S102S11/S102S12 S202S11/S202S12

SIP Type SSR with Snubber Circuit and Mouning Capability for External Heat Sink

■ Features

1. High radiation resin mold package
2. Built-in snubber circuit
3. Built-in zero-cross circuit
   (S102S12/S202S12)
4. High repetitive peak OFF-state voltage
   S102S11/S102S12 V_{DRM} : 400V
   S202S11/S202S12 V_{DRM} : 600V
5. RMS ON-state current
   I_T : MAX. 8Arms at T_C <= 88˚C
   (With heat sink)
6. Isolation voltage between input and output
   (V_{iso} : 4 000V_{rms})
7. Recognized by UL, file No. E94758
   Approved by CSA, No. LR63705

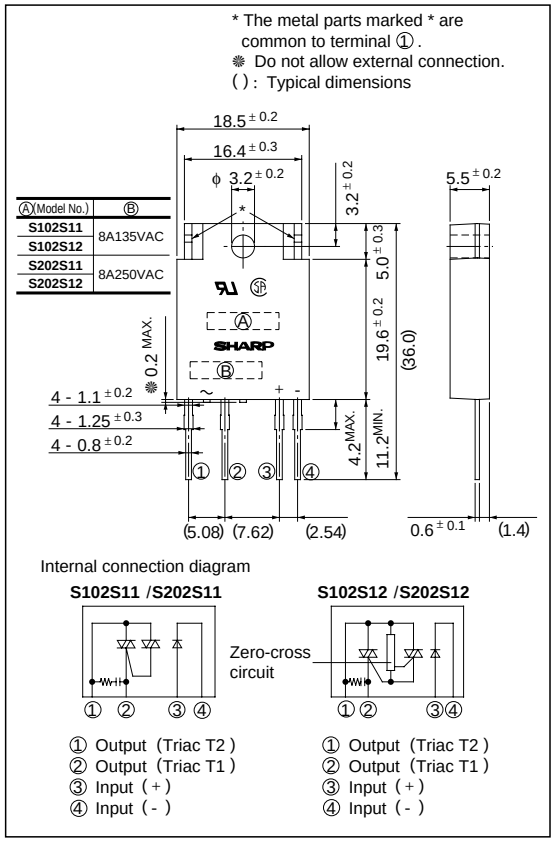
■ Applications

1. Automatic vending machines
2. Amusement equipment
3. Programmable controllers

■ Model line-ups

	For 100V lines	For 200V lines
Built-in snubber circuit	**S102S11**	**S202S11**
Built-in snubber circuit and zero-cross circuit	**S102S12**	**S202S12**

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings

(Ta = 25˚C)

Parameter			Symbol	Rating	Unit
Input	Forward current		I_F	50	mA
	Reverse voltage		V_R	6	V
Output	RMS ON-state current		I_T	*4 8	A_{rms}
	*1 Peak one cycle surge current		I_{surge}	80	A
	Repetitive peak-OFF state voltage	**S102S11/S102S12**	V_{DRM}	400	V
		S202S11/S202S12		600	
	Non-repetitive peak-OFF state voltage	**S102S11/S102S12**	V_{DSM}	400	V
		S202S11/S202S12		600	
	Critical rate of rise of ON-state current		dI_T/dt	50	A/μs
*2 Isolation voltage			V_{iso}	4 000	V_{rms}
Operating temperature			T_{opr}	- 20 to + 80	˚C
Storage temperature			T_{stg}	- 30 to + 100	˚C
*3 Soldering temperature			T_{sol}	260	˚C
Load supply voltage		**S102S11/S102S12**	V_{out}	135	V_{rms}
		S202S11/S202S12		250	

*1 50Hz sine wave, start at Tj= 25˚C
*2 60Hz AC for 1 minute, RH= 40 to 60%, Apply voltages between input and output, by the dielectric withstand voltage tester with zero-cross circuit.(Input and output shall be shorted respectively).
(Note) When the isolation voltage is necessary at using external hear sink, please use the insulation sheet.
*3 For 10 seconds
*4 Tc <= 88˚C

■ Electro-optical Characteristics

(Ta = 25˚C)

