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

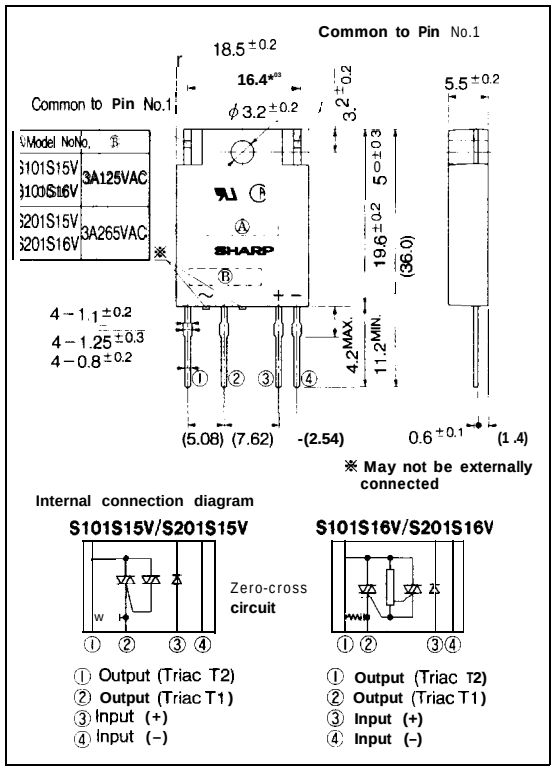
■ Applications

1. Air conditioners
2. OA equipment

■ Model **Line-ups**

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

■ Outline Dimensions (Unit : mm)



■ 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 ($T_c \leqq 100$℃)		A_{rms}
	*1 Peak one cycle surge current	I_{surge}	30		A
	Repetitive peak OFF-state voltage	V_{DRM}	400	600	V
	Non-repetitive peak OFF-state voltage	V_{DSM}	400	600	V
	Critical rate of rise of ON state current	dI_T/dt	4		A/μs
	Operating frequency	f	45 to 65		Hz
	Operating temperature	T_{opr}	−20 to +80		℃
	Storage temperature	T_{stg}	-30 to +100		℃
	*2 Isolation voltage	V_{iso}	3.0		kV_{rms}
	*3 Soldering temperature	T_{sol}	260		℃
	Load supply voltage	V_{out}	125	265	V_{rms}

*1 60Hz sine wave, T_j=25℃

*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

"In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

■ Electrical Characteristics

(Ta = 25℃)

	Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F = 20mA		1.2	1.4	V
	Rever.se current		I_R	V_R = 3V		—	10^{-4}	A
	ON-state voltage		V_T	Resistance load, I_F = 20mA, I_T = 1.5A_{rms}	—		1.5	V_{rms}
Output	Minimum operating current	S101S15V/16V	I_{OP}	V_{OUT} = 120V_{rms}	—		50	mA_{rms}
		S201S15V/16V		V_{OUT} = 240V_{rms}				
	Open circuit leak current	S101S15V/16V	I_{leak}	\~0[l=12ovrm.	—		5	mA_{rms}
		S201S15V/16V		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℃, V_D = 400V, dI_T/dt = - 1.5A/ms	4		—	V/μs
	Minimum trigger current	S101S15VIS201S15V	I_{FT}	V_D = 12V, R_L = 30Ω		—	15	mA
		S101S16V/S201S16V		V_D = 6V, R_L = 30Ω				
	Isolation" resistance		R_{ISO}	DC500V, RH=40 to 60%	10^{10}	—		Ω
Transfer characteristics	Zero-cross voltage	S101S16V	V_{OX}	I_F = 15mA			35	V
		S201S16V					35	
	Turn-on time	S101S15VIS201S15V	ton	AC50Hz		—	1	ms
		S101S16VIS201S16V			—	—	10	
	Turn-off time		toff	AC50Hz		—	10	ms
	Thermal resistance Between junction and case		$R_{th(j-c)}$		—	6	—	℃/W
	Thermal resistance Between junction and ambient		$R_{th(j-a)}$		—	45		℃/W

