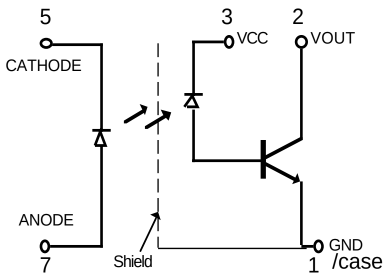
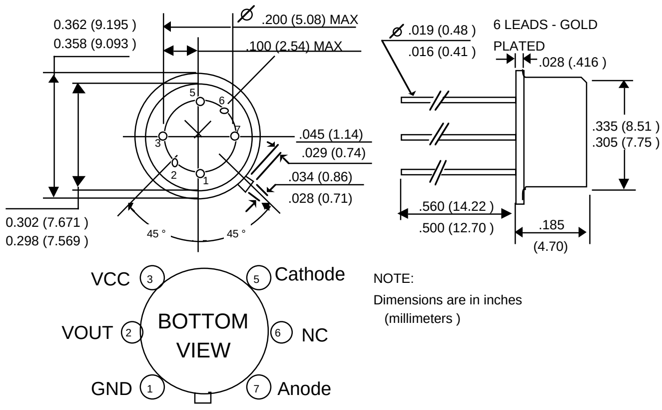
OLH300

High Speed

Hermetic Optocoupler



SCHEMATIC



PACKAGE OUTLINE

Features

- **Electrical parameters guaranteed over -55°C to +125°C ambient temp. range**
- **1000 Vdc electrical isolation**
- **High-Speed, 1 Mbit/s typical**
- **Open collector output**
- **300 Khz bandwidth**
- **TO - 5 hermetic package**
- **Similar to 6N135/136, 4N55**
- **Radiation tolerant**
- **100% hi-rel screening are offered**

Description

The OLH 300 is suitable for interfacing TTL to LSTTL, TTL or CMOS as well as wide bandwidth analog applications. Each OLH 300 has a light emitting diode and an integrated photodiode transistor detector mounted and coupled in a ceramic substrate inside a hermetic TO-5 package providing 1000 Vdc electrical isolation between input and output. The integrated photo-diode transistor improves switching speed by orders of magnitude as compared to standard photo transistors, by reducing the base to collector capacitance. The internal shield provides excellent common-mode immunity performance.

NOTES:

1. Measured between pins 1,2 and 3 shorted together and pins 5,6 and 7 shorted together. T_A = 25 °C and duration = 1 second.
2. Current transfer ratio is define as the ratio of output collector current, Ic to the forward LED current, IF times 100%

Absolute Maximum Ratings

Couple	
Input to Output Isolation Voltage [1]	± 1000 Vdc
Storage Temperature Range	-65°C to +150°C
Operation Temperature Range	-55°C to +125°C
Lead Temperature 1.6 mm from case for 10 sec.	240°C
Input Diode	
Average Input Current	20 mA
Peak Forward Current (≤ 1mS duration)	40 mA
Reverse Voltage	5.0 V
Power Dissipation	36 mW
Output Detector	
Average Output Current	8 mA
Peak Output Current	16 mA
Supply Voltage, Vcc	-0.5 V to 18 V
Output Voltage, Vout	-0.5 V to 18 V
Power Dissipation	50 mW

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	20	45		%	I_F=10 mA, Vo=0.4 V, V_{CC}=4.5 V,	2	2
Logic Low Output Voltage	VOL		.25	0.4	V	I_F=10 mA, IO_L=1.5mA, V_{CC}=4.5V		
Logic High Output Current	I_{OH}		.05	100	µA	I_F=0mA, V_O=V_{CC}=15V		
Supply Current								
Logic Hi	I_{CCL}		40	200	µA	I_F=10mA, V_{CC}=15V, Vo=open		
Logic Low	I_{CCH}		.05	10	µA	I_F=0mA, V_{CC}=15V, Vo=open		
Input Forward Voltage	V_F		1.7	2.5	V	I_F=10 mA		
Temperature Coefficient of input diode Forward Voltage	$\frac{\Delta V_F}{\Delta T_A}$		- 2.3		mV/°C	I_F=5 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 ≤ 50%, T_A = 25°C, V_{I-O} = 1000 Vdc		1
Propagation Delay Time Logic High to Low	t_{PHL}		0.3	1.0	µS	I_F=10 mA, Vcc= 5V, R_L =4.1 KΩ,	3,4	
Propagation Delay Time Logic Low to High	t_{PLH}		0.5	2.0	µS	I_F=10 mA, Vcc= 5V, R_L =4.1 KΩ,	3,4	

