

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 $T_c \leq 80^\circ\text{C}$
 (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 000V_{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

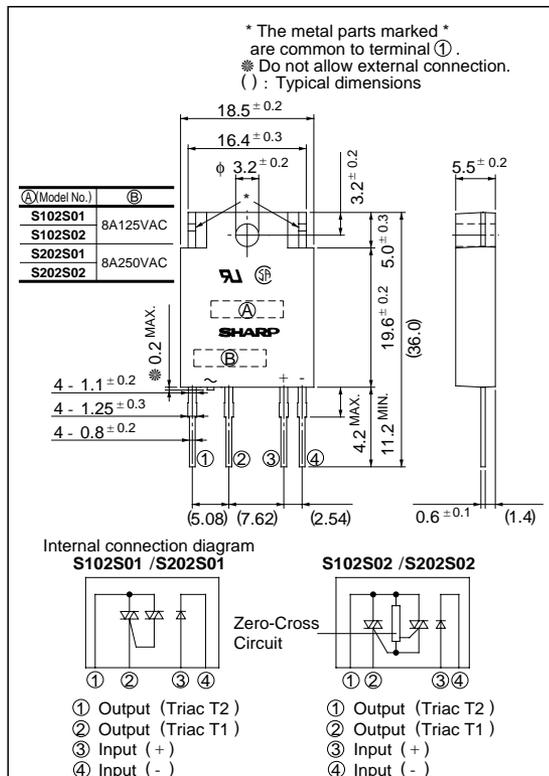
	For 100V lines	For 200V lines
For phase control No built-in zero-cross circuit	S102S01	S202S01
Built-in zero-cross circuit	S102S02	S202S02

■ Absolute Maximum Ratings

Parameter	Symbol	Rating		Unit
		S102S01 S102S02	S202S01 S202S02	
Input	Forward current	50		mA
	Reverse voltage	6		V
Output	*1RMS ON-state current	8		A _{rms}
	*2Peak one cycle surge current	80		A
	Repetitive peak OFF-state voltage	400	600	V
	Non-repetitive peak OFF-state voltage	400	600	V
	Critical rate of rise of ON-state current	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		$^\circ\text{C}$
Storage temperature	T_{stg}	- 30 to + 125		$^\circ\text{C}$
*4Soldering temperature	T_{sol}	260		$^\circ\text{C}$

■ Outline Dimensions

(Unit : mm)



(Ta = 25°C)

*1 $T_c \leq 80^\circ\text{C}$ *2 50Hz sine wave, $T_j = 25^\circ\text{C}$ 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.

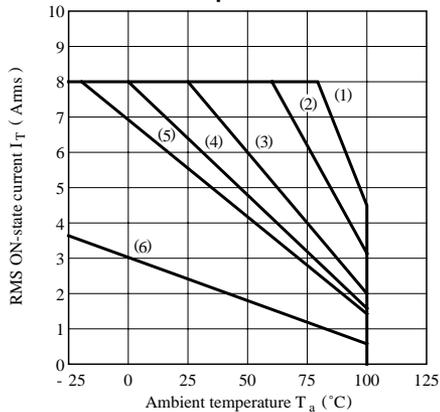
*4 For 10 seconds

Electro-optical Characteristics

(T_a = 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	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

