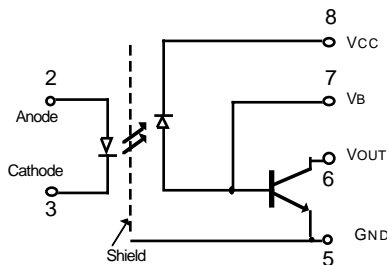




ISO LINK



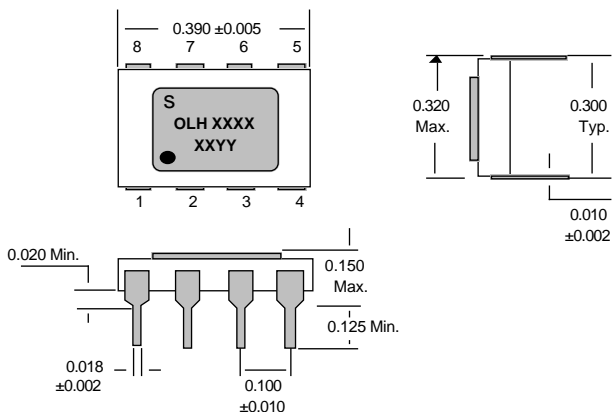
SCHMATIC

Features

- ◆ *Rugged, reliable hermetic DIP package*
- ◆ *Performance guaranteed over full military temperature range*
- ◆ *High isolation voltage, 3000 Vdc*
- ◆ *High Speed: 400 kbits/s typ.*
- ◆ *Open collector output*
- ◆ *Very high Common Mode Transient Immunity >10000 V/μs at Vcm = 350 V*
- ◆ *Radiation tolerant design*

OLH5500 / 5501

Hermetic High Speed Optocoupler



PACKAGE OUTLINE

Description

The OLH5500 and 5501 are hermetic 8-pin DIP optocouplers for wide bandwidth analog applications as well as for interfacing TTL to LSTTL or CMOS. The OLH5501 product is a 100% hi-rel screened version of the OLH5500.

Each unit consists of an AlGaAs LED optically coupled to an integrated photodiode-transistor detector. The separate photodiode and transistor configuration improves speed performance significantly over that of phototransistors. The base of the transistor is available for gain and bandwidth adjustments.

These products are functionally compatible to 6N135, 6N136, 4N55 and HCPL5500/5501 optocouplers but with better common mode transient immunity. Special CTR selection or no transistor base connection versions for improved noise immunity is available upon request.

The performance of these products under radiation environment is significantly improved over standard phototransistors. Test data is presented in Application Note 1003.

NOTES:

1. Measured between pins 1, 2, 3, 4 shorted together and pins 5, 6, 7, 8 shorted together.
2. Current transfer ratio is defined as the ratio of output collector current, I_c, to the forward LED current I_F, times 100%.

Absolute Maximum Ratings

Coupled	
Input to Output Isolation Voltage	± 3000Vdc
Storage Temperature Range	-65°C to +150°C
Operating Temperature Range	-55°C to +125°C
Lead Solder Temperature (1.6mm below seating plane)	260°C for 10 s
Input Diode	
Average Input Current	20 mA
Peak Input Current (≤ 1 ms duration)	40 mA
Reverse Voltage	3.0 V
Input Power Dissipation	36 mW
Output Detector	
Average Output Current	8 mA
Peak Output Current	16 mA
Supply Voltage, V _{cc}	-0.5 V to 18 V
Output Voltage, V _{out}	-0.5 V to 18 V
Power Dissipation	50 mW
Emitter Base Reverse Voltage	3.0 V
Base Current	5 mA

ELECTRICAL CHARACTERISTIC (T_A = - 55 °C to +125 °C, Unless Otherwise Specified)

