PS7902-1A

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

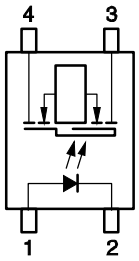
DESCRIPTION

The PS7902-1A 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 × 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 × R (C × R = 12.6 pF • Ω)
- Low on-state resistance (R_{on} = 1.1 Ω TYP.)
- High pass characteristics (ERT = 42 ps TYP.)
- 1 channel type (1 a output)
- Designed for AC/DC switching line changer
- Low offset voltage
- Embossed tape product : PS7902-1A-F3 : 3 500 pcs/reel
- Pb-Free product

PIN CONNECTION
(Top View)

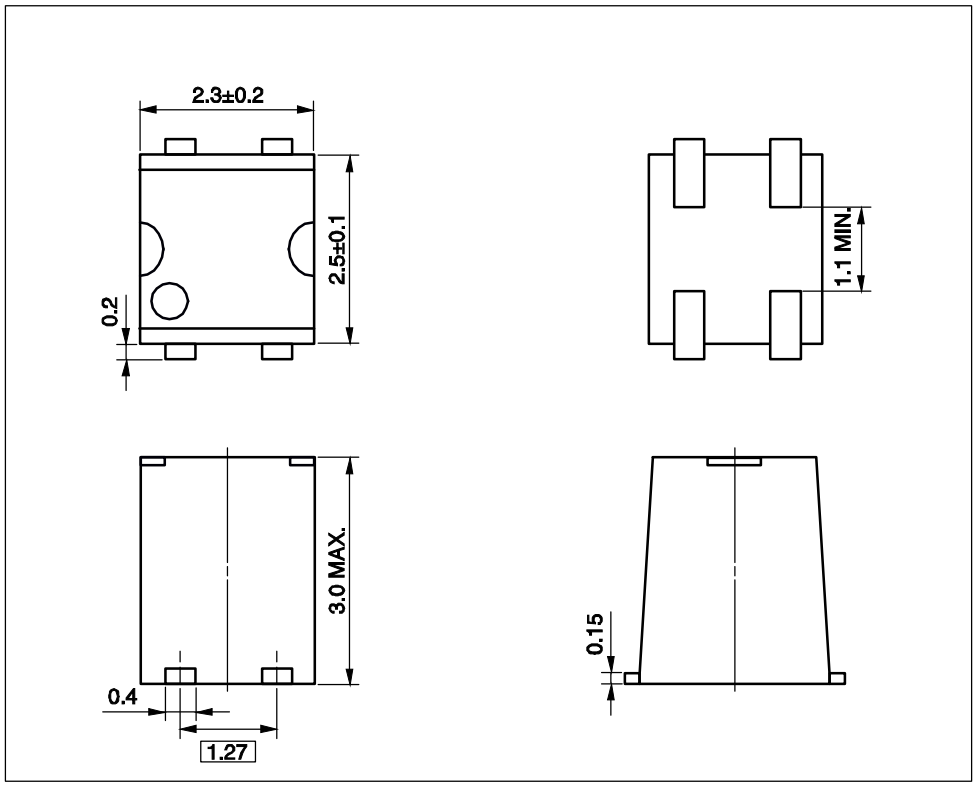


1. LED Anode
2. LED Cathode
3. MOS FET
4. MOS FET

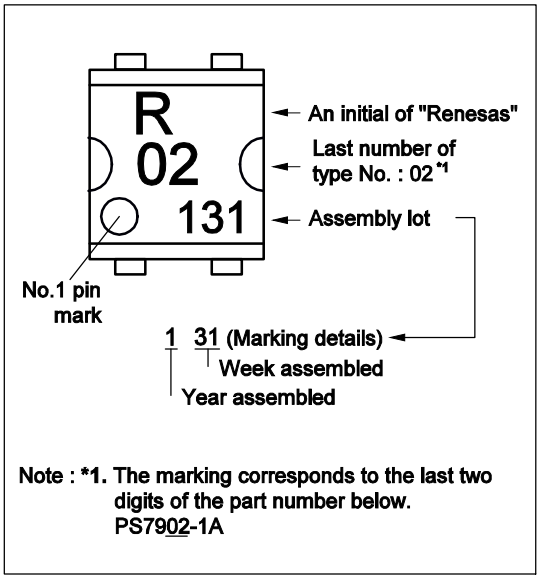
APPLICATIONS

- Measurement equipment

PACKAGE DIMENSIONS (UNIT: mm)



