

# S11MD4V/S11MD4T

## Phototriac Coupler with Built-in Zero-cross Circuit

### ■ Features

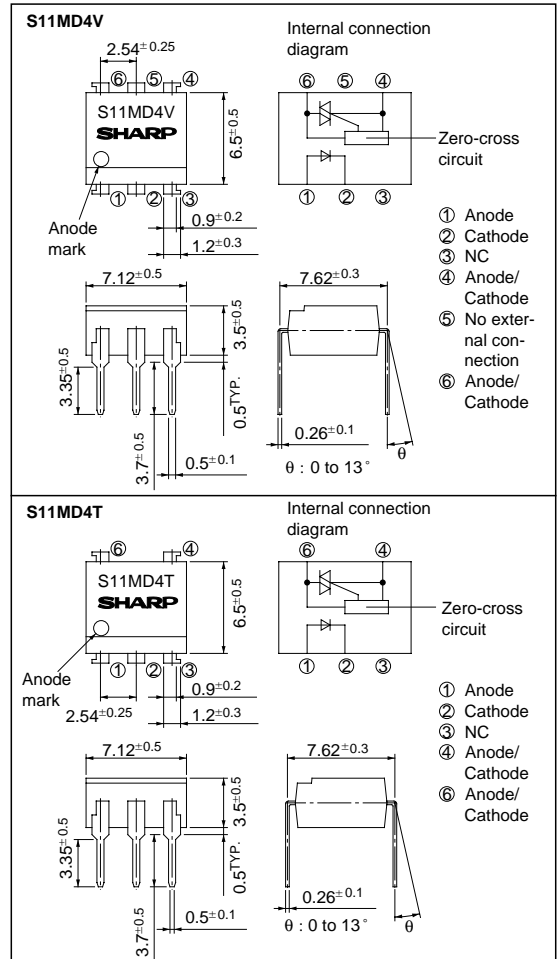
1. Pin No. 5 completely molded for external noise resistance (**S11MD4T**)
2. Dual-in-line package type (**S11MD4V**)
3. Built-in zero-cross circuit
4. High repetitive peak OFF-state voltage ( $V_{DRM}$  : MIN. 400V)
5. Isolation voltage between input and output  $V_{iso}$  : 5 000V<sub>rms</sub> (**S11MD4V/S11MD4T**)
6. Recognized by UL, file No.E64380
  - \* **S11MD4V** and **S11MD4T** are for 100V lines.

### ■ Applications

1. For triggering medium/high power triacs

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Rating	
		S11MD4V/S11MD4T	Unit
Input	Forward current	$I_F$	50 mA
	Reverse voltage	$V_R$	6 V
Output	RMS ON-state current	$I_T$	0.1 A <sub>rms</sub>
	*1 Peak one cycle surge current	$I_{surge}$	1.2 A
	Repetitive peak OFF-state voltage	$V_{DRM}$	400 V
*2 Isolation voltage	$V_{iso}$	5 000	V <sub>rms</sub>
Operating temperature	$T_{opr}$	-30 to +100	°C
Storage temperature	$T_{stg}$	-55 to +125	°C
*3 Soldering temperature	$T_{sol}$	260	°C

\*1 50Hz sine wave

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

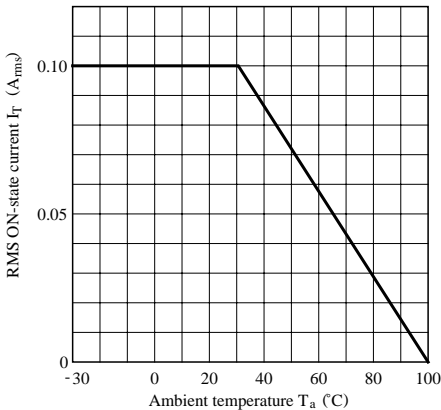
\*3 For 10 seconds

**Electro-optical Characteristics**

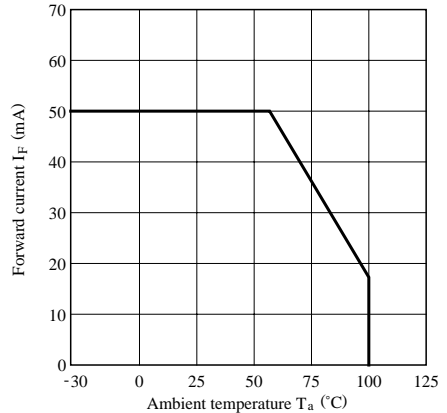
( $T_a = 25^\circ\text{C}$ )

