S102S01/S102S02 S202S01/S202S02

SIP Type SSR for Medium Power Control

■ Features

1. High radiation resin mold package
2. RMS ON-state current
   I_T : 8 Arms at T_C <= 80˚C
   (With heat sink)
3. Built-in zero-cross circuit
   (S102S02/S202S02)
4. High repetitive peak OFF-state voltage
   S102S01/S102S02 V_{DRM} : MIN. 400V
   S202S01/S202S02 V_{DRM} : MIN. 600V
5. Isolation voltage between input and output
   (V_{iso} : 4 000 V_{rms})
6. Approved by CSA, No. LR63705
   Recognized by UL, file No. E94758

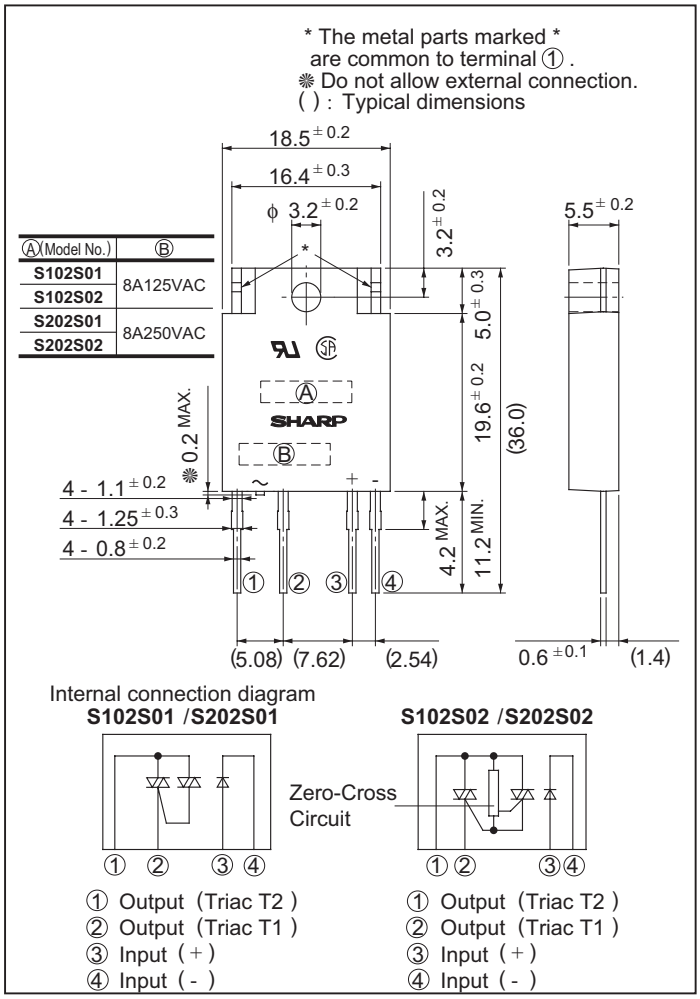
■ Applications

1. Automatic vending machines, programmable controllers
2. Amusement equipment

■ Model Line-ups

	For 100V lines	For 200V lines
For phase control No built-in zero-cross circuit	**S102S01**	**S202S01**
Built-in zero-cross circuit	**S102S02**	**S202S02**

■ Outline Dimensions (Unit : mm)



■ Absolute Maximum Ratings (Ta = 25˚C)

Parameter		Symbol	Rating S102S01 S102S02	Rating S202S01 S202S02	Unit
Input	Forward current	I_F	50		mA
	Reverse voltage	V_R	6		V
Output	*1RMS ON-state current	I_T	8		A_{rms}
	*2Peak one cycle surge current	I_{surge}	80		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/dt	50		A/μ s
	Operating frequency	f	45 to 65		Hz
*3Isolation voltage		V_{iso}	4 000		V_{rms}
Operating temperature		T_{opr}	- 25 to + 100		˚C
Storage temperature		T_{stg}	- 30 to + 125		˚C
*4Soldering temperature		T_{sol}	260		˚C

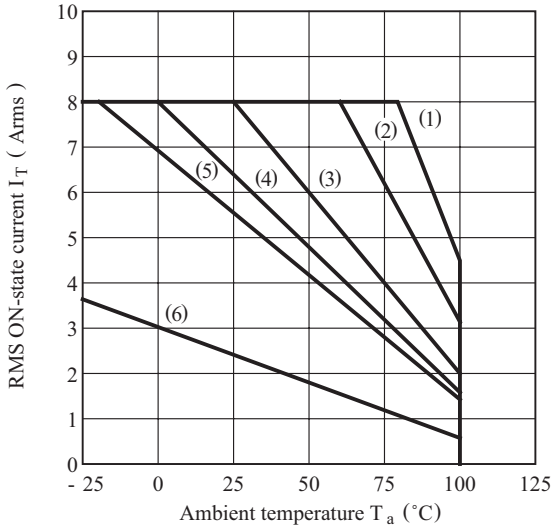
*1 T_C <=80˚C
*2 50Hz sine wave, T_j = 25˚C start
*3 60Hz AC for 1 minute, 40 to 60% RH, Apply voltages between input and output, by the dielectric withstand voltage tester with zero-cross circuit.
(Input and output shall be shorted respectively).
(Note)
When the isolation voltage is necessary at using external heat sink, please use the insulation sheet.
*4 For 10 seconds

