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S105T01/S105T02 S205T01/S205T02

Low Profile Type Solid State Relays

■ Features

1. Low profile type (height : 16mm)
2. Built-in zero-cross circuit **(S105T02/S205T02)**
3. RMS ON-state current I_T : MAX. 5Arms
4. Approved by TÜV, No. R9750790 **(S205TY1/S205TY2)**
   Input-Output : Basic Insulation

■ Applications

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

■ Model line-ups

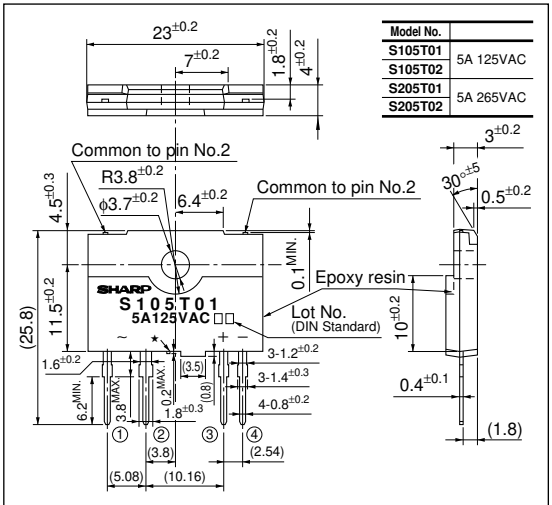
	For 100V lines	For 200V lines
No zero-cross circuit	**S105T01**	**S205T01**
Built-in zero-cross circuit	**S105T02**	**S205T02**

■ 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 5	A_{rms}
	*2 Peak one cycle surge current		I_{surge}	50	A
	Repetitive peak OFF-state voltage	**S105T01** **S105T02**	V_{DRM}	400	V
		S205T01 **S205T02**		600	
	Non-repetitive peak OFF-state voltage	**S105T01** **S105T02**	V_{DSM}	400	V
		S205T01 **S205T02**		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)



■ Electro-optical 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_t/dt=–2.5A/ms	5	–	–	V/μs
Transfer characteristics	Minimum trigger current	S105T01/S205T01	I_{FT}	V_D=12V, R_L=30Ω	–	–	8	mA
		S105T02/S205T02		V_D=6V, R_L=30Ω				
	Zero cross voltage	S105T02/S205T02	V_{OX}	I_F=8mA	–	–	35	V
	Isolation resistance		R_{iso}	DC500V, 40 to 60%RH	1×10^{10}	–	–	Ω
	Turn-on time	S105T01	t_{on}	V_D=100V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA	–	–	1	ms
		S105T02			–	–	10	
		S205T01		V_D=200V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA	–	–	1	
		S205T02			–	–	10	
	Turn-off time	S105T01	t_{off}	V_D=100V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA	–	–	10	ms
		S105T02						
		S205T01		V_D=200V_{rms}, AC50Hz, I_T=2A_{rms}, Resistance load, I_F=20mA				
		S205T02						
Thermal resistance (Between junction and case)			R_{th}(j-c)	–	–	5	–	°C/W
Thermal resistance (Between junction and ambience)			R_{th}(j-a)	–	–	45	–	°C/W

Fig.1 Forward Current vs. Ambient Temperature

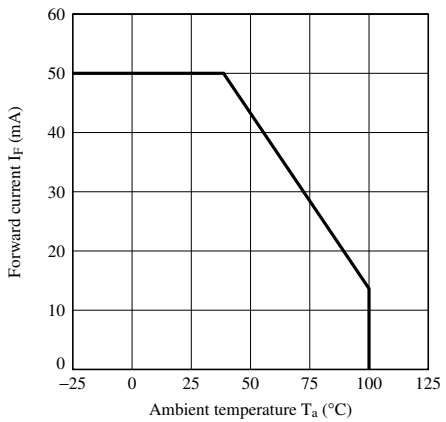
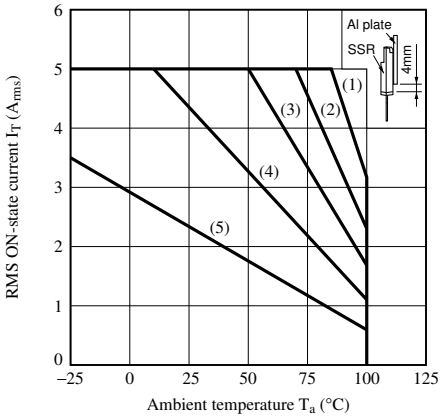


