

S11 2S01 Series

S116S01 Series

SIP Type SSR for Medium Power Control

■ Features

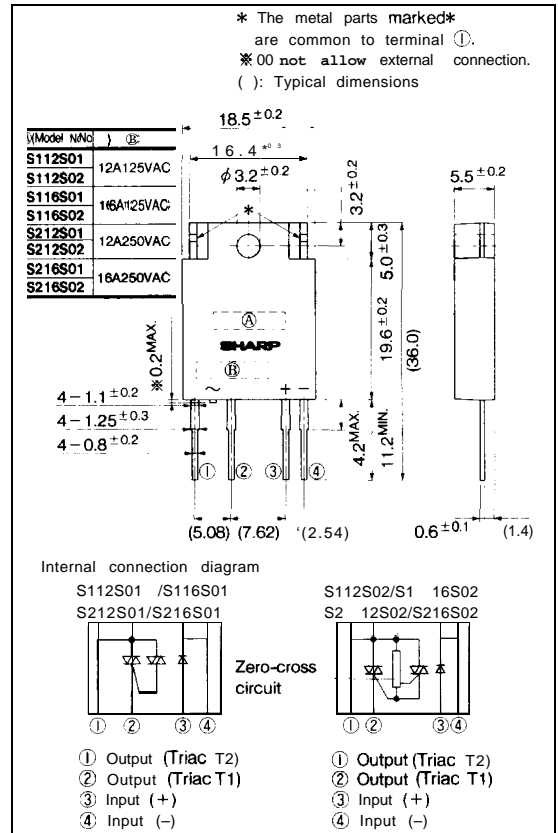
1. Compact, high radiation resin mold package
2. RMS ON-state current
 - S1 12S01 Series** :12Arms at $T_c \leq 70^\circ\text{C}$
(With heat sink)
 - S116S01 Series** :16Arms at $T_c \leq 60^\circ\text{C}$
(With heat sink)
3. Built-in zero-cross circuit
(S1 12S02/S212S02/S116S02/S21 6S02)
4. High repetitive peak OFF-state voltage
 - S112S01/S1 12S02/S116S01/S1 16S02**
 $V_{\text{DRM}} : 400\text{V}$
 - S212S01 /S212S02/S216S01 /S216S02**
 $V_{\text{DRM}} : 600\text{V}$
5. Isolation voltage between input and output
($V_{\text{...}} : 4000\text{Vrms}$)
6. Recognized by UL, file No. E94758
 - S112s01/s1 12s02**
 - S116S01/S1 16S02**
7. Approved by CSA, No. 63705
 - S112s01/s1 12s02**
 - S116S01/S116S02**

■ Applications

1. Copiers, laser beam printers
2. Automatic vending machines
3. FA equipment

■ Outline Dimensions

(Unit : mm)



■ Model line-ups

	For 100V lines	For 200V lines
For phase control	S112S01	S212S01
No built-in zero-cross circuit	S116S01	S216S01
Built-in zero-cross circuit	S112S02	S212S02
	S116S02	S216S02

■ 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	S112S01 Series S116S01 Series	I _T	*1 12	A _{rms}
				*1 16	A _{rms}
	*1 Peak one cycle surge current	S112S01 Series S116S01 Series	I _{surge}	120	A
				160	A
	Repetitive peak OFF-state voltage	S112S01/S112S02 S116S01/S116S02	V _{DRM}	400	V
				600	V
	Non-repetitive peak OFF-state voltage	S112S01/S112S02 S116S01/S116S02	V _{DSM}	400	V
				600	V
Critical rate of rise of ON-state current		dI/dt	50	A/μs	
Operating frequency		f	45 to 65	Hz	
*2 Isolation voltage		V _{iso}	4 000	V _{rms}	
Operating temperature		T _{min}	-25 to +100	°C	
Storage temperature		T _{stg}	-30 to +125	°C	
*1 Soldering temperature		T _{sol}	260	°C	

*1 60Hz sine wave, T_i=25°C start
 *2 AC 60Hz 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 ≤ 70°C
 *5 T_C ≤ 60°C

