



# NEC's HIGH ISOLATION VOLTAGE SINGLE TRANSISTOR TYPE PHOTOCOUPLER SERIES

PS2501A  
PS2501AL-1

## FEATURES

- **HIGH ISOLATION VOLTAGE**  
BV: 5000 V<sub>r.m.s</sub>
- **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**

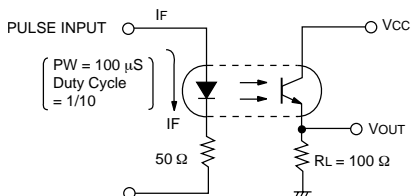
## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

PART NUMBER PACKAGE OUTLINE		PS2501A-1, PS2501AL-1			
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
<b>DIODE</b>					
V <sub>F</sub>	Forward Voltage, I <sub>F</sub> = 10 mA	V		1.1	1.4
I <sub>R</sub>	Reverse Current, V <sub>R</sub> = 5 V	μA			5
C <sub>t</sub>	Terminal Capacitance, V = 0, f = 1.0 MHz	pF		10	
<b>TRANSISTOR</b>					
I <sub>CEO</sub>	Collector to Emitter, V <sub>ce</sub> = 70 V, I <sub>F</sub> = 0	nA			100
<b>COUPLED</b>					
CTR	Current Transfer Ratio (I <sub>C</sub> /I <sub>F</sub> ) <sup>1</sup> , I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 5 V	%	50		400
V <sub>CE (sat)</sub>	Collector Saturation Voltage, I <sub>F</sub> = 10 mA, I <sub>C</sub> = 2 mA	V		0.13	0.3
R <sub>I-O</sub>	Isolation Resistance at V <sub>I-O</sub> = 1.0 kVDC	Ω	10 <sup>11</sup>		
C <sub>I-O</sub>	Isolation Capacitance at V = 0 V, f = 1.0 MHz	pF		0.4	
t <sub>r</sub>	Rise Time <sup>2</sup> , V <sub>CC</sub> = 10 V, I <sub>C</sub> = 2 mA, R <sub>L</sub> = 100 Ω	μs		5	
t <sub>f</sub>	Fall Time <sup>2</sup> , V <sub>CC</sub> = 10 V, I <sub>C</sub> = 2 mA, R <sub>L</sub> = 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 RATINGS<sup>1</sup>** (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
<b>DIODE</b>			
V <sub>R</sub>	Reverse Voltage	V	6
I <sub>F</sub>	Forward Current	mA	30
ΔP <sub>D</sub> /°C	Power Dissipation Derating	mW/°C	1.5
P <sub>D</sub>	Power Dissipation	mW	150
I <sub>F</sub> (PEAK)	Peak Forward Current <sup>2</sup>	A	0.5
<b>TRANSISTOR</b>			
V <sub>CEO</sub>	Collector to Emitter Voltage	V	70
V <sub>ECO</sub>	Emitter to Collector Voltage	V	5
I <sub>C</sub>	Collector Current	mA	30
ΔP <sub>C</sub> /°C	Power Dissipation Derating	mW/°C	1.5
P <sub>C</sub>	Power Dissipation	mW	150
<b>COUPLED</b>			
BV	Isolation Voltage <sup>3</sup>	V <sub>r.m.s.</sub>	5000
T <sub>A</sub>	Operating Ambient Temp.	°C	-55 to +100
T <sub>STG</sub>	Storage Temperature	°C	-55 to +150

## Notes:

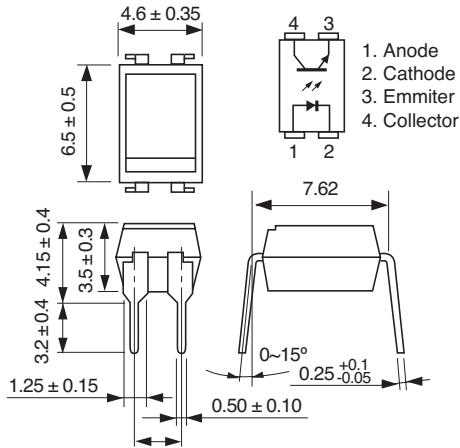
1. Operation in excess of any one of these parameters may result in permanent damage.
2. PW = 100 μs, Duty Cycle = 1 %.
3. AC voltage for 1 minute at T<sub>A</sub> = 25 °C, RH = 60 % between input and output.

**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		

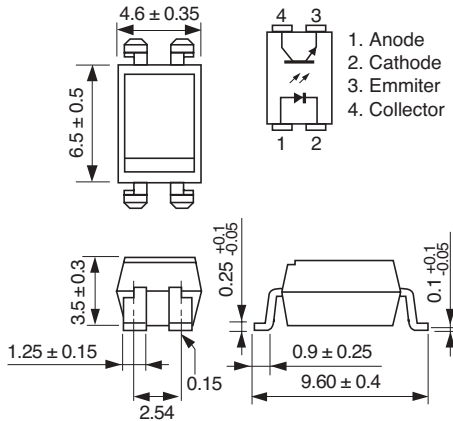
**OUTLINE DIMENSIONS** (Units in mm) DIP TYPE

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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