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PS7904-1A

Preliminary Data Sheet

Specifications in this document are tentative and subject to change.

OCMOS FET
 4-PIN SMALL FLAT-LEAD, LOW ON-STATE RESISTANCE
 1-ch Optical Coupled MOS FET

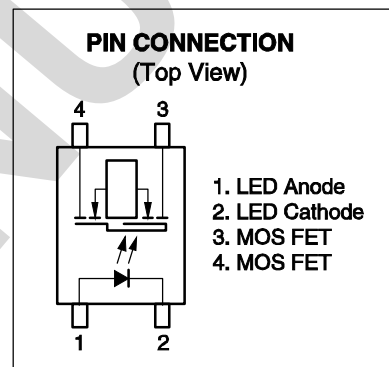
Mar 7, 2012

DESCRIPTION

The PS7904-1A is a low output capacitance solid state relay containing a GaAs LED on the light emitting side (input side) and MOS FETs on the output side.
 A small flat-lead package has been provided which realizes a reduction in mounting area of about 50% compared with the PS78xx series.
 It is suitable for high-frequency signal control, due to its low $C \times R$, low output capacitance, and low off-state leakage current.

FEATURES

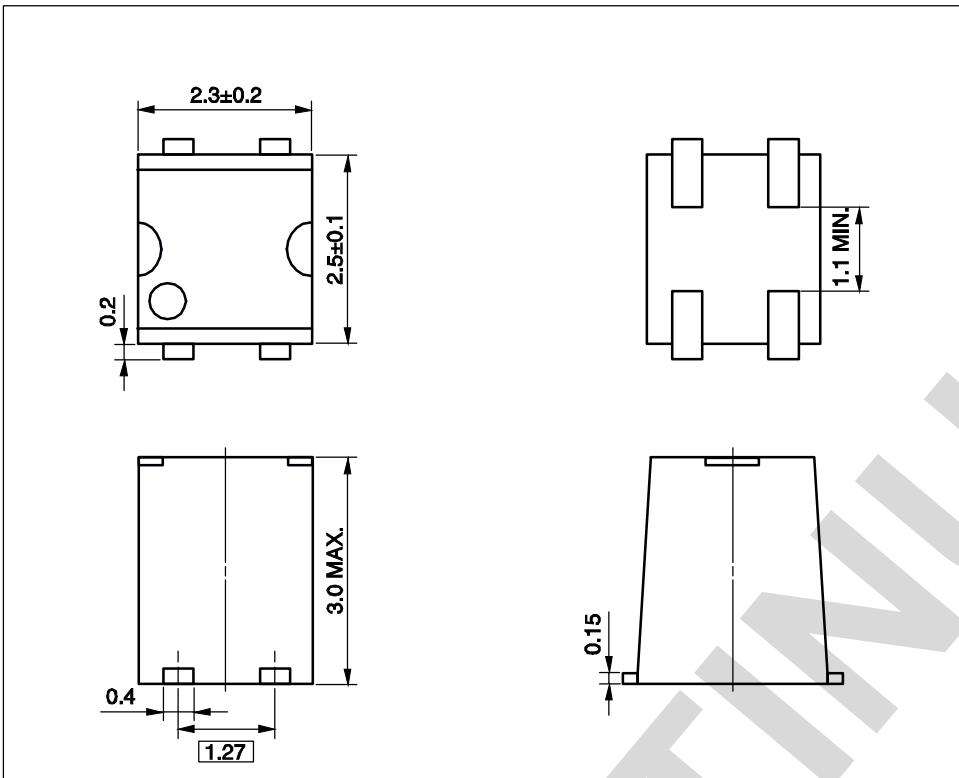
- ☒ Small flat-lead package (2.5 (L) × 2.3 (W) × 2.9 (H) mm)
- ☒ Low $C \times R$ ($C \times R = 29.7 \text{ pF} \cdot \Omega$)
- ☒ Low on-state resistance ($R_{on} = 1.1 \Omega$ TYP.)
- ☒ Large continuous load current ($I_L = 400 \text{ mA}$)
- ☒ 1 channel type (1 a output)
- ☒ Designed for AC/DC switching line changer
- ☒ Low offset voltage
- ☒ Embossed tape product : PS7904-1A-F3 : 3 500 pcs/reel
- ☒ Pb-Free product



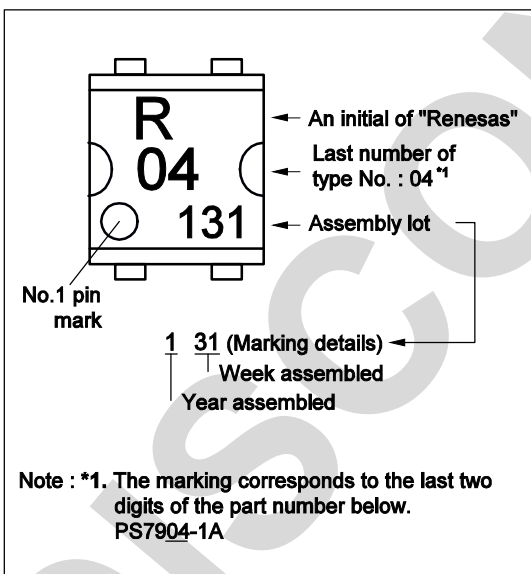
APPLICATIONS

- ☒ Measurement equipment

PACKAGE DIMENSIONS (UNIT: mm)



