

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

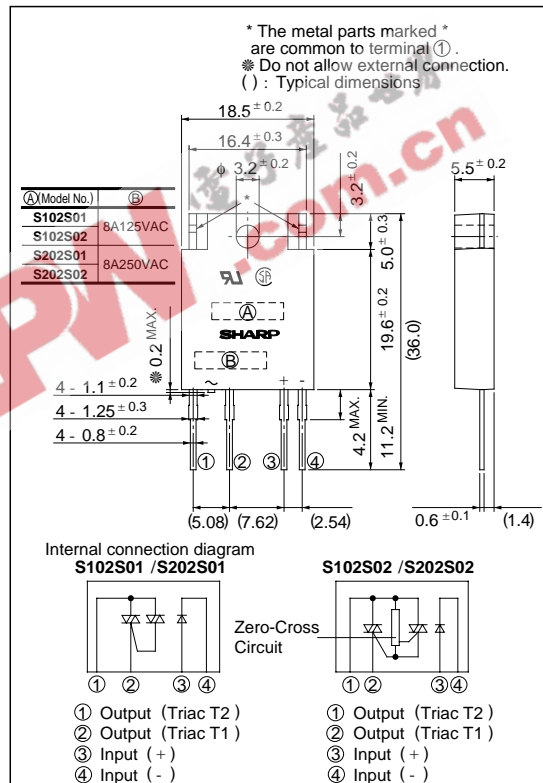
($T_a = 25^\circ\text{C}$)

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		$^\circ\text{C}$

*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

■ Outline Dimensions

(Unit : mm)

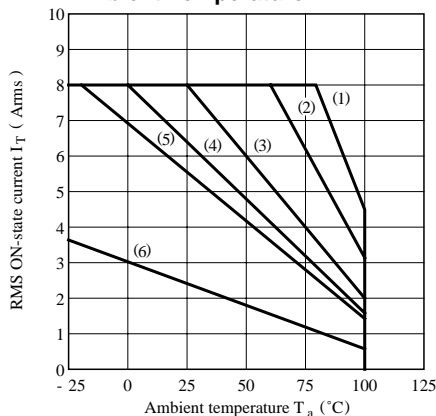


■ Electro-optical Characteristics

(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 $I_F = 20\text{mA}, I_T = 2I_{RMS}$	-	-	1.5	V_{rms}
	Holding current	I_H	-	-	-	50	mA
	Critical rate of rise of OFF-state voltage	dV/dt	$V_D = 2/3 \cdot V_{DRM}$	30	-	-	$V/\mu s$
	Critical rate of rise of commutating OFF-state voltage	$(dV/dt)_c$	$T_j = 125^\circ\text{C}, dI_T/dt = -4.0\text{A/ms}, V_D = 400\text{V}$	5	-	-	$V/\mu s$
Zero-cross voltage	V_{OX}	$I_F = 8\text{mA}$	-	-	35	V	
Transfer characteristics	Minimum trigger current	I_{FT}	$V_D = 12\text{V}, R_L = 30\Omega$	-	-	8	mA
			$V_D = 6\text{V}, R_L = 30\Omega$	-	-	8	mA
	Isolation resistance	R_{ISO}	DC500V, 40 to 60 % RH	10^{10}	-	-	Ω
	Turn-on time	t_{on}	AC 50Hz	-	-	1	ms
				-	-	10	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

