

S102S11/S102S12

S202S11/S202S12

SIP Type **SSR** with Snubber Circuit and **Mounting** 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
 $I_T : \text{MAX. } 8A_{rms}$ at $T_c \leq 88^\circ C$
(With heat sink)
6. Isolation voltage between input and output
($V_{iso} : 4000V_{rms}$)
7. Recognized by UL, file No. E94758
Approved by CSA, No. LR63705

■ Applications

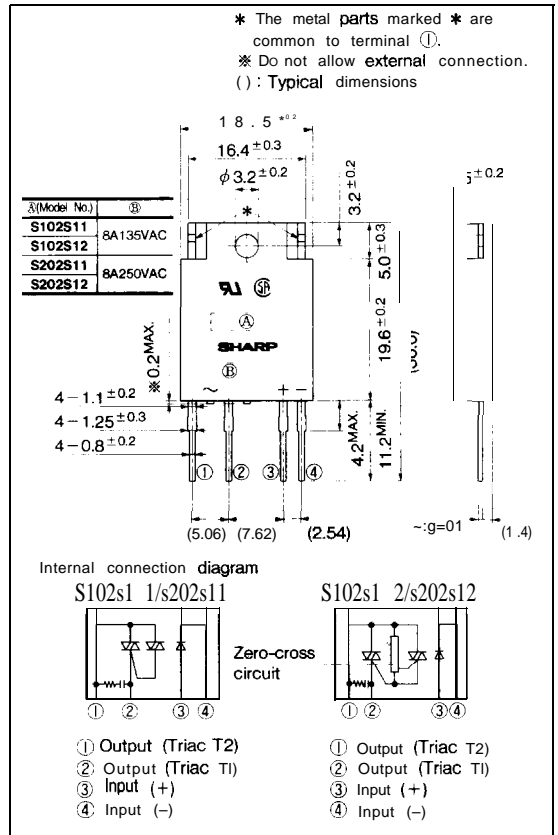
1. Automatic vending machines
2. Amusement equipment
3. Programmable controllers

■ 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	*48	A _{rms}	
	*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	
*isolation voltage		V _{iso}	4000	V _{rms}	
Operating temperature		T _{opr}	-20 to +80	°C	
Storage temperature		T _{str}	-30 to +100	°C	
*Soldering temperature		T _{sol}	260	°C	
Load supply voltage		V _{out}	135	V _{rms}	
			S202S11/S202S12		250

*150Hz sine wave, start at T_j = 25°C

*260Hz 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 heat sink, please use the insulation sheet.

*3For 10 seconds

*4 T_c ≤ 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	I _{on}	V _{out} = 120Vrms	—	—	50	mA _{rms}	
			V _{out} = 240Vrms	—	—	—	—	
	Open circuit leak current	I _{leak}	V _{out} = 120Vrms	—	—	5	mA _{rms}	
			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	T _j = 125°C dI _T /dt ~ 0A/ms, *5	5	—	—	V / μs
Zero. cross voltage		V _{OX}	I _F = 8mA	—	—	35	v	
transfer characteristics	Minimum trigger current	I _{FT}	V _D = 12V, R _L = 30Ω	—	—	8	mA	
			V _D = 6V, R _L = 30Ω	—	—	8	mA	
	Isolation resistance		R _{ISO}	DC500V, RH = 40 to 60%	10 ¹⁰	—	—	Ω
	Turn-on time	t _{on}	AC60HZ	—	—	1	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

1 RMS ON-state Current vs. Case Temperature

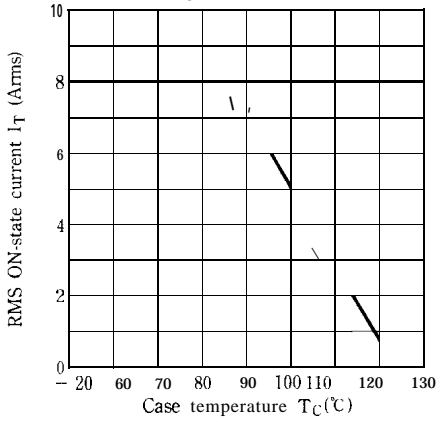


Fig. 2 RMS ON-state Current vs. Ambient Temperature

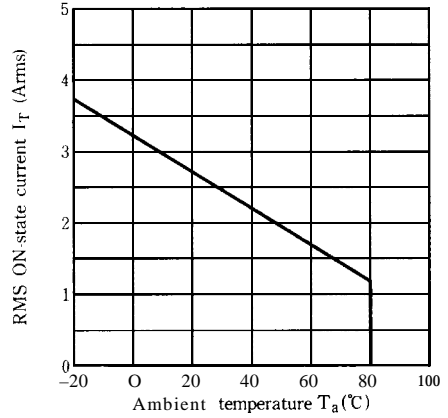


Fig. 3 Forward Current vs. Forward Voltage (Typical Value)