MARKING EXAMPLE



Note : ***1.** The marking corresponds to the last two digits of the part number below.
PS7902-1A

ABSOLUTE MAXIMUM RATINGS (T_A = 25°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	40	V
	Continuous Load Current	I_L	250	mA
	Pulse Load Current *2 (AC/DC Connection)	I_{LP}	500	mA
	Power Dissipation *2	P_D	100	mW
Isolation Voltage *3		BV	500	Vr.m.s.
Total Power Dissipation		P_T	150	mW
Operating Ambient Temperature		T_A	−40 to +85	°C
Storage Temperature		T_{stg}	−40 to +100	°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°C, RH = 60% between input and output.
Pins 1-2 shorted together, 3-4 shorted together.

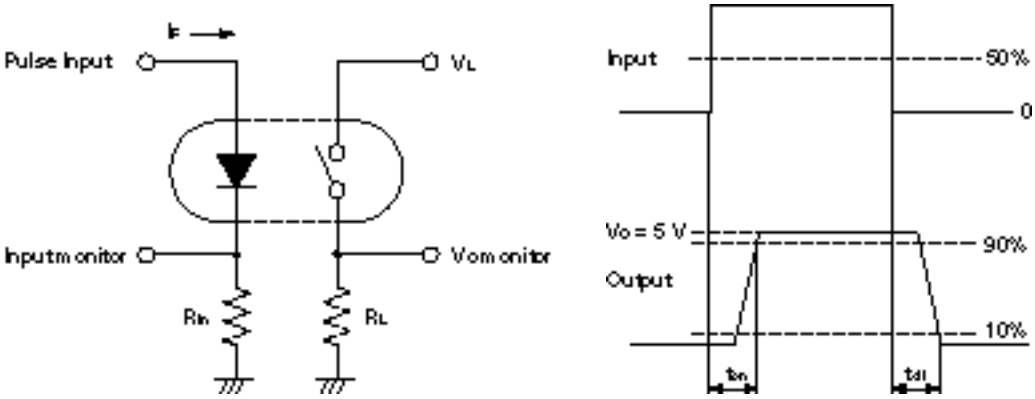
RECOMMENDED OPERATING CONDITIONS (T_A = 25°C)

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)

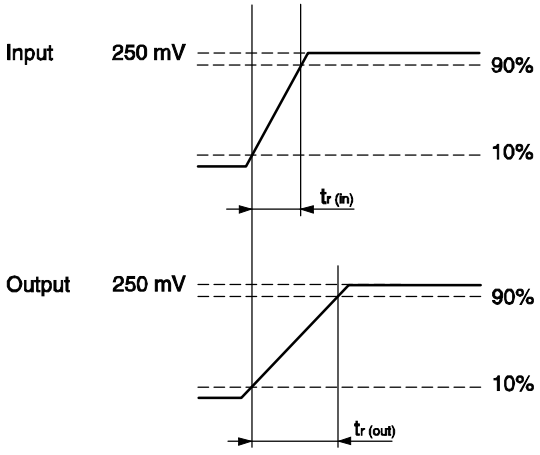
Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	I_F = 5 mA		1.1	1.4	V
	Reverse Current	I_R	V_R = 5 V			5.0	□A
MOS FET	Off-state Leakage Current	I_{Loff}	V_L = 40 V		0.1	10	nA
	Output Capacitance	C_{out}	V_L = 0 V, f = 1 MHz		11.5		pF
Coupled	LED On-state Current	I_{Fon}	I_L = 250 mA			4.0	mA
	On-state Resistance	R_{on}	I_F = 5 mA, I_L = 250 mA		1.1	1.6	□
	Turn-on Time*1	t_{on}	I_F = 5 mA, V_O = 5 V,		0.10	0.25	ms
	Turn-off Time*1	t_{off}	R_L = 500 □ , PW □ 0.5 ms		0.10	0.25	
	Isolation Resistance	R_{I-O}	V_{I-O} = 0.5 kV_{DC}	10^9			□
	Isolation Capacitance	C_{I-O}	V = 0 V, f = 1 MHz		0.3		pF
	Equivalent Rise Time*2	ERT	I_F = 5 mA, $t_{r(in)}$ = 25.0 ps, V = 250 mV, 50 □ termination		42		ps

Notes: ***1***. Test Circuit for Switching Time



2. ERT (Equivalent Rise Time) measurement

$$ERT = \sqrt{t_{r\,(out)}^2 - t_{r\,(in)}^2}$$



USAGE CAUTIONS

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

Caution GaAs Products	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. • 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. 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.