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	$I_{DRM}$	$V_{DRM} = \text{Rated}$	-	-	$10^{-6}$	A
	ON-state voltage	$V_T$	$I_T = 0.1\text{A}$	-	1.7	2.5	V
	Holding current	$I_H$	$V_D = 6\text{V}$	0.1	1.0	3.5	mA
	Critical rate of rise of OFF-state voltage	$dV/dt$	$V_{DRM} = 1/\sqrt{2} \cdot \text{Rated}$	100	-	-	$\text{V}/\mu\text{s}$
	Zero-cross voltage	$V_{OX}$	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	$5 \times 10^{10}$	$10^{11}$	-	$\Omega$
	Turn-on time	$t_{on}$	$V_D = 6\text{V}$ , $R_L = 100\Omega$ , $I_F = 20\text{mA}$	-	20	50	$\mu\text{s}$

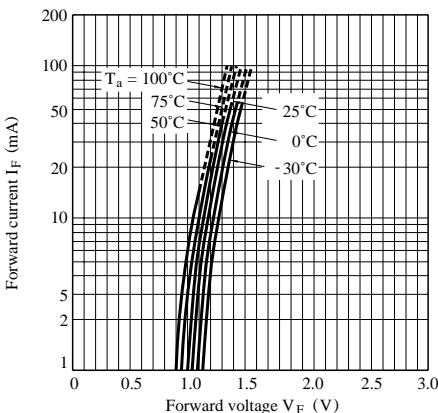
**Fig. 1 RMS ON-state Current vs. Ambient Temperature**



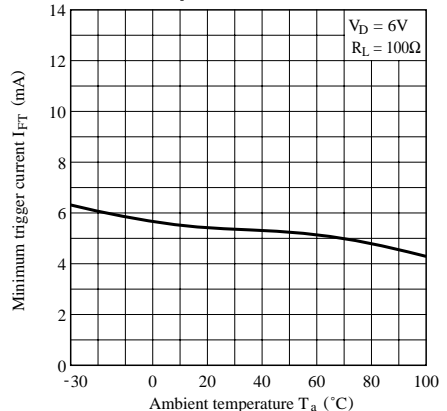
**Fig. 2 Forward Current vs. Ambient Temperature**



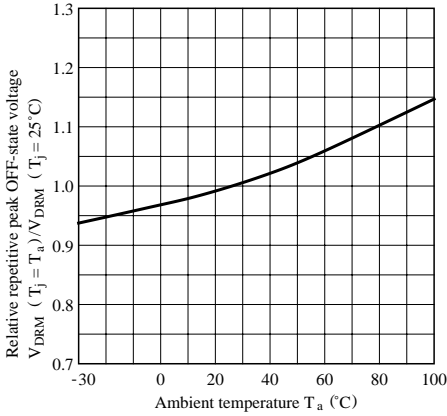
**Fig. 3 Forward Current vs. Forward Voltage**



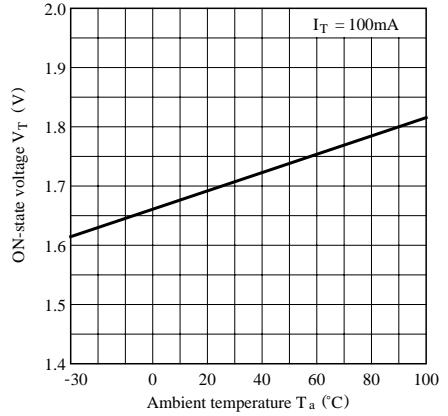
**Fig. 4 Minimum Trigger Current vs. Ambient Temperature**



