

FEATURES

- **HIGH ISOLATION VOLTAGE**
BV: 5kV_{r.m.s.} MIN
- **HIGH COLLECTOR TO EMITTER VOLTAGE**
V_{CEO}: 80 V MIN
- **HIGH CURRENT TRANSFER RATIO**
CTR: 300% TYP
- **HIGH SPEED SWITCHING**
t_r = 3 μs, t_f = 5 μs TYP
- **LOW COST**
- **ISOLATED CHANNELS PER EACH PACKAGE**

DESCRIPTION

PS2501-1, -2, -4 and PS2501L-1, -2, -4 are optically coupled isolators containing a GaAs light emitting diode and an NPN silicon phototransistor. PS2501-1, -2, -4 are in a plastic DIP (Dual In-line Package) and PS2501L-1, -2, -4 are lead bending type (Gull-wing) for surface mount.

APPLICATIONS

Interface circuit for various instrumentations and control equipments

- AC LINE / DIGITAL LOGIC
- DIGITAL LOGIC / DIGITAL LOGIC
- TWISTED PAIR LINE RECEIVER
- TELEPHONE / TELEGRAPH LINE RECEIVER
- HIGH FREQUENCY POWER SUPPLY
FEEDBACK CONTROL
- RELAY CONTACT MONITOR
- POWER SUPPLY MONITOR

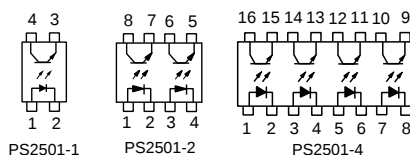
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER				PS2501-1, -2, -4 PS2501L-1, -2, -4		
SYMBOLS		PARAMETERS	UNITS	MIN	TYP	MAX
Diode	V _F	Forward Voltage, I _F = 10 mA	V		1.17	1.4
	I _R	Reverse Current, V _R = 5 V	μA			5
	C	Junction Capacitance, V = 0, f = 1.0 MHz	pF		50	
Transistor	I _{CEO}	Collector to Emitter Dark Current, V _{ce} = 80 V, I _F = 0	nA			100
	BV _{CEO}	Collector to Emitter Breakdown Voltage, I _c = 1 mA, I _B = 0	V	40	60	
	BV _{ECO}	Emitter to Collector Breakdown Voltage, I _E = 100 μA, I _B = 0	V	7	9	
Coupled	CTR	Current Transfer Ratio ¹ , I _F = 5 mA, V _{CE} = 5 V	%	80	300	600
	V _{CE} (sat)	Collector Saturation Voltage, I _F = 10 mA, I _c = 2 mA	V			0.3
	R ₁₋₂	Isolation Resistance, V _{IN-OUT} = 1.0 kV	Ω	10 ¹¹		
	C ₁₋₂	Isolation Capacitance, V = 0, f = 1.0 MHz	pF		0.5	
	t _r	Rise Time ² , V _{CC} = 10 V, I _c = 2 mA, R _L = 100 Ω	μs		3	
	t _f	Fall Time ² , V _{CC} = 10 V, I _c = 2 mA, R _L = 100 Ω	μs		5	

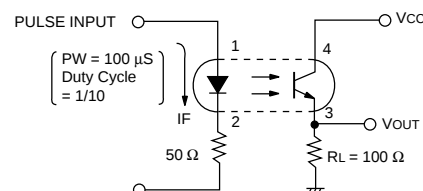
Notes:

1. CTR rank (PS2501-1, PS2501L-1 only)

K: 300 to 600 %
L: 200 to 400 %
M: 80 to 240 %
D: 100 to 300 %
H: 80 to 160 %
W: 130 to 260 %
Q: 100 to 200 %
N: 80 to 600 %



