

# S102S03/S202S03

## SIP Type SSR with Mounting Capability for External Heat Sink

### ■ Features

1. High radiation resin mold package
2. RMS ON-state current  $I_T$ : MAX. 8 Arms at  $T_C \leq 80^\circ\text{C}$  (With heat sink)
3. Isolation voltage between input and output ( $V_{iso}$ : 4 000V<sub>rms</sub>)
4. Low input driving current ( $I_{FT}$ : MAX. 5mA)
5. Approved by CSA, No. LR63705  
Recognized by UL, file No. E94758

### ■ Applications

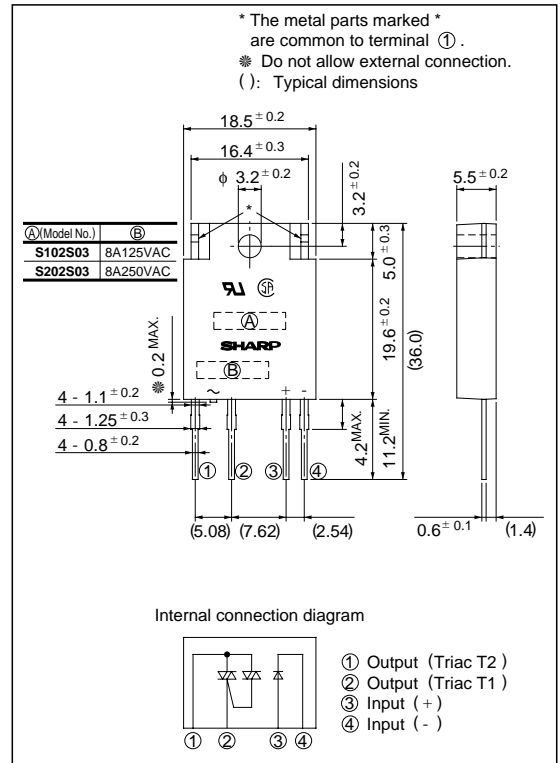
1. Automatic vending machines
2. Programmable controllers
3. Amusement equipment

### ■ Model Line-ups

For 100V lines	For 200V lines
<b>S102S03</b>	<b>S202S03</b>

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating		Unit
		S102S03	S202S03	
Input	Forward current	50		mA
	Reverse voltage	6		V
Output	RMS ON-state current	*48		A <sub>rms</sub>
	*1 Peak 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/μs
	Operating frequency	45 to 65		Hz
*2 Isolation voltage	$V_{iso}$	4 000		V <sub>rms</sub>
Operating temperature	$T_{opr}$	- 25 to + 100		°C
Storage temperature	$T_{stg}$	- 30 to + 125		°C
*3 Soldering temperature	$T_{sol}$	260		°C

\*1 50Hz sine wave,  
Tj = 25°C start  
\*2 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.

\*3 For 10 seconds

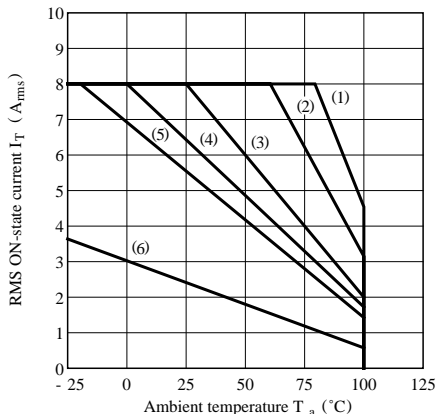
\*4  $T_C \leq 80^\circ\text{C}$

## Electro-optical Characteristics

(Ta = 25°C)

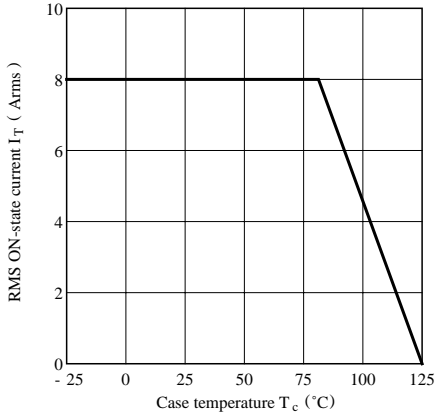
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$	$I_F = 20\text{mA}$	-	1.2	1.4	V
	Reverse current	$I_R$	$V_R = 3\text{V}$	-	-	$10^{-4}$	A
Output	Repetitive peak OFF-state current	$I_{DRM}$	$V_D = V_{DRM}$	-	-	$10^{-4}$	A
	On-state voltage	$V_T$	Resistance load, $I_F = 20\text{mA}$ $I_T = 2A_{rms}$	-	-	1.5	$V_{rms}$
	Holding current	$I_H$	-	-	-	35	mA
	Critical rate of rise of OFF-state voltage	$dV/dt$	$V_D = 2/3V_{DRM}$	30	-	-	$V/\mu s$
	Critical rate of rise of commutating OFF-state voltage	$(dV/dt)_C$	$T_j = 125^\circ\text{C}$ , $dt/dt_1 = -4.0\text{A/ms}$ , $V_D = 400\text{V}$	5	-	-	$V/\mu s$
	Minimum trigger current	$I_{FT}$	$V_D = 12\text{V}$ , $R_L = 30\Omega$	-	-	5	mA
Transfer characteristics	Isolation resistance	$R_{ISO}$	$DC = 500\text{V}$ , 40 to 60% RH	$10^{10}$	-	-	$\Omega$
	Turn-on time	$t_{on}$	$AC = 50\text{Hz}$	-	-	1	ms
	Turn-off time	$t_{off}$		-	-	10	ms
Thermal resistance (Between junction and case)		$R_{th(j-c)}$	-	-	4.5	-	$^\circ\text{C/W}$
Thermal resistance (Between junction and ambience)		$R_{th(j-a)}$	-	-	40	-	$^\circ\text{C/W}$

