S11MD5T/S21MD3TV/ S21MD4TV

High Noise-resistance Type Phototriac Coupler

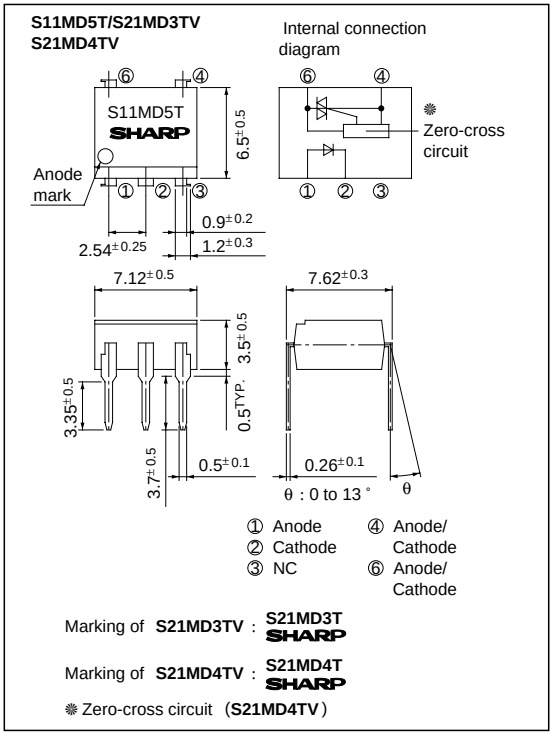
■ Features

1. NO.5 pin completely sealed in the mold for external noise resistance
2. Built-in zero-cross circuit **(S21MD4TV)**
3. High repetitive peak OFF-state voltage.
   - **S11MD5T** V_{DRM} : MIN. 400V
   - **S21MD3TV/S21MD4TV** V_{DRM} : MIN. 600V
4. Isolation voltage between input and output (Viso : 5 000 Vrms)
5. Recognized by UL : recognized, file No. E64380

■ Applications

1. For triggering of power triac

■ Outline Dimensions (Unit : mm)



■ Model Line-ups

100V	**S11MD5T**
200V	**S21MD3TV/S21MD4TV**

■ Absolute Maximum Ratings (Ta = 25°C)

Parameter		Symbol	Rating		Unit
			S11MD5T	S21MD3TV/S21MD4TV	
Input	Forward current	I_F	50		mA
	Reverse voltage	V_R	6		V
Output	RMS ON-state current	I_T	0.1		A_{rms}
	*1Peak one cycle surge current	I_{surge}	1.2		A
	Repetitive peak OFF-state voltage	V_{DRM}	400	600	V
*2Isolation voltage		V_{iso}	5 000		V_{rms}
Operating temperature		T_{opr}	- 30 to + 100		°C
Storage temperature		T_{stg}	- 55 to + 125		°C
*3Soldering temperature		T_{sol}	260		°C

*1 Sine wave
*2 40 to 60% RH, AC for 1 minute, f = 60Hz
*3 For 10 seconds

■ Electro-optical Characteristics

(Ta= 25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	**S11MD5T/S21MD4TV**	V_F	I_F = 20mA	-	1.2	1.4	V
		S21MD3TV		I_F = 30mA				
	Reverse current		I_R	V_R = 3V	-	-	10^{-5}	A
Output	Repetitive peak OFF-state current		I_{DRM}	V_{DRM} = Rated	-	-	10^{-6}	A
	ON-state voltage	**S11MD5T**	V_T	I_T = 0.1A	-	1.3	2.0	V
		S21MD3TV/S21MD4TV			-	1.7	2.5	V
	Holding current		I_H	V_D = 6V	0.1	1	3.5	mA
	Critical rate of rise of OFF-state voltage	**S11MD5T/S21MD4TV**	dV/dt	V_{DRM} = 1/√2 Rated	100	-	-	V/µs
		S21MD3TV			500	-	-	V/µs
	Zero-cross voltage	**S21MD4TV**	V_{OX}	Resistance load I_F = 15mA	-	-	35	V
Transfer characteristics	Minimun 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	**S11MD5T**	t_{on}	V_D = 6V, I_F = 20mA*4 R_L = 100Ω	-	80	200	µs
		S21MD3TV			-	-	100	µs
		S21MD4TV			-	20	50	µs