Parameter			Symbol	Conditions	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	I_T = 2Arms	-	-	1.5	V_{rms}
	Minimum Operating current	**S102S11/S102S12**	I_{op}	V_{out} = 120Vrms	-	-	50	mA_{rms}
		S202S11/S202S12		V_{out} = 240Vrms				
	Open circuit leak current	**S102S11/S102S12**	I_{leak}	V_{out} = 120Vrms	-	-	5	mA_{rms}
		S202S11/S202S12		V_{out} = 240Vrms	-	-	10	
	Critical rate of rise of OFF-state voltage		dV/dt	V_D = 2/3V_{DRM}	30	-	-	V/μs
	Critical rate of rise of Commutating OFF-state voltage		$(dV/dt)_C$	Tj = 125 ˚C, dI_t/dt = - 4.0A/ms, *5	5	-	-	V/μs
	Zero-cross voltage	**S102S12/S202S12**	V_{OX}	I_F = 8mA	-	-	35	V
Transfer characteristics	Minimum trigger current	**S102S11/S202S11**	I_{FT}	V_D = 12V, R_L = 30Ω	-	-	8	mA
		S102S12/S202S12		V_D = 6V, R_L = 30Ω	-	-	8	mA
	Isolation resistance		R_{ISO}	DC500V, RH = 40 to 60%	10^{10}	-	-	Ω
	Turn-on time	**S102S11/S202S11**	t_{on}	AC60Hz	-	-	1	ms
		S102S12/S202S12			-	-	9.3	ms
	Turn-off time		t_{off}	AC60Hz	-	-	9.3	ms
Thermal resistance (Between junction and case)			$R_{th(j-c)}$	-	-	4.0	-	˚C/W
Thermal resistance (Between junction and ambience)			$R_{th(j-a)}$	-	-	40	-	˚C/W

*5 **S102S11/S102S12**: V_D= 400V **S202S11/S202S12**: V_D= 600V

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

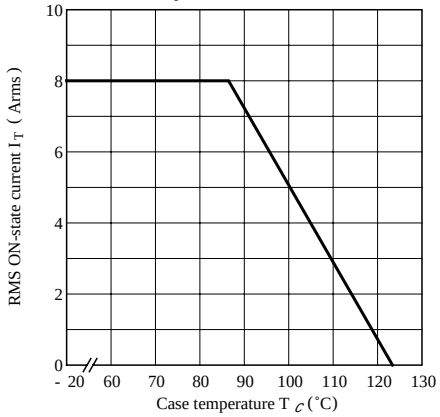


Fig. 2 RMS ON-state Current vs. Ambient Temperature

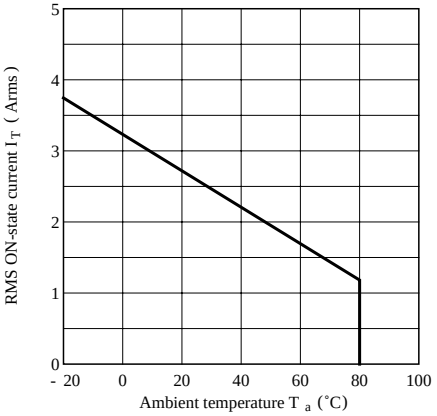


Fig. 3 Forward Current vs. Forward Voltage (Typical Value)