2. Test Circuit for Switching



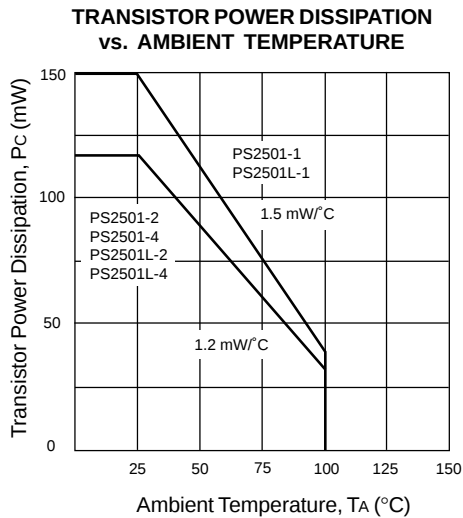
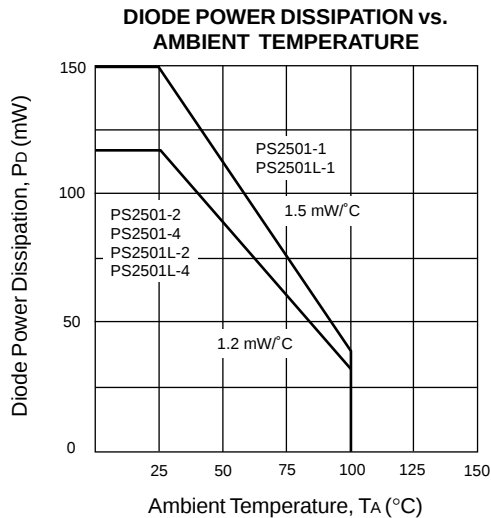
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS	
			PS2501-1 PS2501L-1	PS2501-2,4 PS2501L-2, 4
Diode				
I _F	Forward Current	mA	80	80
V _R	Reverse Voltage	V	6	6
ΔP _D /°C	Power Dissipation Derating	mW/°C	1.5	1.2
P _D	Power Dissipation	mW/Ch	150	120
I _F (PEAK)	Peak Forward Current (P _W = 100 μs, Duty Cycle 1%)	A	1	1
Transistor				
V _{CEO}	Collector to Emitter Voltage	V	80	80
V _{ECO}	Emitter to Collector Voltage	V	7	7
I _C	Collector Current	mA	50	50
ΔP _C /°C	Power Dissipation Derating	mW/°C	1.5	1.2
P _C	Power Dissipation	mW/Ch	150	120
Coupled				
BV	Isolation Voltage ²	V _{r.m.s.}	5000	5000
T _{STG}	Storage Temperature	°C	-55 to +150	-55 to +150
T _{OPT}	Operating Temperature	°C	-55 to +100	-55 to +100
T _{SOL}	Lead Temperature (Soldering 10 s)	°C	260	260
P _T	Total Power Dissipation	mW/Ch	250	200

