

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:

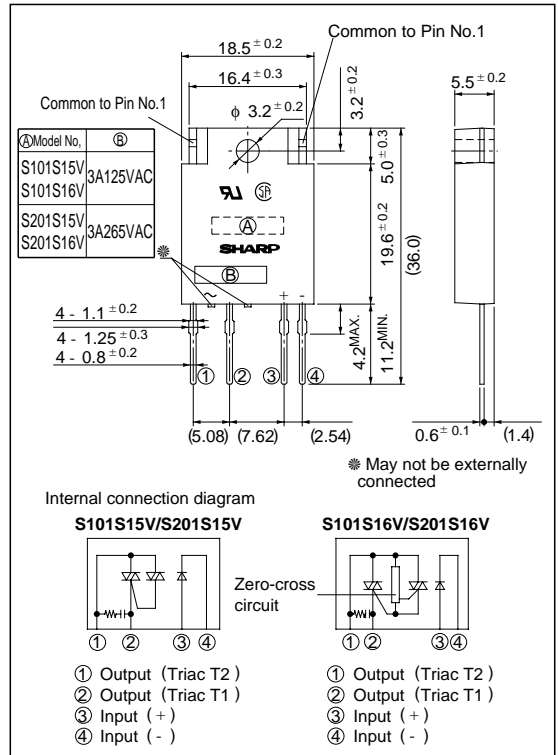
- Dielectric withstand tester, with zero-cross circuit shall be used.
- The waveform of applied voltage shall be sine wave.
- It shall be applied voltage between input and output.

(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	$I_F = 20\text{mA}$	-	1.2	1.4	V	
	Reverse current	I_R	$V_R = 3\text{V}$	-	-	10^{-4}	A	
Output	ON-state voltage	V_T	Resistance load, $I_F = 20\text{mA}$, $I_T = 1.5\text{A}_{\text{rms}}$	-	-	1.5	V_{rms}	
	Minimum operating current	S101S15V/16V S201S15V/16V	I_{OP}	$V_{OUT} = 120\text{V}_{\text{rms}}$	-	-	50	mA_{rms}
				$V_{OUT} = 240\text{V}_{\text{rms}}$				
	Open circuit leak current	S101S15V/16V S201S15V/16V	I_{leak}	$V_{OUT} = 120\text{V}_{\text{rms}}$	-	-	5	mA_{rms}
				$V_{OUT} = 240\text{V}_{\text{rms}}$	-	-	10	
	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		$(dV/dt)_c$	$T_j = 125^\circ\text{C}$, $V_D = 400\text{V}$, $dI_T/dt = -1.5\text{A/ms}$	4	-	-	$\text{V}/\mu\text{s}$	
Transfer characteristics	Minimum trigger current	S101S15V/S201S15V	I_{FT}	$V_D = 12\text{V}$, $R_L = 30\Omega$	-	-	15	mA
		S101S16V/S201S16V		$V_D = 6\text{V}$, $R_L = 30\Omega$				
	Isolation resistance		R_{ISO}	DC500V, $R_H = 40$ to 60%	10^{10}	-	-	Ω
	Zero-cross voltage	S101S16V S201S16V	V_{OX}	$I_F = 15\text{mA}$	-	-	35	V
					-	-	35	
	Turn-on time	S101S15V/S201S15V S101S16V/S201S16V	ton	AC50H _Z	-	-	1	ms
					-	-	10	
	Turn-off time		toff	AC50H _Z	-	-	10	ms
Thermal resistance Between junction and case		$R_{th(j-c)}$	-	-	6	-	$^\circ\text{C/W}$	
Thermal resistance Between junction and ambient		$R_{th(j-a)}$	-	-	45	-	$^\circ\text{C/W}$	