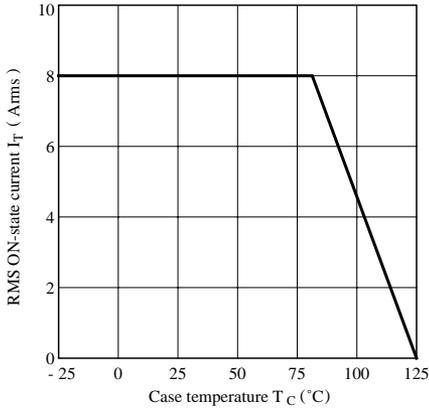


Fig. 3 Forward Current vs. Ambient Temperature

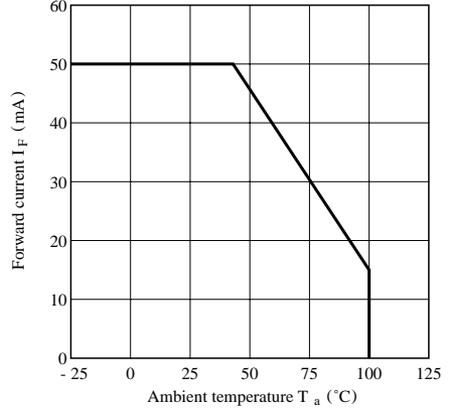


Fig. 4 Forward Current vs. Forward Voltage

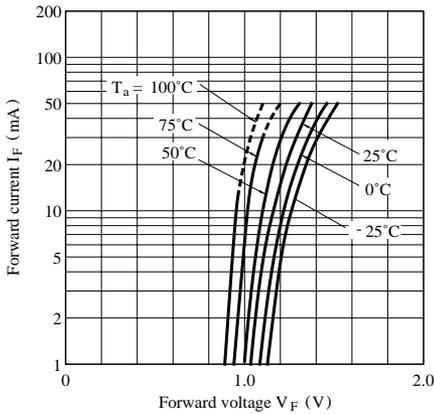


Fig. 5 Surge Current vs. Power-on Cycle

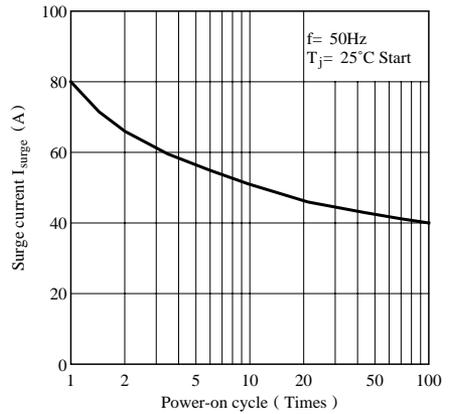


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

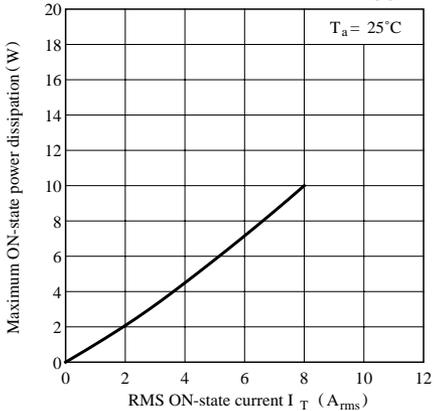


Fig. 7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

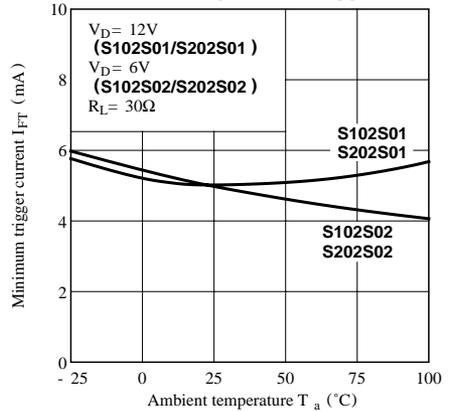
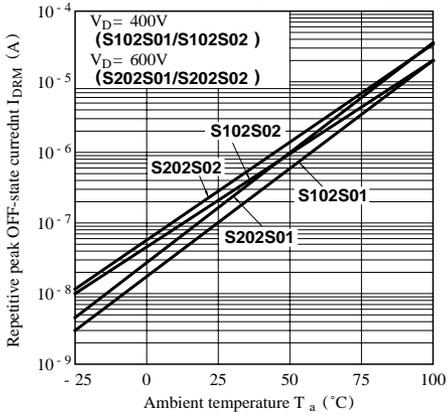


Fig. 8 Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value)



● Please refer to the chapter “Precautions for Use”