

# S21MD4V

## Built-in Zero-cross Circuit, High Noise Resistance Type Phototriac Coupler

\* Lead forming type of **S21MD4V** is also available. (**S21MD4W**)  
 \*\* TÜV (DIN-VDE0884) approved type is also available as an option.

### ■ Features

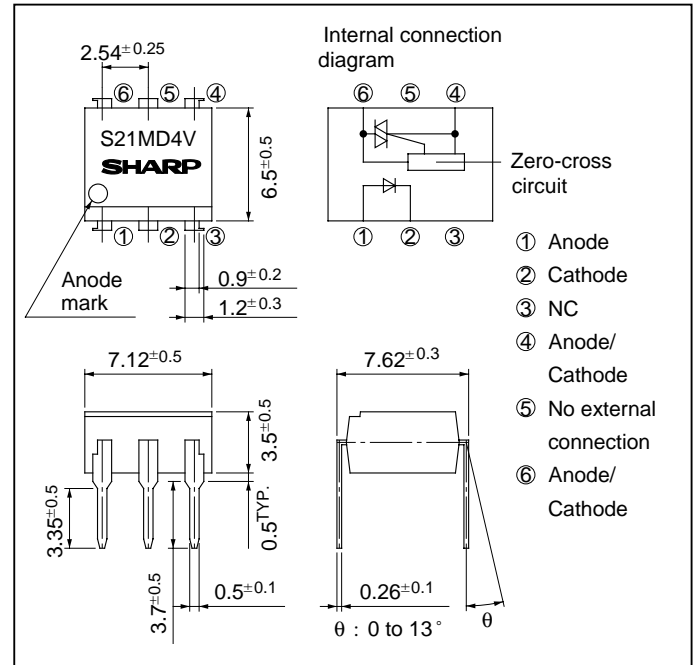
1. Built-in zero-cross circuit
2. High critical rate of rise of OFF-state voltage (dV/dt : MIN. 100V/μs)
3. High repetitive peak OFF-state voltage (V<sub>DRM</sub> : MIN. 600V)
4. Isolation voltage between input and output  
V<sub>iso</sub> : 5 000Vrms
5. UL recognized, file No. E64380 (**S21MD4V/ S21MD4W**)  
\* **S21MD4V** is for 200V line

### ■ Applications

1. For triggering medium/high power triac

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	V
Output	RMS ON-state current	I <sub>T</sub>	100	mA <sub>rms</sub>
	*1 Peak one cycle surge current	I <sub>surge</sub>	1.2	A
	Repetitive peak OFF-state voltage	V <sub>DRM</sub>	600	V
	*2 Isolation voltage	V <sub>iso</sub>	5 000	V <sub>rms</sub>
Operating temperature		T <sub>opr</sub>	- 30 to + 100	°C
Storage temperature		T <sub>stg</sub>	- 55 to + 125	°C
*3 Soldering temperature		T <sub>sol</sub>	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	$V_F$	$I_F = 20\text{mA}$	-	1.2	1.4	V
	Reverse current	$I_R$	$V_R = 3\text{V}$	-	-	$10^{-5}$	A
Output	Repetitive peak OFF-state current	$I_{\text{DRM}}$	$V_{\text{DRM}} = \text{Rated}$	-	-	$10^{-6}$	A
	ON-state voltage	$V_T$	$I_T = 100\text{mA}$	-	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	$dV/dt$	$V_{\text{DRM}} = 1/\sqrt{2}$ Rated	100	-	-	$\text{V}/\mu\text{s}$
	Zero-cross voltage	$V_{\text{OX}}$	Resistance load, $I_F = 15\text{mA}$	-	-	35	V
	Transfer characteristics	Minimum trigger current	$I_{\text{FT}}$	$V_D = 6\text{V}, R_L = 100\Omega$	-	-	15
Transfer characteristics	Isolation resistance	$R_{\text{ISO}}$	DC500V, 40 to 60% RH	$5 \times 10^{10}$	$10^{11}$	-	$\Omega$
	Turn-on time	$t_{\text{on}}$	$V_D = 6\text{V}, R_L = 100\Omega, I_F = 20\text{mA}$	-	20	50	$\mu\text{s}$

