

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

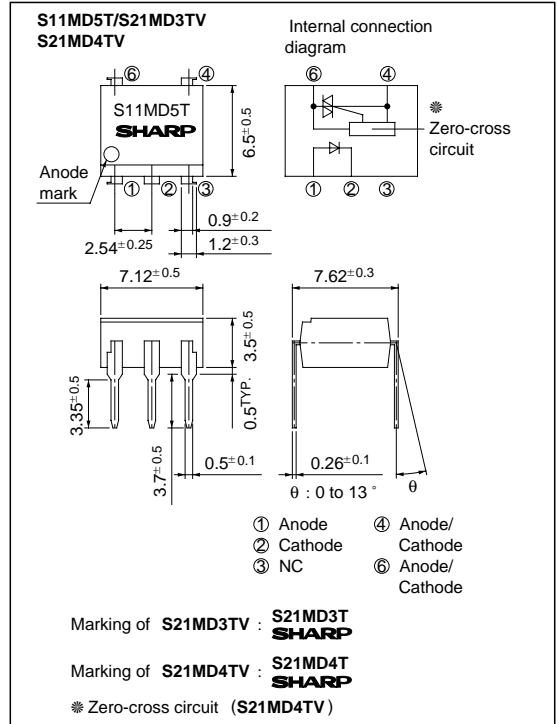
1. For triggering of power triac

■ 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

(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} = R _{ated}	-	-	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	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	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 : IF=30mA

