

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_r : 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

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

Parameter		Symbol	Rating	Unit	
Input	Forward current	I_F	50	mA	
	Reverse voltage	V_R	6	V	
	RMS ON-state current	I_r	*1 8	A_{rms}	
	*2 Peak one cycle surge current	I_{surge}	80	A	
Output	Repetitive peak OFF-state voltage	V_{DRM}	S108T01 S108T02	400	V
			S208T01 S208T02	600	
	Non-repetitive peak OFF-state voltage	V_{DSM}	S108T01 S108T02	400	V
			S208T01 S208T02	600	
	Critical rate of rise of ON-state current	dI_r/dt	50	$A/\mu s$	
	Operating frequency	f	45 to 65	Hz	
Operating temperature	T_{opr}	-25 to +100	$^{\circ}\text{C}$		
Storage temperature	T_{stg}	-30 to +125	$^{\circ}\text{C}$		
*3 Isolation voltage	V_{iso}	3.0	kV_{rms}		
*4 Soldering temperature	T_{sol}	260	$^{\circ}\text{C}$		

*1 Refer to Fig.2, Fig.3

*2 60Hz sine wave, start at $T_j=25^{\circ}\text{C}$

*3 Isolation voltage measuring method

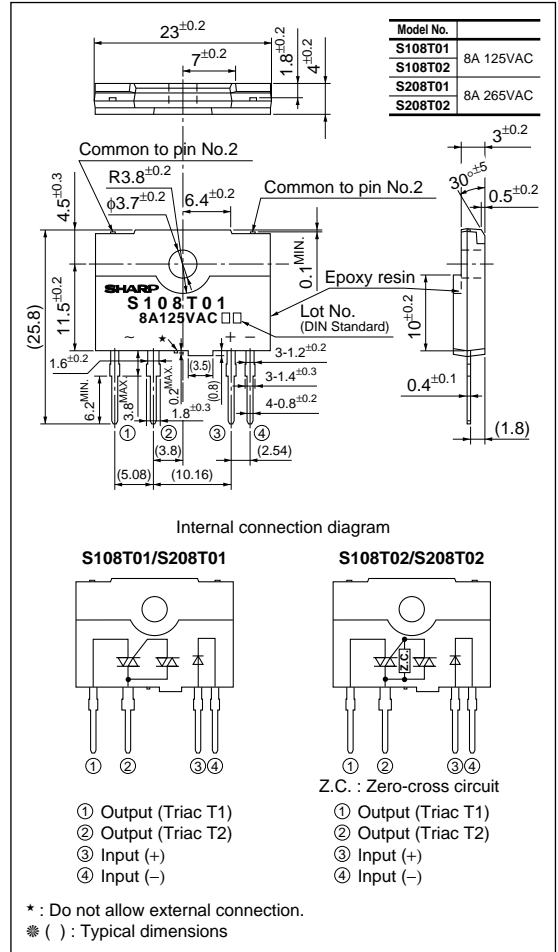
- (1) Dielectric withstand voltage tester with zero cross circuit shall be used.
- (2) The applied voltage waveform shall be sine wave.
- (3) Voltage shall be applied between input and output.
(Input and output terminals shall be shorted respectively.)

(4) AC 60Hz, 1min, 40 to 60%RH.

*4 For 10s

■ Outline Dimensions

(Unit : mm)



■ Electrical 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	$V_R=3\text{V}$	–	–	1×10^{-4}	A	
	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, $I_F=20\text{mA}$	–	–	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	–	–	$V/\mu\text{s}$	
	Critical rate of rise of OFF-state voltage at commutation	$(dV/dt)_C$	$T_j=125^\circ\text{C}$, $V_D=2/3V_{DRM}$, $dI/dt=-4\text{A/ms}$	5	–	–	$V/\mu\text{s}$	
Transfer characteristics	Minimum trigger current	S108T01/S208T01	$V_D=12\text{V}$, $R_L=30\Omega$	–	–	8	mA	
		S108T02/S208T02						$V_D=6\text{V}$, $R_L=30\Omega$
	Zero cross voltage	S108T02/S208T02	V_{OX}	$I_F=8\text{mA}$	–	–	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, $I_F=20\text{mA}$	–	–	1	ms
		S208T01						
		S108T02						
S208T02	$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	10						
Turn-off time	S108T01	t_{off}	$V_D=100V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	–	–	10	ms	
	S108T02							
	S208T01							
S208T02	$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$							
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	–		

Fig.1 Forward Current vs. Ambient Temperature

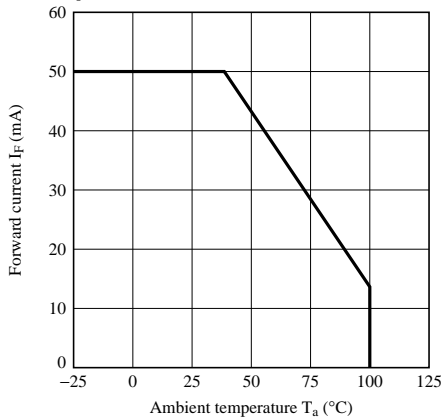
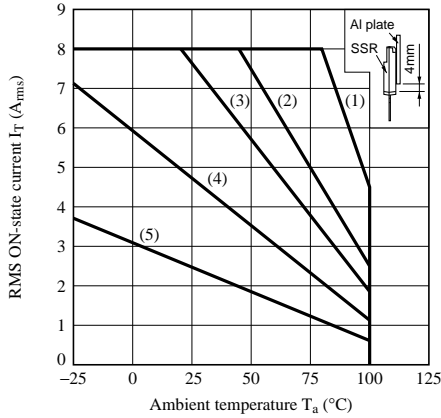


