

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

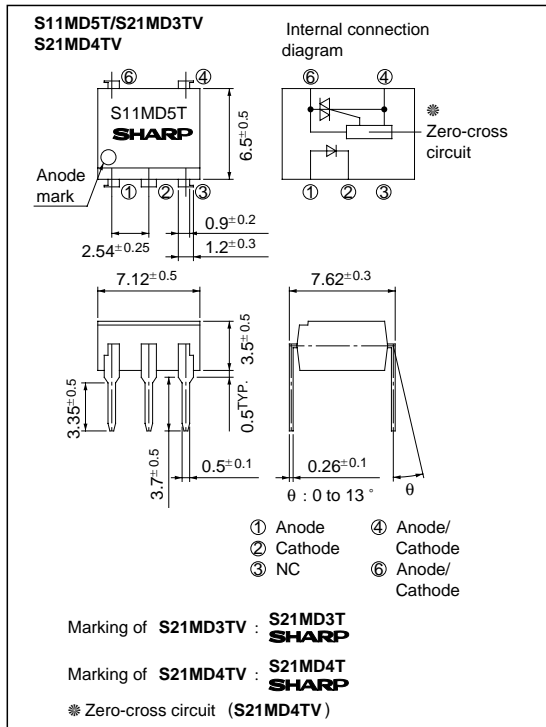
1. For triggering of power triac

■ Model Line-ups

100V	S11MD5T
200V	S21MD3TV/S21MD4TV

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(Ta = 25°C)

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

*1 Sine wave

*2 40 to 60% RH, AC for 1 minute, f = 60Hz

*3 For 10 seconds

■ **Electro-optical Characteristics**

($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit	
Input	Forward voltage	S11MD5T/S21MD4TV	$I_F = 20\text{mA}$	-	1.2	1.4	V	
		S21MD3TV	$I_F = 30\text{mA}$					
Reverse current		I_R	$V_R = 3\text{V}$	-	-	10^{-5}	A	
Repetitive peak OFF-state current		I_{DRM}	$V_{DRM} = R_{\text{ated}}$	-	-	10^{-6}	A	
Output	ON-state voltage	S11MD5T	$I_T = 0.1\text{A}$	-	1.3	2.0	V	
		S21MD3TV/S21MD4TV		-	1.7	2.5	V	
	Holding current		I_H	$V_D = 6\text{V}$	0.1	1	3.5	mA
	Critical rate of rise of OFF-state voltage	S11MD5T/S21MD4TV	dV/dt	$V_{DRM} = 1/\sqrt{2}$ Rated	100	-	-	V/ μs
					500	-	-	V/ μs
Zero-cross voltage	S21MD4TV	V_{OX}	Resistance load $I_F = 15\text{mA}$	-	-	35	V	
Transfer characteristics	Minimum trigger current		I_{FT}	$V_D = 6\text{V}$ $R_L = 100\Omega$	-	-	10	mA
	Isolation resistance		R_{ISO}	DC500V 40 to 60% RH	5×10^{10}	10^{11}	-	Ω
	Turn-on time	S11MD5T	t_{on}	$V_D = 6\text{V}, I_F = 20\text{mA}^{*4}$ $R_L = 100\Omega$	-	80	200	μs
		S21MD3TV			-	-	100	μs
S21MD4TV		-			20	50	μs	