ALL TYPICAL @ T_A = 25°C

TYPICAL PERFORMANCE CURVES

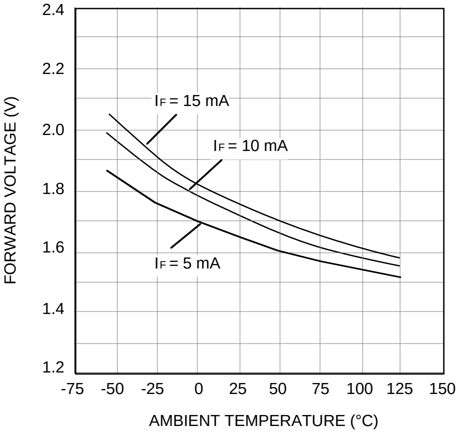


Fig. 1 - LED Forward Characteristics

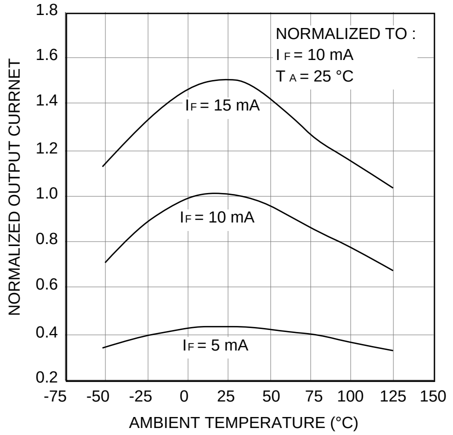


Fig. 2 - Normalized Output Current vs. IF vs. Temperature

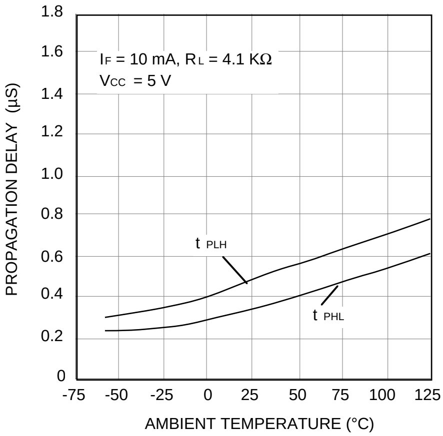


Fig. 3 - Propagation Delay vs. Temperature

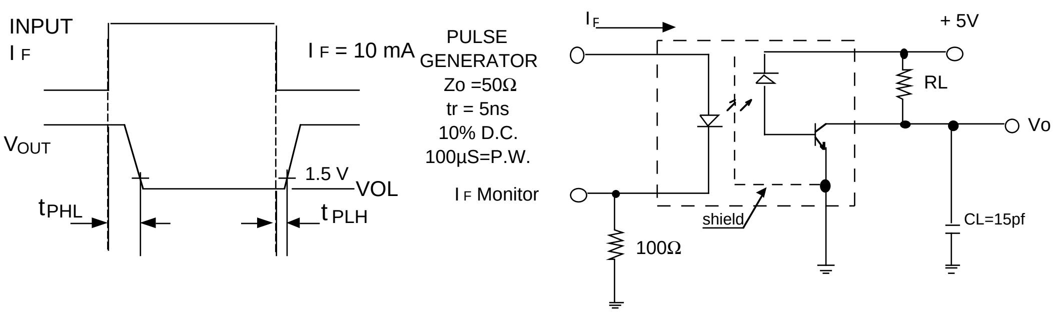


Fig. 4 - Switching Test Circuit