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

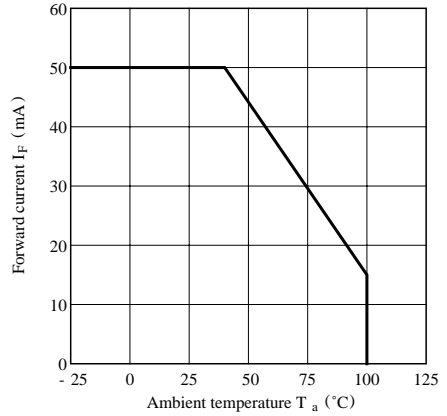


- (1) With infinite heat sink
  - (2) With heat sink (200 x 200 x 2 mm Al plate)
  - (3) With heat sink (100 x 100 x 2 mm Al plate)
  - (4) With heat sink (75 x 75 x 2 mm Al plate)
  - (5) With heat sink (50 x 50 x 2 mm Al plate)
  - (6) Without heat sink
- (Note) With the Al heat sink set up vertically, tighten the device at the center of the Al heat sink with a torque of  $0.4\text{N}\cdot\text{m}$  and apply thermal conductive silicone grease on the heat sink mounting plate. Forcible cooling shall not be carried out.

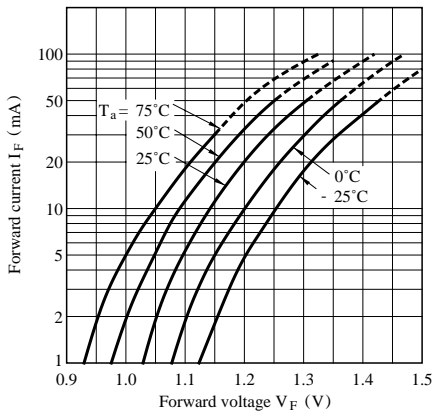
**Fig. 2 RMS ON-state Current vs. Case Temperature**



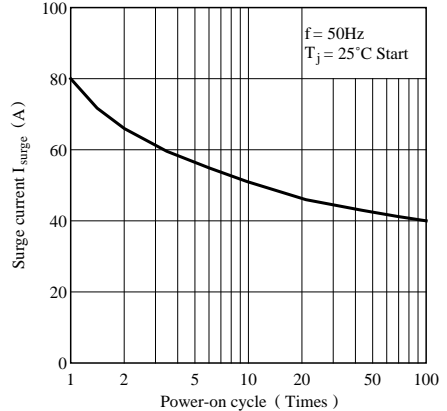
**Fig. 3 Forward Current vs. Ambient Temperature**



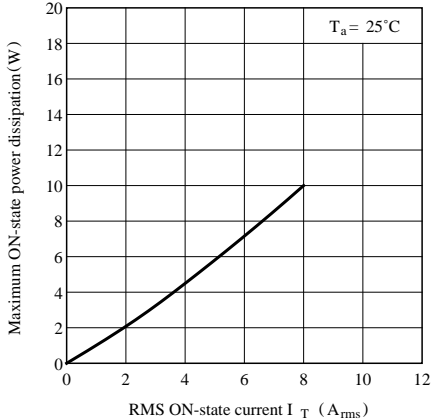
**Fig. 4 Forward Current vs. Forward Voltage**



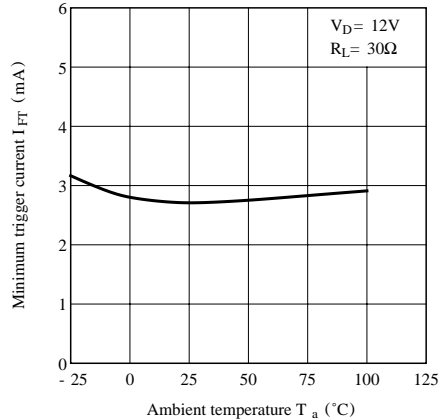
**Fig. 5 Surge Current vs. Power-on Cycle**



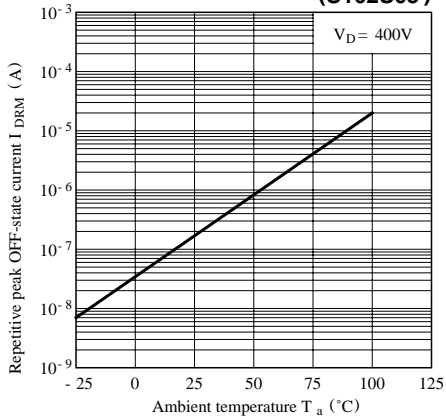
**Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)**



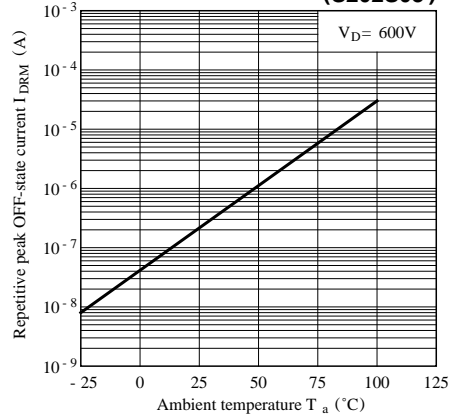
**Fig. 7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)**



**Fig.8-a Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value) (S102S03)**



**Fig.8-b Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value) (S202S03)**



● Please refer to the chapter “Precautions for Use”