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)

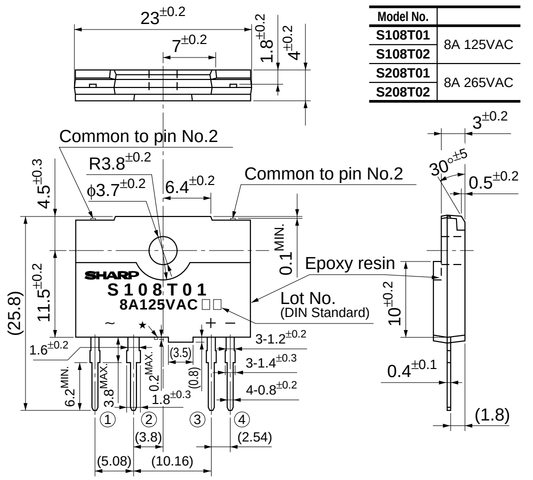
	Parameter		Symbol	Rating	Unit
Input	Forward current		I_F	50	mA
Input	Reverse voltage		V_R	6	V
Output	RMS ON-state current		I_T	*1 8	A_{rms}
Output	*2 Peak one cycle surge current		I_{surge}	80	A
Output	Repetitive peak OFF-state voltage	**S108T01** **S108T02**	V_{DRM}	400	V
Output		**S208T01** **S208T02**		600	
Output	Non-repetitive peak OFF-state voltage	**S108T01** **S108T02**	V_{DSM}	400	V
Output		**S208T01** **S208T02**		600	
Output	Critical rate of rise of ON-state current		dI_T/dt	50	A/μs
Output	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

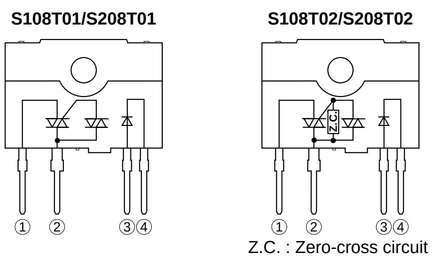
■ Outline Dimensions

(Unit : mm)

Model No.	
S108T01 / S108T02	8A 125VAC
S208T01 / S208T02	8A 265VAC



Internal connection diagram



Z.C. : Zero-cross circuit

S108T01/S208T01:
① Output (Triac T1)
② Output (Triac T2)
③ Input (+)
④ Input (–)

S108T02/S208T02:
① Output (Triac T1)
② Output (Triac T2)
③ Input (+)
④ Input (–)

⋆ : Do not allow external connection.
❋ ( ) : Typical dimensions

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

Fig.1 Forward Current vs. Ambient Temperature

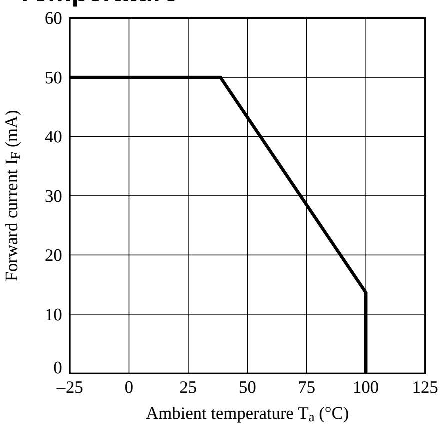
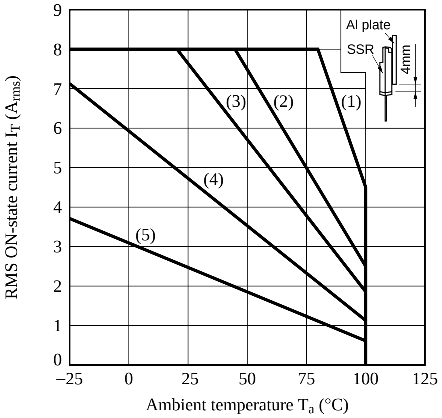


