NEC

# PHOTOCOUPLER
# PS2761-1

## HIGH ISOLATION VOLTAGE 4-PIN SOP PHOTOCOUPLER

–NEPOC™ Series–

### DESCRIPTION

The PS2761-1 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon phototransistor.

This package is mounted in a plastic SOP (Small Outline Package) for high density applications.

### FEATURES

- High isolation thickness (0.4 mm MIN.)
- High isolation voltage (BV = 3 750 Vr.m.s.)
- SOP (Small Outline Package) type
- High-speed switching ($t_r$ = 3 $\mu$s TYP., $t_f$ = 5 $\mu$s TYP.)
- Ordering number of taping product: PS2761-1-E3, E4, F3, F4

### APPLICATIONS

- Hybrid IC
- Programmable logic controllers
- Power supply



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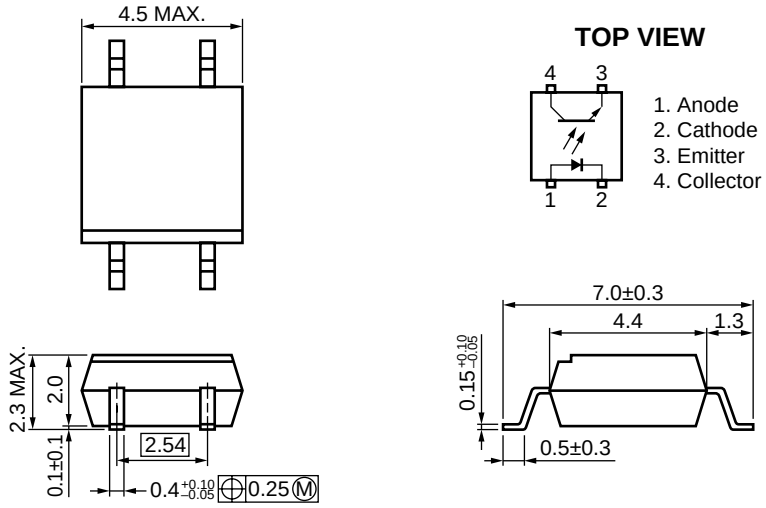
**PACKAGE DIMENSIONS**
in millimeters




## PHOTOCOUPLER CONSTRUCTION

| Parameter | Unit (MIN.) |
|---|---|
| Air Distance | 5 mm |
| Outer Distance | 5 mm |
| Inner Distance | 2.5 mm |
| Isolation Thickness | 0.4 mm |

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

| Parameter | | Symbol | Ratings | Unit |
|---|---|---|---|---|
| Diode | Forward Current (DC) | $I_F$ | 50 | mA |
| | Reverse Voltage | $V_R$ | 6 | V |
| | Power Dissipation Derating | $\Delta P_D$/°C | 0.8 | mW/°C |
| | Power Dissipation | $P_D$ | 80 | mW |
| | Peak Forward Current*1 | $I_{FP}$ | 1.0 | A |
| Transistor | Collector to Emitter Voltage | $V_{CEO}$ | 40 | V |
| | Emitter to Collector Voltage | $V_{ECO}$ | 6 | V |
| | Collector Current | $I_C$ | 80 | mA |
| | Power Dissipation Derating | $\Delta P_C$/°C | 1.5 | mW/°C |
| | Power Dissipation | $P_C$ | 150 | mW |
| Isolation Voltage*2 | | BV | 3 750 | Vr.m.s. |
| Operating Ambient Temperature | | $T_A$ | –40 to +100 | °C |
| Storage Temperature | | $T_{stg}$ | –55 to +150 | °C |

***1** PW = 100 $\mu$s, Duty Cycle = 1 %

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

## 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 | $\mu$A |
| | Terminal Capacitance | $C_t$ | V = 0 V, f = 1 MHz | | 30 | | pF |
| Transistor | Collector to Emitter Dark Current | $I_{CEO}$ | $I_F$ = 0 mA, $V_{CE}$ = 40 V | | | 100 | nA |
| Coupled | Current Transfer Ratio ($I_C/I_F$) *1 | CTR | $I_F$ = 5 mA, $V_{CE}$ = 5 V | 50 | 100 | 300 | % |
| | Collector Saturation Voltage | $V_{CE\ (sat)}$ | $I_F$ = 10 mA, $I_C$ = 2 mA | | | 0.3 | V |
| | Isolation Resistance | $R_{I-O}$ | $V_{I-O}$ = 1 $kV_{DC}$ | $10^{11}$ | | | Ω |
| | Isolation Capacitance | $C_{I-O}$ | V = 0 V, f = 1 MHz | | 0.4 | | pF |
| | Rise Time | $t_r$ | $V_{CC}$ = 5 V, $I_C$ = 2 mA, $R_L$ = 100 Ω | | 3 | | $\mu$s |
| | Fall Time | $t_f$ | | | 5 | | |

***1** CTR rank

M: 50 to 150 (%)

L: 100 to 300 (%)

## 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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