

S11MD4V/S11MD4T

Phototriac Coupler with Built-in Zero-cross Circuit

■ Features

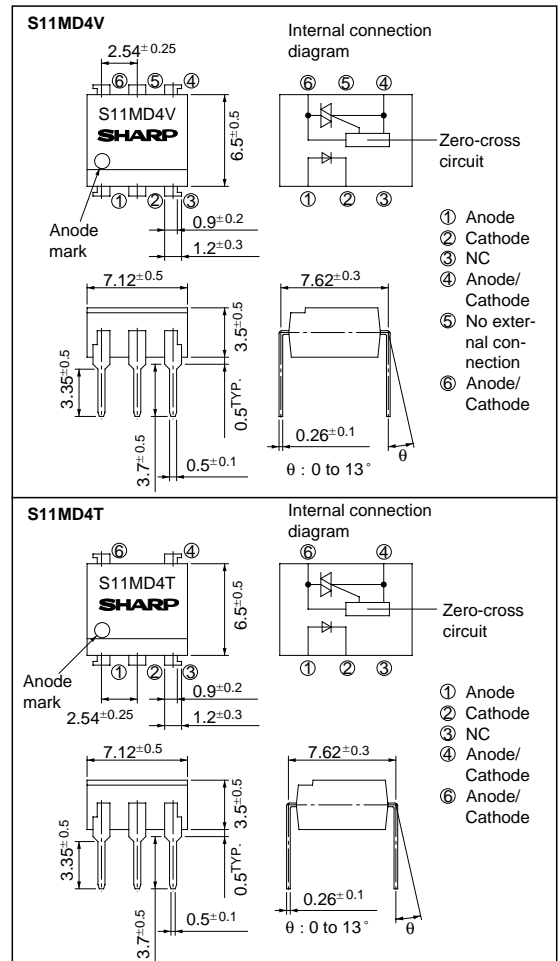
1. Pin No. 5 completely molded for external noise resistance (**S11MD4T**)
2. Dual-in-line package type (**S11MD4V**)
3. Built-in zero-cross circuit
4. High repetitive peak OFF-state voltage (V_{DRM} : MIN. 400V)
5. Isolation voltage between input and output V_{iso} : 5 000V_{rms} (**S11MD4V/S11MD4T**)
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 _{rms} |
| | *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 _{rms} |
| 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 | 5×10^{10} | 10^{11} | - | Ω |
| | Turn-on time | t_{on} | $V_D = 6\text{V}$, $R_L = 100\Omega$, $I_F = 20\text{mA}$ | - | 20 | 50 | μs |