Fig.2 RMS ON-state Current vs. Ambient Temperature



(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

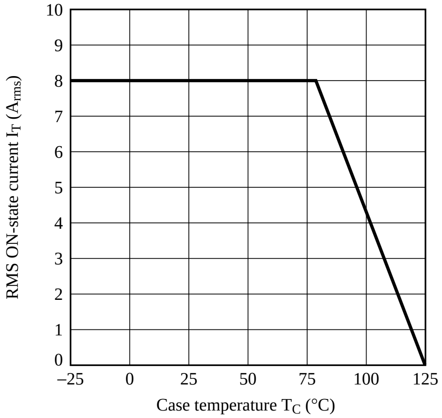


Fig.4 Forward Current vs. Forward Voltage

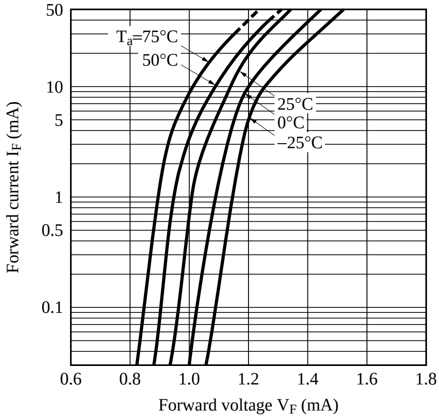


Fig.5 Surge Current vs. Power-on Cycle

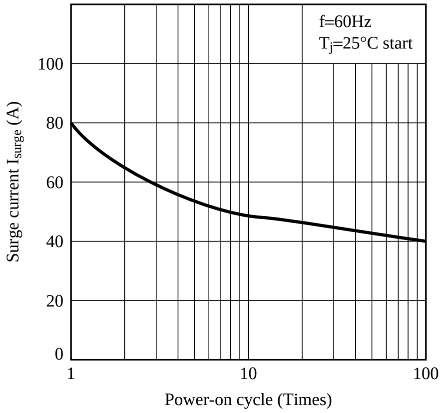


Fig.6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

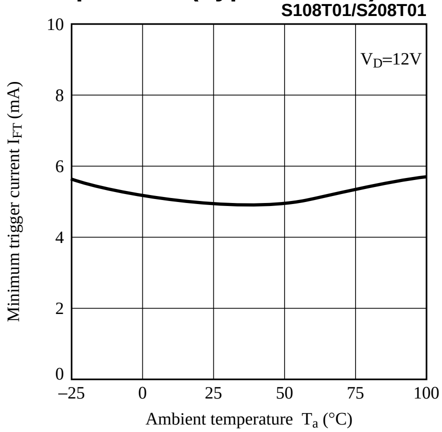


Fig.7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

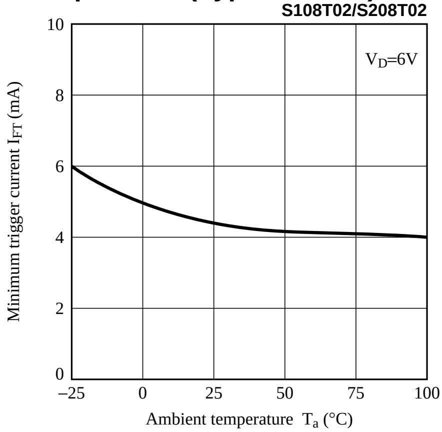


Fig.8 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

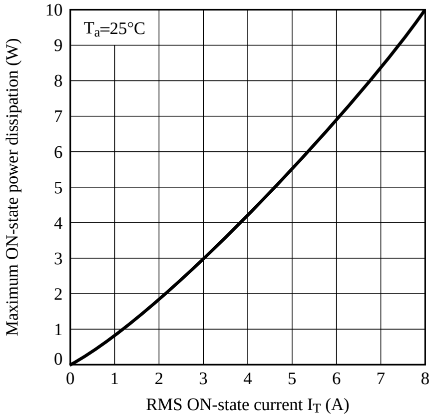


Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature

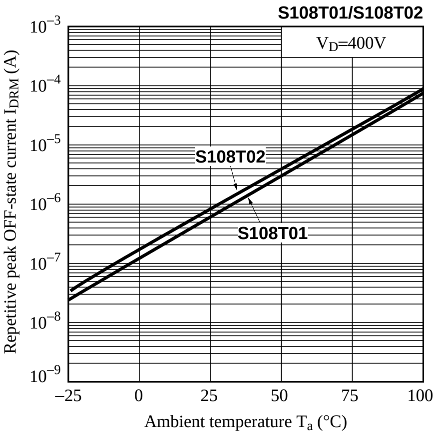


Fig.10 Repetitive Peak OFF-state Current vs. Ambient Temperature