PRELIMINARY DATA SHEET

NEC

OCMOS FET™

# PS7241C-1A

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

### DESCRIPTION

The PS7241C-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

★ • 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: PS7241C-1A-E3, E4, F3, F4

★ • UL approved: File No. E72422 (S)

### APPLICATIONS

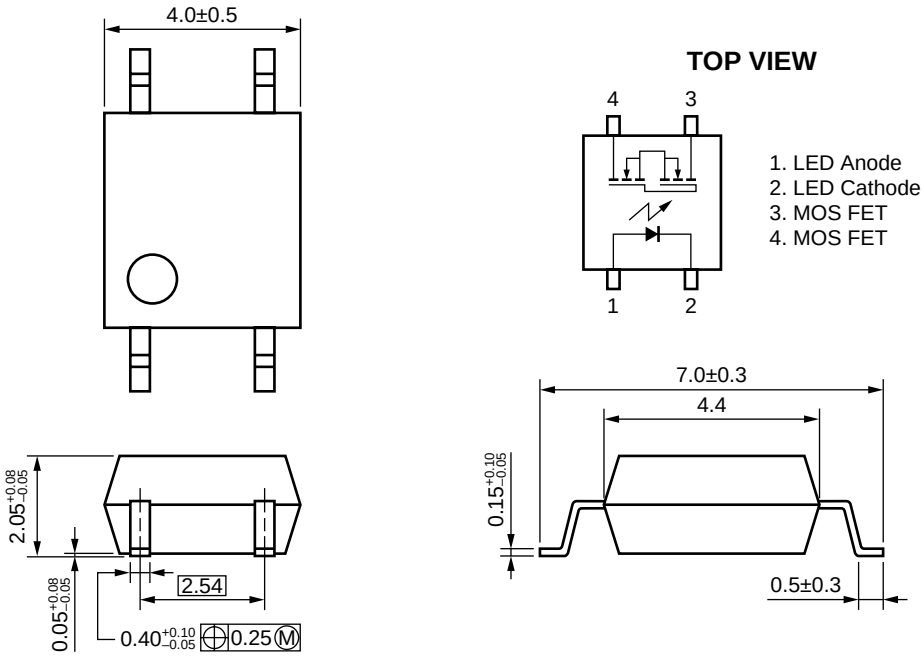
- Note PC, PDA
- Modem card
- Telephone, FAX
- Measurement equipment



Document No. P13921EJ4V0DS00 (4th edition)
Date Published July 1999 NS CP(K)
Printed in Japan

**The mark ★ shows major revised points.**

**PACKAGE DIMENSIONS**
in millimeters




**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 | $V_L$ | 400 | V |
| | Continuous Load Current | $I_L$ | 120 | mA |
| ★ | Pulse Load Current*2 (AC/DC Connection) | $I_{LP}$ | 120 | mA |
| | Power Dissipation | $P_D$ | 300 | mW |
| Isolation Voltage*3 | | BV | 1 500 | Vr.m.s. |
| Total Power Dissipation | | $P_T$ | 350 | mW |
| Operating Ambient Temperature | | $T_A$ | −40 to +80 | °C |
| Storage Temperature | | $T_{stg}$ | −40 to +100 | °C |

***1** PW = 100 μs, Duty Cycle = 1 %

***2** PW = 100 ms, 1 shot

***3** AC voltage for 1 minute at $T_A$ = 25 °C, RH = 60 % between input and output

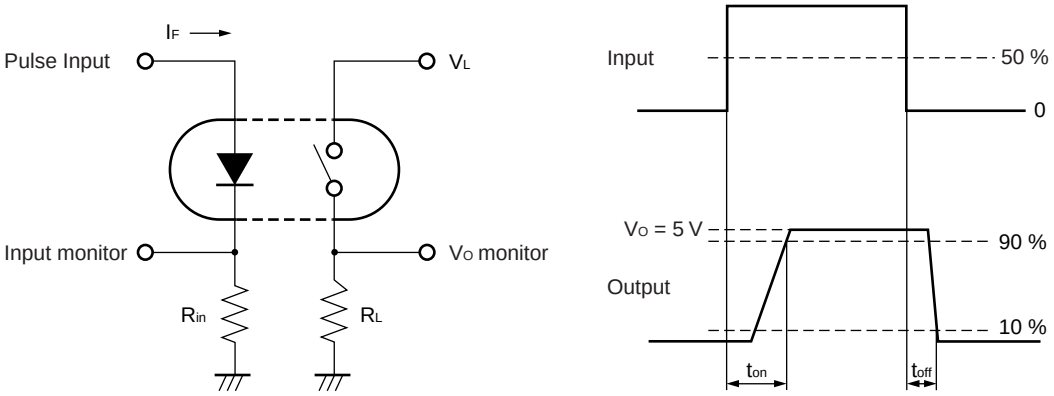
## RECOMMENDED OPERATING CONDITIONS ($T_A$ = 25 °C)

| 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 °C)

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

★ ***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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