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

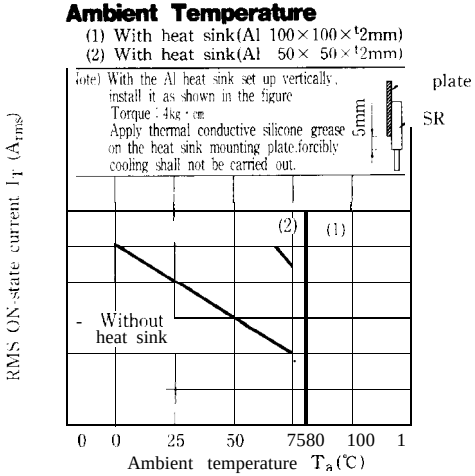


Fig. 2 RMS ON-state Current vs. Case Temperature

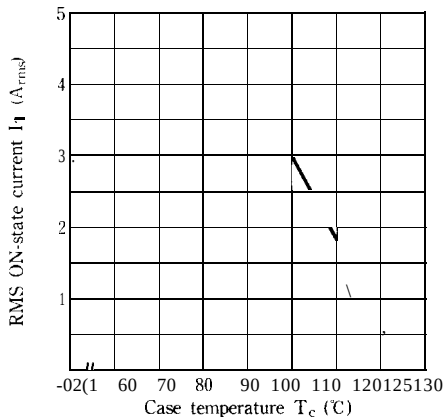


Fig. 3 Forward **Current vs. Ambient Temperature**

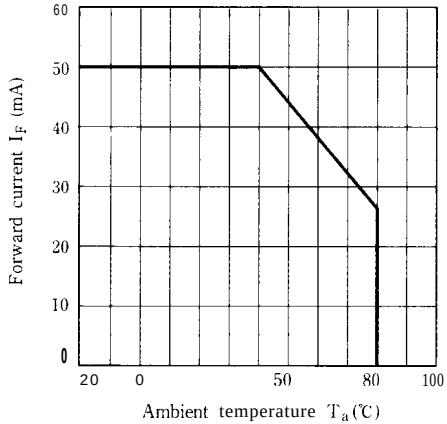


Fig. 5 Forward **Current vs.** Forward **Voltage**

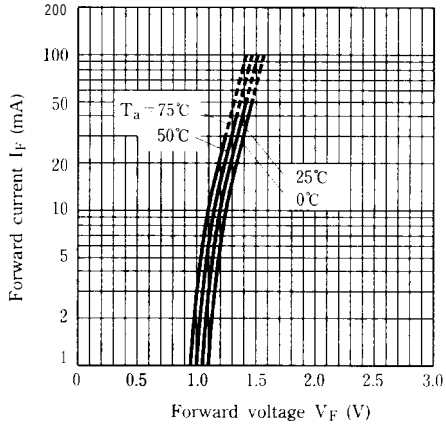


Fig. 5 **Surge** currant vs. **Power-on cycle**

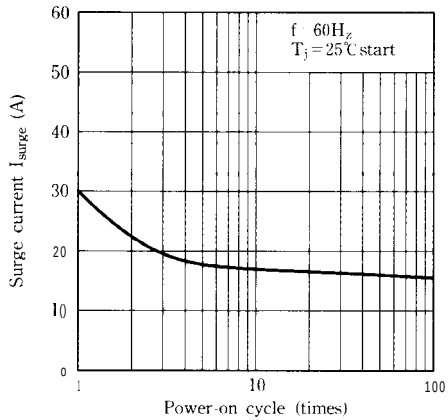


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

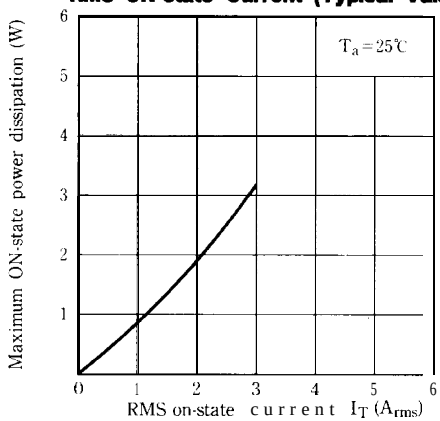


Fig. 7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S15V/S201S15V)

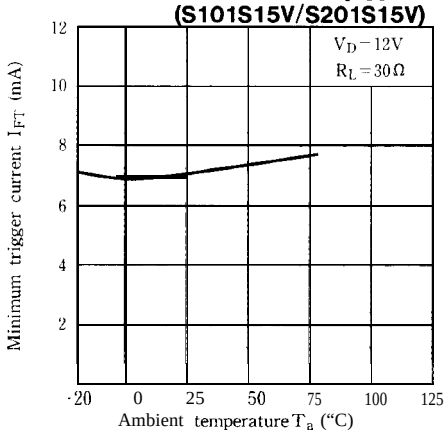


Fig. 7-b **Minimum Trigger Current** VS. **Ambient Temperature (Typical Value) (S101S16V/S201S16V)**

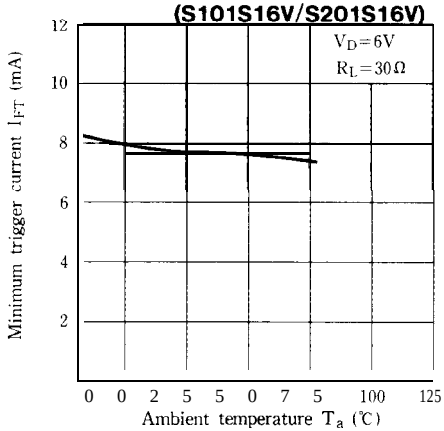


Fig. 8-a Open Circuit Leak Current vs. Supply Voltage (Typical Value) (S101S15V, S101S16V)

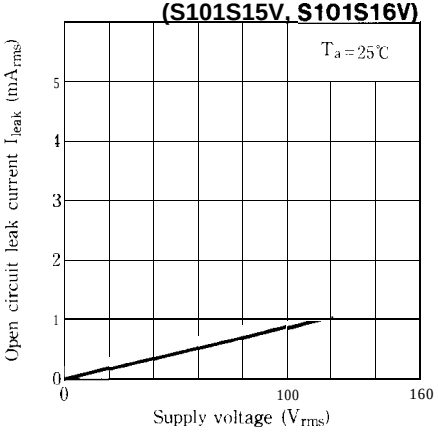
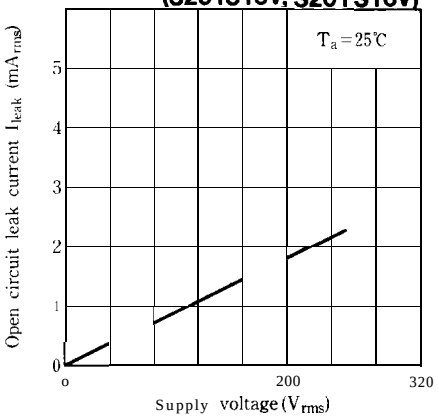


Fig. 8-b Open Circuit Leak Current vs. Supply voltage (Typical Value) (S201S15V, S201S16V)



● Please refer to the chapter "Precautions for Use." (Page 78 to 93).