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

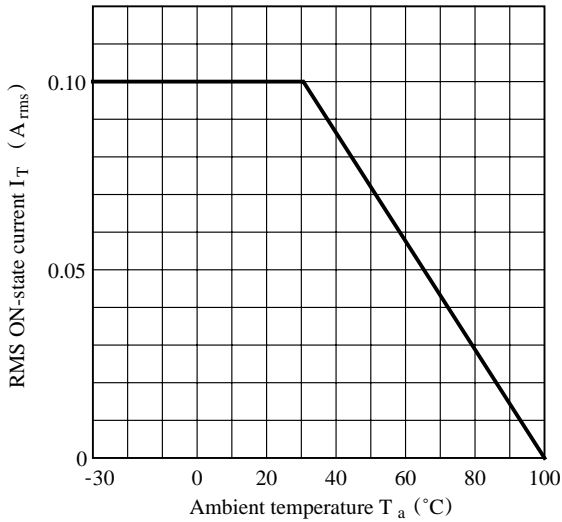


Fig. 2 Forward Current vs. Ambient Temperature

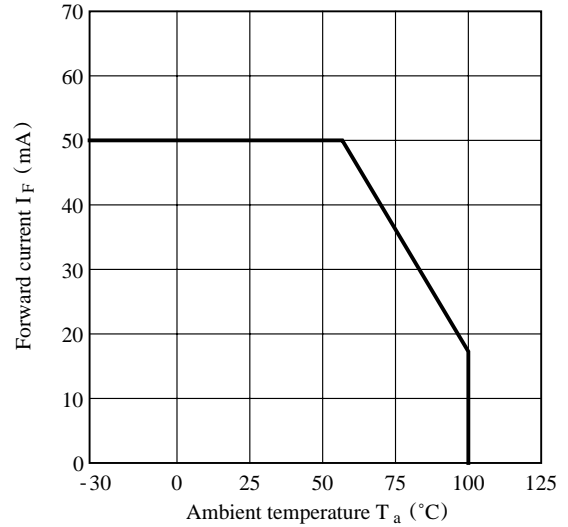


Fig. 3 Forward Current vs. Forward Voltage

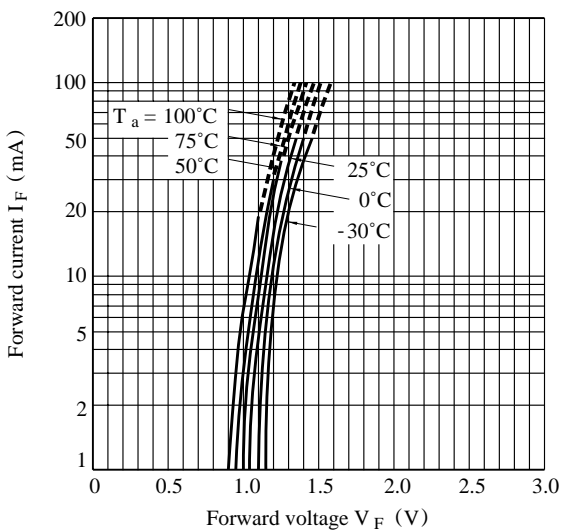
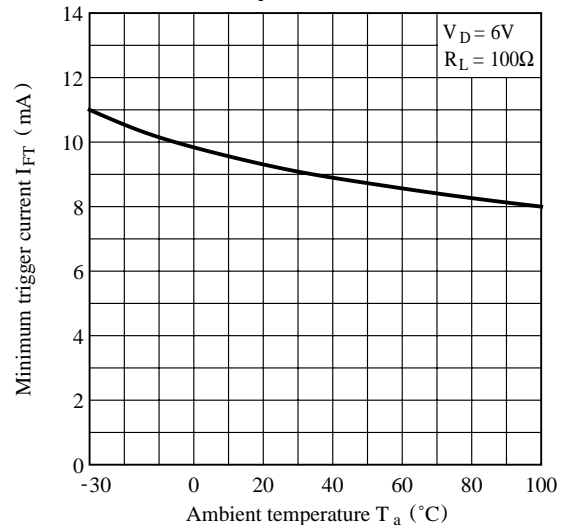
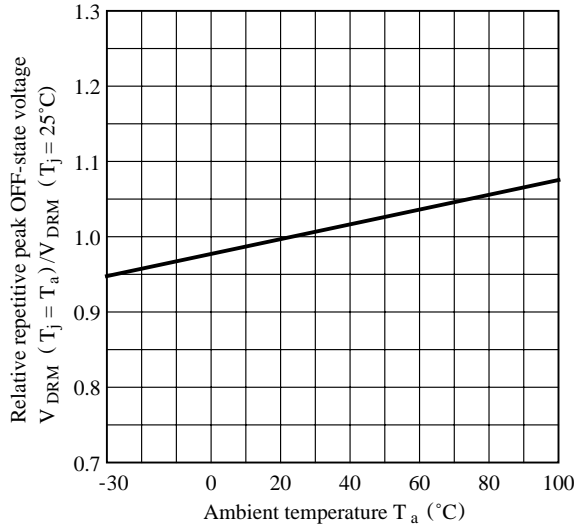