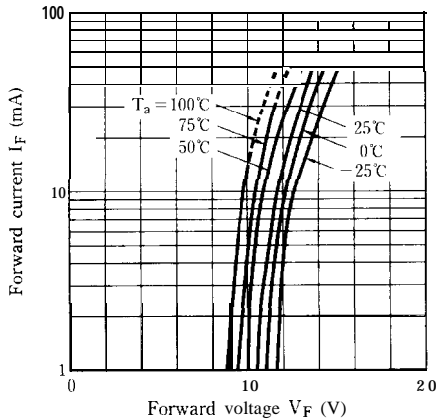


Fig. 4 Surge Current vs. Power-on Cycle

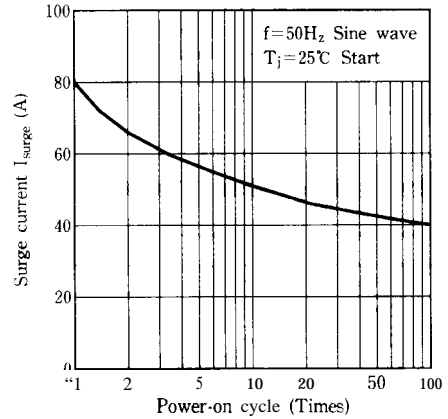


Fig. 5 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

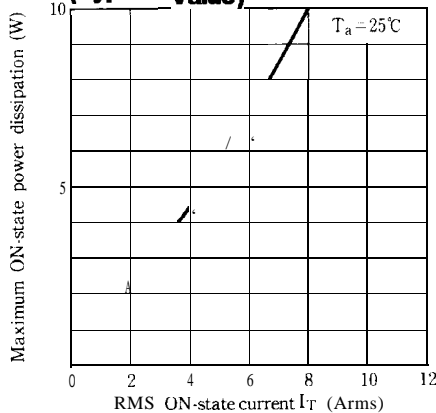


Fig. 6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)
(s102s11/s202s11)

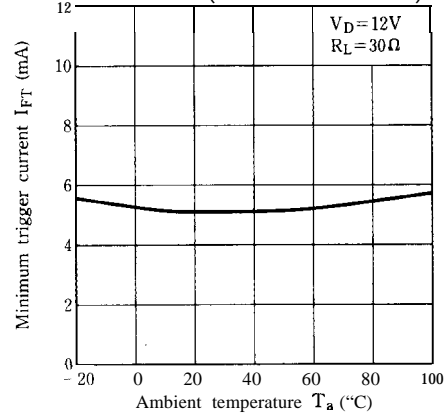


Fig. 7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)
(s1o2s12/s2o2s12)

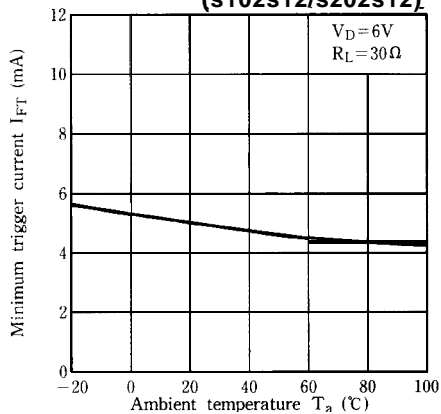


Fig. 8 Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(s1o2s11/s1o2s12)

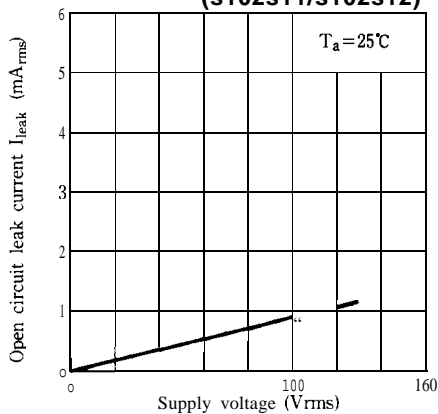
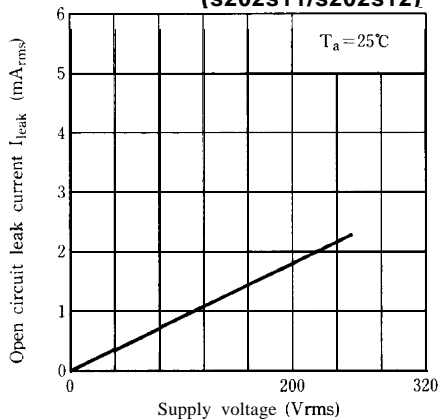


Fig. 9 Open Circuit Leak Current vs. Supply Voltage (Typical Value)
(s2o2s11/s2o2s12)



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