Fig.2 RMS ON-state Current vs. Ambient Temperature



(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

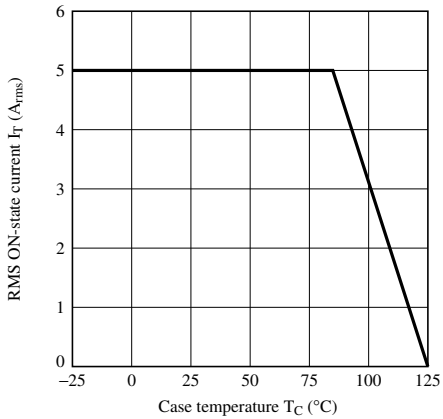


Fig.4 Forward Current vs. Forward Voltage

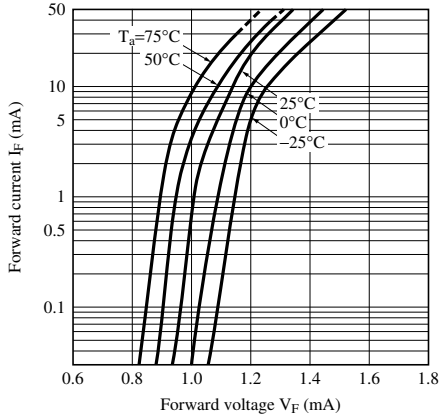


Fig.5 Surge Current vs. Power-on Cycle

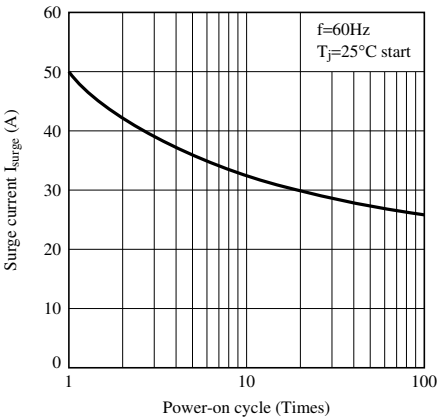


Fig.6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

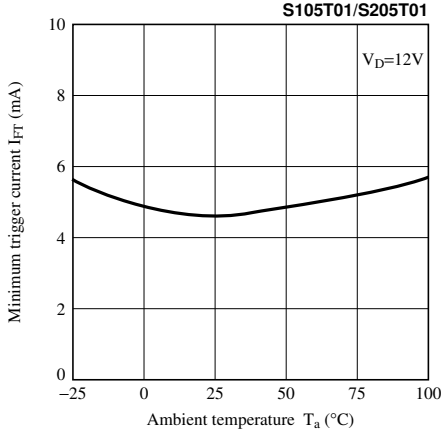


Fig.7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

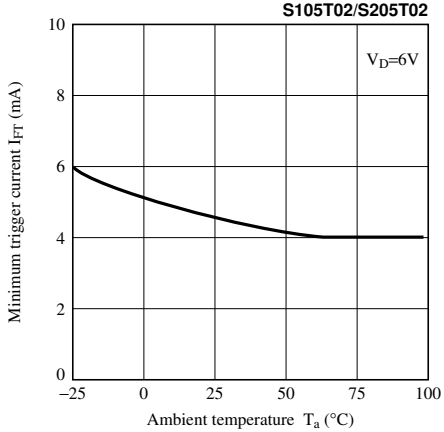


Fig.8 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

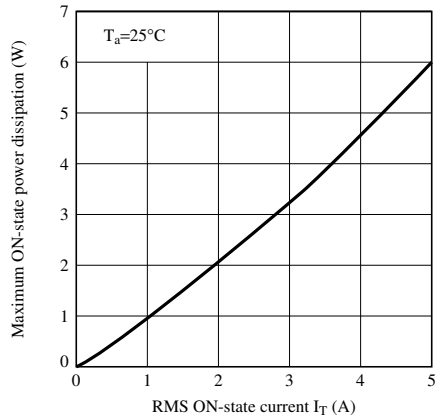


Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature

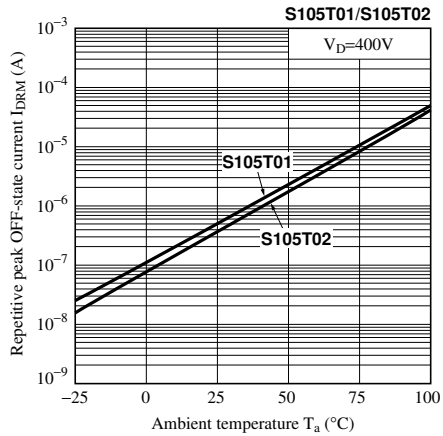
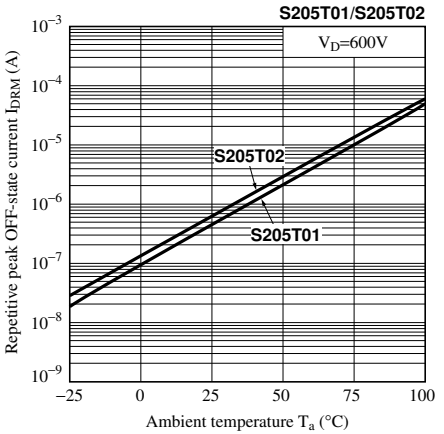


Fig.10 Repetitive Peak OFF-state Current vs. Ambient Temperature



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