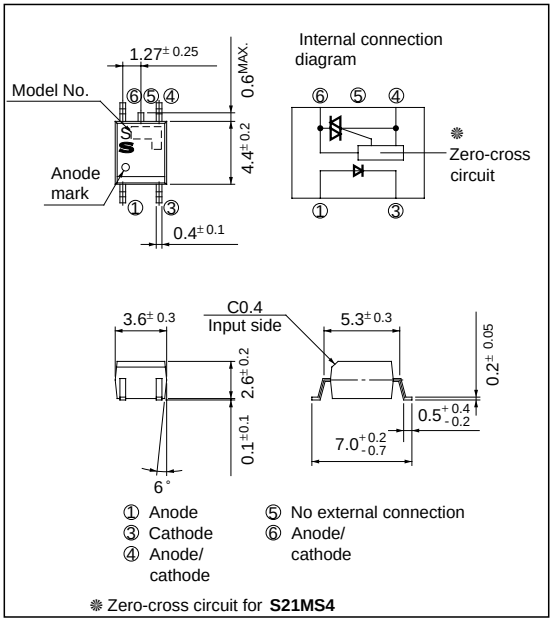
S11MS3/ S21MS3/S21MS4

High Density Surface Mount Type Mini-flat Package Phototriac Coupler

■ Features

1. Ultra-compact, mini-flat package type (3.6 x 4.4 x 2.0mm)
2. Built-in zero-cross circuit **(S21MS4)**
3. High isolation voltage between input and output (V_{iso} : 3 750V_{rms})
4. Recognized by UL, file No.E64380

■ Outline Dimensions (Unit : mm)



■ Model Line-ups

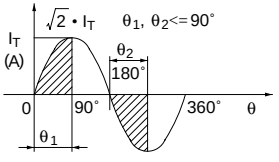
	For 100V lines	For 200V lines
No built-in zero-cross circuit	**S11MS3**	**S21MS3**
Built-in zero-cross circuit	-	**S21MS4**

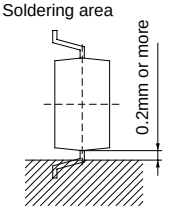
■ Applications

1. For triggering of medium/high power triacs

■ Absolute Maximum Ratings (Ta = 25˚C)

Parameter		Symbol	Rating		Unit
			S11MS3	S21MS3/S21MS4	
Input	Forward current	I_F	50		mA
	Reverse voltage	V_R	6		V
Output	*1 RMS ON-state current	I_T	0.05		A_{rms}
	*2 Peak one cycle surge current	I_{surge}	0.6		A
	Repetitive peak OFF-state voltage	V_{DRM}	400	600	V
*3 Isolation voltage		V_{iso}	3 750		V_{rms}
Operating temperature		T_{opr}	- 30 to + 100		˚C
Storage temperatrue		T_{stg}	- 40 to + 125		˚C
*4 Soldering temperature		T_{sol}	260		˚C





∗1 The definition of conduction angle θ of effective ON current I_T should be as shown in the right drawing.
∗2 50Hz sine wave
∗3 40 to 60% RH, AC for 1 minute
∗4 For 10 seconds,

" In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

■ 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	-	-	10	μA
Output	Repetitive peak OFF-state current		I_{DRM}	V_{DRM} = Rated	-	-	1	μA
	ON-state voltage		V_T	I_T = 0.05A	-	-	2.5	V
	Holding current		I_H	V_D = 6V	0.1	-	3.5	mA
	Critical rate of rise of OFF-state voltage		dV/dt	V_{DRM} = $1/\sqrt{2}$ • Rated	100	1 000	-	V/μs
	Zero-cross voltage	**S21MS4**	V_{OX}	I_F = 15mA, Resistance load	-	-	35	V
Transfer characteristics	Minimum trigger current		I_{FT}	V_D = 6V, R_L = 100Ω	-	-	10	mA
	Isolation resistance		R_{ISO}	DC500V, 40 to 60% RH	5 x 10^{10}	10^{11}	-	Ω
	Turn-on time	**S11MS3/S21MS3**	t_{on}	V_D = 6V, R_L = 100Ω, I_F = 20mA	-	-	100	μs
		S21MS4			-	-	50	