Fig.2 RMS ON-state Current vs. Ambient Temperature



- (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

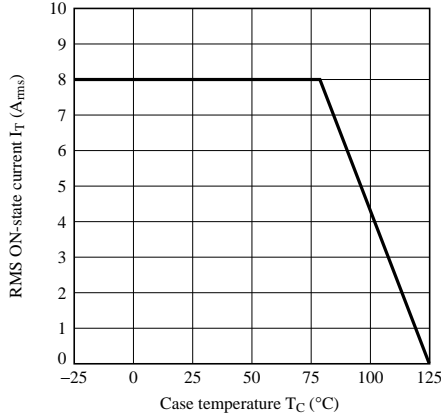


Fig.4 Forward Current vs. Forward Voltage

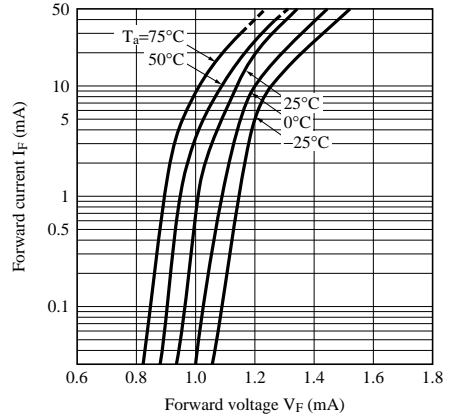


Fig.5 Surge Current vs. Power-on Cycle

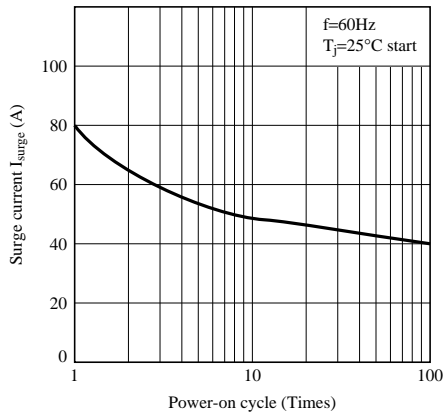


Fig.6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

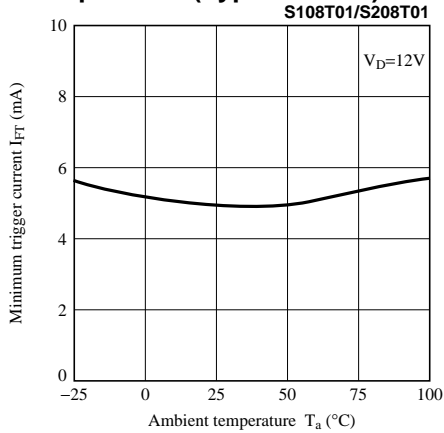


Fig.7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

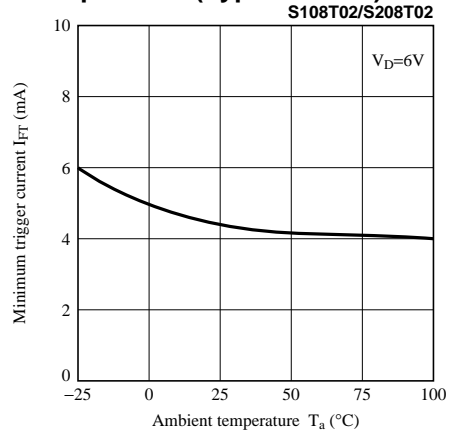


Fig.8 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

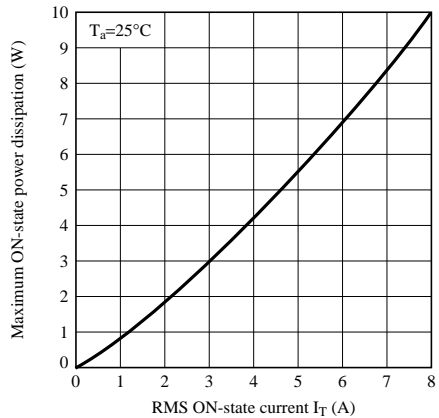


Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature

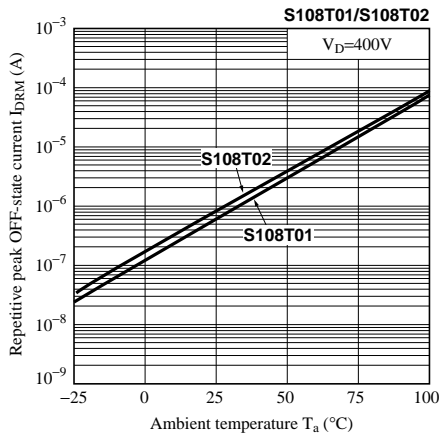
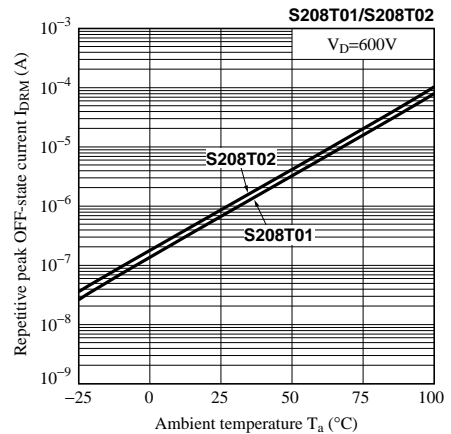


Fig.10 Repetitive Peak OFF-state Current vs. Ambient Temperature



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