*4 **S21MD3TV** : $I_F=30\text{mA}$

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

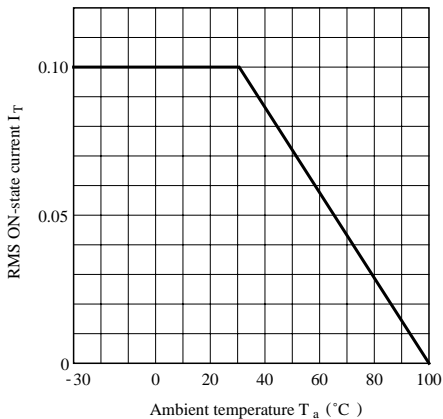


Fig. 2 Forward Current vs. Ambient Temperature

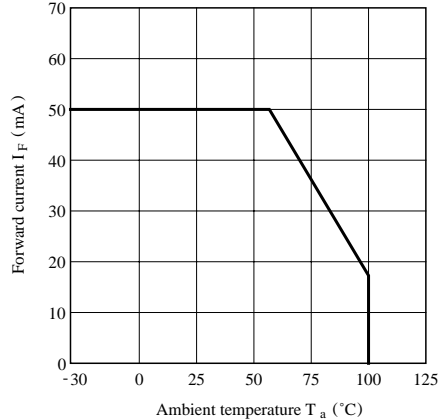


Fig. 3 Forward Current vs. Forward Voltage

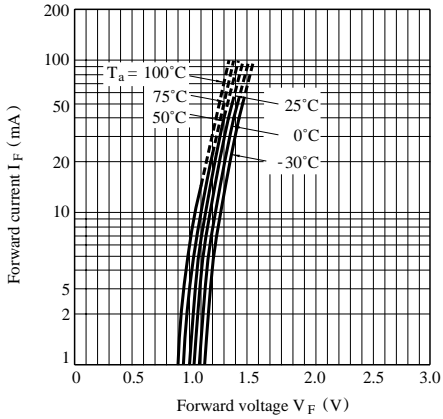


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

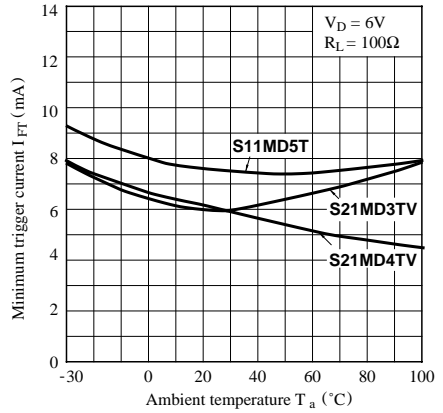


Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature

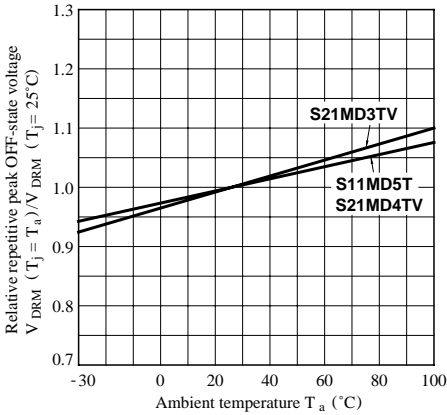


Fig. 6-a ON-state Voltage vs. Ambient Temperature (S11MD5T)

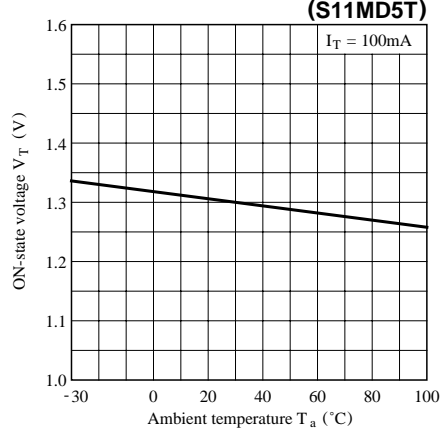


Fig. 6-b ON-state Voltage vs. Ambient Temperature (S21MD3TV/S21MD4TV)

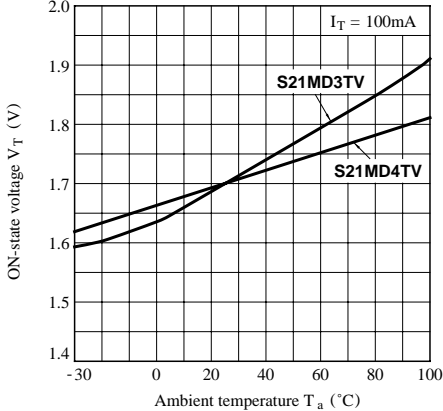


Fig. 7 Holding Current vs. Ambient Temperature

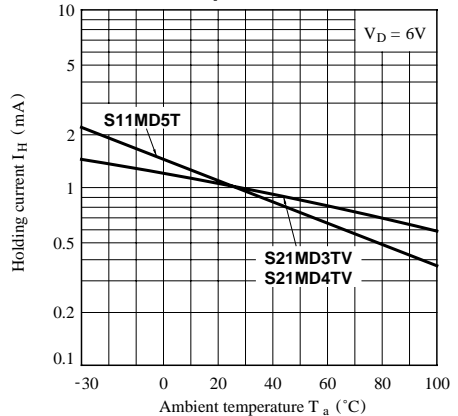


Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD5T)

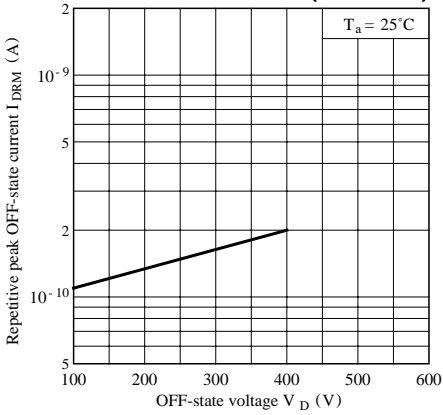


Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21MD3TV/S21MD4TV)