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

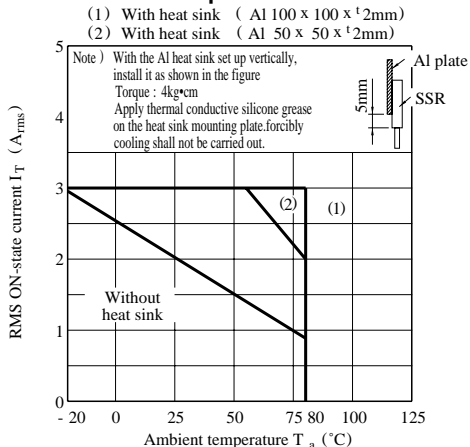


Fig. 2 RMS ON-state Current vs. Case Temperature

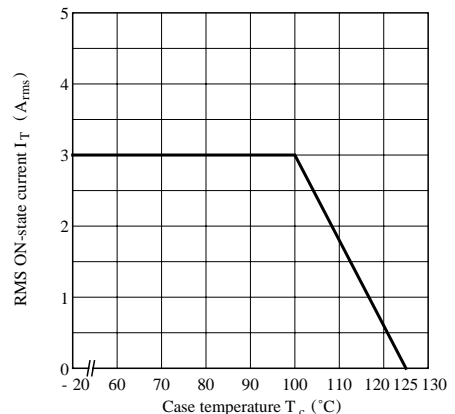


Fig. 3 Forward Current vs. Ambient Temperature

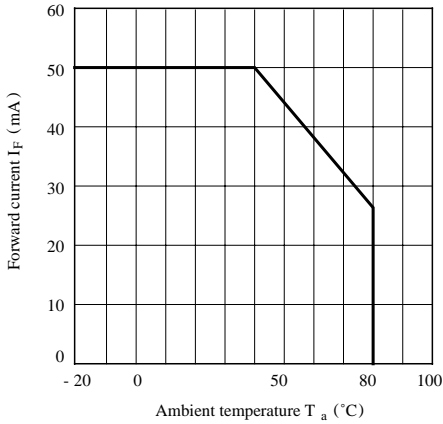


Fig. 5 Forward Current vs. Forward Voltage

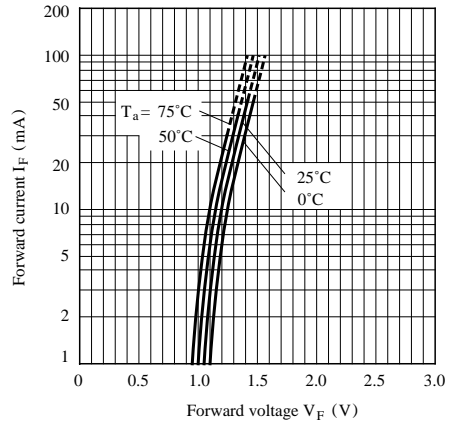


Fig. 5 Surge Current vs. Power-on cycle

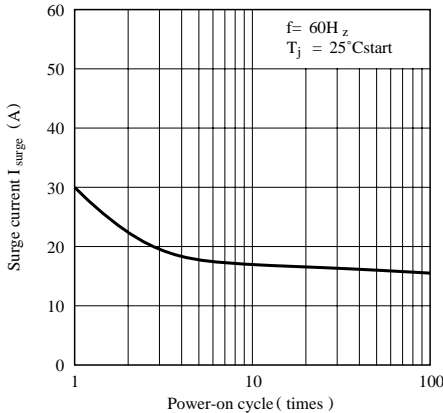


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

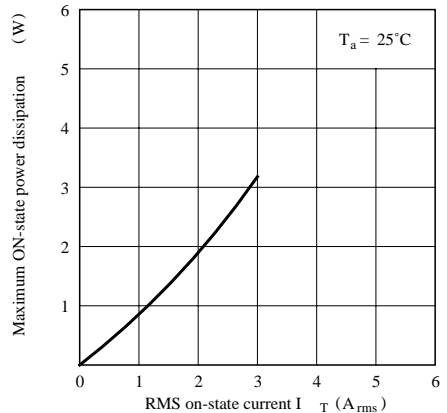


Fig. 7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S15V/S201S15V)

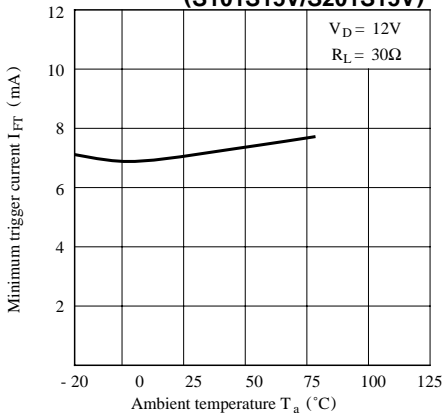


Fig. 7-b Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S16V/S201S16V)

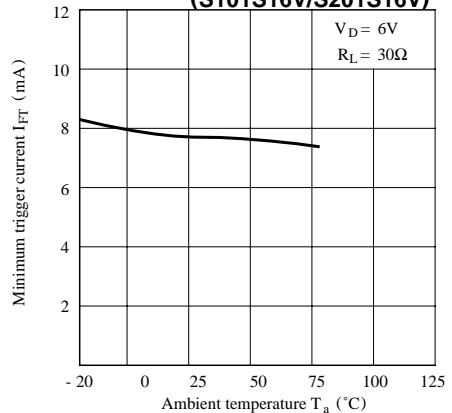


Fig. 8-a Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(S101S15V, S101S16V)

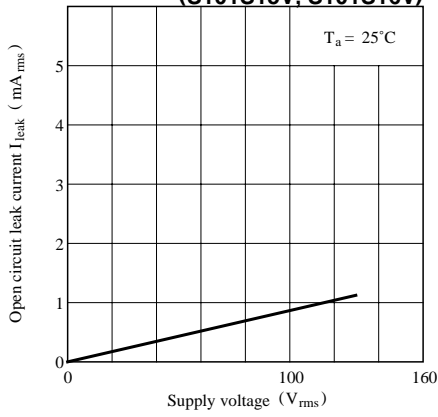
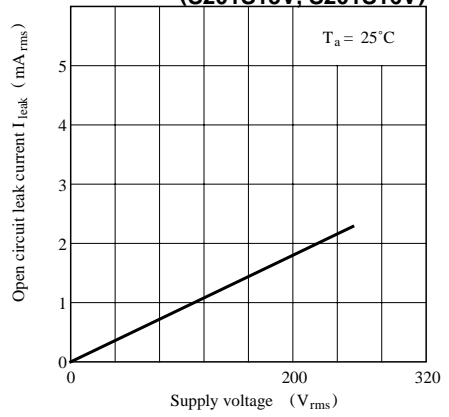


Fig. 8-b Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(S201S15V, S201S16V)



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