

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:

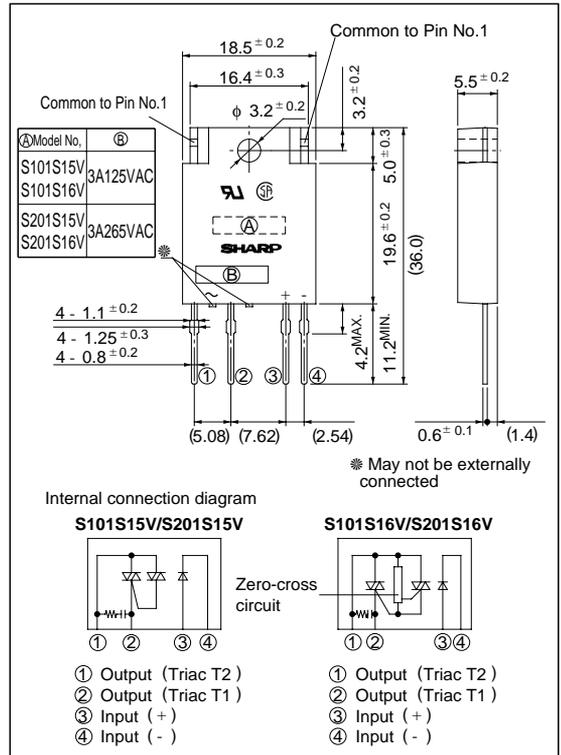
- Dielectric withstand tester, with zero-cross circuit shall be used.
- The waveform of applied voltage shall be sine wave.
- It shall be applied voltage between input and output.

(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/16V S201S15V/16V	I _{OP}	V _{OUT} = 120V _{rms}	-	-	50	mA _{rms}
				V _{OUT} = 240V _{rms}	-	-		
	Open circuit leak current	S101S15V/16V S201S15V/16V	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