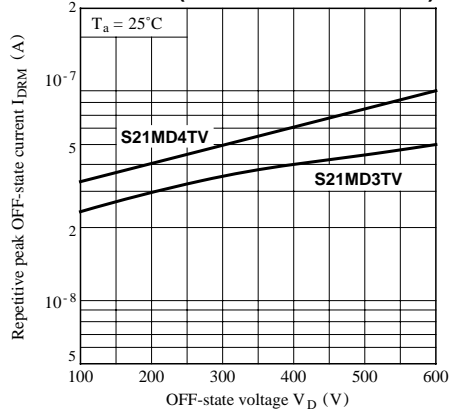


Fig. 9-a Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD5T)

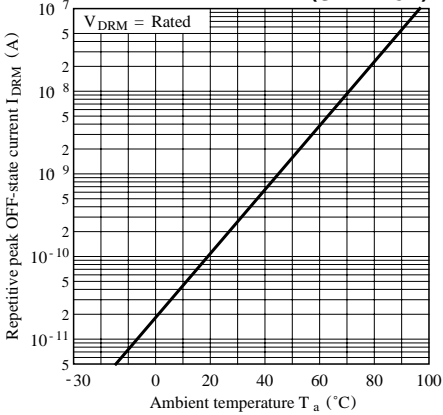


Fig. 9-b Repetitive Peak OFF-state Current vs. Ambient Temperature (S21MD3TV/S21MD4TV)

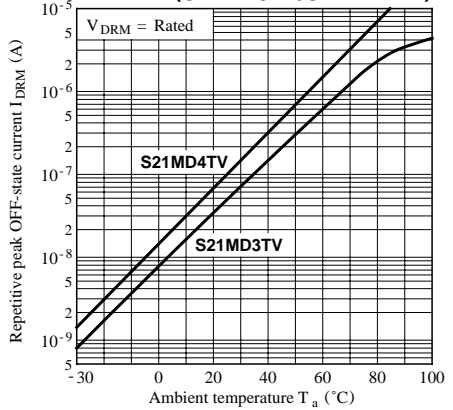


Fig.10 Turn-on Time vs. Forward Current (S11MD5T/S21MD3TV)

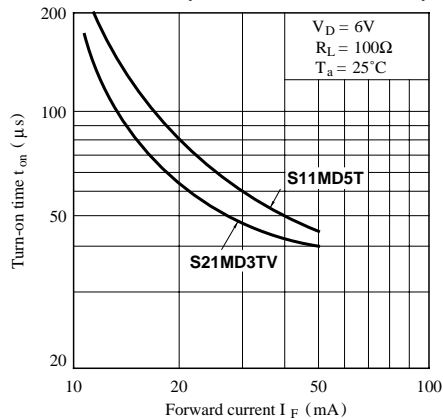


Fig.11 Zero-cross Voltage vs. Ambient Temperature (S21MD4TV)

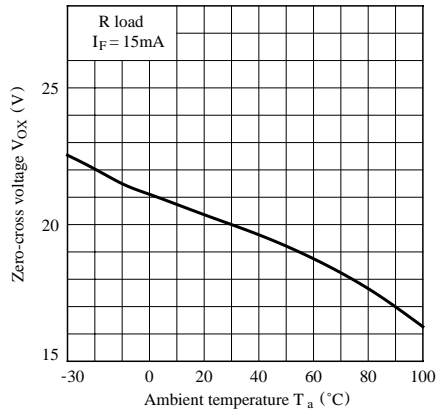
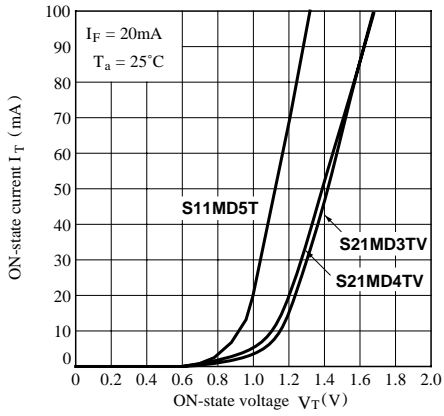
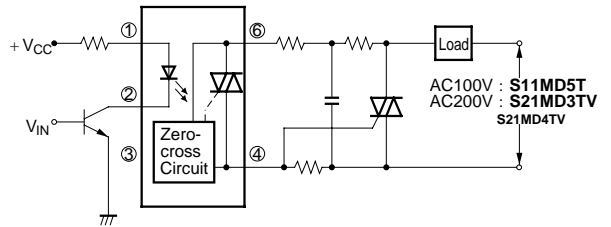


Fig.12 ON-state Current vs. ON-state Voltage



■ 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.”