

S105T01/S105T02 S205T01/S205T02

■ Features

1. Low profile type (height : 16mm)
2. Built-in zero-cross circuit (**S105T02/S205T02**)
3. RMS ON-state current I_r : 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	
	RMS ON-state current	I_r	*15	A _{rms}	
	*2 Peak one cycle surge current	I_{surge}	50	A	
Output	Repetitive peak OFF-state voltage	V_{DRM}	S105T01 S105T02	400	V
			S205T01 S205T02	600	
	Non-repetitive peak OFF-state voltage	V_{DSM}	S105T01 S105T02	400	V
			S205T01 S205T02	600	
	Critical rate of rise of ON-state current	dI_T/dt	50	A/ μ s	
	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.)

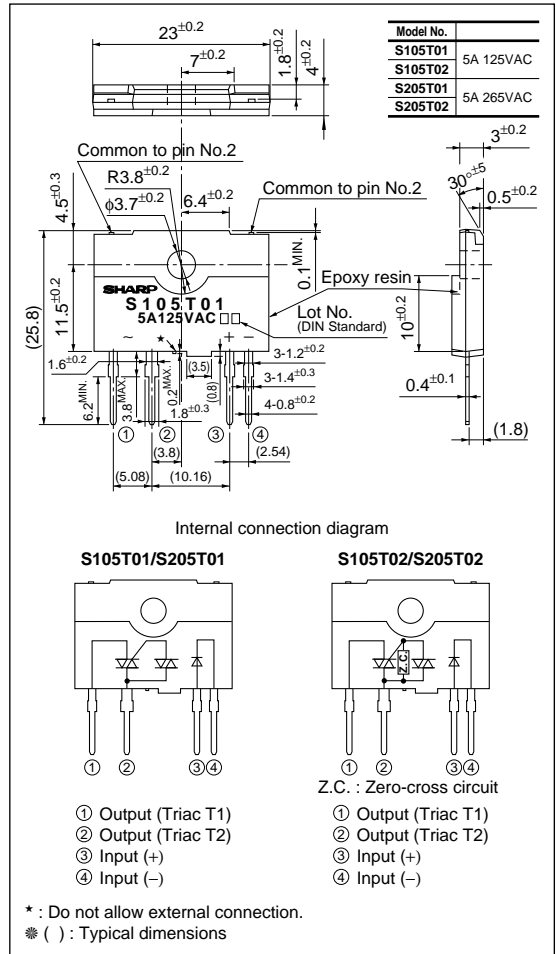
(4) AC 60Hz, 1min, 40 to 60%RH.

*4 For 10s

Low Profile Type Solid State Relays

■ Outline Dimensions

(Unit : mm)



■ Electro-optical 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	
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, $I_F=20\text{mA}$	–	–	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	$(dV/dt)_c$	$T_J=125^\circ\text{C}$, $V_D=2/3V_{DRM}$, $dI/dt=-2.5\text{A/ms}$	5	–	–	$V/\mu\text{s}$	
	Transfer characteristics	Minimum trigger current	S105T01/S205T01	$V_D=12\text{V}$, $R_L=30\Omega$	–	–	8	mA
S105T02/S205T02			$V_D=6\text{V}$, $R_L=30\Omega$					
Zero cross voltage		S105T02/S205T02	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		S105T01 S105T02 S205T01 S205T02	t_{on}	$V_D=100V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	–	–	1	ms
				$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	–	–	10	
				$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	–	–	1	
				$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	–	–	10	
Turn-off time		S105T01 S105T02 S205T01 S205T02	t_{off}	$V_D=100V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$	–	–	10	ms
				$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$				
	$V_D=200V_{rms}$, AC50Hz, $I_T=2A_{rms}$, Resistance load, $I_F=20\text{mA}$							
Thermal resistance (Between junction and case)		$R_{th(j-c)}$	–	–	5	–	$^\circ\text{C/W}$	
Thermal resistance (Between junction and ambience)		$R_{th(j-a)}$	–	–	45	–	$^\circ\text{C/W}$	

Fig.1 Forward Current vs. Ambient Temperature

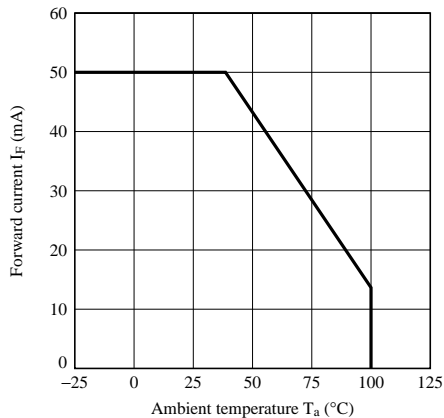
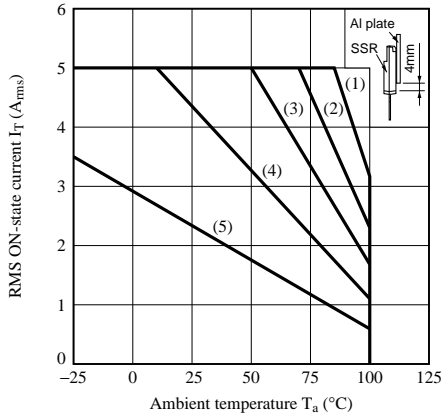