Fig. 1 RMS ON-state Current vs. Ambient Temperature

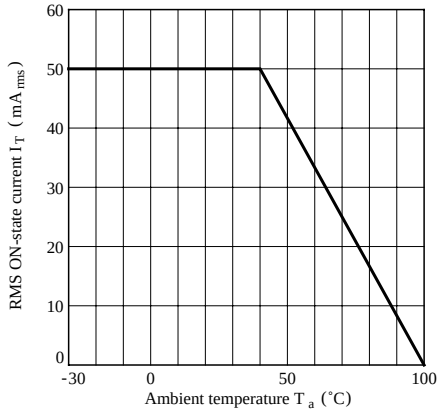


Fig. 2 Forward Current vs. Ambient Temperature

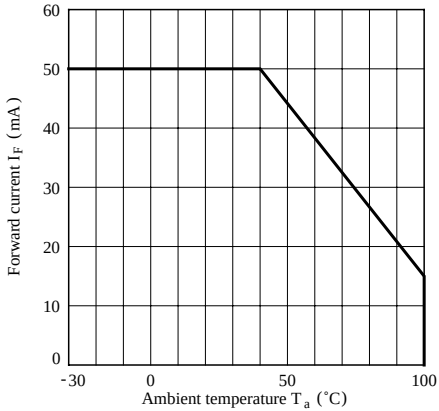


Fig. 3 Forward Current vs. Forward Voltage

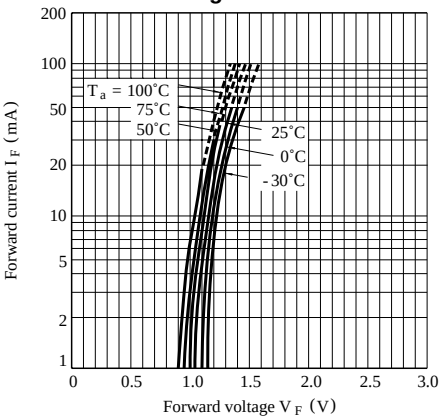


Fig. 4-a Minimum Trigger Current vs. Ambient Temperature (S11MS3/S21MS3)

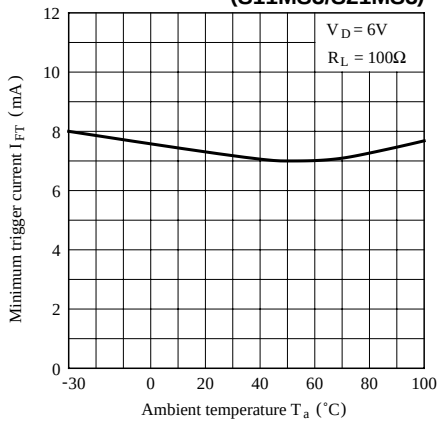


Fig. 4-b Minimum Trigger Current vs. Ambient Temperature (S21MS4)

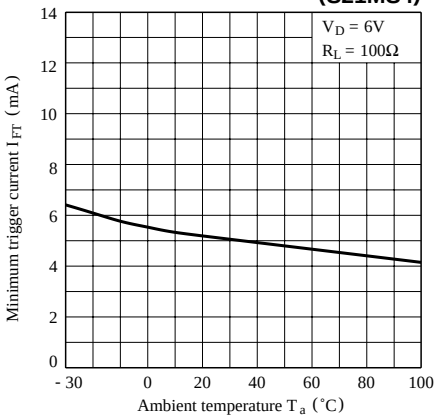


Fig. 5-a Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature (S11MS3/S21MS3)

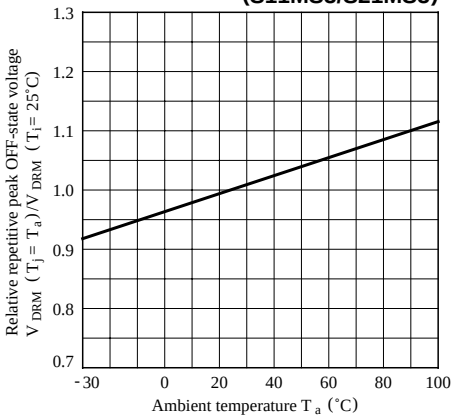


Fig. 5-b Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature (S21MS4)

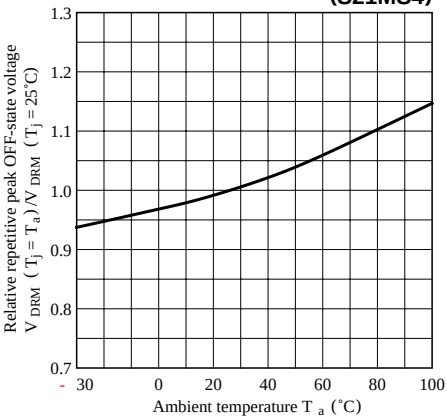


Fig. 6 ON-state Voltage vs. Ambient Temperature

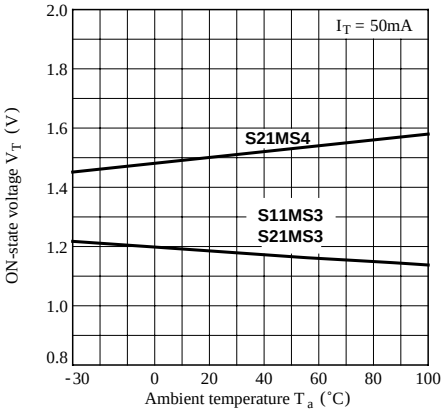


Fig. 7-a Holding Current vs. Ambient Temperature (S11MS3/S21MS3)

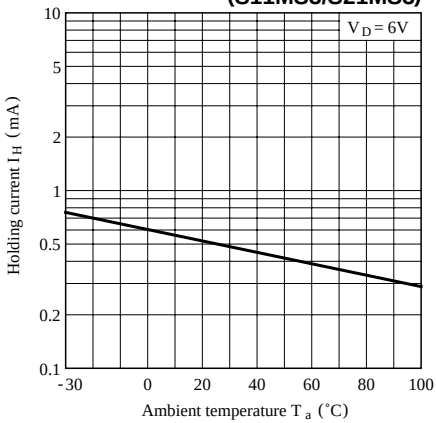


Fig. 7-b Holding Current vs. Ambient Temperature (S21MS4)

