S108T01/S108T02 S208T01/S208T02

Low Profile Type Solid State Relays

■ Features

1. Low profile type (height : 16mm)
2. Built-in zero-cross circuit **(S108T02/S208T02)**
3. RMS ON-state current I_T : MAX. 8Arms
4. Approved by TÜV, No. R9750791 **(S208TY1/S208TY2)**
   Input-Output : Basic Insulation

■ Applications

1. Programmable controllers
2. Air conditioners
3. Copiers
4. Automatic vending machines

■ Model line-ups

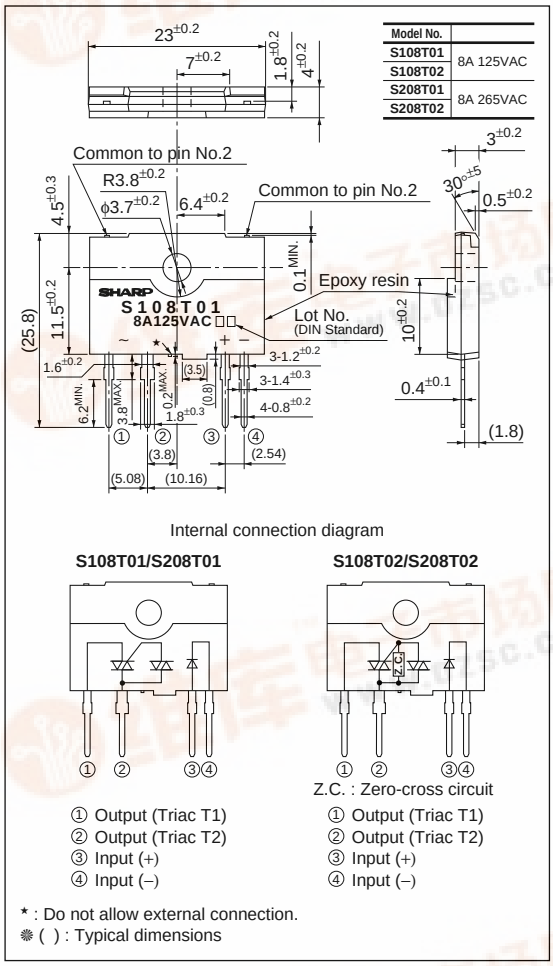
	For 100V lines	For 200V lines
No zero-cross circuit	**S108T01**	**S208T01**
Built-in zero-cross circuit	**S108T02**	**S208T02**

■ 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		I_T	*1 8	A_{rms}
	*2 Peak one cycle surge current		I_{surge}	80	A
	Repetitive peak OFF-state voltage	**S108T01 S108T02**	V_{DRM}	400	V
		S208T01 S208T02		600	
	Non-repetitive peak OFF-state voltage	**S108T01 S108T02**	V_{DSM}	400	V
		S208T01 S208T02		600	
	Critical rate of rise of ON-state current		dI_T/dt	50	A/μs
	Operating frequency		f	45 to 65	Hz
	Operating temperature		T_{opr}	−25 to +100	°C
	Storage temperature		T_{stg}	−30 to +125	°C
	*3 Isolation voltage		V_{iso}	3.0	kV_{rms}
	*4 Soldering temperature		T_{sol}	260	°C

*1 Refer to Fig.2, Fig.3
*2 60Hz sine wave, start at Tj=25°C
*3 Isolation voltage measuring method
(1) Dielectric withstand voltage tester with zero cross circuit shall be used.
(2) The applied voltage waveform shall be sine wave.
(3) Voltage shall be applied between input and output.
(Input and output terminals shall be shorted respectively.)
(4) AC 60Hz, 1min, 40 to 60%RH.
*4 For 10s

■ Outline Dimensions (Unit : mm)



Notice	In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.
Internet	Internet address for Electronic Components Group http://www.sharp.co.jp/ecg/

