

OCMOS FET™

# PS7341-1B,PS7341L-1B

# HIGH ISOLATION VOLTAGE 6-PIN DIP OCMOS FET (1-ch OCMOS FET)

#### **DESCRIPTION**

The PS7341-1B and PS7341L-1B are solid state relays containing a GaAs LED on the light emitting side (input side) and normally close (N.C.) contact MOS FETs on the output side.

They are suitable for analog signal control because of their low offset and high linearity.

The PS7341L-1B has a surface mount type lead.

#### **FEATURES**

- High isolation voltage (BV = 3 750 Vr.m.s.)
- 1 channel type (1 b output)
- Low LED Operating Current (IF = 2 mA)
- · Designed for AC/DC switching line changer
- Small package (6-pin DIP)
- · Low offset voltage
- PS7341L-1B: Surface mount type
- UL approved: File No. E72422 (S)
- BSI approved: No. 8252/8253
- CSA approved: CA 101391

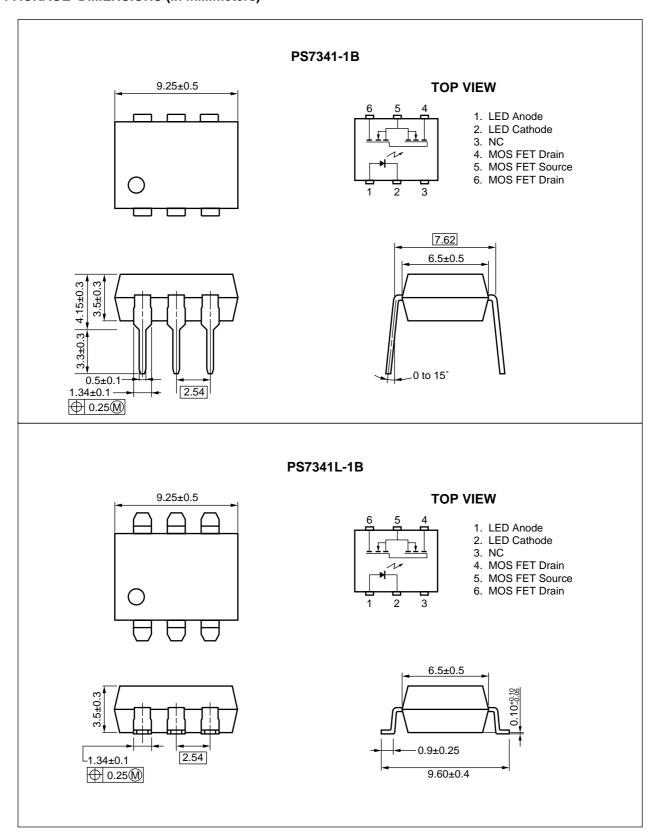
#### **APPLICATIONS**

- Exchange equipment
- · Measurement equipment
- · FA/OA equipment

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

# **PACKAGE DIMENSIONS (in millimeters)**



#### **ORDERING INFORMATION**

| Part Number   | Package   | Packing Style                | Application Part Number*1 |
|---------------|-----------|------------------------------|---------------------------|
| PS7341-1B     | 8-pin DIP | Magazine case 50 pcs         | PS7341-1B                 |
| PS7341L-1B    |           |                              | PS7341L-1B                |
| PS7341L-1B-E3 |           | Embossed Tape 1 000 pcs/reel |                           |
| PS7341L-1B-E4 |           |                              |                           |

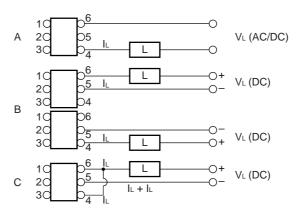
<sup>\*1</sup> For the application of the Safety Standard, following part number should be used.

