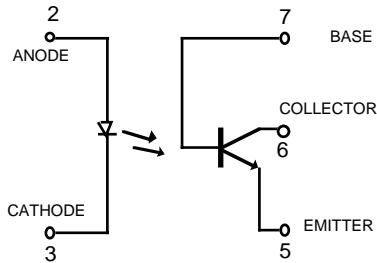


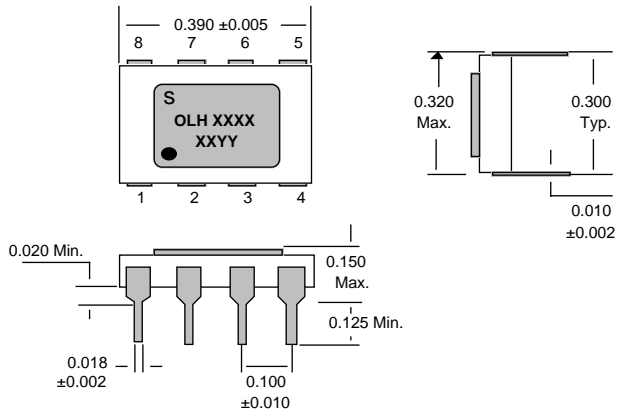


ISO LINK

OLH1047/1048/1049 Hermetic Phototransistor Optocoupler



SCHEMATIC



PACKAGE OUTLINE

Features

- ◆ *Current transfer ratio guaranteed over -55°C to +100°C ambient temp. range*
- ◆ *3000Vdc electrical isolation*
- ◆ *Standard 8-pin DIP configuration*
- ◆ *High current transfer ratio at low input current*
- ◆ *Base lead available for transistor biasing*
- ◆ *100% hi-rel screenings are offered*

Description

The OLH1047/ 48/ 49 are designed especially for hi-rel applications requiring optical isolation with high current transfer ratio and low saturation V_{ce} . Each optocoupler consists of a light emitting diode and a NPN silicon phototransistor mounted and coupled in an 8-pin hermetically sealed DIP package. The low input current makes the OLH1047 /48 /49 well suited for direct CMOS to LSTTL / TTL interfaces.

The electrical parameters of the OLH1047 /48 /49 are identical to the JEDEC registered 4N47, 4N48, and 4N49 respectively.

NOTES:

1. Measured between pins 1,2,3 and 4 shorted together and pins 5, 6, 7 and 8 shorted together. $T_A = 25^\circ\text{C}$ and duration = 1 second.
2. Derate linearly at 3.0 mW / °C above 25 °C
3. Values applies for $P_w \leq 1\mu\text{S}$, PRR ≤ 300 pps .

Absolute Maximum Ratings

Coupled		
Input to Output Isolation Voltage		± 3000Vdc
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		40mA
Peak Forward Current		1 A
Reverse Voltage		2.0 V
Power Dissipation		70 mW
Output Detector		
Collector - Emitter Voltage		40 V
Emitter - Base Voltage		7 V
Collector - Base Voltage		45 V
Continous Collector Current		50 mA
Power Dissipation		300 mW ²

ELECTRICAL CHARACTERISTIC (T_A = 25 °C , Unless Otherwise Specified)

Parameter	Symbol	1047			1048			1049			Units	Test Conditions	Fig.	Note
		Min	Typ.	Max	Min	Typ.	Max	Min	Typ.	Max				
On-State Collector Current	I _{C(ON)}	0.5		1.0	5.0	2.0		10		mA	I _F = 1 mA, V _{CE} = 5.0V	2,3		
		0.7		1.4				2.8		mA	I _F = 2 mA, V _{CE} = 5.0V, T _A = -55°C			
		0.5		1.0			2.0			mA	I _F = 2 mA, V _{CE} = 5.0V, T _A = 100°C			
On-State Coll.-Base Current	I _{CB(ON)}	30		30			30			µA	I _F = 10 mA, V _{CB} = 5.0V			
Saturation Voltage	V _{CE(SAT)}			0.3			0.3			V	I _F = 2mA, I _C =0.5mA			
										V	I _F = 2mA, I _C =1.0mA			
										0.3	V	I _F = 2mA, I _C =2.0mA		
Breakdown Voltage	BV _{CEO}	40		40			40			V	I _{CE} = 1 mA			
		45		45			45			V	I _{CB} = 100 µA			
		7		7			7			V	I _{EB} = 100 µA			
Off-State Leakage Current	I _{CE(OFF)}			100			100			nA	V _{CE} = 20V			
				100			100			µA	V _{CE} = 20V, T _A =100 °C			
Collector to Base	I _{CB(OFF)}			10			10			nA	V _{CB} = 20V			
Input Forward Voltage	V _F	1.0		1.7	1.0	1.7	1.0	1.7		V	I _F = 10mA, T _A = -55°C	1		
		0.8		1.5	0.8	1.5	0.8	1.5		V	I _F = 10mA	1		
		0.7		1.3	0.7	1.3	0.7	1.3		V	I _F = 10mA, T _A = 100°C	1		
Input Reverse Current	I _R			100			100			µA	V _R = 2.0V			
Input to Output Resistance	R _{I-O}	10 ¹¹		10 ¹¹			10 ¹¹			Ω	V _{I-O} = ±1000Vdc		1	
Input to Output Capacitance	C _{I-O}			5			5			pF	V _{I-O} = 0V, f = 1 MHz		1	
Rise Time	t _r		10	20	10	20	15	25		µS	V _{CC} = 10V, R _L = 100 Ω	4		
Fall Time	t _f		10	20	10	20	15	25		µS	I _F = 5mA			