Parameter	Symbol	Min	Typ.	Max	Units	Test Conditions	Fig.	Note
Current Transfer Ratio	CTR	12	25		%	I _F = 16 mA, V _O = 0.4V, V _{CC} = 4.5 V	2	2
Logic High Output Current	I _{OH}		5	100	µA	I _F = 0 mA, V _O = V _{CC} = 18V		
Logic Low Supply Current	I _{CCL}		35	250	µA	I _F = 16 mA, V _{CC} = 18V		
Logic High Supply Current	I _{CCH}		.1	10	µA	I _F = 0mA, V _{CC} = 18V		
Input Forward Voltage	V _F		1.75	2.5	V	I _F = 10 mA	1	
Input Reverse Breakdown Voltage	B _{VR}	3			V	I _R = 10 µA		
Input to Output Leakage Current	I _{I-O}			1.0	µA	Relative Humidity ≤ 45%, T _A = 25°C, V _{I-O} = 3000Vdc, t = 1s		1
Propagation Delay Time, Logic High to Low	t _{PHL}		0.3	1.0	µS	I _F = 16mA, R _L = 8.2 kΩ, V _{CC} = 5V, C _L = 50 pF	3,4	
Logic Low to High	t _{PLH}		0.8	3.0	µS	I _F = 16mA, R _L = 8.2 kΩ, V _{CC} = 5V, C _L = 50 pF	3,4	
Common Mode Transient Immunity								
Logic High Level	CM _H	5	>10		KV/µs	I _F = 0, R _L = 8.2 kΩ, V _{CM} = 350Vp-p T _A = 25°C		
Logic Low Level	CM _L	5	>10		KV/µs	I _F = 16 mA, R _L = 8.2 kΩ, V _{CM} = 350V p-p, T _A = 25°C		

ALL TYPICAL @ T_A = 25°C

TYPICAL PERFORMANCE CURVES

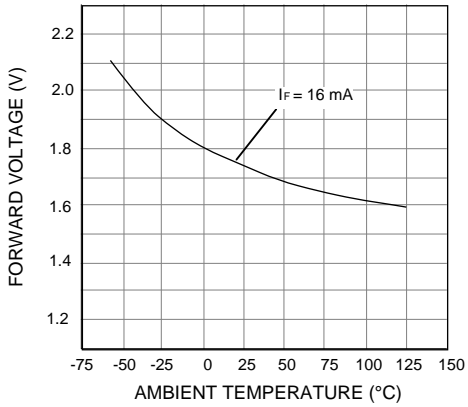


Fig. 1 - LED Forward Characteristics

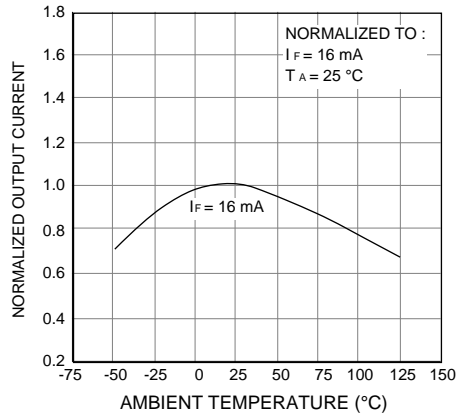


Fig. 2 - Normalized Output Current vs. I_F vs. Temperature

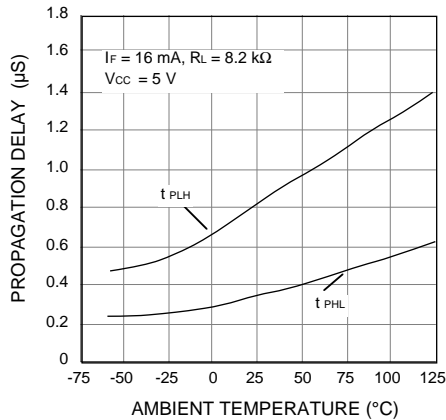


Fig. 3 - Propagation Delay vs. Temperature

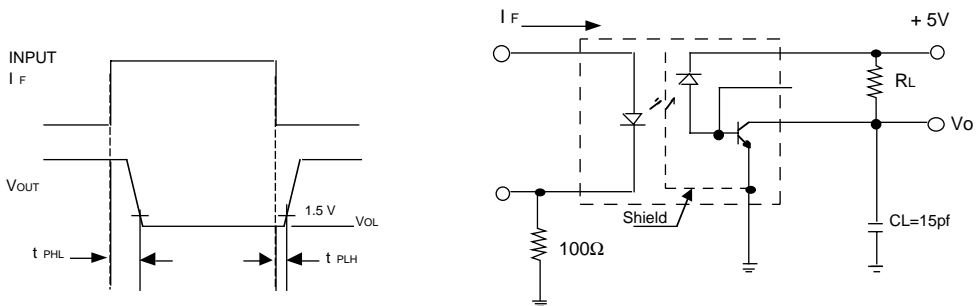


Fig. 4 - Switching Test Circuit