## ABSOLUTE MAXIMUM RATINGS (TA = 25 °C, unless otherwise specified)

| Parameter                     |   | Symbol           | Ratings     | Unit    |    |
|-------------------------------|---|------------------|-------------|---------|----|
| Diode                         | Forward Current (DC)                                |                  | lF          | 50      | mA |
|                               | Reverse Voltage                                     |                  | VR          | 5.0     | V  |
|                               | Power Dissipation                                   |                  | Po          | 50      | mW |
|                               | Peak Forward Current <sup>™</sup>                   |                  | IFP         | 1       | Α  |
| MOS FET                       | Break Down Voltage                                  |                  | VL          | 400     | V  |
|                               | Continuous  | Connection A     | lι          | 150     | mA |
|                               | Load Current <sup>*2</sup>                          | Connection B     |             | 200     |    |
|                               |   | Connection C     |             | 300     |    |
|                               | Pulse Load Current <sup>13</sup> (AC/DC Connection) |                  | ILP         | 300     | mA |
|                               | Power Dissipation                                   |                  | Po          | 560     | mW |
| Isolation Voltage ⁴           |   | BV               | 3 750       | Vr.m.s. |    |
| Total Power Dissipation       |   | Рт               | 610         | mW      |    |
| Operating Ambient Temperature |   | TA               | -40 to +85  | °C      |    |
| Storage Temperature           |   | T <sub>stg</sub> | -40 to +125 | °C      |    |

<sup>\*1</sup> PW = 100  $\mu$ s, Duty Cycle = 1 %

<sup>\*2</sup> Conditions: If  $\geq$  2 mA. The following types of load connections are available.



<sup>\*3</sup> PW = 100 ms, 1shot

<sup>\*4</sup> AC voltage for 1 minute at  $T_A = 25$  °C, RH = 60 % between input and output

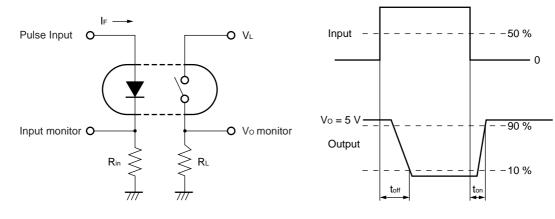
# RECOMMENDED OPERATING CONDITIONS (TA = 25 °C)

| Parameter             | Symbol | MIN. | TYP. | MAX. | K. Unit |  |
|-----------------------|--------|------|------|------|---------|--|
| LED Operating Current | lF     | 2    | 10   | 20   | mA      |  |
| LED Off Voltage       | VF     | 0    |      | 0.5  | V       |  |

# ELECTRICAL CHARACTERISTICS (TA = 25 °C)

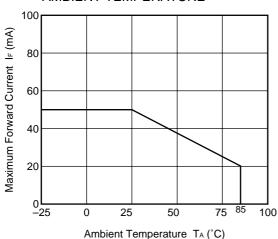
|         | Parameter                  | Symbol           | Conditions   | MIN. | TYP. | MAX. | Unit |
|---------|----------------------------|------------------|--|------|------|------|------|
| Diode   | Diode Forward Voltage      |                  | IF = 10 mA   |      | 1.2  | 1.4  | V    |
|         | Reverse Current            | lR               | V <sub>R</sub> = 5 V                                     |      |      | 5.0  | μΑ   |
| MOS FET | Off-state Leakage Current  | Loff             | IF = 10 mA, VD = 400 V                                   |      | 0.5  | 10   | μΑ   |
|         | Output Capacitance         | Cout             | IF = 10 mA, VD = 0 V, f = 1 MHz                          |      | 185  |      | pF   |
| Coupled | LED Off-state Current      | <b>I</b> Foff    | I∟ = 150 mA  |      |      | 2.0  | mA   |
|         | On-state Resistance        | Ron1             | IF = 0 mA, IL = 10 mA                                    |      | 20   | 30   | Ω    |
|         |                            | Ron2             | I <sub>F</sub> = 0 mA, I <sub>L</sub> = 150 mA           |      | 16   | 25   |      |
|         | Turn-on Time <sup>*1</sup> | ton              | I <sub>F</sub> = 10 mA, V <sub>O</sub> = 5 V, PW ≥ 10 ms |      | 0.03 | 0.2  | ms   |
|         | Turn-off Time <sup>™</sup> | toff             |  |      | 0.6  | 1.5  |      |
|         | Isolation Resistance       | R <sub>I-O</sub> | Vi-o = 1.0 kVpc  | 10°  |      |      | Ω    |
|         | Isolation Capacitance      | Сі-о             | V = 0 V, f = 1 MHz                                       |      | 1.1  |      | pF   |