ALL TYPICAL @ T_A = 25°C

TYPICAL PERFORMANCE CURVES

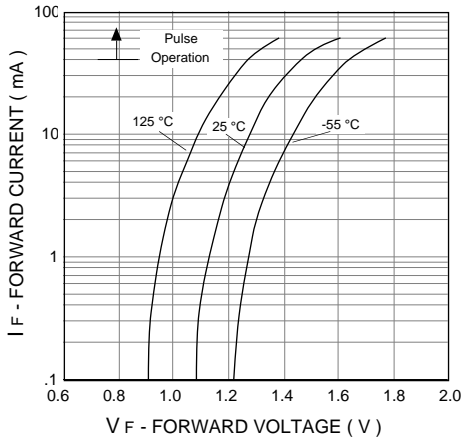


Fig. 1 - Diode Forward Characteristics

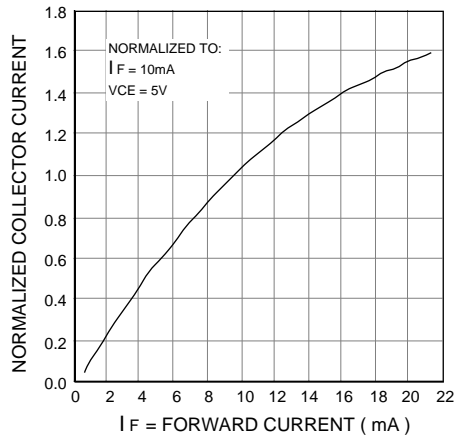


Fig. 2 - Normalized I_c vs. I_F

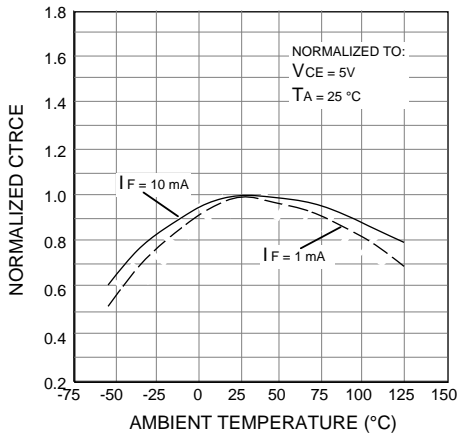


Fig. 3 - Normalized CTR vs. Temperature

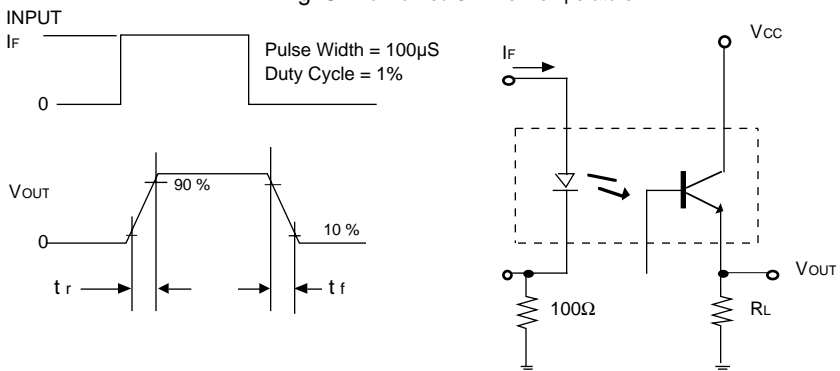


Fig. 4 - Switching Test Circuit