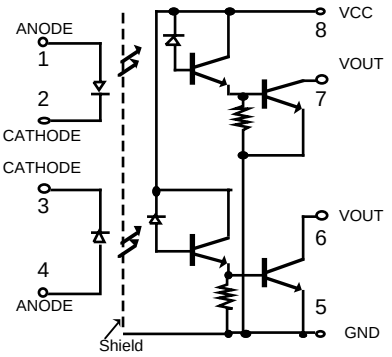
ISO LINK

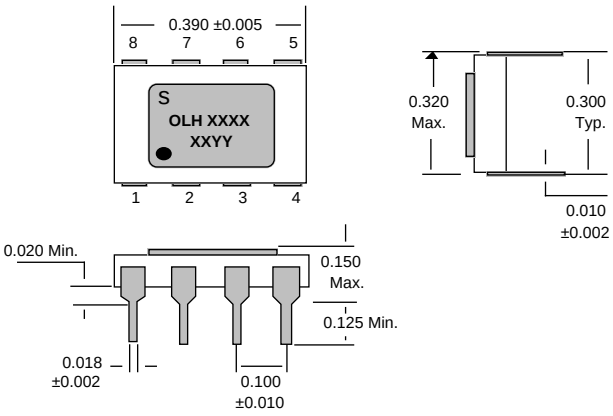
OLH 5730/5731

Hermetic **LOW INPUT CURRENT**

DUAL CHANNEL **OPTOCOUPLER**



SCHEMATIC



PACKAGE OUTLINE

Features

- *Rugged, reliable hermetic DIP package*
- *Performance guaranteed over full military temperature range*
- *High isolation voltage, 3000 Vdc*
- *Low input current, 0.5 mA*
- *Low power consumption*
- *High common mode rejection*
- *Radiation tolerant design*
- *High density dual-channel package*

Description

The OLH5730 and 5731 are dual-channel hermetic 8-pin DIP optocouplers for low input current applications. The OLH5731 product is a 100% hi-rel screened version of the OLH5730.

Each channel consists of an AlGaAs LED optically coupled to an integrated photodiode-split darlington detector. The AlGaAs LED provides superior low current performance. The split darlington open collector output results in high gain and low saturation voltage.

These products are functionally compatible to HCPL2730/2731, and 6N140A optocouplers.

The performance of these products under radiation environment is much better than standard phototransistors. Test data is presented in Application Note 1003.

Special low input current and CTR selections are available upon request.

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, Ic, to the forward LED current I_F, times 100%.
3. Derate I_F at 0.33 mA /°C above 110°C.
4. Output power is collector output power plus total supply power. Derate at 1.66 mW / °C above 110°C

Absolute Maximum Ratings

Coupled	
Input to Output Isolation Voltage[1]	± 3000 Vdc
Storage Temperature Range	-65°C to +150°C
Operation Temperature Range	-55°C to +125°C
Lead Solder Temperature (1.6mm below seating plane)	260°C for 10s
Input Diode	
Average Input Current	10 mA[3]
Peak Forward Current (≤ 1mS duration)	20 mA
Reverse Voltage	5.0 V
Output Detector	
Average Output Current	40 mA
Supply Voltage, Vcc	-0.5 V to 18 V
Output Voltage, Vout	-0.5 V to 18 V
Power Dissipation	50 mW[4]

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	300			%	I_F=0.5 mA, V_O=0.4v, V_{CC}=4.5v		
		300			%	I_F=1.6 mA, V_O=0.4v, V_{CC}=4.5v	2	2
		200			%	I_F=5.0 mA, V_O=0.4v, V_{CC}=4.5v		
Logic Low Output Voltage	V_{OL}		.1	.4	V	I_F=0.5 mA,I_{OL}=1.5mA,V_{CC}=4.5v		
			.1	.4	V	I_F=1.6 mA,I_{OL}=4.8mA,V_{CC}=4.5v		
			.2	.4	V	I_F=5mA, I_{OL}=10mA, V_{CC}=4.5v		
Logic High Output Current	I_{OH}/I_{OHX}		.005	250	µA	I_F=2 µA,I_F =10mA (other channel), V_O =V_{CC}=18V		
Logic Low Supply Current	I_{CCL}		1.0	2.0	mA	I_F=1.6mA, V_{CC}=18v		
Logic High Supply Current	I_{CCH}		.01	40	µA	I_F=0mA, V_{CC}=18v		
Input Forward Voltage	V_F	1.0	1.65	2.0	V	I_F=1.6mA	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} = 3000Vdc, t=1s		1
Propagation Delay Time Logic High to Low	t_{PHL}		26	100	µS	I_F=0.5mA, R_L=4.7 KΩ,		
			5	30	µS	I_F=1.6mA, R_L=2.2 KΩ,		
			2	10	µS	I_F=5mA, R_L =680 Ω, V_{CC}= 5v	3,4,5	
Propagation Delay Time Logic Low to High	t_{PLH}		28	60	µS	I_F=0.5mA, R_L=4.7 KΩ, T_A= 25°C		
			15	50	µS	I_F=1.6mA, R_L=2.2 KΩ,		
			10	30	µS	I_F=5mA, R_L =680 Ω		
Common Mode Transient Immunity (each channel)	C_{MH}	5	≥10		KV/µS	I_F=0mA, V_{CC}= 5V, T_A= 25°C, R_L=1.5KΩ, V_{CM}= 300 V_{P-P}		
	C_{ML}	5	≥10		KV/µS	I_F=1.6mA		

