



NEC's HIGH ISOLATION VOLTAGE SINGLE TRANSISTOR TYPE PHOTOCOUPLER SERIES

PS2501A
PS2501AL-1

FEATURES

- **HIGH ISOLATION VOLTAGE**
BV: 5000 V_{r.m.s}
- **UL AWAITING APPROVAL**
- **ORDERING NUMBER OF TAPING PRODUCT**
PS2501AL-1-E3, E4, F3, F4

DESCRIPTION

NEC's PS2501A-1 is an optically coupled isolator containing a GaAs light emitting diode and an NPN silicon phototransistor.

NEC's PS2501A-1 is in a plastic DIP (Dual In-line Package) and the PS2501AL-1 are lead bent type (Gull-wing) for surface mount.

APPLICATIONS

- **POWER SUPPLY**
- **TELEPHONE / FAX**
- **FACTORY AUTOMATION**
- **PROGRAMMABLE LOGIC CONTROLLER**

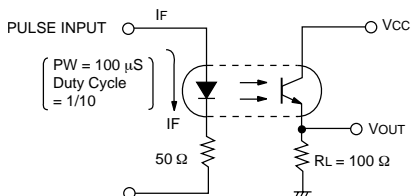
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| PART NUMBER PACKAGE OUTLINE | | PS2501A-1, PS2501AL-1 | | | |
|--------------------------------|--|-----------------------|------------------|------|-----|
| SYMBOLS | PARAMETERS AND CONDITIONS | UNITS | MIN | TYP | MAX |
| DIODE | | | | | |
| V _F | Forward Voltage, I _F = 10 mA | V | | 1.1 | 1.4 |
| I _R | Reverse Current, V _R = 5 V | μA | | | 5 |
| C _t | Terminal Capacitance, V = 0, f = 1.0 MHz | pF | | 10 | |
| TRANSISTOR | | | | | |
| I _{CEO} | Collector to Emitter, V _{ce} = 70 V, I _F = 0 | nA | | | 100 |
| COUPLED | | | | | |
| CTR | Current Transfer Ratio (I _C /I _F) ¹ , I _F = 5 mA, V _{CE} = 5 V | % | 50 | | 400 |
| V _{CE (sat)} | Collector Saturation Voltage, I _F = 10 mA, I _C = 2 mA | V | | 0.13 | 0.3 |
| R _{I-O} | Isolation Resistance at V _{I-O} = 1.0 kVDC | Ω | 10 ¹¹ | | |
| C _{I-O} | Isolation Capacitance at V = 0 V, f = 1.0 MHz | pF | | 0.4 | |
| t _r | Rise Time ² , V _{CC} = 10 V, I _C = 2 mA, R _L = 100 Ω | μs | | 5 | |
| t _f | Fall Time ² , V _{CC} = 10 V, I _C = 2 mA, R _L = 100 Ω | | | 7 | |

Notes:

1. CTR rank
N: 50 to 400 %
H: 80 to 160 %
W: 130 to 260 %
Q: 100 to 200%
L: 200 to 400 %

2. Test Circuit for Switching



ABSOLUTE MAXIMUM RATINGS¹ ($T_A = 25^\circ\text{C}$)

| SYMBOLS | PARAMETERS | UNITS | RATINGS |
|-----------------------------|-----------------------------------|----------------------|-------------|
| DIODE | | | |
| V_R | Reverse Voltage | V | 6 |
| I_F | Forward Current | mA | 30 |
| $\Delta P_D/^\circ\text{C}$ | Power Dissipation Derating | mW/ $^\circ\text{C}$ | 1.5 |
| P_D | Power Dissipation | mW | 150 |
| $I_F(\text{PEAK})$ | Peak Forward Current ² | A | 0.5 |
| TRANSISTOR | | | |
| V_{CEO} | Collector to Emitter Voltage | V | 70 |
| V_{ECO} | Emitter to Collector Voltage | V | 5 |
| I_C | Collector Current | mA | 30 |
| $\Delta P_C/^\circ\text{C}$ | Power Dissipation Derating | mW/ $^\circ\text{C}$ | 1.5 |
| P_C | Power Dissipation | mW | 150 |
| COUPLED | | | |
| BV | Isolation Voltage ³ | $V_{r.m.s.}$ | 5000 |
| T_A | Operating Ambient Temp. | $^\circ\text{C}$ | -55 to +100 |
| T_{STG} | Storage Temperature | $^\circ\text{C}$ | -55 to +150 |

Notes:

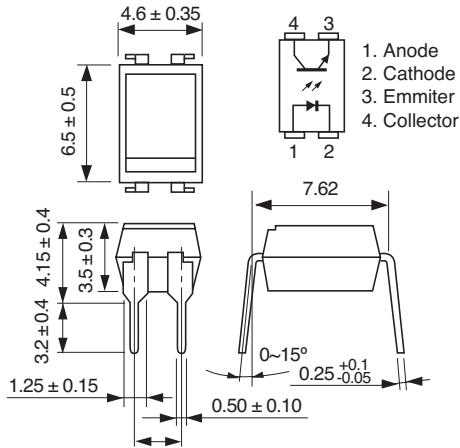
1. Operation in excess of any one of these parameters may result in permanent damage.
2. $PW = 100 \mu\text{s}$, Duty Cycle = 1 %.
3. AC voltage for 1 minute at $T_A = 25^\circ\text{C}$, RH = 60 % between input and output.

ORDERING INFORMATION

| PART NUMBER | PACKAGE | PACKAGE STYLE |
|---------------|-----------|-----------------------------|
| PS2501A-1 | 4-PIN DIP | Magazine case 100 pcs |
| PS2501AL-1 | | |
| PS2501AL-1-E3 | 4-PIN DIP | Embossed tape 1000 pcs/reel |
| PS2501AL-1-E4 | | |
| PS2501AL-1-F3 | 4-PIN DIP | Embossed tape 2000 pcs/reel |
| PS2501AL-1-F4 | | |

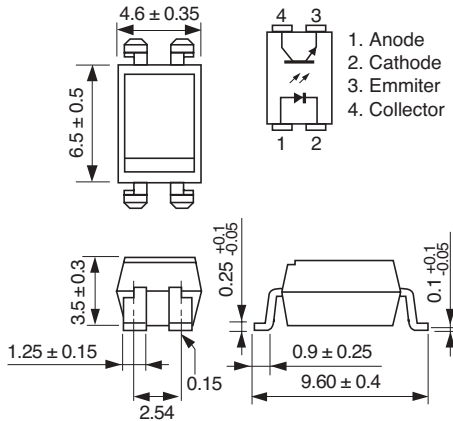
OUTLINE DIMENSIONS (Units in mm) DIP TYPE

PS2501A-1



OUTLINE DIMENSIONS (Units in mm) LEAD BENDING TYPE

PS2501A-1



Life Support Applications

These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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