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

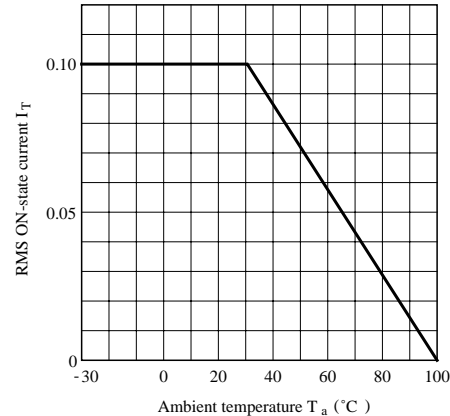


Fig. 2 Forward Current vs. Ambient Temperature

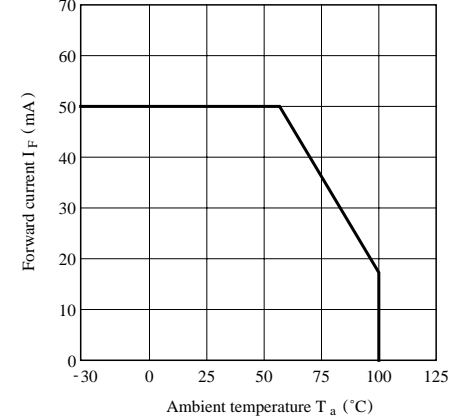


Fig. 3 Forward Current vs. Forward Voltage

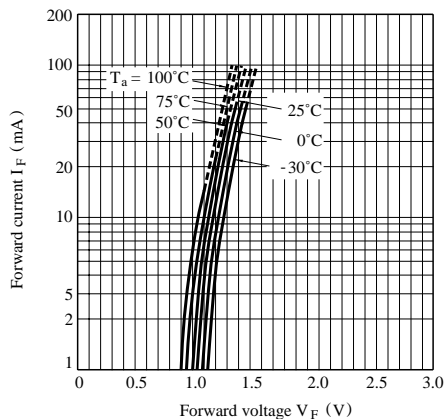


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

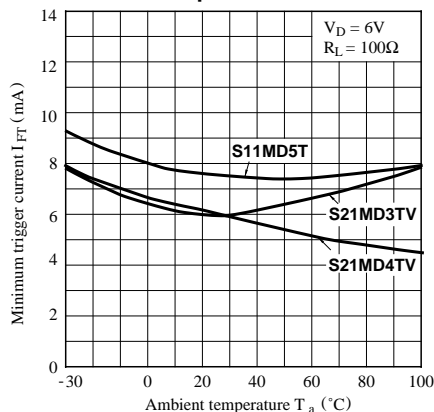


Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature

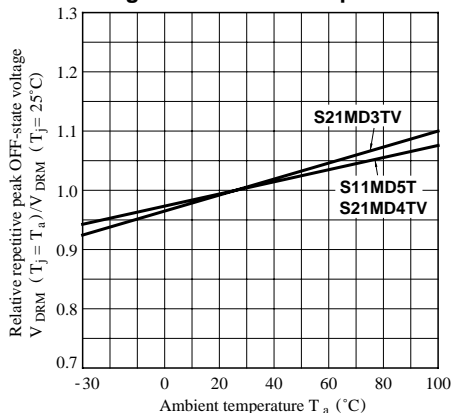


Fig. 6-a ON-state Voltage vs. Ambient Temperature (S11MD5T)

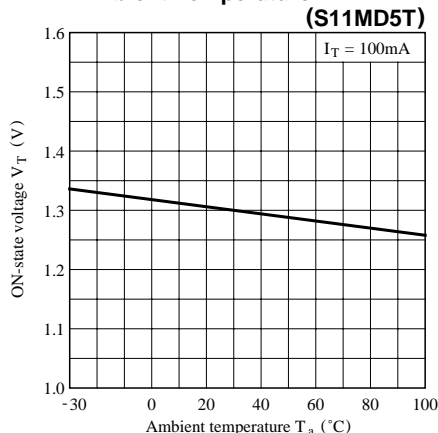


Fig. 6-b ON-state Voltage vs. Ambient Temperature (S21MD3TV/S21MD4TV)

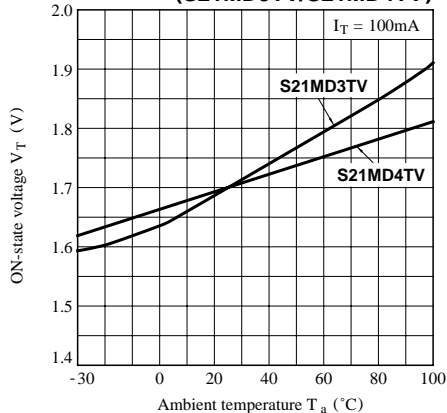


Fig. 7 Holding Current vs. Ambient Temperature

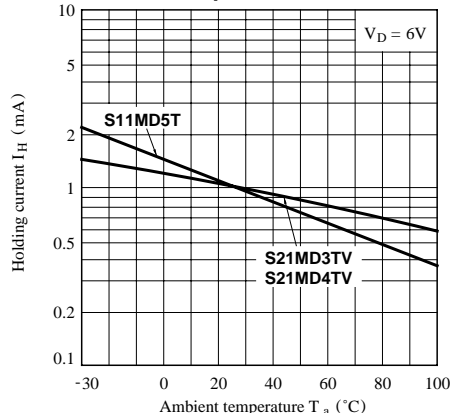


Fig. 8-a Repetitive Peak OFF-state Current vs. OFF-state Voltage (S11MD5T)

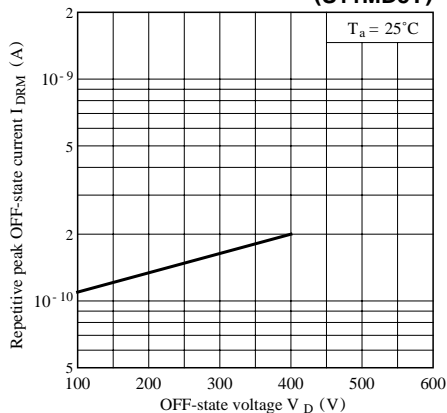


Fig. 8-b Repetitive Peak OFF-state Current vs. OFF-state Voltage (S21MD3TV/S21MD4TV)

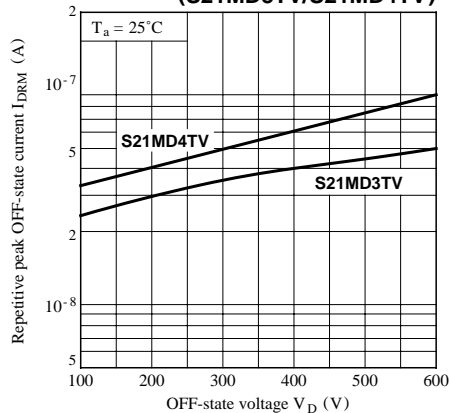


Fig. 9-a Repetitive Peak OFF-state Current vs. Ambient Temperature (S11MD5T)