■ 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	Repetitive peak OFF-state current		I_{DRM}	$V_D = V_{DRM}$	-	-	10^{-4}	A
	ON-state voltage		V_T	Resistance load I_F = 20mA, I_T = 2Arms	-	-	1.5	V_{rms}
	Holding current		I_H	-	-	-	50	mA
	Critical rate of rise of OFF-state voltage		dV/dt	V_D = 2/3 • V_{DRM}	30	-	-	V/μs
	Critical rate of rise of commutating OFF-state voltage		$(dV/dt)_C$	T_j = 125°C, dI_T/dt = - 4.0A/ms, V_D = 400V	5	-	-	V/μs
	Zero-cross voltage	S102S02 S202S02	V_{OX}	I_F = 8mA	-	-	35	V
Transfer characteristics	Minimum trigger current	S102S01 S202S01	I_{FT}	V_D = 12V, R_L = 30Ω	-	-	8	mA
		S102S02 S202S02		V_D = 6V, R_L = 30Ω	-	-	8	mA
	Isolation resistance		R_{ISO}	DC500V, 40 to 60 % RH	10^{10}	-	-	Ω
	Turn-on time	S102S01 S202S01	t_{on}	AC 50Hz	-	-	1	ms
		S102S02 S202S02			-	-	10	ms
	Turn-off time		t_{off}	-	-	-	10	ms
Thermal resistance (Between junction and case)			$R_{th(j-c)}$	-	-	4.5	-	°C/W
Thermal resistance (Between junction and ambience)			$R_{th(j-a)}$	-	-	40	-	°C/W

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



(1) With infinite heat sink
(2) With heat sink (200 x 200 x 2 mm Al plate)
(3) With heat sink (100 x 100 x 2 mm Al plate)
(4) With heat sink (75 x 75 x 2 mm Al plate)
(5) With heat sink (50 x 50 x 2 mm Al plate)
(6) Without heat sink

(Note) With the Al heat sink set up vertically,tighten the device at the center of the Al heat sink with a torque of 0.4N • m and apply thermal conductive silicone grease on the heat sink mounting plate. Forcible cooling shall not be carried out.