■ Electrical 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 _o = V _{DRM}	-		10 ⁻⁴	A	
	ON-state voltage	S112S01 Series S116S01 Series	V _T	Resistance load I _F = 20mA, I _T = 12A _{rms}		1.5	V _{rms}	
				Resistance load I _F = 20mA, I _T = 16A _{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 · V _{DRM}	30			V/μs
	Critical rate of rise of commutating OFF-state voltage		(dV/dt) _c	T _j = 125°C, V _D = 400V, *6	5			V/μs
Zero-cross voltage		V _{OX}	I _F = 8mA			35	v	
Transfer characteristics	Minimum trigger current	S112S01/S112S01 S116S01/S116S01 S112S02/S112S02 S116S02/S116S02	I _{F1}	V _D = 12V, R _L = 30Ω		8	mA	
				V _D = 6V, R _L = 30Ω		8	mA	
				DC500V, RH = 40 to 60%	10 ¹⁰			Ω
	Turn-on time		t _{on}	AC 50Hz			1	ms
	Turn-off time		t _{off}	AC 50Hz			10	ms
Thermal resistance (Between junction and case)		R _{th(j-c)}	S112S01 series S116S01 series		3.8		°C/W	
Thermal resistance (Between junction and ambience)		R _{th(j-a)}			3.3		°C/W	
					40		°C/W	

*6 S112S01 Series dI_T/dt --- 6.4/ins
 S116S01 Series dI_T/dt --- 8A/ins

Solid State Relays

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Fig. 5 Forward Current vs. Forward Voltage

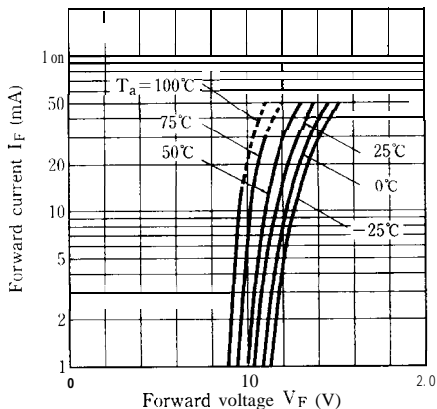


Fig. 6 Surge Current vs. Power-on Cycle

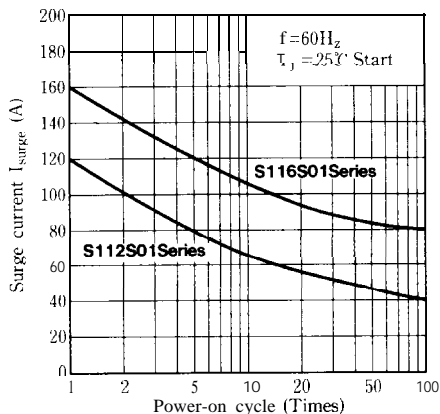


Fig. 7 Maximum ON-state Power Dissipation vs. RMS ON-state Current (S112S01Series)

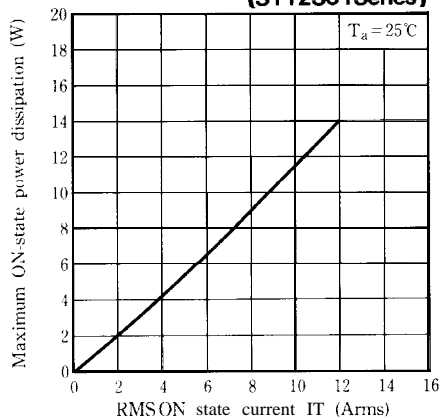


Fig. 8 Maximum ON-state Power Dissipation vs. RMS ON-state Current (S116S01Series)