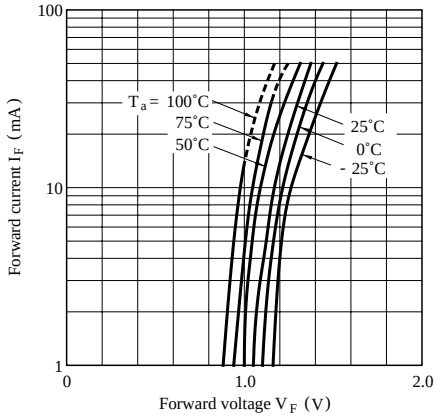


Fig. 4 Surge Current vs. Power-on Cycle

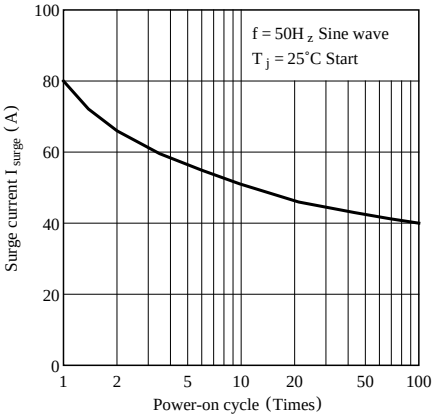


Fig. 5 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

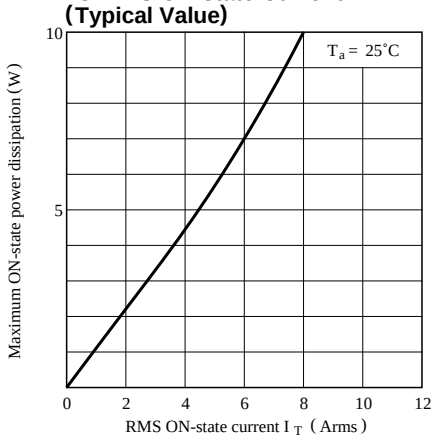


Fig. 6 Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S102S11/S202S11)

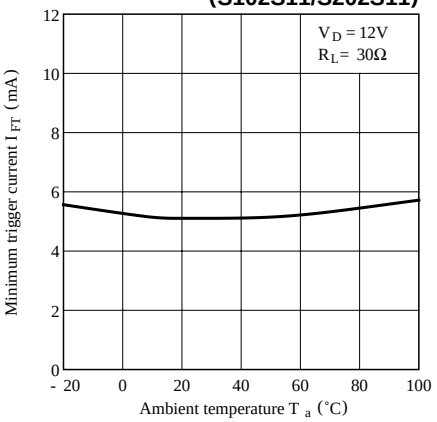


Fig. 7 Minimum Trigger Current vs. Ambient Temperature (Typical Value) (S102S12 / S202S12)

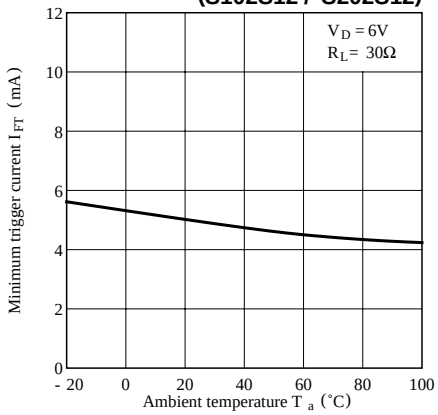


Fig. 8 Open Circuit Leak Current vs. Supply Voltage (Typical Value) (S102S11/S102S12)

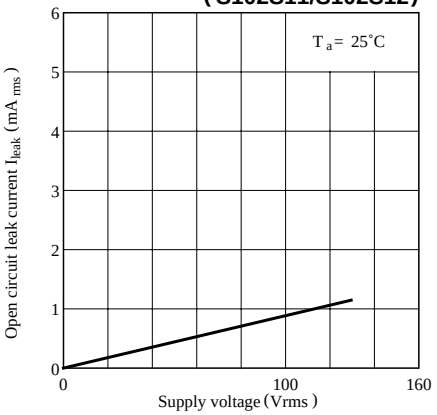
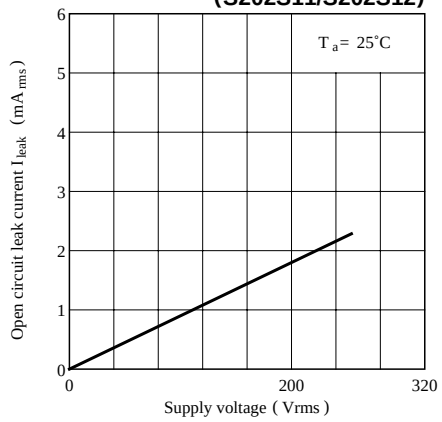


Fig. 9 Open Circuit Leak Current vs. Supply Voltage (Typical Value) (S202S11/S202S12)



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