-	-	10
Turn-off time		$t_{\text{off}}$	AC50Hz	-	-	10	ms	
Thermal resistance Between junction and case		$R_{\text{th(j-c)}}$	-	-	6	-	$^\circ\text{C}/\text{W}$	
Thermal resistance Between junction and ambient		$R_{\text{th(j-a)}}$	-	-	45	-	$^\circ\text{C}/\text{W}$	

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

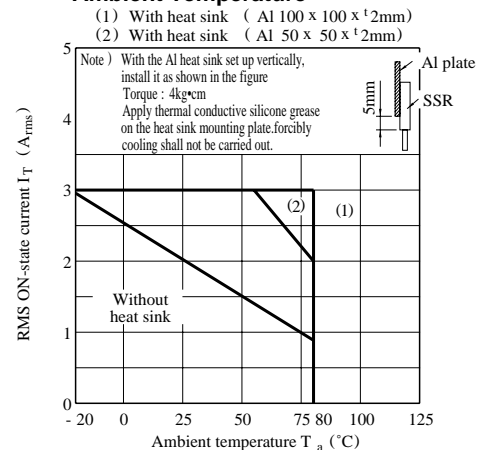


Fig. 2 RMS ON-state Current vs. Case Temperature

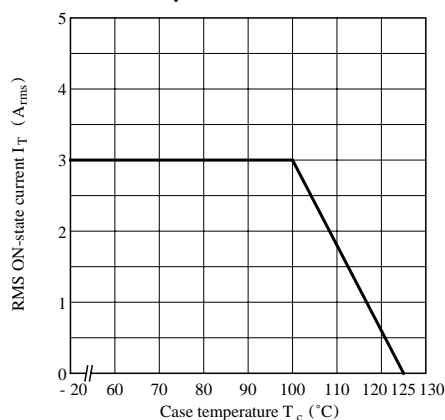


Fig. 3 Forward Current vs. Ambient Temperature

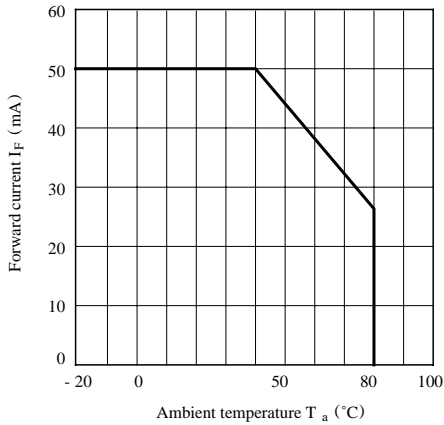


Fig. 5 Forward Current vs. Forward Voltage

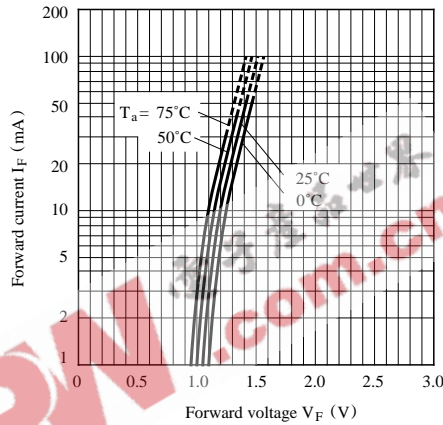


Fig. 5 Surge Current vs. Power-on cycle

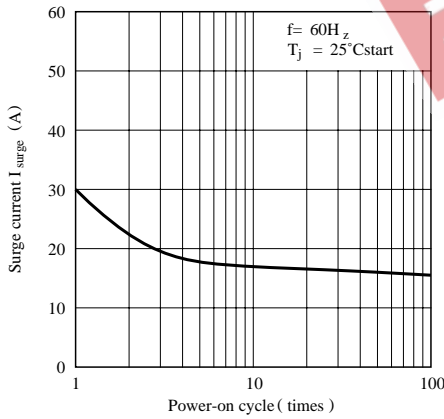


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

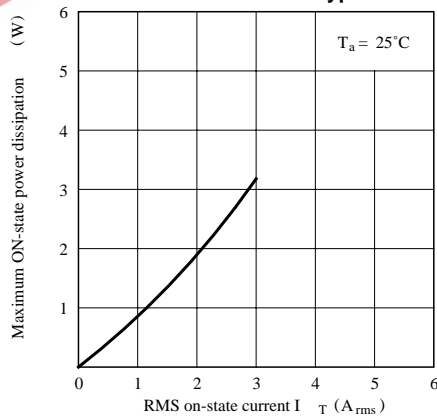


Fig. 7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S15V/S201S15V)

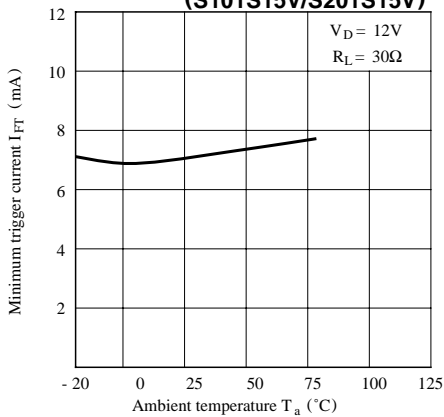
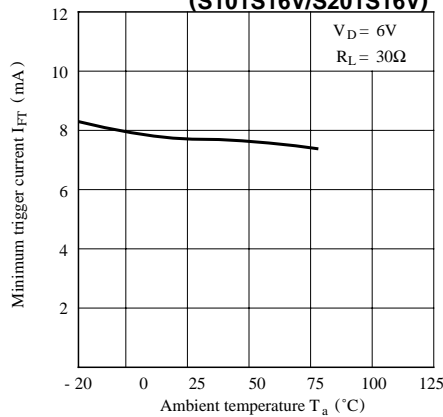
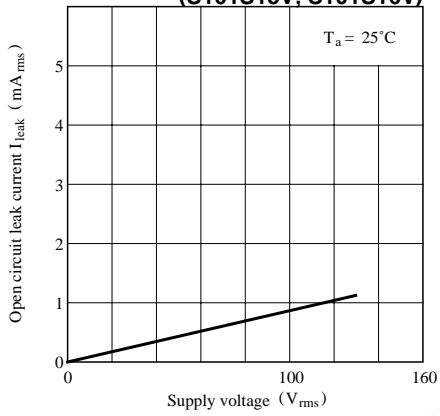


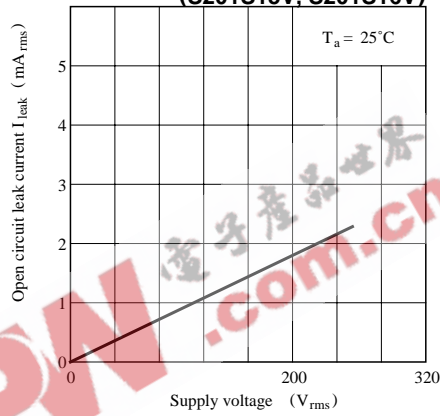
Fig. 7-b Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S16V/S201S16V)



**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.”