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

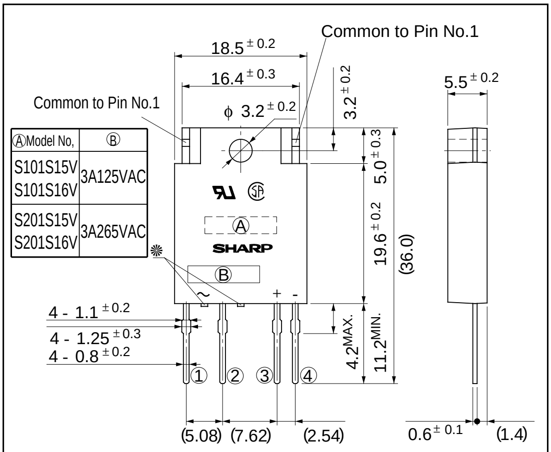
	For 100V lines	For 200V lines
No built-in zero-cross circuit	**S101S15V**	**S201S15V**
Built-in zero-cross circuit	**S101S16V**	**S201S16V**

■ Absolute Maximum Ratings (Ta = 25˚C)

Parameter		Symbol	Ratings (100V line)	Ratings (200V line)	Unit
Input	Forward current	I_F	50		mA
	Reverse current	V_R	6		V
Output	RMS ON-state current	I_T	3 (T_c<=100˚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/μ s
	Operating frequency	f	45 to 65		Hz
	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

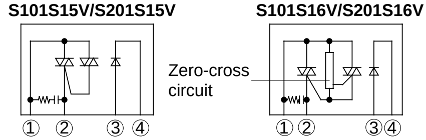
*1 60Hz sine wave, T_j = 25˚C
*2 AC 60Hz for 1 minute, 40 to 60% RH
Isolation voltage measuring method:
(1) Dielectric withstand tester, with zero-cross circuit shall be used.
(2) The waveform of applied voltage shall be sine wave.
(3) It shall be applied voltage between input and output.
(Input and output shall be short-circuited respectively)
*3 For 10 seconds

■ Outline Dimensions (Unit : mm)



❋ May not be externally connected

Internal connection diagram



S101S15V/S201S15V:
① Output (Triac T2)
② Output (Triac T1)
③ Input (+)
④ Input (-)

S101S16V/S201S16V:
① Output (Triac T2)
② Output (Triac T1)
③ Input (+)
④ Input (-)

■ 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
Input	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}
Output	Minimum operating current	S101S15V/16V	I_{OP}	V_{OUT} = 120V_{rms}	-	-	50	mA_{rms}
Output	Minimum operating current	S201S15V/16V	I_{OP}	V_{OUT} = 240V_{rms}	-	-	50	mA_{rms}
Output	Open circuit leak current	S101S15V/16V	I_{leak}	V_{OUT} = 120V_{rms}	-	-	5	mA_{rms}
Output	Open circuit leak current	S201S15V/16V	I_{leak}	V_{OUT} = 240V_{rms}	-	-	10	mA_{rms}
Output	Critical rate of rise of OFF-state voltage		dV/dt	V_D = 2/3V_{DRM}	30	-	-	V/μ s
Output	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/μ s
Transfer characteristics	Minimum trigger current	S101S15V/S201S15V	I_{FT}	V_D = 12V, R_L = 30Ω	-	-	15	mA
Transfer characteristics	Minimum trigger current	S101S16V/S201S16V	I_{FT}	V_D = 6V, R_L = 30Ω	-	-	15	mA
Transfer characteristics	Isolation resistance		R_{ISO}	DC500V, R_H = 40 to 60%	10^{10}	-	-	Ω
Transfer characteristics	Zero-cross voltage	S101S16V	V_{OX}	I_F = 15mA	-	-	35	V
Transfer characteristics	Zero-cross voltage	S201S16V	V_{OX}	I_F = 15mA	-	-	35	V
Transfer characteristics	Turn-on time	S101S15V/S201S15V	ton	AC50H_Z	-	-	1	ms
Transfer characteristics	Turn-on time	S101S16V/S201S16V	ton	AC50H_Z	-	-	10	ms
Transfer characteristics	Turn-off time		toff	AC50H_Z	-	-	10	ms
Transfer characteristics	Thermal resistance Between junction and case		$R_{th (j-c)}$	-	-	6	-	˚C/W
Transfer characteristics	Thermal resistance Between junction and ambient		$R_{th (j-a)}$	-	-	45	-	˚C/W

