

PR31MA11NTZ

6-pin DIP Type SSR for Low Power Control

■ Features

1. Low operating current type
($I_{T(rms)} = 60\text{mA}$)
2. Compact 5-pin dual-in-line package type

■ Applications

1. Home appliances

■ Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

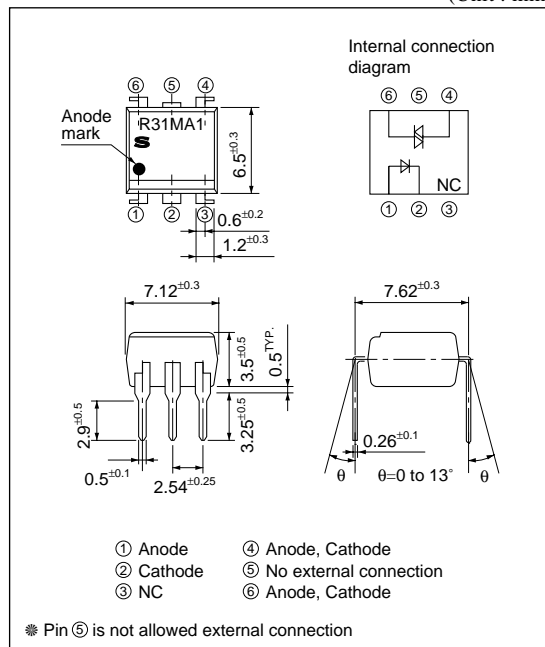
| | Parameter | Symbol | Rating | Unit |
|--------|-----------------------------------|----------------|-------------|------------------|
| Input | Forward current | I_F | 50 | mA |
| | Reverse voltage | V_R | 6 | V |
| Output | RMS ON-state current | $I_{T(rms)}$ | 60 | mA |
| | *1 Peak one cycle surge current | I_{surge} | 1.2 | A |
| | Repetitive peak OFF-state voltage | V_{DRM} | 600 | V |
| *2 | Isolation voltage | $V_{iso(rms)}$ | 5.0 | kV |
| | Operating temperature | T_{opr} | -30 to +80 | $^\circ\text{C}$ |
| | Storage temperature | T_{stg} | -55 to +125 | $^\circ\text{C}$ |
| *3 | Soldering temperature | T_{sol} | 260 | $^\circ\text{C}$ |

*1 50Hz sine wave

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

*3 For 10s

■ Outline Dimensions (Unit : mm)



■ 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 | μA |
| Output | Repetitive peak OFF-state current | I_{DRM} | $V_D=V_{\text{DRM}}$ | — | — | 1 | μA |
| | ON-state voltage | V_T | $I_T=60\text{mA}$ | — | — | 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 | $V_D=(1/\sqrt{2})\cdot V_{\text{DRM}}$ | 500 | — | — | V/ μs |
| Transfer characteristics | Minimum trigger current | I_{FT} | $V_D=6\text{V}, R_L=100\Omega$ | — | — | 10 | mA |
| | Isolation resistance | R_{ISO} | DC=500V, 40 to 60%RH | 5×10^{10} | 10^{11} | — | Ω |
| | Turn-on time | t_{on} | $V_D=6\text{V}, R_L=100\Omega, I_F=20\text{mA}$ | — | — | 100 | μs |