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

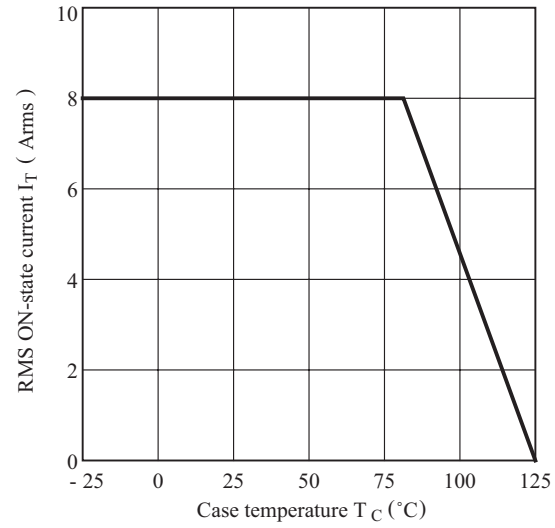


Fig. 3 Forward Current vs. Ambient Temperature

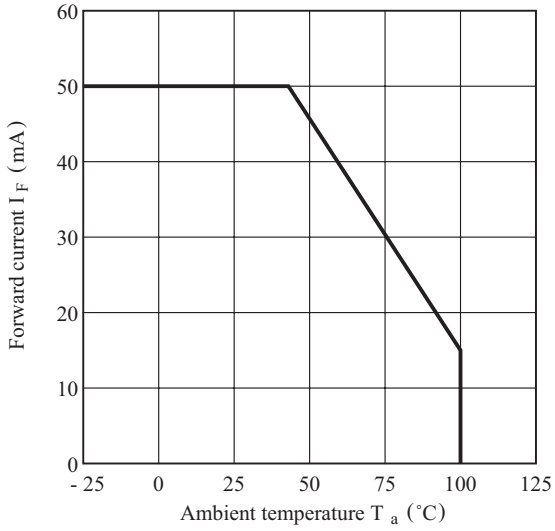


Fig. 4 Forward Current vs. Forward Voltage

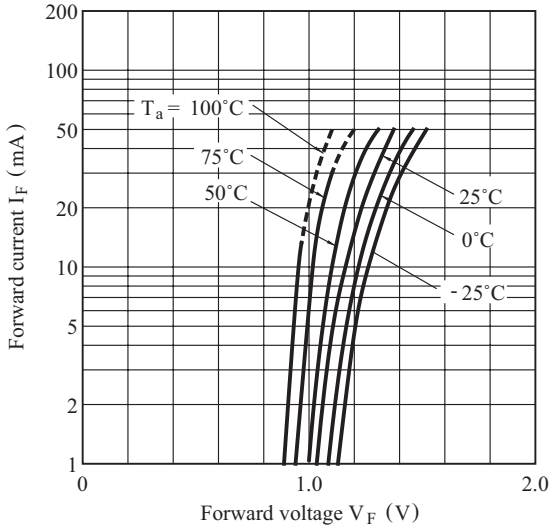


Fig. 5 Surge Current vs. Power-on Cycle

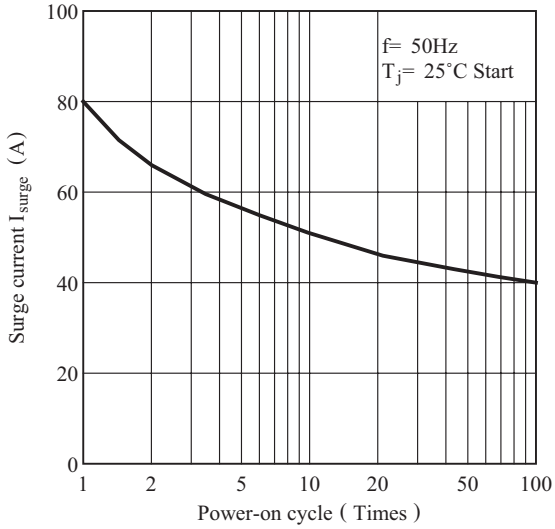


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

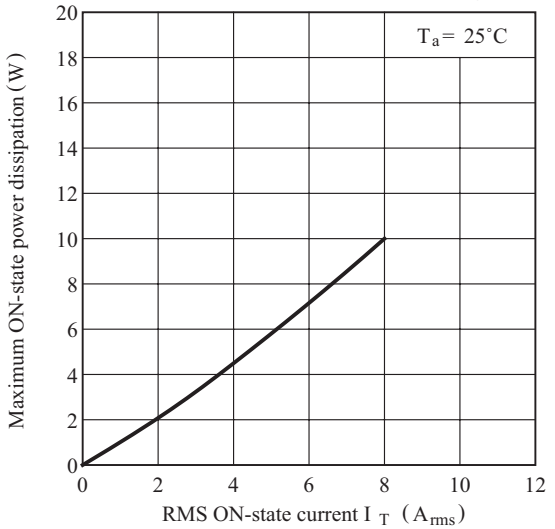


Fig. 7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

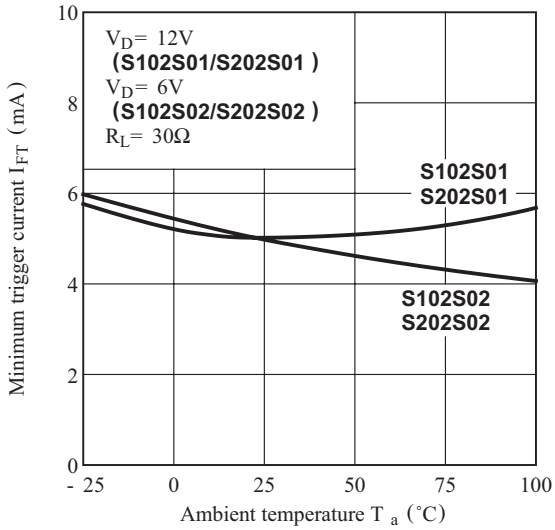
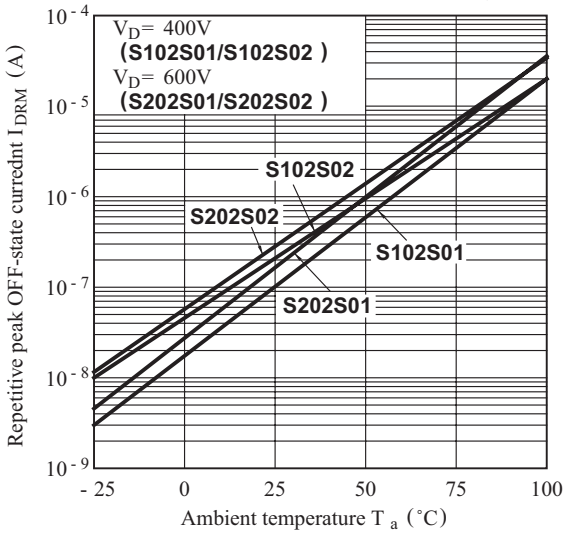


Fig. 8 Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value)



● Please refer to the chapter "Precautions for Use"