## \*1 Test Circuit for Switching Time

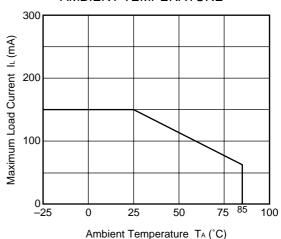


#### TYPICAL CHARACTERISTICS (TA = 25 °C, unless otherwise specified)

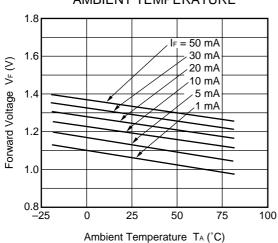




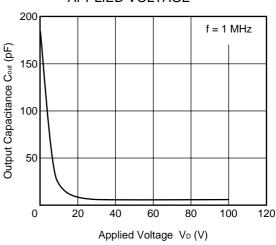
### MAXIMUM LOAD CURRENT vs. AMBIENT TEMPERATURE



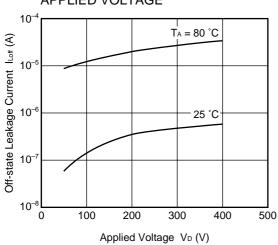
#### FORWARD VOLTAGE vs. AMBIENT TEMPERATURE



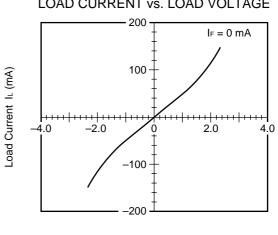
#### OUTPUT CAPACITANCE vs. APPLIED VOLTAGE



## OFF-STATE LEAKAGE CURRENT vs. APPLIED VOLTAGE

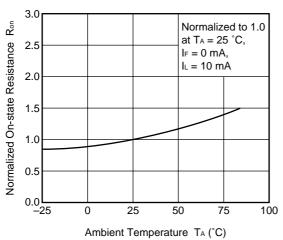


# LOAD CURRENT vs. LOAD VOLTAGE

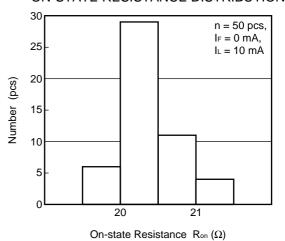


Load Voltage V<sub>L</sub> (V)