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

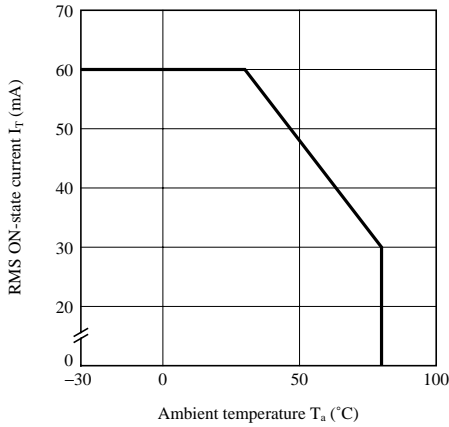


Fig.2 Forward Current vs. Ambient Temperature

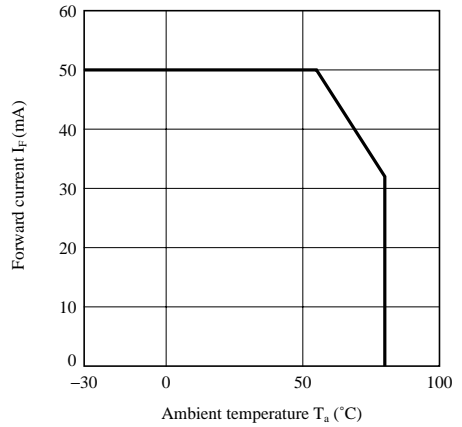


Fig.3 Forward Current vs. Forward Voltage

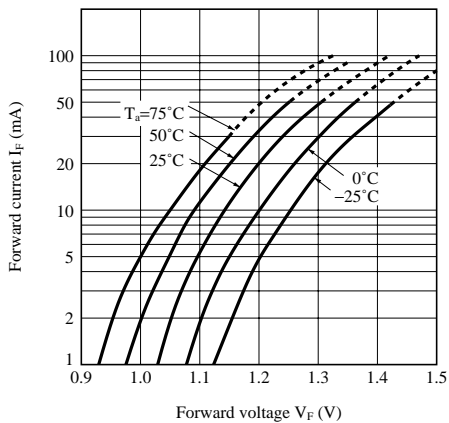


Fig.4 Minimum Trigger Current vs. Ambient Temperature

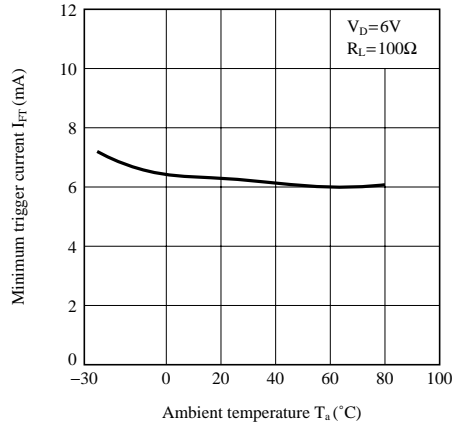


Fig.5 ON-state Voltage vs. Ambient Temperature

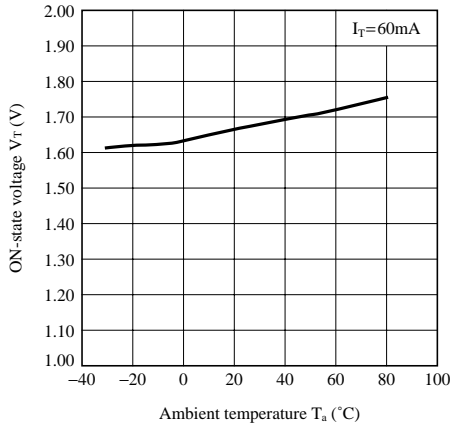


Fig.6 Relative Holding Current vs. Ambient Temperature

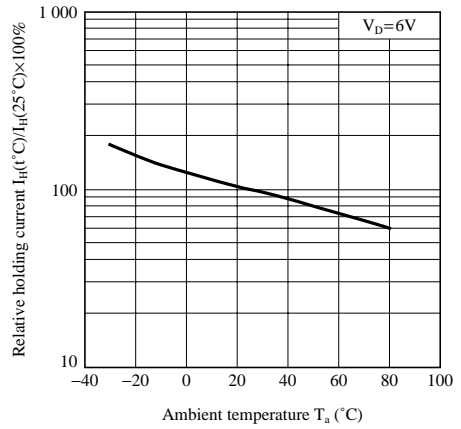


Fig.7 ON-state Current vs. ON-state Voltage

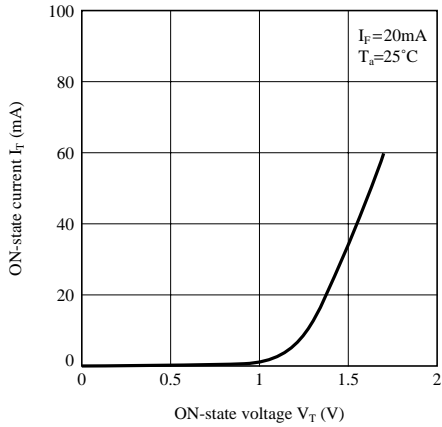
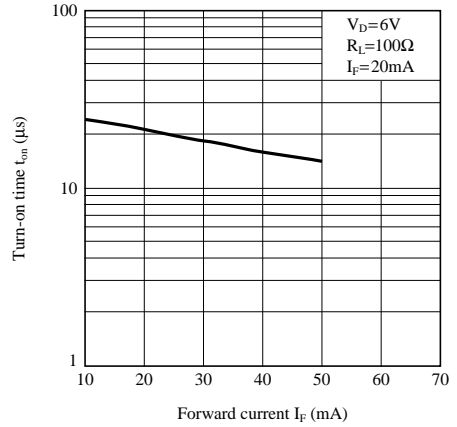
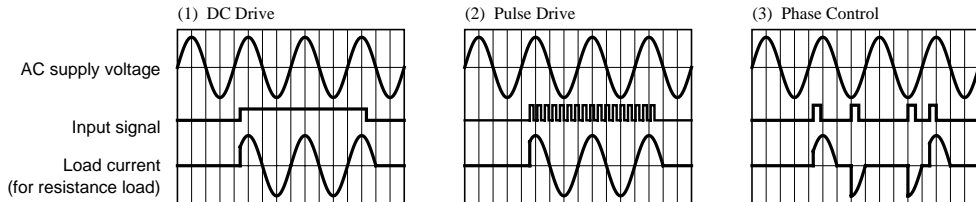
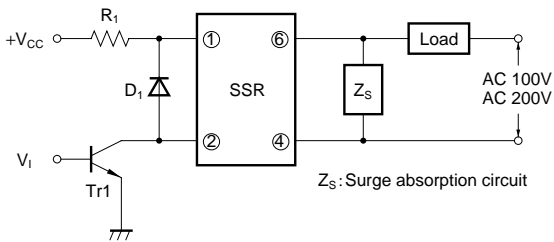


Fig.8 Turn-on Time vs. Forward Current



Basic Operation Circuit



- Notes 1) If large amount of surge is loaded onto V_{CC} or the driver circuit, add a diode D_1 between terminals 1 and 2 to prevent reverse bias from being applied to the infrared LED.
- 2) Be sure to install a surge absorption circuit.
An appropriate circuit must be chosen according to the load (for CR, choose its constant). This must be carefully done especially for an inductive load.
- 3) For phase control, adjust such that the load current immediately after the input signal is applied will be more than 10mA.

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