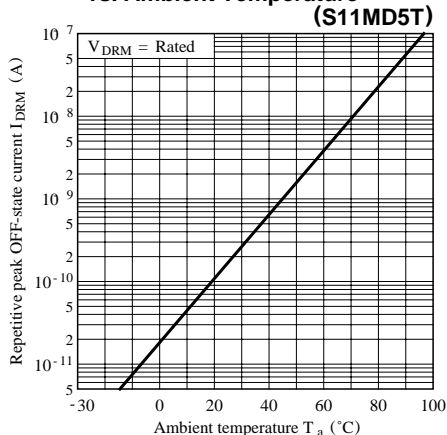


Fig. 9-b Repetitive Peak OFF-state Current vs. Ambient Temperature (S21MD3TV/S21MD4TV)

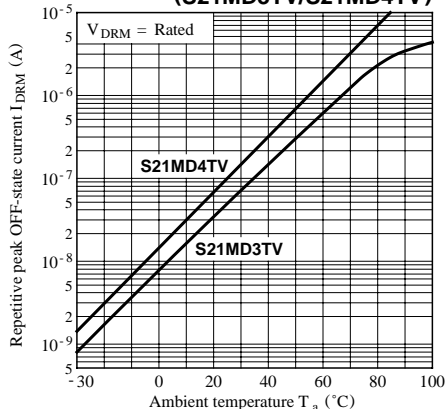


Fig.10 Turn-on Time vs. Forward Current (S11MD5T/S21MD3TV)

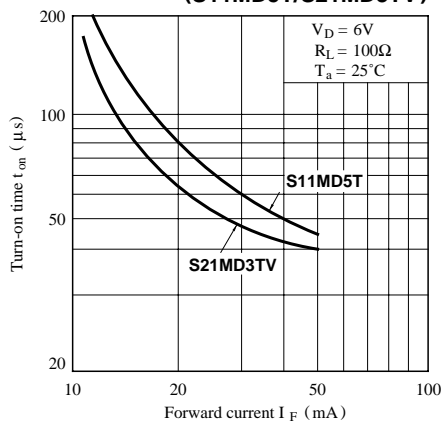
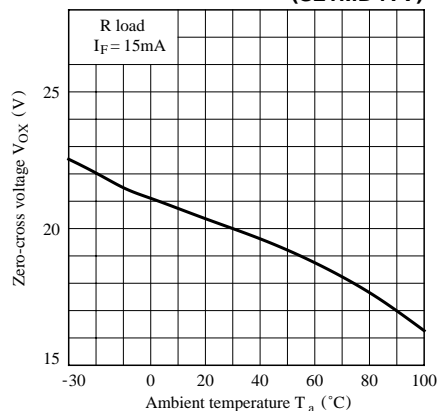
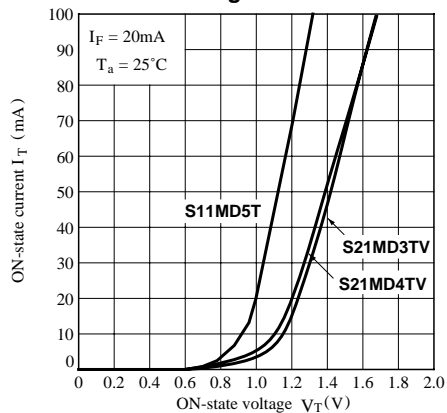


Fig.11 Zero-cross Voltage vs. Ambient Temperature (S21MD4TV)

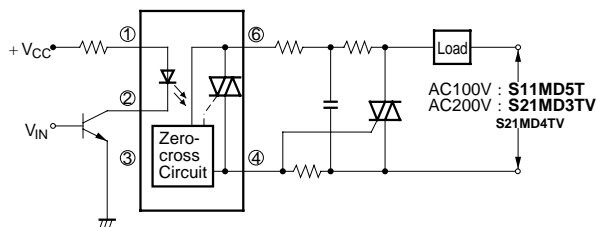


**Fig.12 ON-state Current vs.
ON-state Voltage**



■ 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.”