

## PRELIMINARY DATA SHEET

# NEC

OCMOS FET™  
**PS7241S-1A**

### CURRENT LIMIT TYPE 4-PIN SOP 400 V OCMOS FET (1-ch OCMOS FET)

#### DESCRIPTION

The PS7241S-1A is a solid state relay containing GaAs LEDs on the light emitting side (input side) and MOS FETs including current control circuit on the output side. Current control circuit of OCMOS FET protects this device from thermal breakdown and output circuit.

It is suitable for analog signal control because of its low offset and high linearity.

#### FEATURES

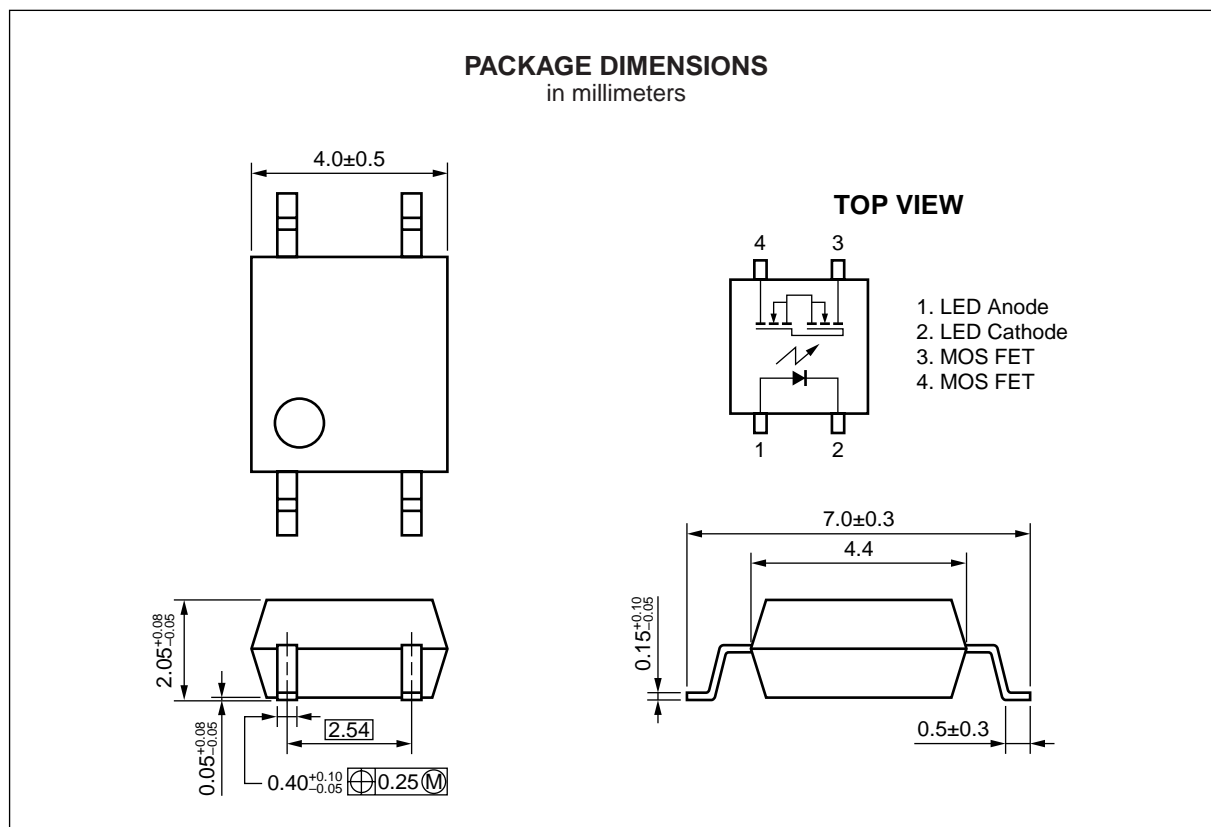
- Shut down type circuit
- ★ • Limit current ( $I_{LMT} = 155$  to  $210$  mA)
- Small and thin package (4-pin SOP, Height =  $2.1$  mm)
- 1 channel type (1 a output)
- Low LED operating current ( $I_F = 2$  mA)
- Designed for AC/DC switching line changer
- Low offset voltage
- Ordering number of taping product: PS7241S-1A-E3, E4, F3, F4
- ★ • UL approved: File No. E72422 (S)

#### APPLICATIONS

- Note PC, PDA
- Modem card
- Telephone, FAX
- Measurement equipment

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

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**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C, unless otherwise specified)**