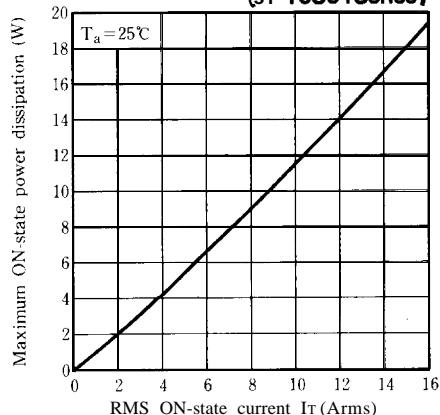


Fig. 9 Minimum Trigger Current vs. Ambient Temperature

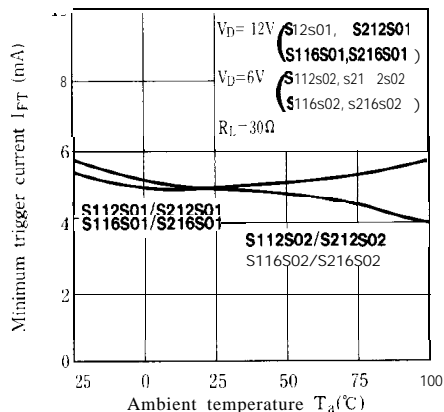


Fig.10 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature

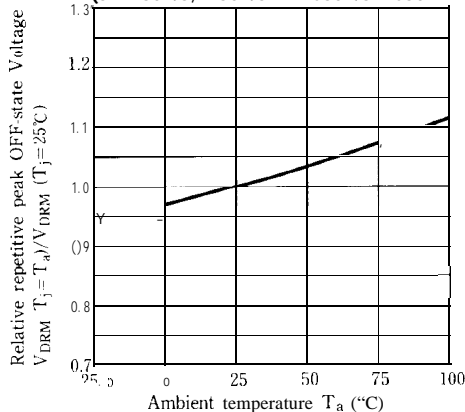


Fig.11 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature
(s112s02/s212s02/s1 16s02/s216s02)

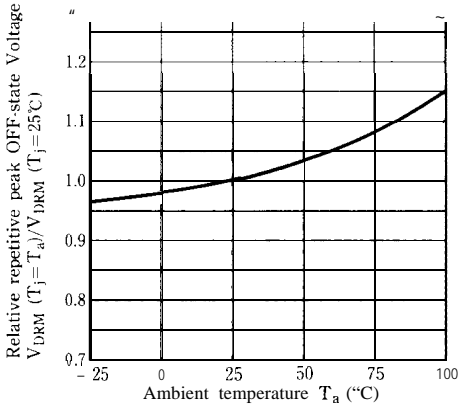


Fig.12 Repetitive Peak OFF-state Current vs. Ambient Temperature
(S112S01/SI 12SF.12/SI 16S01/S116S02)

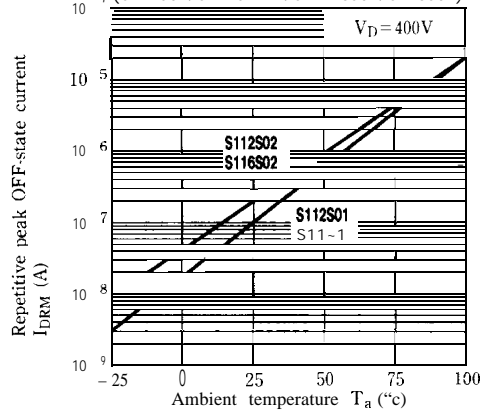
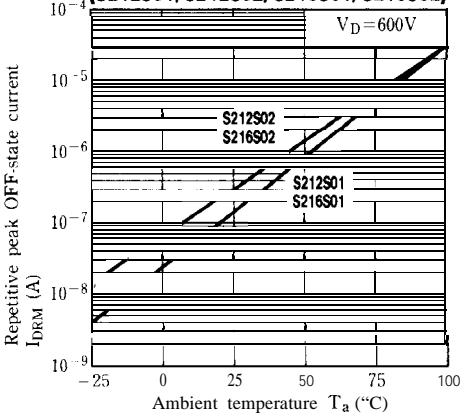


Fig.13 Repetitive Peak OFF-state Current vs. Ambient Temperature
(S212S01/S212S02/S216S01/S216S02)



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