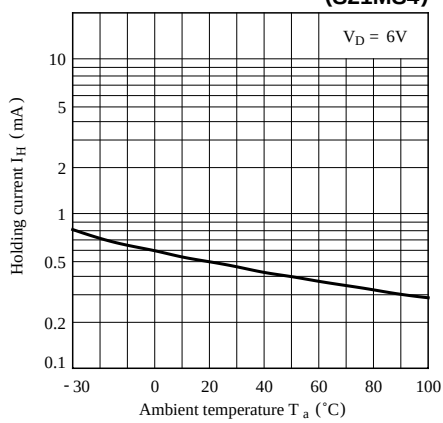


Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MS3)

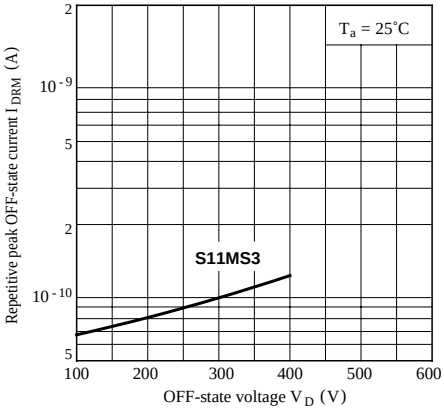


Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21MS3/S21MS4)

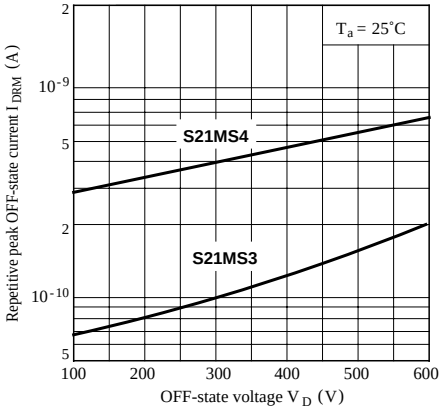


Fig. 9 Relative Repetitive Peak OFF-state Current vs. Ambient Temperature

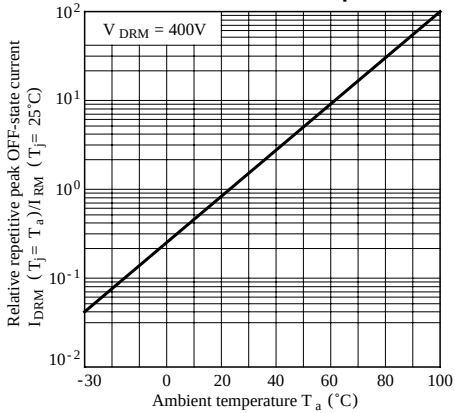


Fig.10 Zero-cross Voltage vs. Ambient Temperature (S21MS4)

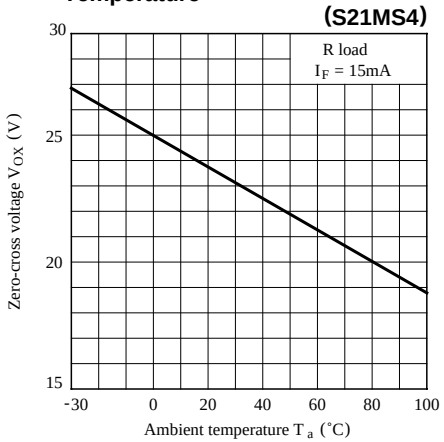
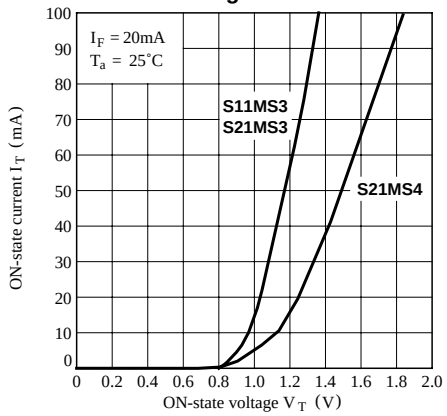
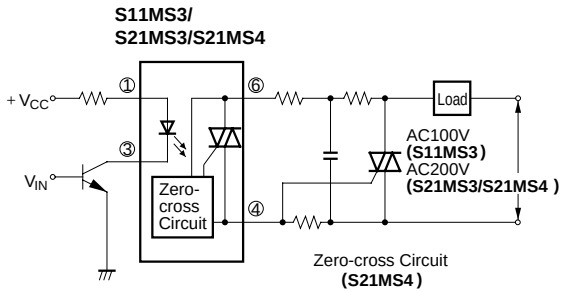


Fig.11 ON-state Current vs. ON-state Voltage



■ Basic Operation Circuit



- Please refer to the chapter "Precautions for Use." (Page 78 to 93).