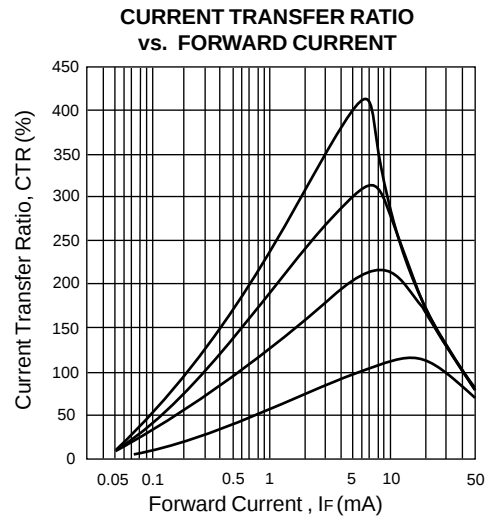
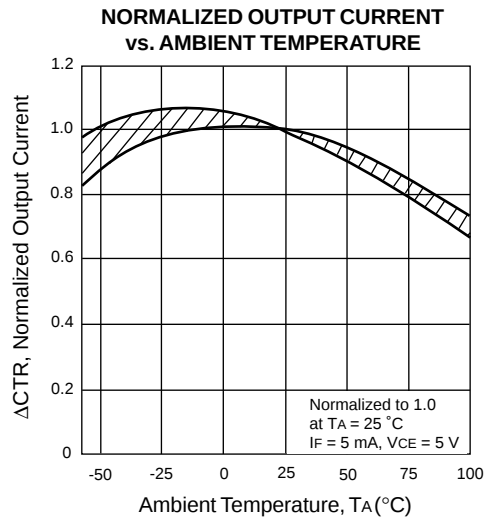
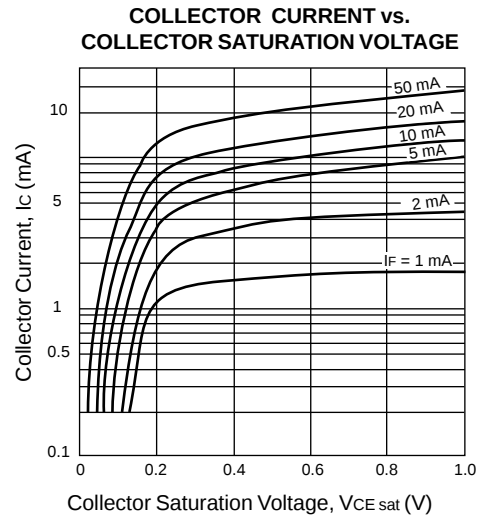
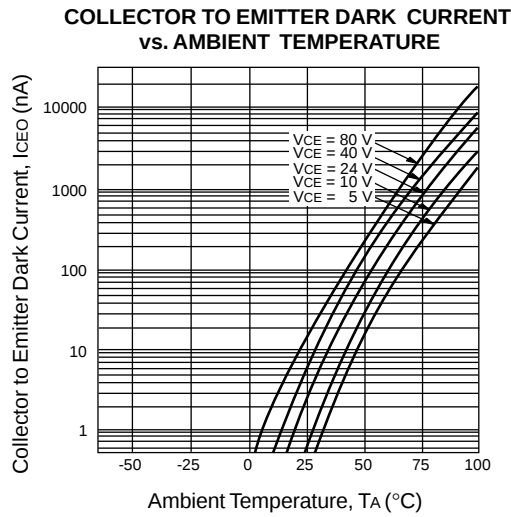
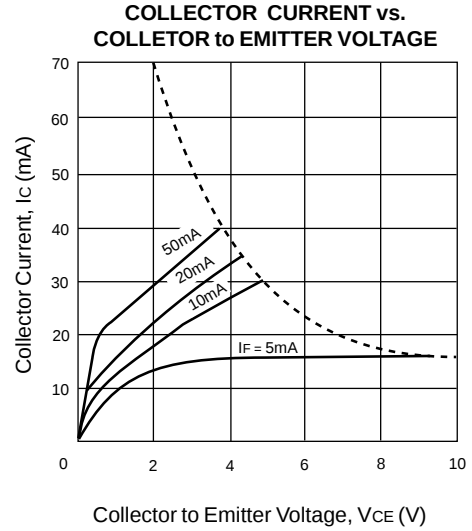
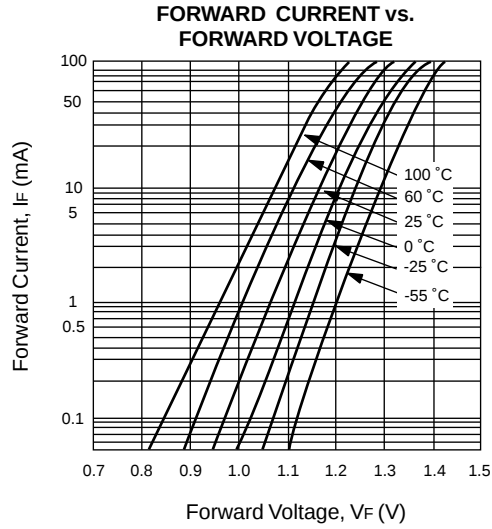
Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. AC voltage for 1 minute at T_A = 25 °C, RH = 60 % between input and ouput.

