S102T01/S102T02 S202T01/S202T02

Low Profile Type Solid State Relays

■ Features

1. Low profile type (height:16mm)
2. Built-in zero-cross circuit **(S102T02/S202T02)**
3. RMS ON-state current I_T (rms) : MAX. 2A (T_a≤40˚C)
4. Recognized by UL, file No.E94758
   Approved by CSA, No.LR63705

■ Applications

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

■ Absolute Maximum Ratings

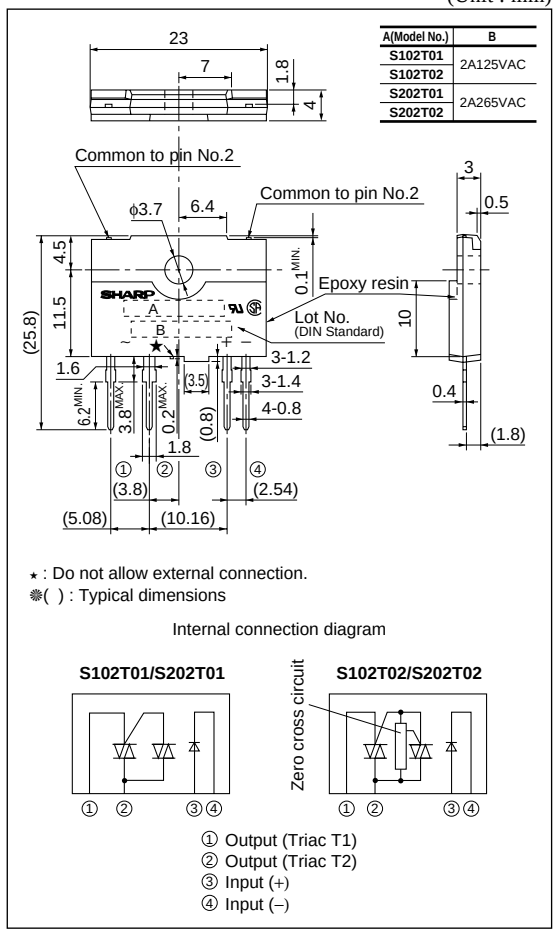
(T_a=25˚C)

Parameter			Symbol	Rating	Unit
Input	Forward current		I_F	50	mA
	Reverse voltage		V_R	6	V
Output	RMS ON-state current		$I_{T(rms)}$	*1 2	A
	*2 Peak one cycle surge current		I_{surge}	20	A
	Repetitive peak OFF-state voltage	**S102T01**	V_{DRM}	400	V
		S102T02			
		S202T01		600	
		S202T02			
	Non-repetitive peak OFF-state voltage	**S102T01**	V_{DSM}	400	V
		S102T02			
		S202T01		600	
		S202T02			
	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			$V_{iso\ (rms)}$	3.0	kV
*4 Soldering temperature			T_{sol}	260	˚C

*1 Refer to Fig.2, Fig.3
*2 60Hz sine wave, start at T_j=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) 40 to 60%RH, AC 60Hz, for 1minute
*4 For 10s

■ Outline Dimensions

(Unit : mm)



■ Model line-up

	For 100V lines	For 200V lines
No zero-cross circuit	**S102T01**	**S202T01**
Built-in zero-cross circuit	**S102T02**	**S202T02**

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Internet Internet address for Electronic Components Group http://sharp-world.com/ecg/