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

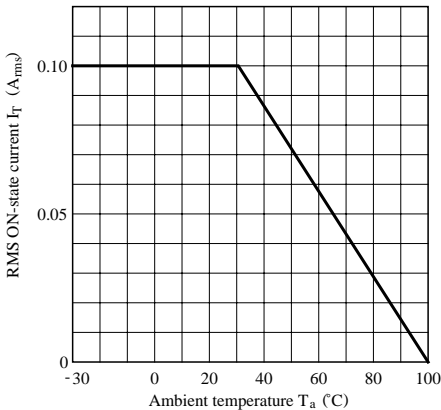


Fig. 2 Forward Current vs. Ambient Temperature

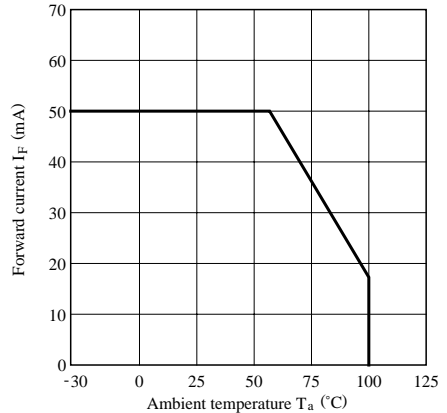


Fig. 3 Forward Current vs. Forward Voltage

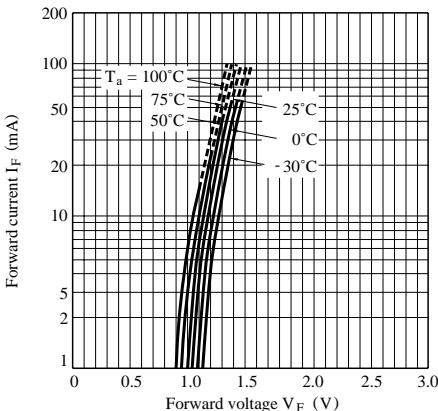


Fig. 4 Minimum Trigger Current vs. Ambient Temperature

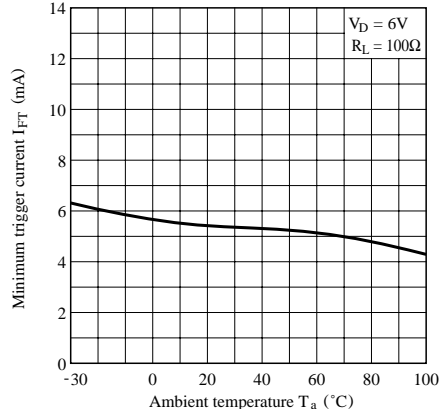


Fig. 5 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature

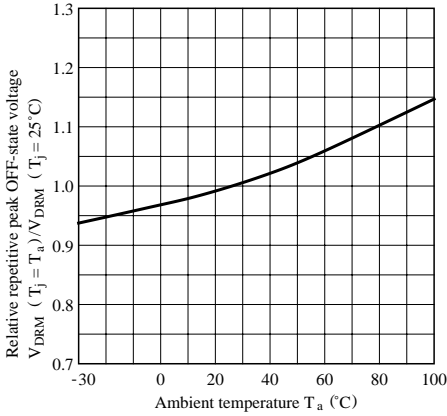


Fig. 6 ON-state Voltage vs. Ambient Temperature

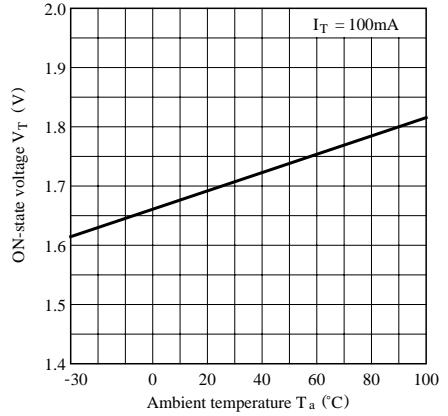


Fig. 7 Holding Current vs. Ambient Temperature

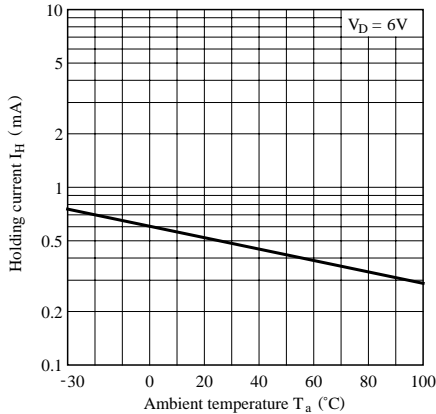


Fig. 8 Repetitive Peak OFF-state Current vs. OFF-state Voltage

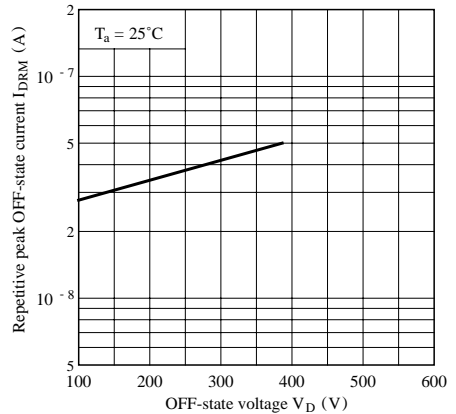


Fig. 9 Repetitive Peak OFF-state Current vs. Ambient Temperature

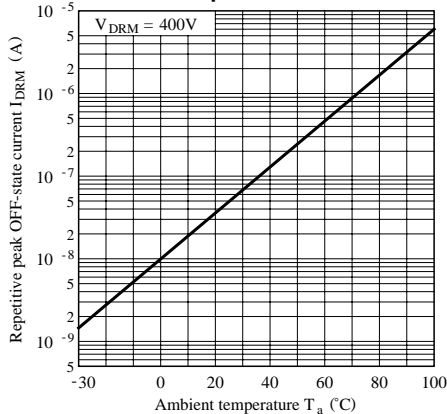


Fig.10 Zero-cross Voltage vs. Ambient Temperature

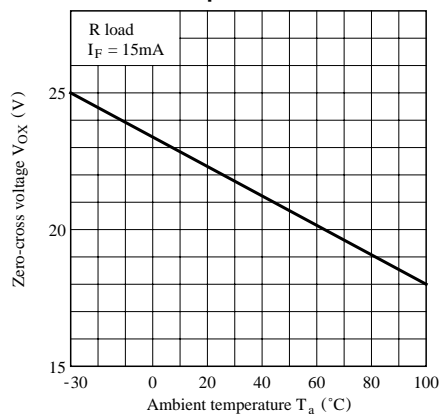
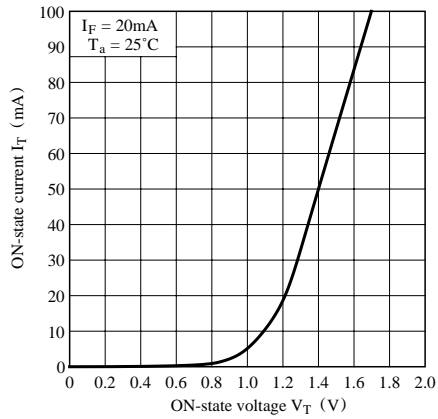
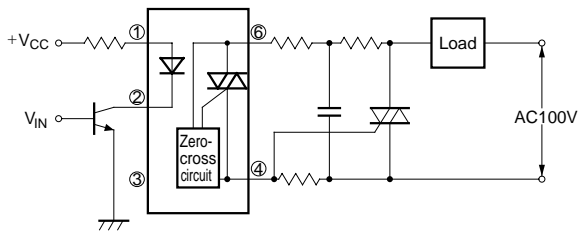


Fig.11 ON-state Current vs. ON-state Voltage



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.”