■ 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	–	–	1×10^{-4}	A
Output	Repetitive peak OFF-state current		I_{DRM}	$V_D=V_{DRM}$	–	–	1×10^{-4}	A
	ON-state voltage		V_T	I_T=2A_{rms}, Resistance load, I_F=20mA	–	–	1.5	V_{rms}
	Holding current		I_H	–	–	–	50	mA
	Critical rate of rise of OFF-state voltage		dV/dt	V_D=2/3V_{DRM}	30	–	–	V/μs
	Critical rate of rise of OFF-state voltage at commutaion		$(dV/dt)_C$	T_j=125°C, V_D=2/3V_{DRM}, dI_f/dt=–4A/ms	5	–	–	V/μs
Transfer characteristics	Minimum trigger current	**S108T01/S208T01**	I_{FT}	V_D=12V, R_L=30Ω	–	–	8	mA
		S108T02/S208T02		V_D=6V, R_L=30Ω				
	Zero cross voltage	**S108T02/S208T02**	V_{OX}	I_F=8mA	–	–	35	V
	Isolation resistance		R_{iso}	DC500V, 40 to 60%RH	1×10^{10}	–	–	Ω
	Turn-on time	**S108T01**	t_{on}	V_D=100V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA	–	–	1	ms
		S208T01						
		S108T02		V_D=200V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA			10	
		S208T02						
	Turn-off time	**S108T01**	t_{off}	V_D=100V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA	–	–	10	ms
		S108T02						
		S208T01		V_D=200V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA				
		S208T02						
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		

Fig.1 Forward Current vs. Ambient Temperature

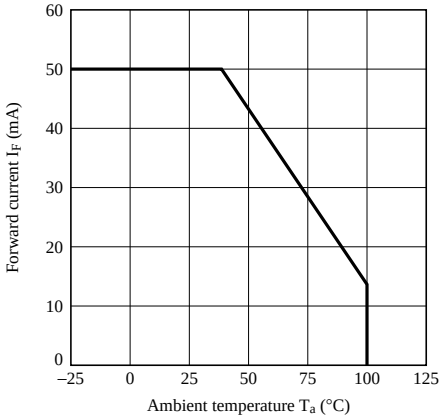
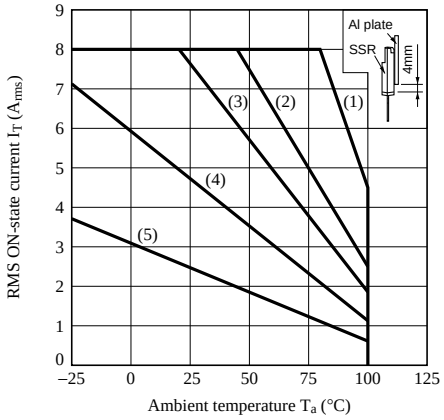


Fig.2 RMS ON-state Current vs. Ambient Temperature



(1) With infinite heat sink
(2) With heat sink (200×200×2mm Al plate)
(3) With heat sink (100×100×2mm Al plate)
(4) With heat sink (50×50×2mm Al plate)
(5) Without heat sink
(Note) With the Al heat sink set up vertically, tighten the device with a torque of 0.4N•m and apply thermal conductive silicone grease on the mounting face of heat sink. Forced cooling shall not be carried out. (Please use an isolation sheet if necessary.)