Parameter		Symbol	Ratings	Unit
Diode	Forward Current (DC)	I <sub>F</sub>	50	mA
	Reverse Voltage	V <sub>R</sub>	5.0	V
	Power Dissipation	P <sub>D</sub>	50	mW
	Peak Forward Current <sup>*1</sup>	I <sub>FP</sub>	1	A
MOS FET	Break Down Voltage	V <sub>L</sub>	400	V
	Continuous Load Current	I <sub>L</sub>	120	mA
	Pulse Load Current <sup>*2</sup> (AC/DC Connection)	I <sub>LP</sub>	120	mA
	Power Dissipation	P <sub>D</sub>	300	mW
Isolation Voltage <sup>*3</sup>		BV	1 500	Vr.m.s.
Total Power Dissipation		P <sub>T</sub>	350	mW
Operating Ambient Temperature		T <sub>A</sub>	−40 to +80	°C
Storage Temperature		T <sub>stg</sub>	−40 to +100	°C

\*1 PW = 100 μs, Duty Cycle = 1 %

\*2 PW = 100 ms, 1 shot

\*3 AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output

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

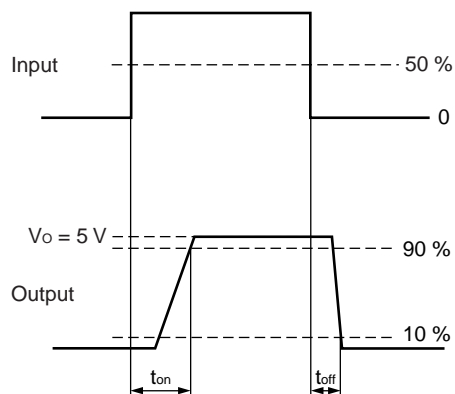
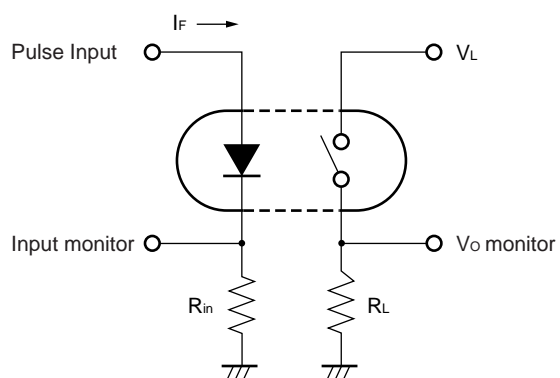
Parameter	Symbol	MIN.	TYP.	MAX.	Unit
LED Operating Current	$I_F$	2	10	20	mA
LED Off Voltage	$V_F$	0		0.5	V

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

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Diode	Forward Voltage	$V_F$	$I_F = 10\text{ mA}$		1.2	1.4	V
	Reverse Current	$I_R$	$V_R = 5\text{ V}$			5.0	$\mu\text{A}$
MOS FET	Off-state Leakage Current	$I_{\text{Leak}}$	$V_D = 400\text{ V}$			1	$\mu\text{A}$
	Output Capacitance	$C_{\text{out}}$	$V_D = 0\text{ V}$ , $f = 1\text{ MHz}$		65		pF
Coupled	LED On-state Current	$I_{\text{Fon}}$	$I_L = 120\text{ mA}$			2	mA
	On-state Resistance	$R_{\text{on1}}$	$I_F = 10\text{ mA}$ , $I_L = 10\text{ mA}$		28	35	$\Omega$
		$R_{\text{on2}}$	$I_F = 10\text{ mA}$ , $I_L = 120\text{ mA}$		24	30	
	Turn-on Time <sup>*1</sup>	$t_{\text{on}}$	$I_F = 10\text{ mA}$ , $V_O = 5\text{ V}$ , $PW \geq 10\text{ ms}$		0.5	2.0	ms
	Turn-off Time <sup>*1</sup>	$t_{\text{off}}$			0.07	0.2	
	Isolation Resistance	$R_{\text{I-O}}$	$V_{\text{I-O}} = 1.0\text{ kV}_{\text{DC}}$	$10^9$			$\Omega$
	Isolation Capacitance	$C_{\text{I-O}}$	$V = 0\text{ V}$ , $f = 1\text{ MHz}$		0.5		pF
	Limit Current	$I_{\text{LMT}}$	$I_F = 10\text{ mA}$ , $V_L = 6\text{ V}$ , $t = 5\text{ ms}$	155	180	210	mA

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★ \*1 Test Circuit for Switching Time



## CAUTION

**Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. Please do not under any circumstances break the hermetic seal.**

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