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

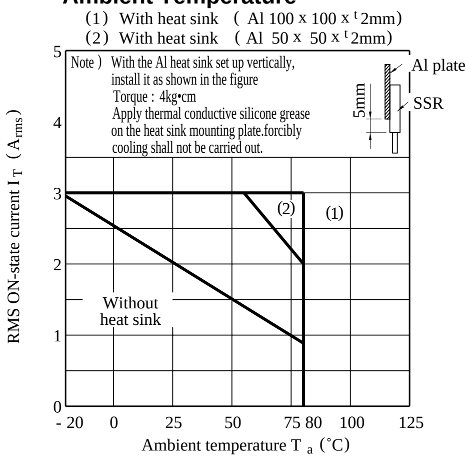


Fig. 2 RMS ON-state Current vs. Case Temperature

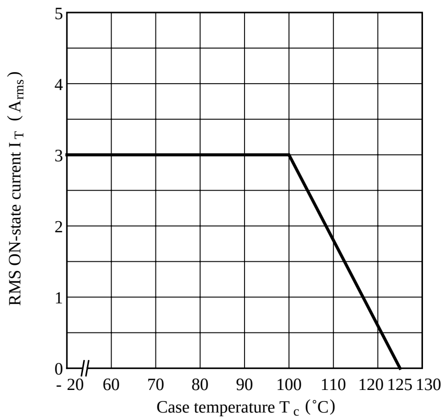


Fig. 3 Forward Current vs. Ambient Temperature

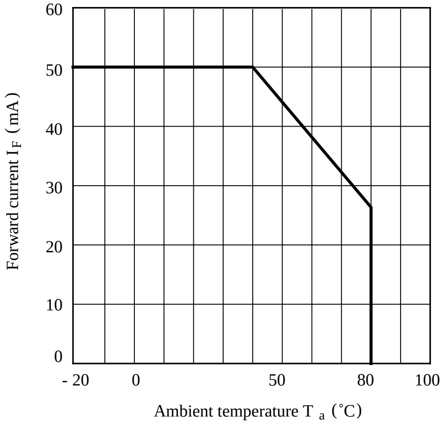


Fig. 5 Forward Current vs. Forward Voltage

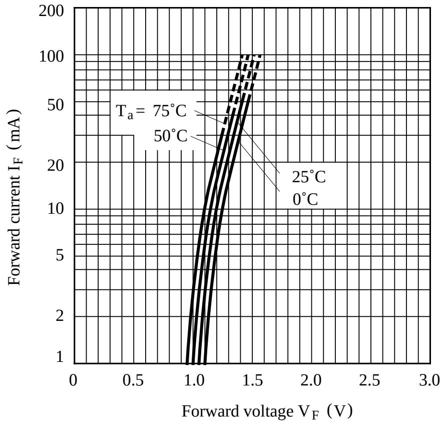


Fig. 5 Surge Current vs. Power-on cycle

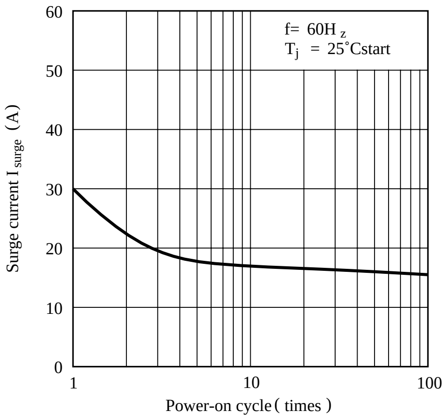


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

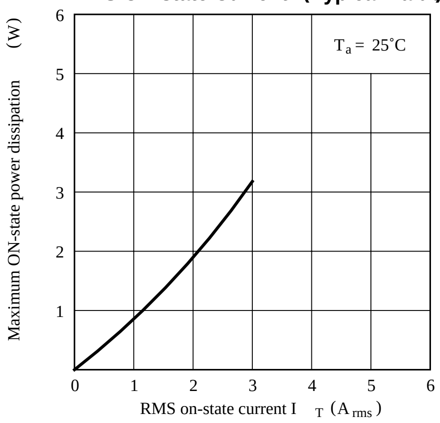


Fig. 7-a Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S15V/S201S15V)

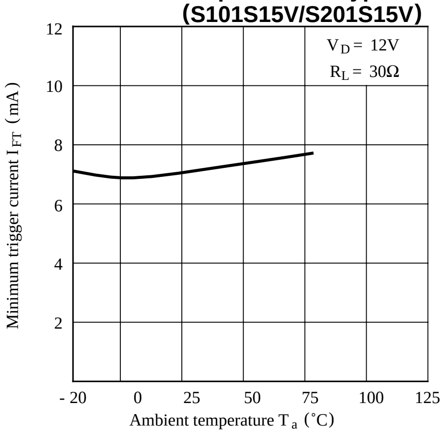


Fig. 7-b Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S101S16V/S201S16V)

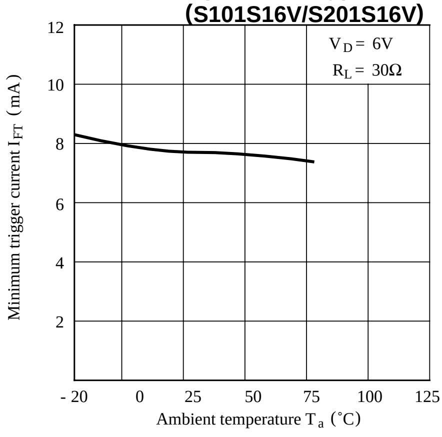


Fig. 8-a Open Circuit Leak Current vs. Supply Voltage (Typical Value) (S101S15V, S101S16V)

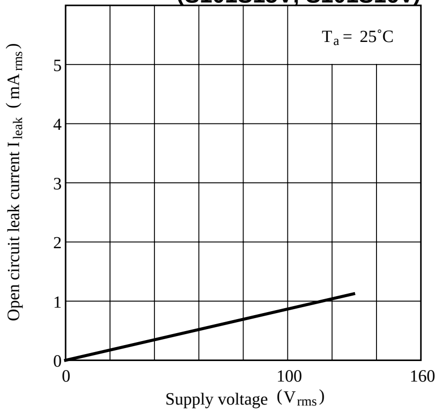
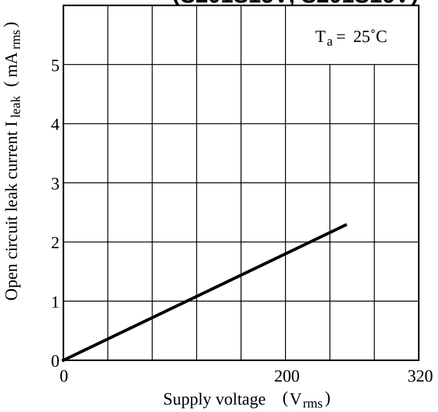


Fig. 8-b Open Circuit Leak Current vs. Supply Voltage (Typical Value) (S201S15V, S201S16V)



● Please refer to the chapter " Precautions for Use."

NOTICE