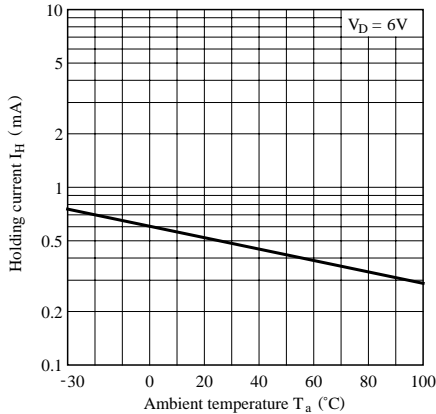
**Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature**



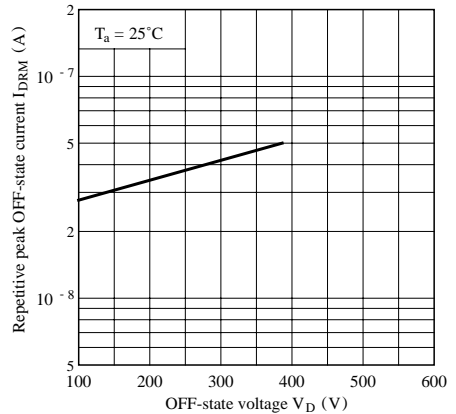
**Fig. 6 ON-state Voltage vs. Ambient Temperature**



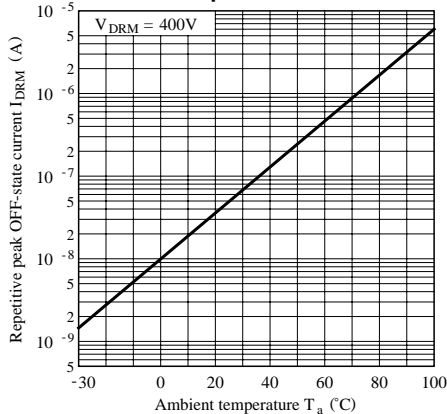
**Fig. 7 Holding Current vs. Ambient Temperature**



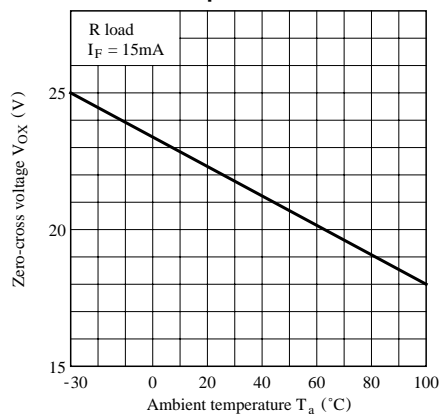
**Fig. 8 Repetitive Peak OFF-state Current vs. OFF-state Voltage**



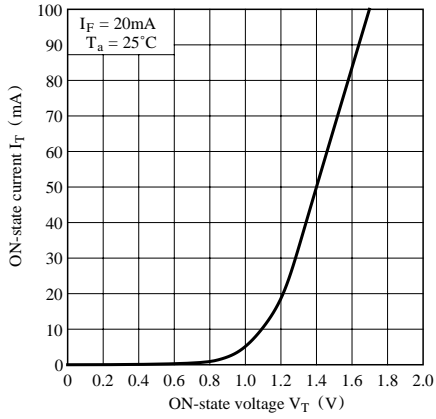
**Fig. 9 Repetitive Peak OFF-state Current vs. Ambient Temperature**



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

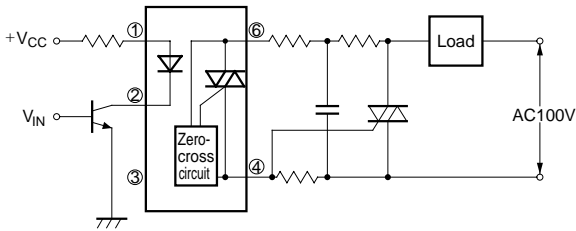


**Fig.11 ON-state Current vs. ON-state Voltage**



**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.”