Fig.2 RMS ON-state Current vs. Ambient Temperature



- (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

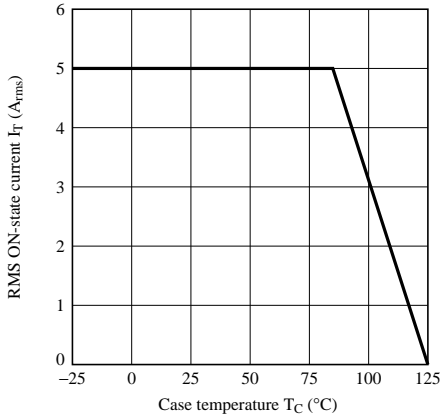


Fig.4 Forward Current vs. Forward Voltage

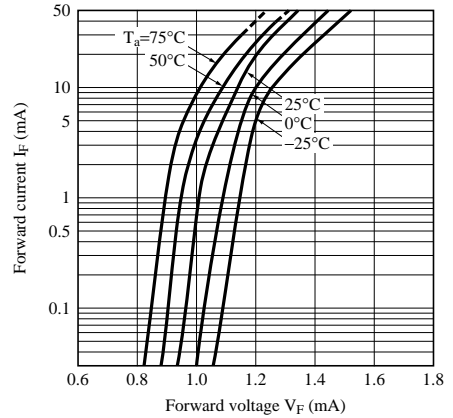


Fig.5 Surge Current vs. Power-on Cycle

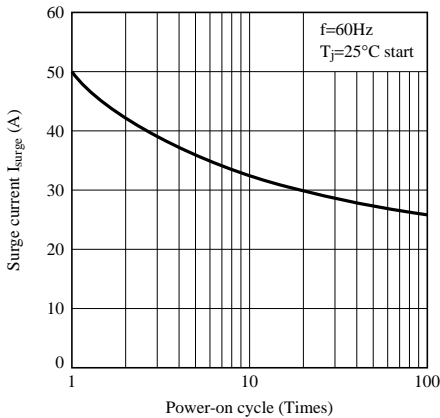


Fig.6 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

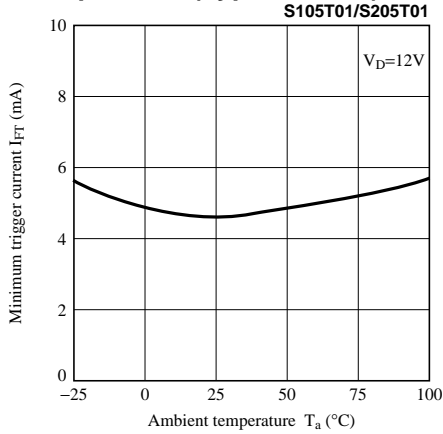


Fig.7 Minimum Trigger Current vs. Ambient Temperature (Typical Value)

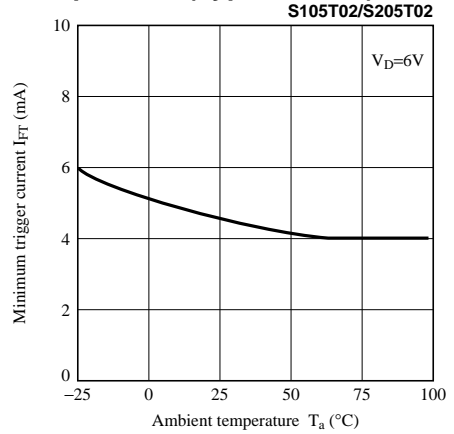


Fig.8 Maximum ON-state Power Dissipation vs. RMS ON-state Current (Typical Value)

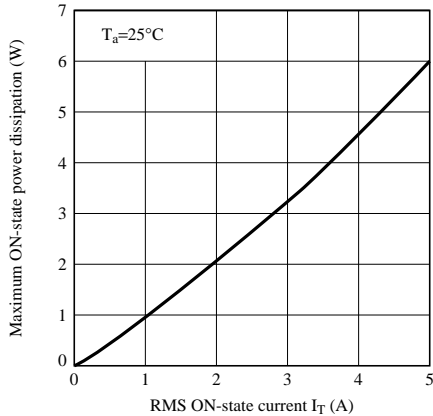


Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature

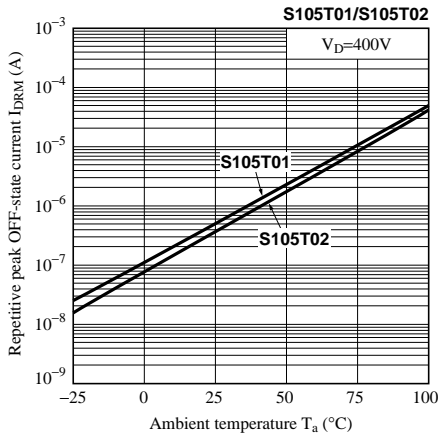
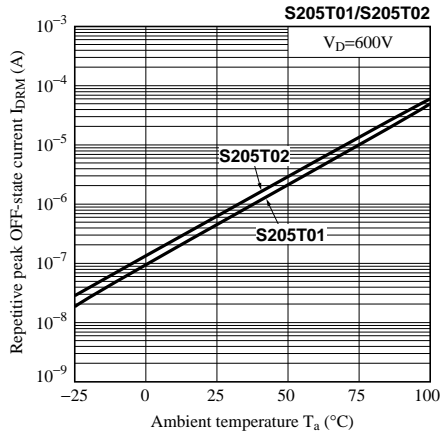


Fig.10 Repetitive Peak OFF-state Current vs. Ambient Temperature



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