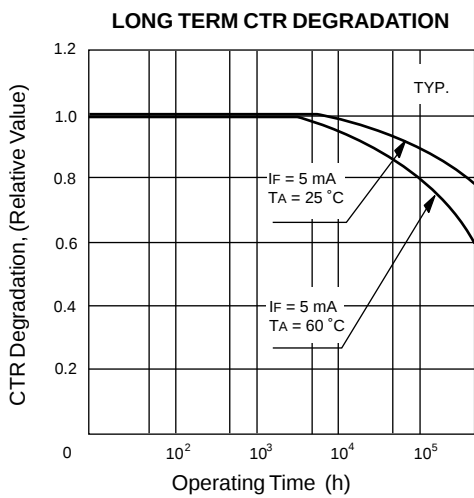
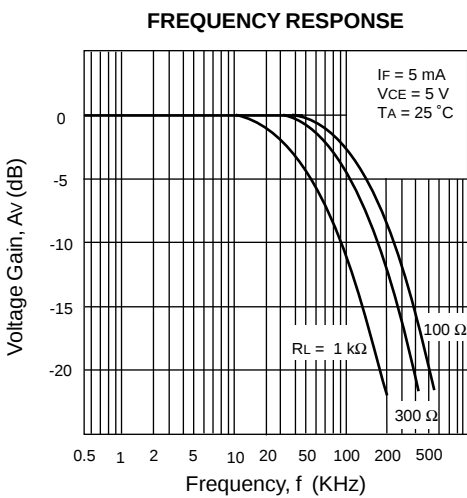
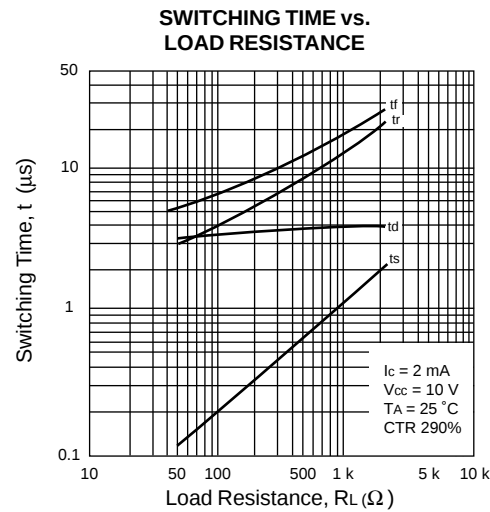
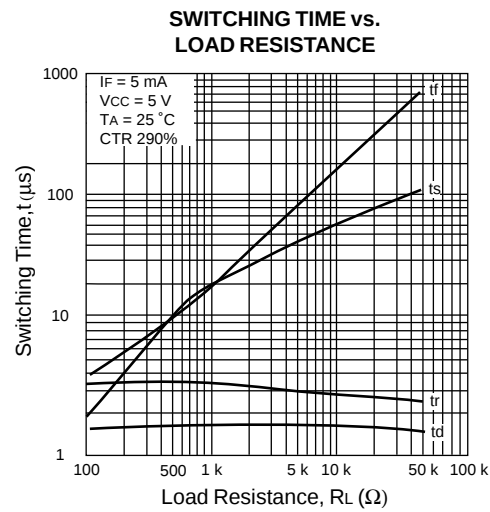
TYPICAL PERFORMANCE CURVES (T_A = 25 °C)