*4 **S21MD3TV** : I_F=30mA

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

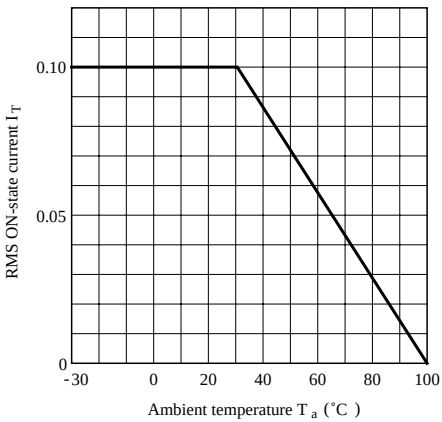


Fig. 2 Forward Current vs. Ambient Temperature

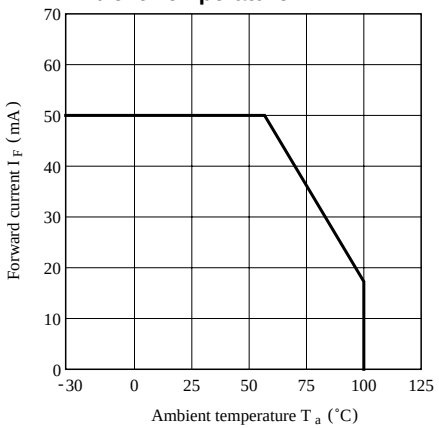


Fig. 3 Forward Current vs. Forward Voltage

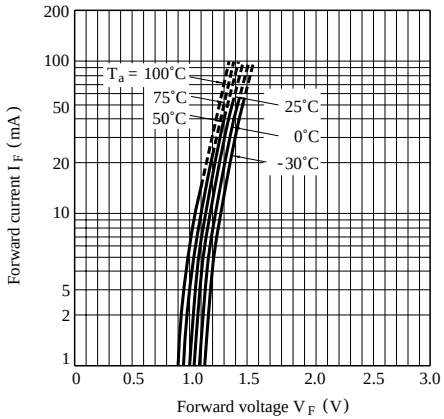


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

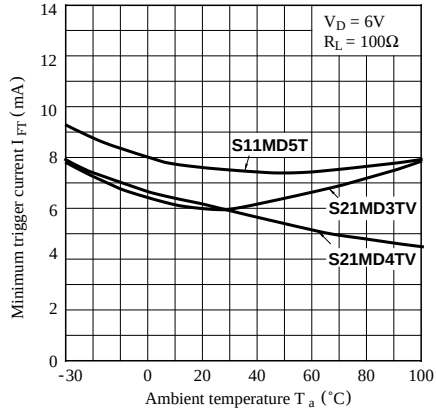


Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature

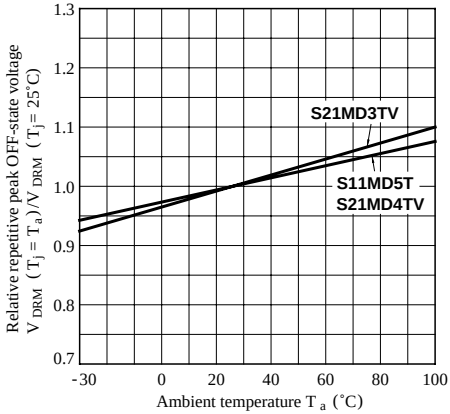


Fig. 6-a ON-state Voltage vs. Ambient Temperature (S11MD5T)

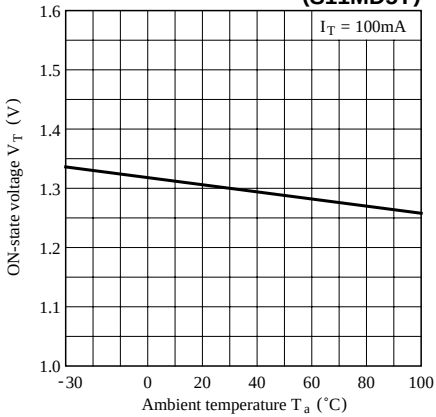


Fig. 6-b ON-state Voltage vs. Ambient Temperature (S21MD3TV/S21MD4TV)

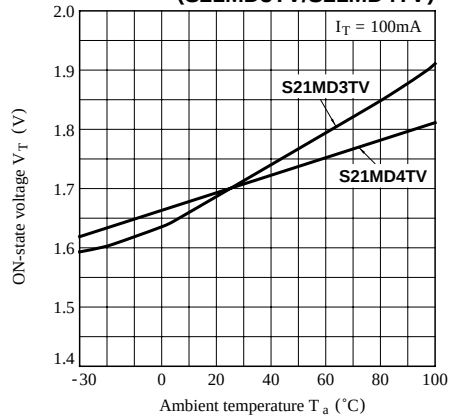


Fig. 7 Holding Current vs. Ambient Temperature

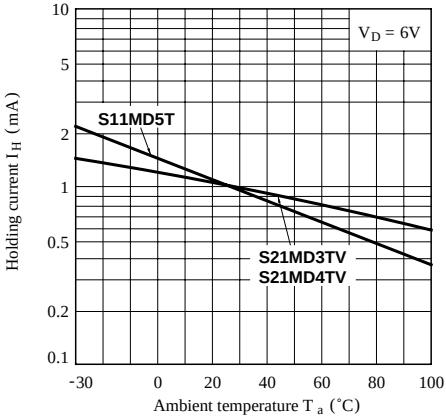


Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD5T)

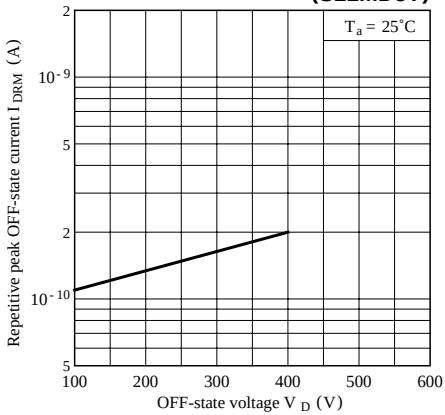


Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltate (S21MD3TV/S21MD4TV)