MARKING EXAMPLE



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

| Parameter | Symbol | Ratings | Unit | |
|---------------------------------|--|------------------------|------------------|----|
| Diode | Forward Current (DC) | I_F | 50 | mA |
| | Reverse Voltage | V_R | 5.0 | V |
| | Power Dissipation | P_D | 50 | mW |
| | Peak Forward Current ^{*1} | I_{FP} | 1 | A |
| MOS FET | Break Down Voltage | V_L | 60 | V |
| | Continuous Load Current | I_L | 400 | mA |
| | Pulse Load Current ^{*2} (AC/DC Connection) | I_{LP} | 800 | mA |
| | Power Dissipation ^{*2} | P_D | 250 | mW |
| Isolation Voltage ^{*3} | BV | 500 | Vr.m.s. | |
| Total Power Dissipation | P_T | 300 | mW | |
| Operating Ambient Temperature | T_A | $\ominus 40$ to $+85$ | $^\circ\text{C}$ | |
| Storage Temperature | T_{stg} | $\ominus 40$ to $+100$ | $^\circ\text{C}$ | |

Notes: *1. PW = 100 μs , Duty Cycle = 1%

*2. PW = 100 ms, 1 shot

*3. AC voltage for 1 minute at $T_A = 25^\circ\text{C}$, RH = 60% between input and output.

Pins 1-2 shorted together, 3-4 shorted together.

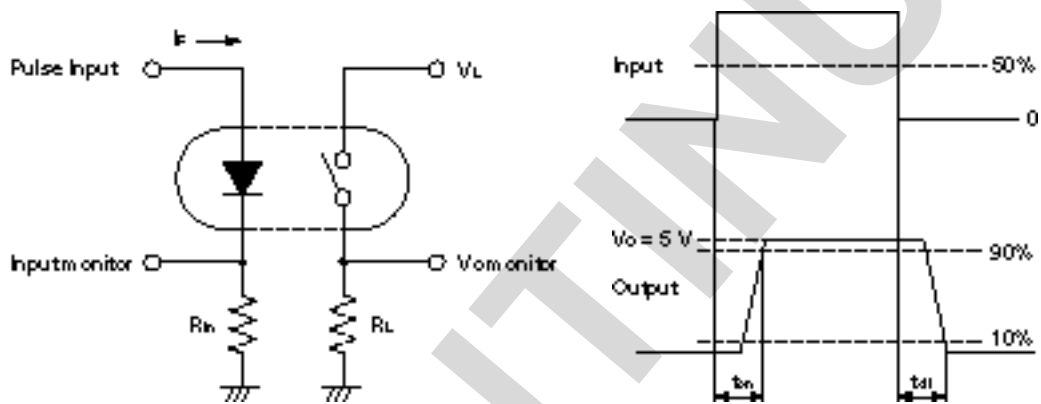
RECOMMENDED OPERATING CONDITIONS ($T_A = 25^\circ\text{C}$)

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|-----------------------|--------|------|------|------|------|
| LED Operating Current | I_F | 4.5 | 5 | 20 | mA |
| LED Off Current | I_F | 0.1 | | | mA |

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|-----------|---------------------------|-------------------|--|-----------------|------|------|------|
| Diode | Forward Voltage | V _F | I _F = 5 mA | | 1.1 | 1.4 | V |
| | Reverse Current | I _R | V _R = 5 V | | | 5.0 | μA |
| MOS FET | Off-state Leakage Current | I _{Loff} | V _L = 60 V | | 0.1 | 10 | nA |
| | Output Capacitance | C _{out} | V _L = 0 V, f = 1 MHz | | 27 | 35 | pF |
| Coupled | LED On-state Current | I _{Fon} | I _L = 400 mA | | | 4.0 | mA |
| | On-state Resistance | R _{on} | I _F = 5 mA, I _L = 400 mA, t ≥ 10 ms | | 1.1 | 1.5 | Ω |
| | Turn-on Time*1 | t _{on} | I _F = 5 mA, V _O = 5 V, | | 0.15 | 0.5 | ms |
| | Turn-off Time*1 | t _{off} | R _L = 500 Ω, PW ≥ 1 ms | | 0.15 | 0.5 | ms |
| | Isolation Resistance | R _{I-O} | V _{I-O} = 0.5 kV _{DC} | 10 ⁹ | | | Ω |
| | Isolation Capacitance | C _{I-O} | V = 0 V, f = 1 MHz | | 0.3 | | pF |

Notes: *1. Test Circuit for Switching Time



USAGE CAUTIONS

1. Protect against static electricity when handling.
2. Avoid storage at a high temperature and high humidity.

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| | | |
|----------------|---------------|--|
| Caution | GaAs Products | <p>This product uses gallium arsenide (GaAs). GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.</p> <ul style="list-style-type: none">• Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.<ol style="list-style-type: none">1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.• Do not burn, destroy, cut, crush, or chemically dissolve the product.• Do not lick the product or in any way allow it to enter the mouth. |
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