

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_{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} ($C_{\text{R}} = 29.7 \text{ pF} \cdot \text{mm}^2$)

Low on-state resistance ($R_{\text{on}} = 1.1 \text{ } \Omega$ TYP.)

Large continuous load current ($I_{\text{L}} = 400 \text{ mA}$)

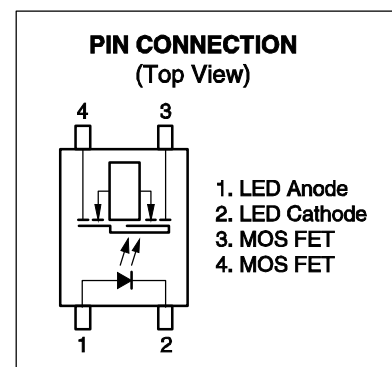
1 channel type (1 a output)

Designed for AC/DC switching line changer

Low offset voltage

Embossed tape product : PS7904-1A-F3 : 3 500 pcs/reel

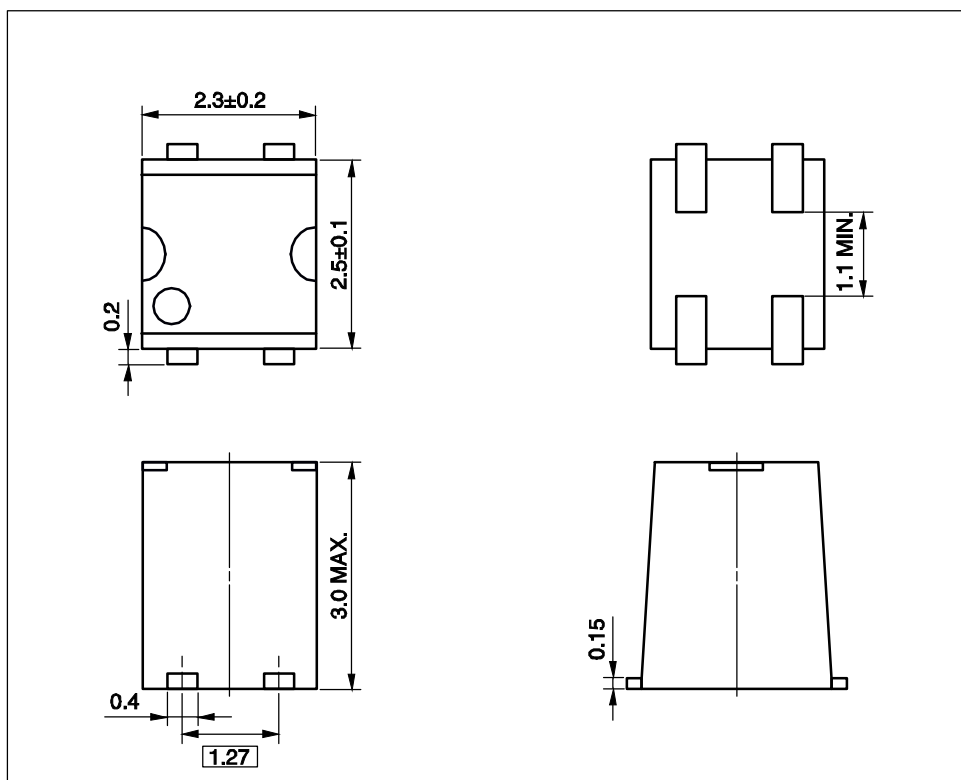
Pb-Free product



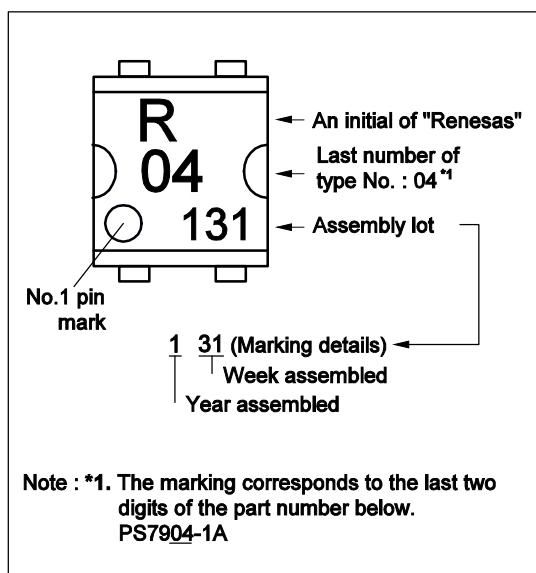
APPLICATIONS

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	40 to +85	C
Storage Temperature		T _{stg}	40 to +100	C

Notes: ^{*1}. PW = 100 μ s, 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.

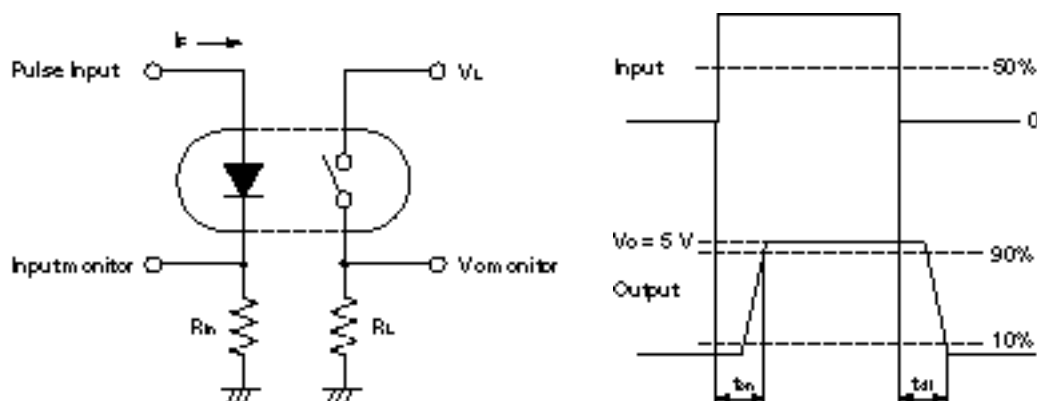
RECOMMENDED OPERATING CONDITIONS ($T_A = 25^\circ\text{C}$)

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

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	V_F	$I_F = 5\text{ mA}$		1.1	1.4	V
	Reverse Current	I_R	$V_R = 5\text{ V}$			5.0	A
MOS FET	Off-state Leakage Current	I_{Loff}	$V_L = 60\text{ V}$		0.1	10	nA
	Output Capacitance	C_{out}	$V_L = 0\text{ V}$, $f = 1\text{ MHz}$		27	35	pF
Coupled	LED On-state Current	I_{Fon}	$I_L = 400\text{ mA}$			4.0	mA
	On-state Resistance	R_{on}	$I_F = 5\text{ mA}$, $I_L = 400\text{ mA}$, $t = 10\text{ ms}$		1.1	1.5	
	Turn-on Time ^{*1}	t_{on}	$I_F = 5\text{ mA}$, $V_O = 5\text{ V}$, $R_L = 500\ \Omega$, $PW = 1\text{ ms}$		0.15	0.5	ms
	Turn-off Time ^{*1}	t_{off}			0.15	0.5	
	Isolation Resistance	R_{I-O}	$V_{I-O} = 0.5\text{ kV}_{DC}$	10^9			
	Isolation Capacitance	C_{I-O}	$V = 0\text{ V}$, $f = 1\text{ MHz}$		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.

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.
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