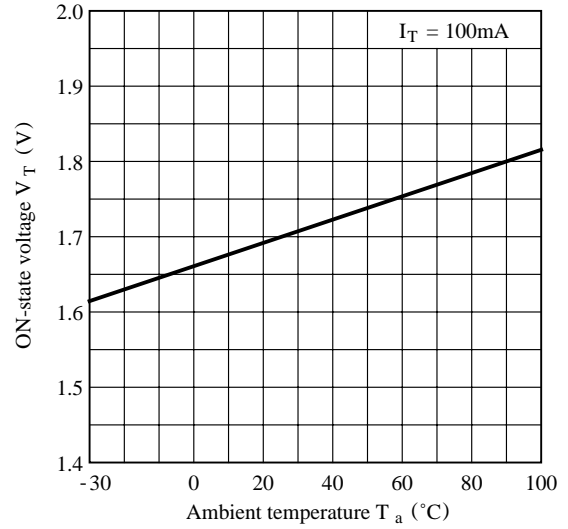
Fig. 4 Minimum Trigger Current vs. Ambient Temperature



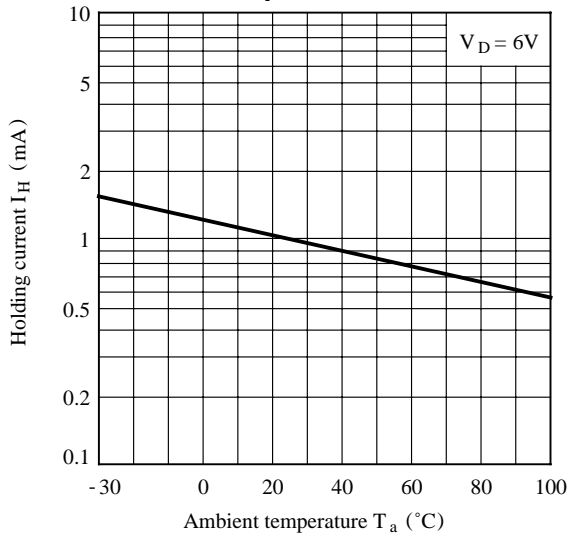
**Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature**



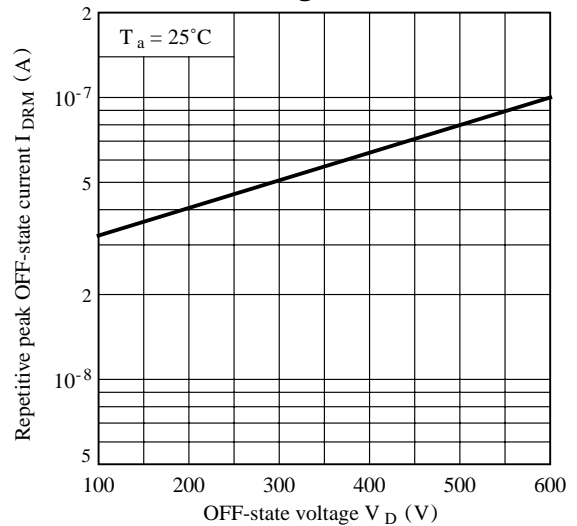
**Fig. 6 ON-state Voltage vs. Ambient Temperature**