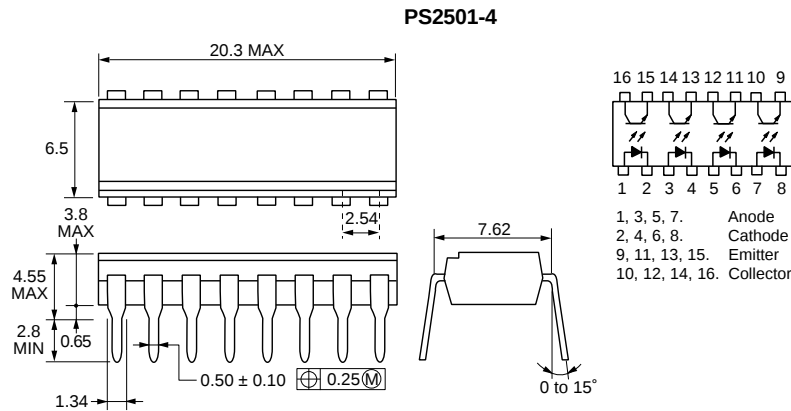
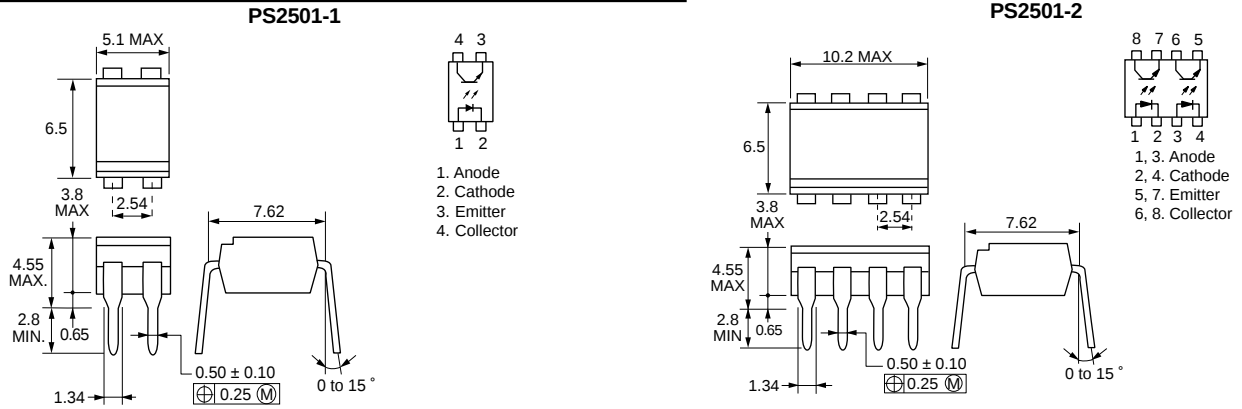
TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)



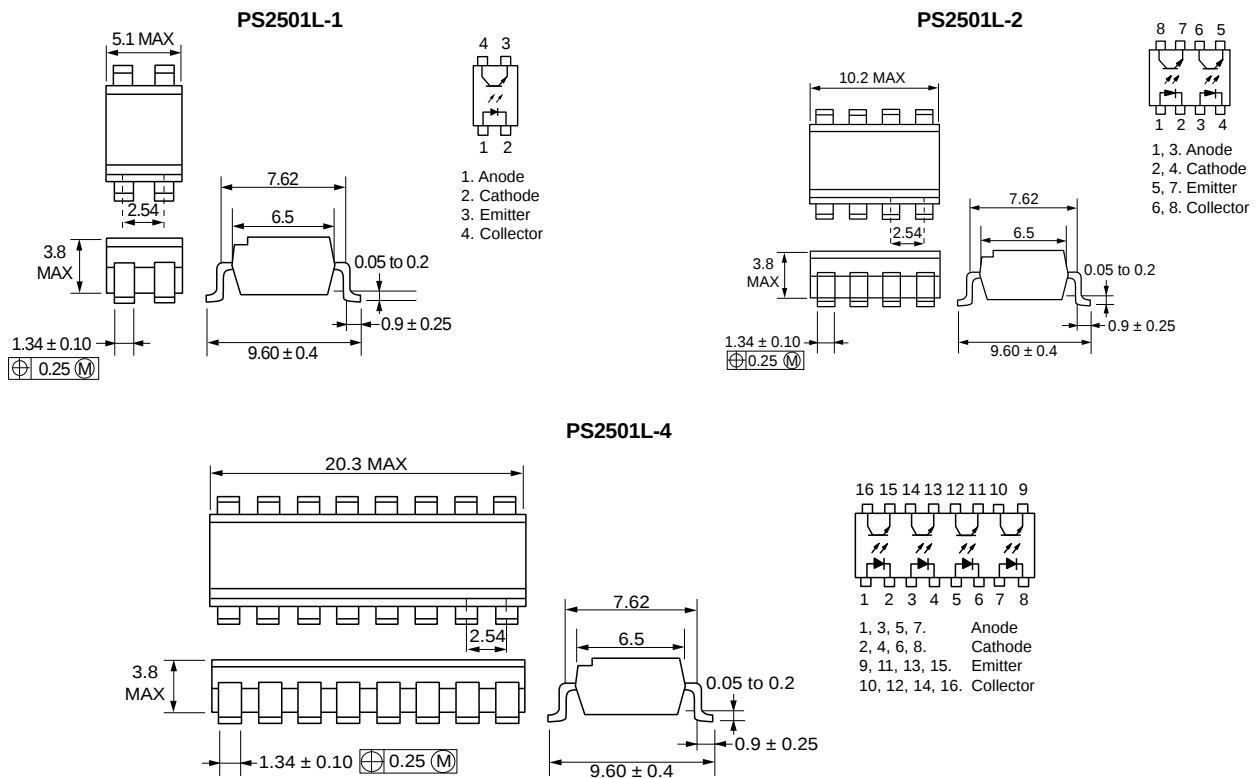
TYPICAL PERFORMANCE CURVES (TA = 25 °C)