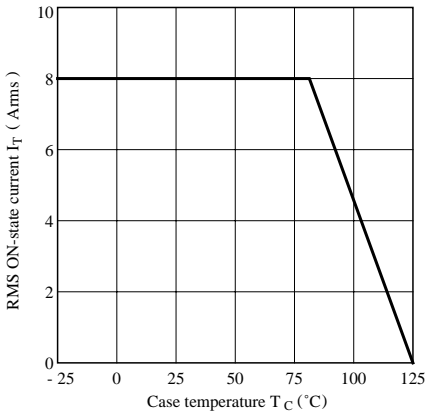


Fig. 3 Forward Current vs. Ambient Temperature

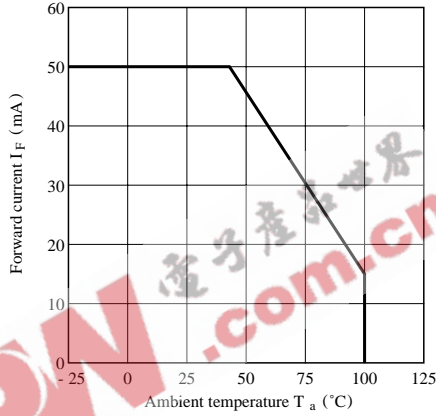


Fig. 4 Forward Current vs. Forward Voltage

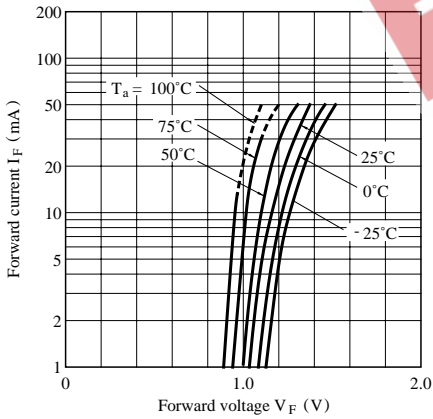


Fig. 5 Surge Current vs. Power-on Cycle

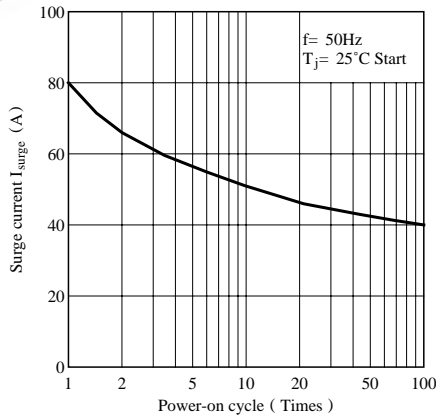


Fig. 6 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

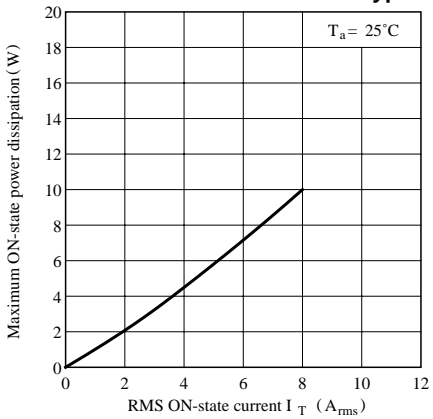


Fig. 7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

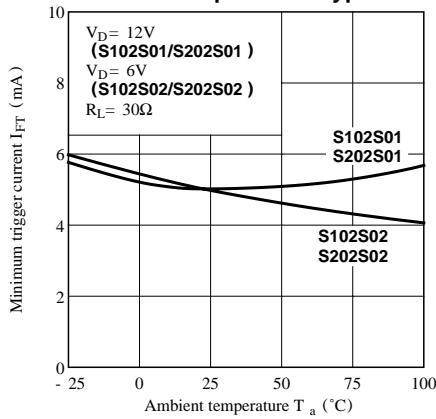
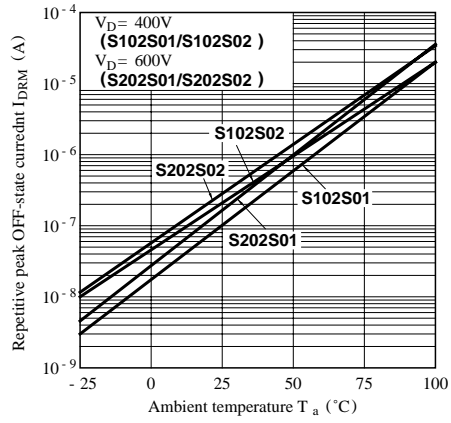


Fig. 8 Repetitive Peak OFF-state Current vs. Ambient Temperature (Typical Value)



● Please refer to the chapter “Precautions for Use”