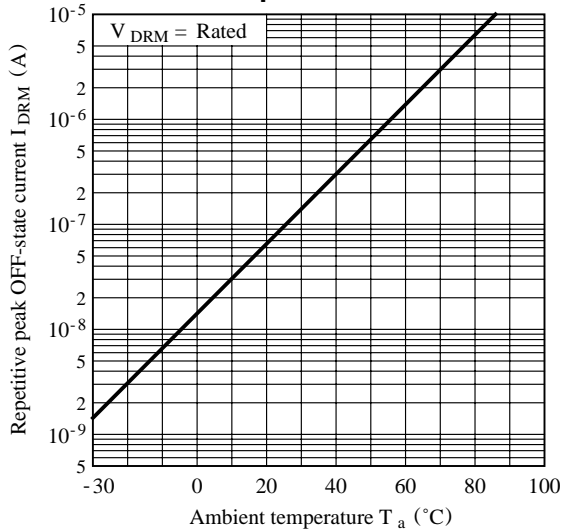
**Fig. 7 Holding Current vs. Ambient Temperature**



**Fig. 8 Repetitive Peak OFF-state Current vs. OFF-state Voltage**



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



**Fig.10 Zero-cross Voltage vs. Ambient Temperature**

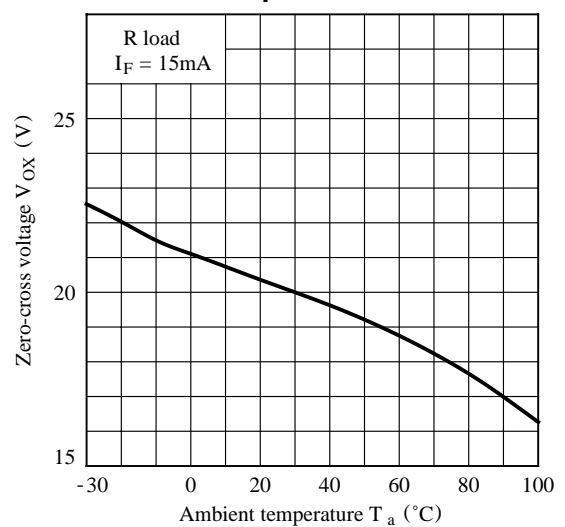
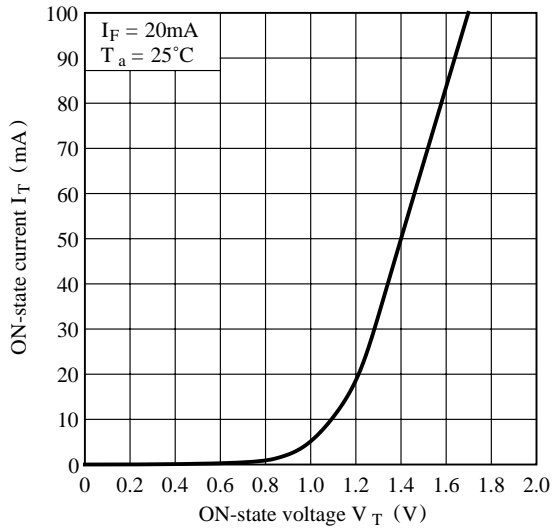
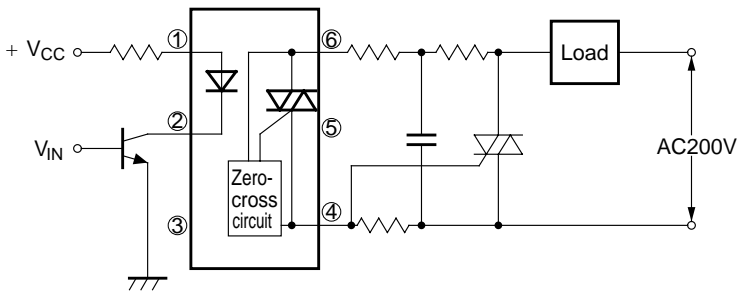


Fig.11 ON-state Current vs. ON-state Voltage



■ Basic Operation Circuit

Medium/High Power Triac Drive Circuit



Note) Please use on condition of the triac for power triggers.

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