OUTLINE DIMENSIONS (Units in mm) **DIP (Dual In-line Package)**

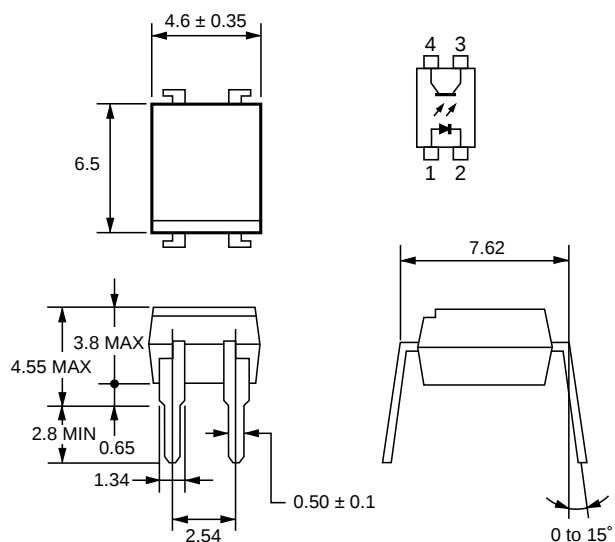


OUTLINE DIMENSIONS (Units in mm) **Lead Bending Type (Gull-wing)**

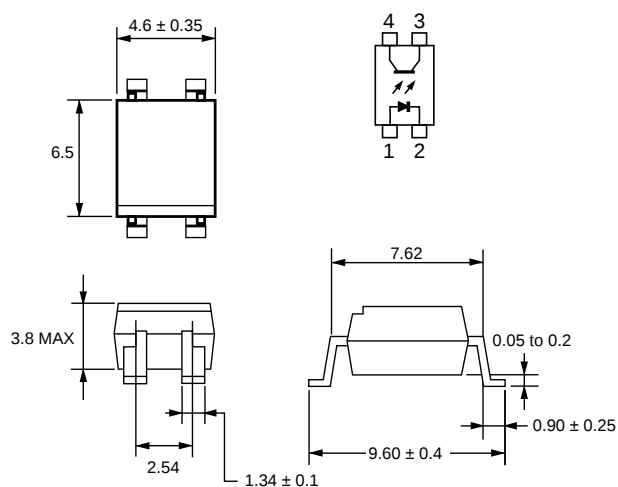


OUTLINE DIMENSIONS (Units in mm)

PS2501-1*



PS2501L-1*



*These packages are manufactured using the new Phoenix manufacturing process, and are interchangeable with the standard PS2501-1 and PS2501L-1.

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