■ Electro-optical Characteristics

(T_a=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		$V_{T\ (rms)}$	$I_{T\ (rms)}$=2A, Resistance load, I_F=20mA	–	–	1.7	V
	Holding current		I_H	–	–	–	25	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_t/dt=–2.5A/ms	4	–	–	V/μs
Transfer characteristics	Minimum trigger current	S102T01/S202T01	I_{FT}	V_D=12V, R_L=30Ω	–	–	8	mA
		S102T02/S202T02		V_D=6V, R_L=30Ω				
	Zero cross voltage	S102T02/S202T02	V_{OX}	I_F=8mA	–	–	35	V
	Isolation resistance		R_{iso}	DC500V, 40 to 60%RH	1×10^{10}	–	–	Ω
	Turn-on time	S102T01	t_{on}	$V_{D\ (rms)}$=100V, AC50Hz, $I_{T\ (rms)}$=2A, Resistance load, I_F=20mA	–	–	1	ms
		S102T02			–	–	10	
		S202T01		$V_{D\ (rms)}$=200V, AC50Hz, $I_{T\ (rms)}$=2A, Resistance load, I_F=20mA	–	–	1	
		S202T02			–	–	10	
	Turn-off time	S102T01	t_{off}	$V_{D\ (rms)}$=100V, AC50Hz, $I_{T\ (rms)}$=2A, Resistance load, I_F=20mA	–	–	10	ms
		S102T02						
		S202T01		$V_{D\ (rms)}$=200V, AC50Hz, $I_{T\ (rms)}$=2A, Resistance load, I_F=20mA				
		S202T02						