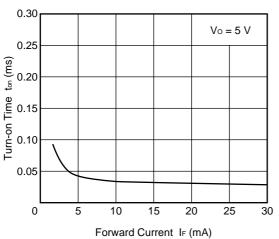
# NORMALIZED ON-STATE RESISTANCE vs. AMBIENT TEMPERATURE



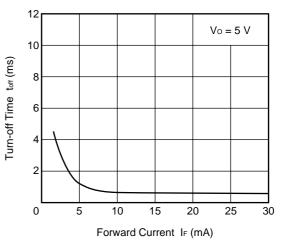
#### ON-STATE RESISTANCE DISTRIBUTION



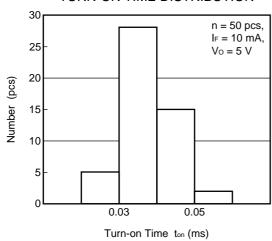
#### TURN-ON TIME vs. FORWARD CURRENT



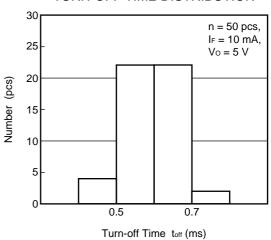
#### TURN-OFF TIME vs. FORWARD CURRENT



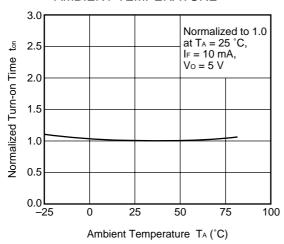
#### TURN-ON TIME DISTRIBUTION



#### TURN-OFF TIME DISTRIBUTION

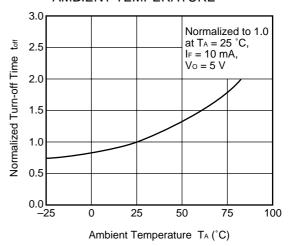


# NORMALIZED TURN-ON TIME vs. AMBIENT TEMPERATURE

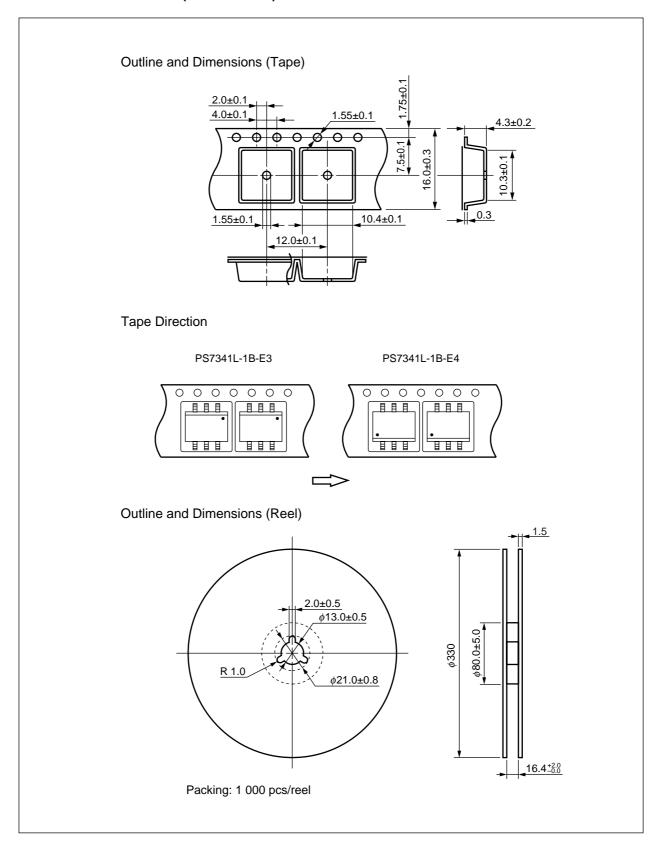


Remark The graphs indicate nominal characteristics.

# NORMALIZED TURN-OFF TIME vs. AMBIENT TEMPERATURE



#### **TAPING SPECIFICATIONS (in millimeters)**



#### RECOMMENDED SOLDERING CONDITIONS

#### (1) Infrared reflow soldering

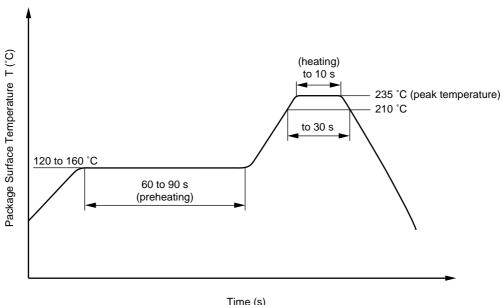
235 °C (package surface temperature) • Peak reflow temperature

• Time of temperature higher than 210 °C 30 seconds or less

· Number of reflows One

• Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt % is recommended.)

#### Recommended Temperature Profile of Infrared Reflow



#### Time (s)

#### (2) Dip soldering

 Temperature 260 °C or below (molten solder temperature)

• Time 10 seconds or less

· Number of times

• Flux Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of

0.2 Wt % is recommended.)

# (3) Cautions

Fluxes

Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.

· Products in dry pack

After opening the dry pack, solder the products within the valid storage period specified on the label on the dry pack.

[MEMO]

[MEMO]

#### 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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