Fig.3 RMS ON-state Current vs. Case Temperature

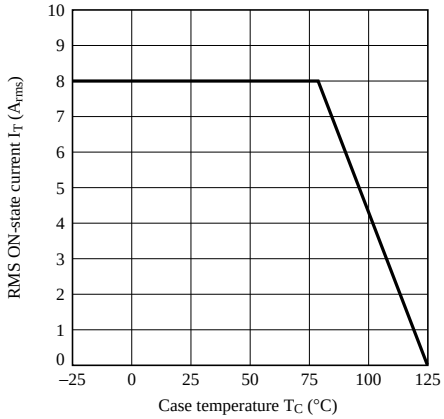


Fig.4 Forward Current vs. Forward Voltage

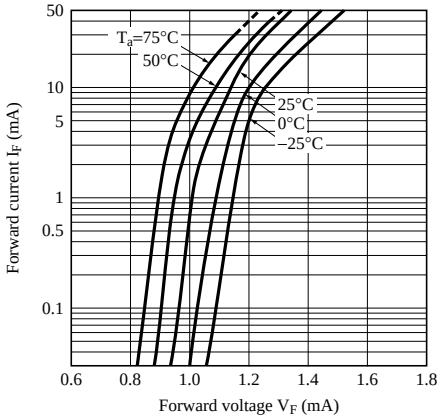


Fig.5 Surge Current vs. Power-on Cycle

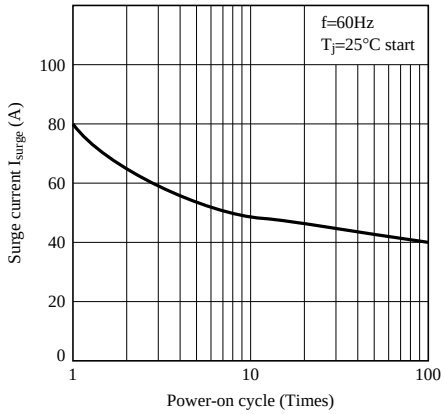


Fig.6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

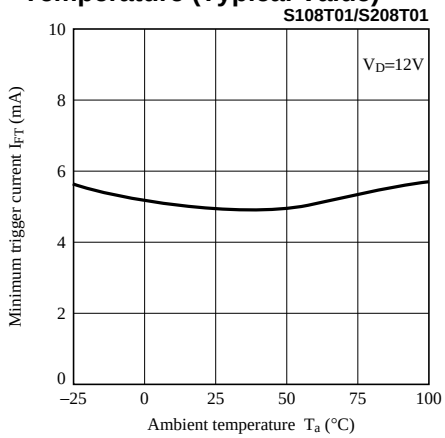


Fig.7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

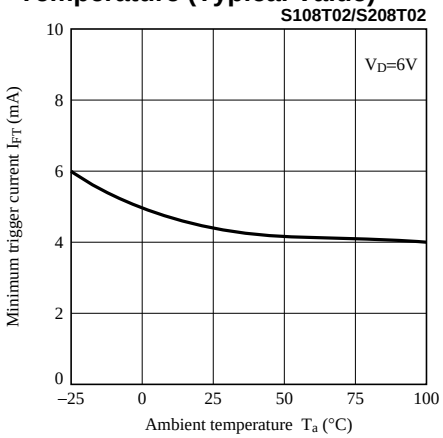


Fig.8 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

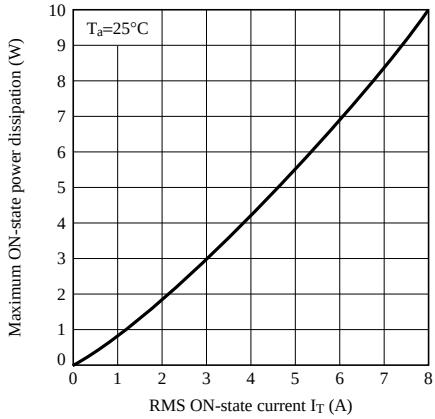


Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature

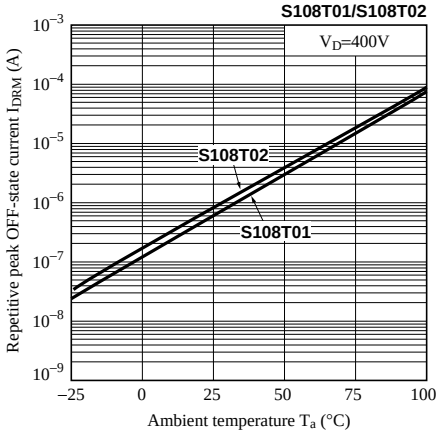
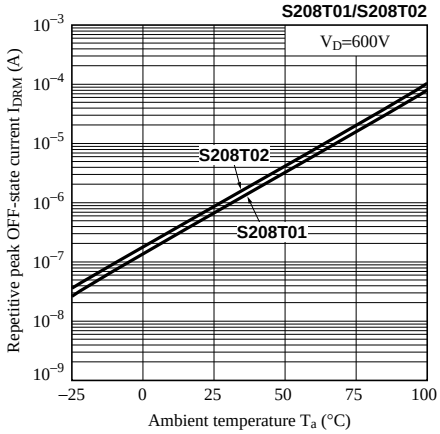


Fig.10 Repetitive Peak OFF-state Current vs. Ambient Temperature



Application Circuits

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  - Office automation equipment
  - Telecommunication equipment [terminal]
  - Test and measurement equipment
  - Industrial control
  - Audio visual equipment
  - Consumer electronics

  (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
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  - Gas leakage sensor breakers
  - Alarm equipment
  - Various safety devices, etc.

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  - Telecommunication equipment [trunk lines]
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