Fig.1 Forward Current vs. Ambient Temperature

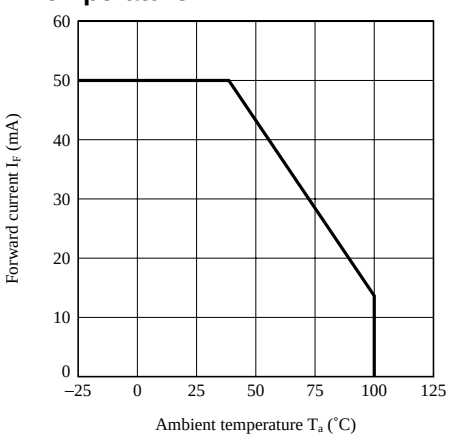


Fig.2 RMS ON-state Current vs. Ambient Temperature

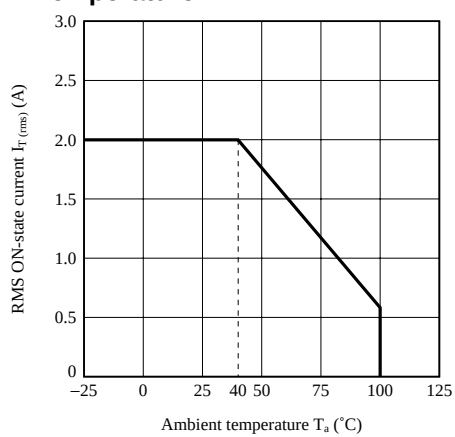


Fig.3 Forward Current vs. Forward Voltage

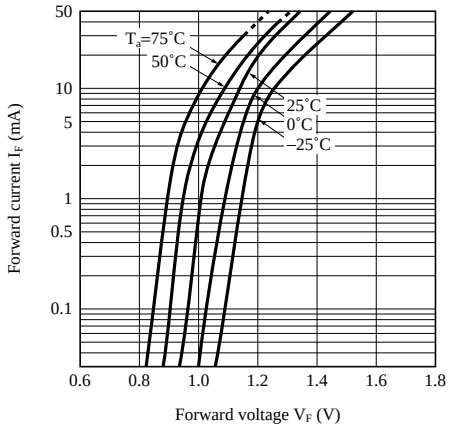


Fig.4 Surge Current vs. Power-on Cycle

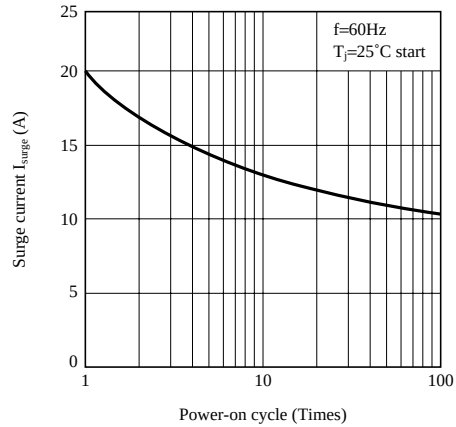


Fig.5 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

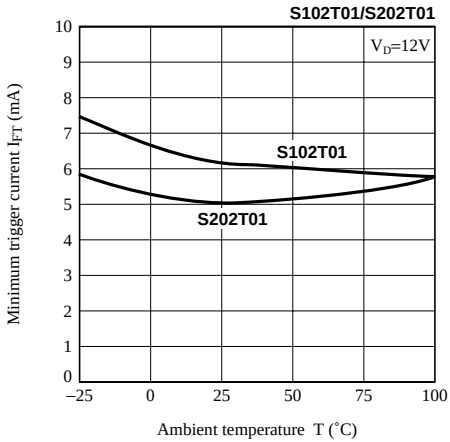


Fig.6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

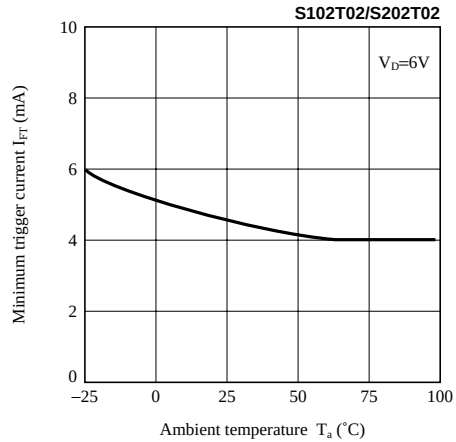


Fig.7 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

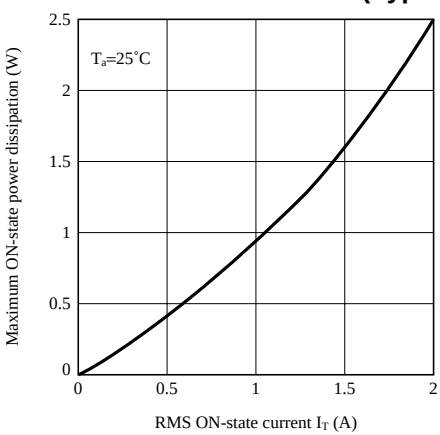


Fig.8 Repetitive Peak OFF-state Current vs. Ambient Temperature

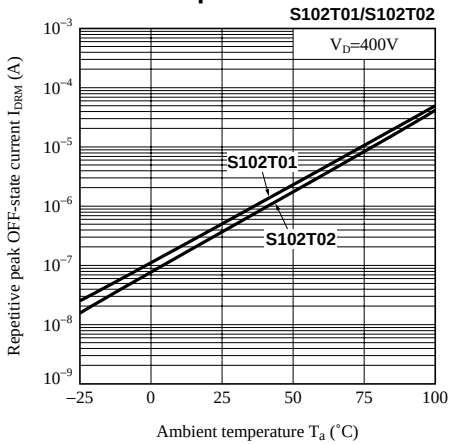
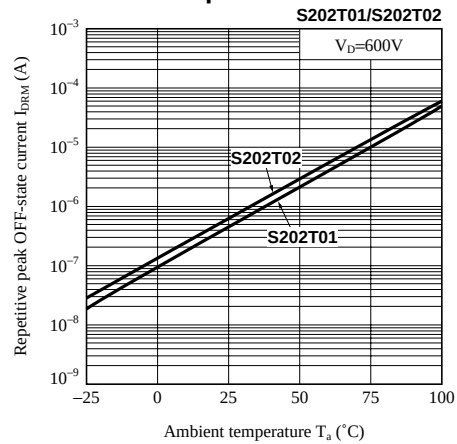


Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature



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

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  --- Traffic signals
  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

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