ALL TYPICAL @ T_A = 25°C

TYPICAL PERFORMANCE CURVES

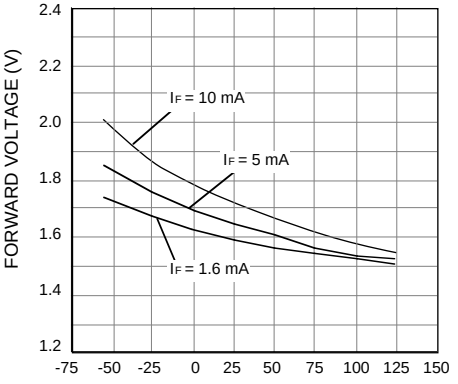


Fig. 1 - LED Forward Characteristics

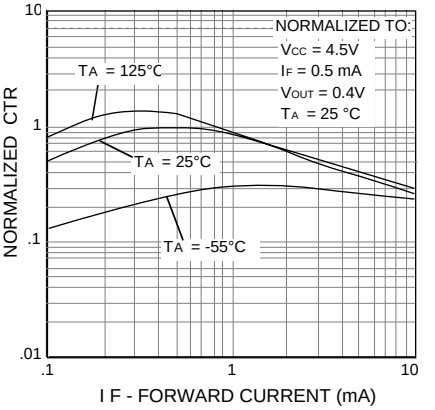


Fig. 2 - Normalized CTR vs. Input Diode Forward Current.

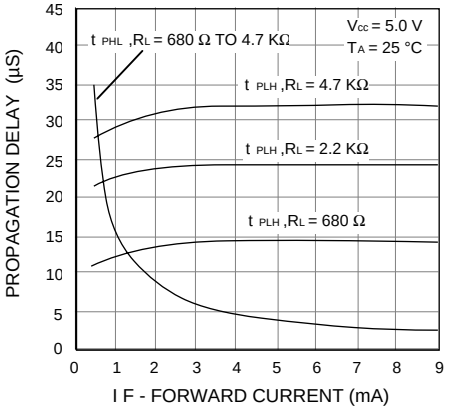


Fig. 4 - Propagation Delay vs. Input Diode Current

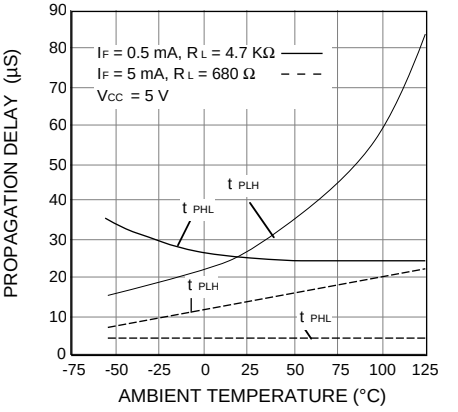
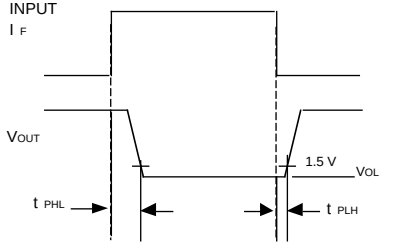


Fig. 3 - Propagation Delay vs. Temperature



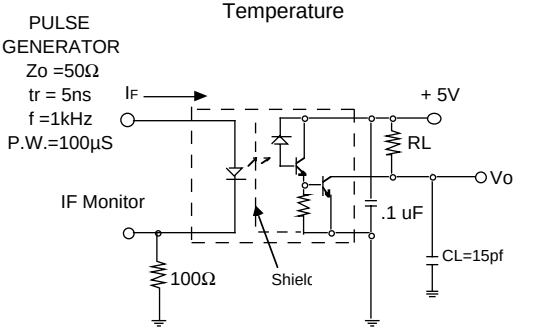


Fig. 5 - Switching Test Circuit