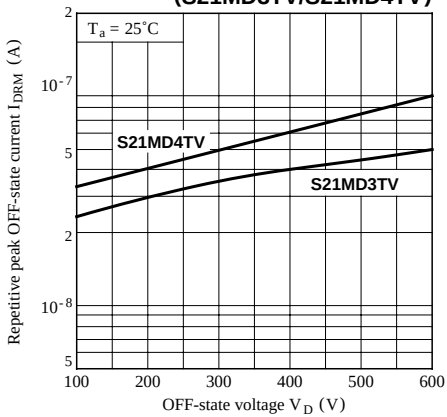


Fig. 9-a Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD5T)

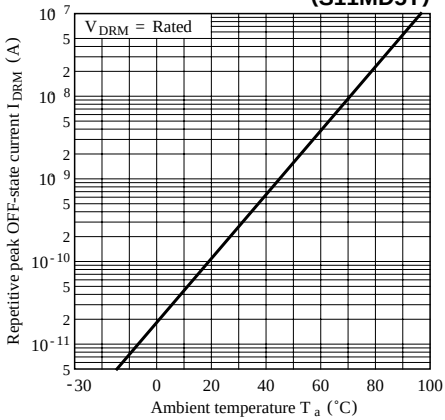


Fig. 9-b Repetitive Peak OFF-state Current vs. Ambient Temperature (S21MD3TV/S21MD4TV)

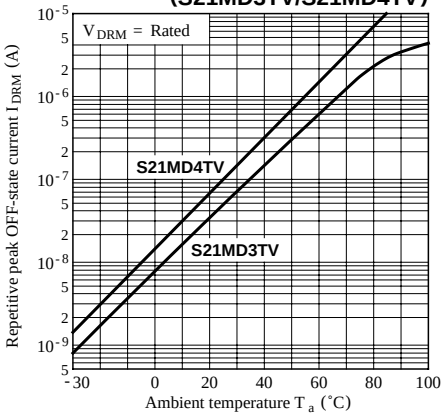


Fig.10 Turn-on Time vs. Forward Current (S11MD5T/S21MD3TV)

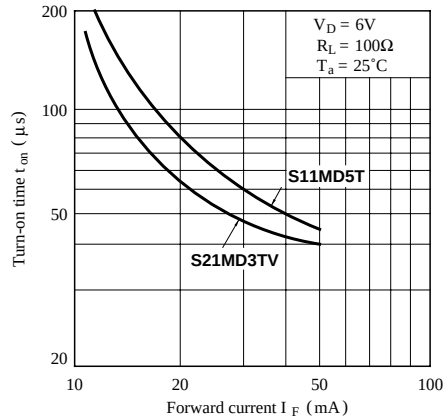


Fig.11 Zero-cross Voltage vs. Ambient Temperature (S21MD4TV)

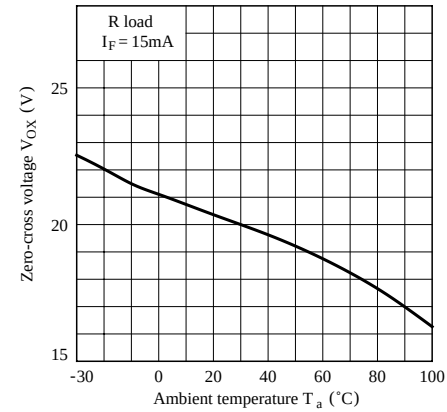
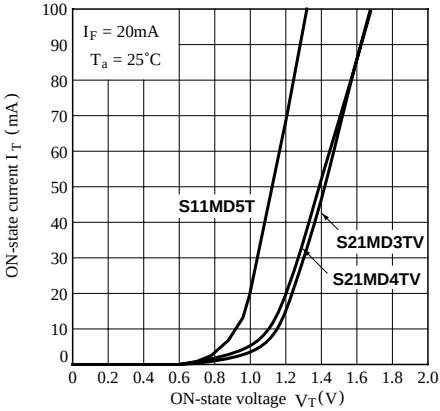
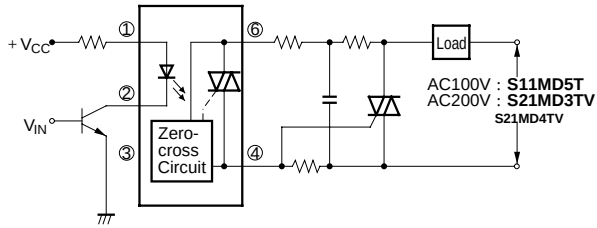


Fig.12 ON-state Current vs. ON-state Voltage



■ Basic Operation Circuit

Medium/High Power Triac Drive Circuit



Note) Please use on condition of the triac for power triggers.
Zero-cross circuit is applied to **S21MD4TV**.

- Please refer to the chapter "Precautions for Use."