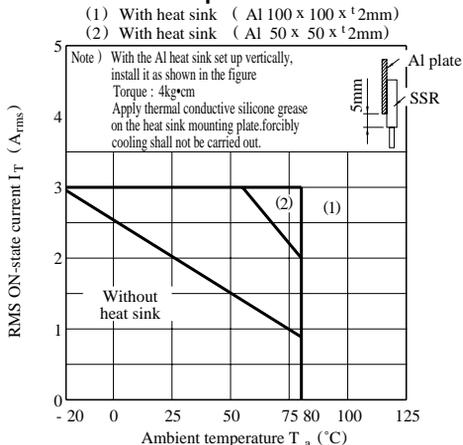


Fig. 2 RMS ON-state Current vs. Case Temperature

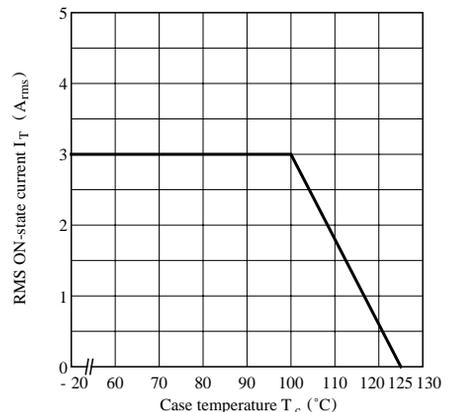


Fig. 3 Forward Current vs. Ambient Temperature

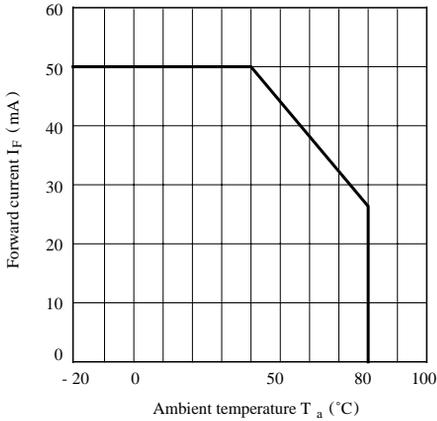


Fig. 5 Forward Current vs. Forward Voltage

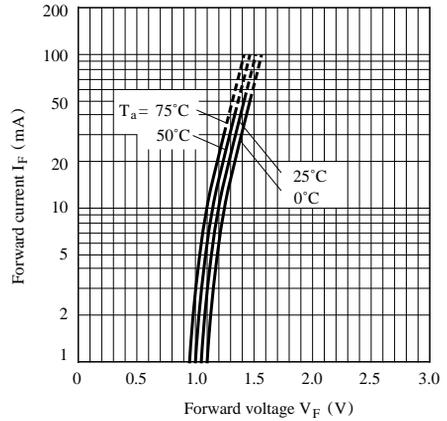


Fig. 5 Surge Current vs. Power-on cycle

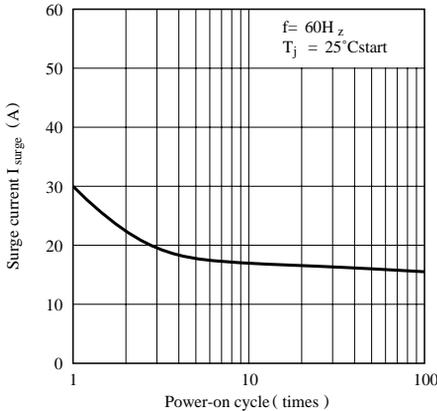


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

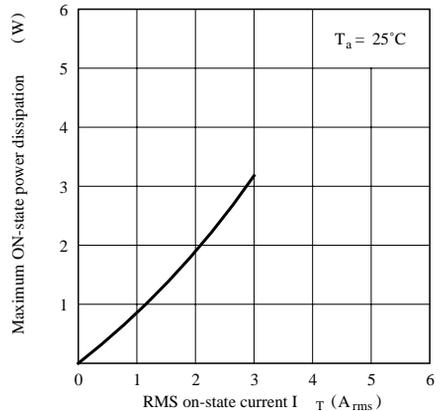


Fig. 7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S15V/S201S15V)

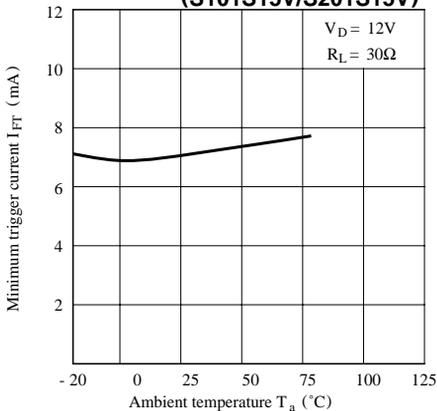


Fig. 7-b Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S16V/S201S16V)

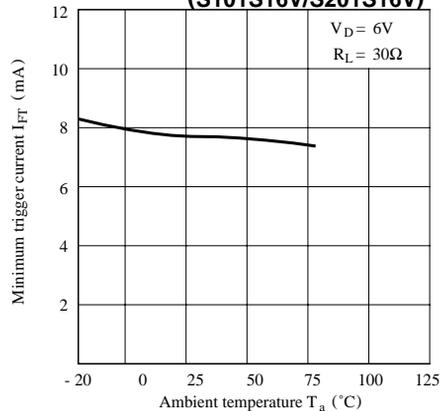


Fig. 8-a Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(S101S15V, S101S16V)

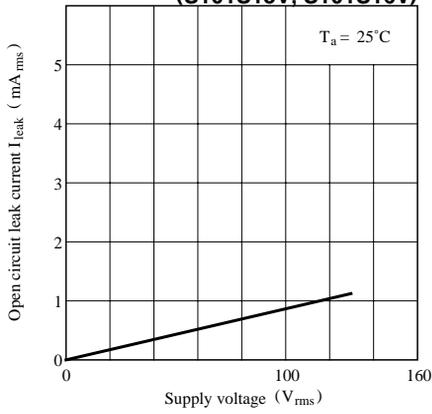
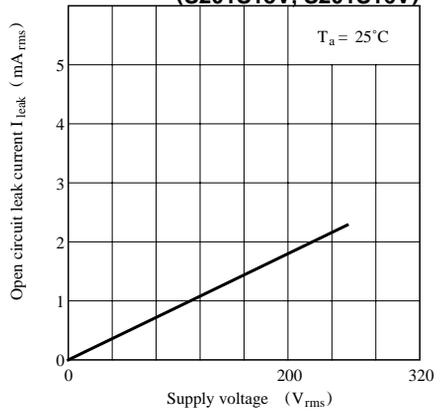


Fig. 8-b Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(S201S15V, S201S16V)



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

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