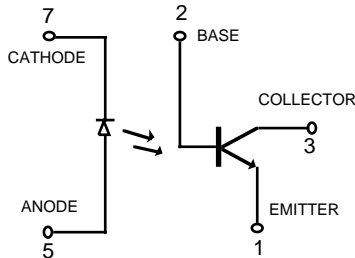




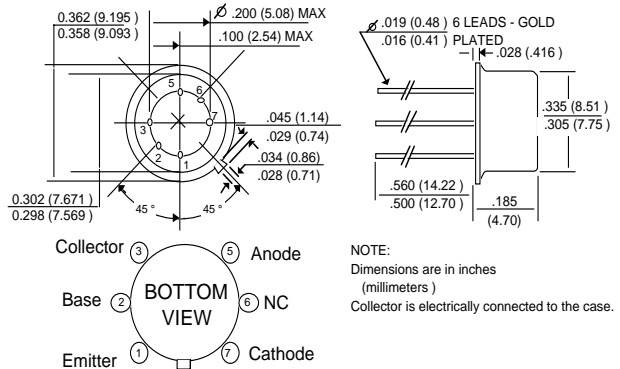
ISO LINK

OLH 249

Radiation Tolerant Phototransistor Hermetic Optocoupler



SCHEMATIC



PACKAGE OUTLINE

Features

- ◆ Radiation tolerant version of 4N49
- ◆ Current transfer ratio guaranteed over -55°C to +100°C ambient temp. range
- ◆ 1000 Vdc electrical isolation
- ◆ High current transfer ratio
- ◆ Standard TO - 5 hermetic package
- ◆ Hi-Rel screening available

Description

The OLH249 is designed especially for hi-rel applications requiring optical isolation in radiation environments such as gamma , neutron and proton radiation with high current transfer ratio and low saturation Vce. Each optocoupler consists of a light emitting diode and a NPN silicon phototransistor electrically isolated but optically coupled inside a hermetic TO - 5 package. Electrical parameters are similar to the JEDEC registered 4N49 optocoupler but with much better CTR degradation characteristics due to radiation exposure⁴. 100% hi-rel screened parts are available.

NOTES:

1. Measured between pins 5,6 and 7 shorted together and pins 1,2,and 3 shorted together. T_A = 25 °C and duration = 1 second.
2. Derate linearly at 3.0 mW / °C above 25 °C
3. Value applies for Pw ≤ 1 μS, PRR ≤ 300 pps.
4. Contact factory for more information

Absolute Maximum Ratings

Coupled	
Input to Output Isolation Voltage ¹	± 1000 Vdc
Storage Temperature Range	-65 °C to + 150 °C
Operation Temperature Range	-55 °C to + 125 °C
Mounting Temperature Range (10 seconds max.)	240 °C
Input Diode	
Average Input Current	40 mA
Peak Forward Current ³	1 A
Reverse Voltage	2.0 V
Output Detector	
Collector - Emitter Voltage	40 V
Emitter - Base Voltage	7 V
Collector - Base Voltage	45 V
Continuous Collector Current	50 mA
Power Dissipation ²	300 mW

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

Parameter	Symbol	Min	Max	Units	Test Conditions	Fig.	Note
On-State Collector Current	I _{C(ON)}	2.0	12	mA	I _F = 1 mA, V _{CE} = 5.0V	2,3	
		2.8		mA	I _F = 2 mA, V _{CE} = 5.0V, T _A = -55°C		
		2.0		mA	I _F = 2 mA, V _{CE} = 5.0V, T _A = 100°C		
On-State Coll.-Base Current	I _{CB(ON)}	30		μA	I _F = 10 mA, V _{CB} = 5.0V		
Saturation Voltage	V _{CE(SAT)}		0.3	V	I _F = 2mA, I _C = 2.0mA		
Breakdown Voltage							
Collector to Emitter	BV _{CEO}	40		V	I _{CE} = 1 mA		
Collector to Base	BV _{CBO}	45		V	I _{CB} = 100 μA		
Emitter to Base	BV _{EBO}	7		V	I _{EB} = 100 μA		
Off-State Leakage Current							
Collector to Emitter	I _{CE(OFF)}		100	nA	V _{CE} = 20V		
			100	μA	V _{CE} = 20V, T _A = 100 °C		
Collector to Base	I _{CB(OFF)}		10	nA	V _{CB} = 20V		
Input Forward Voltage	V _F	1.8	2.2	V	I _F = 10mA, T _A = -55°C	1	
		1.4	1.8	V	I _F = 10mA	1	
		1.2	1.6	V	I _F = 10mA, T _A = 100°C	1	
Input Reverse Current	I _R		100	μA	V _R = 2.0V		
Input to Output Resistance	r _{I-O}	10 ¹¹		Ω	V _{I-O} = ±1000Vdc		1
Input to Output Capacitance	c _{I-O}		5	pF	V _{I-O} = 0V, f = 1 MHz		1
Rise Time	t _r		25	μS	V _{CC} = 10V, R _L = 100 Ω	4	
Fall Time	t _f		25	μS	I _F = 5mA		

TYPICAL PERFORMANCE CURVES

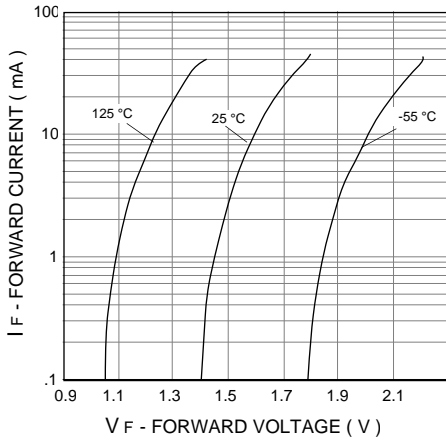


Fig. 1 - Diode Forward Characteristics

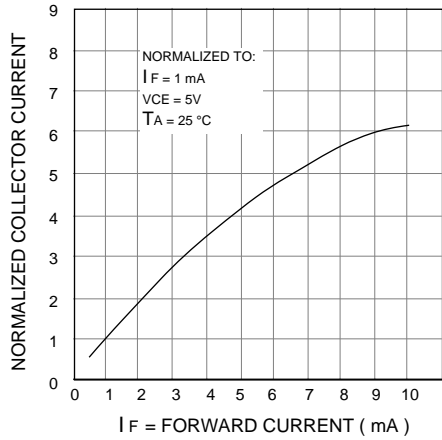


Fig. 2 - Normalized I_c vs. I_F

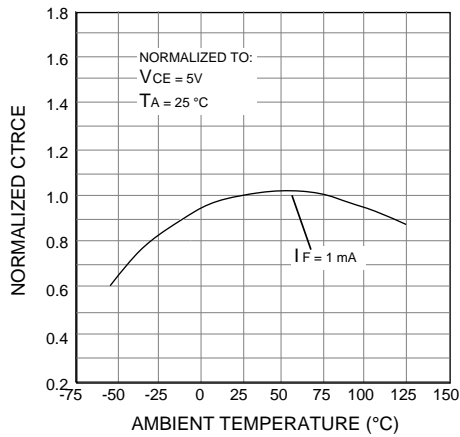


Fig. 3 - Normalized CTR vs. Temperature

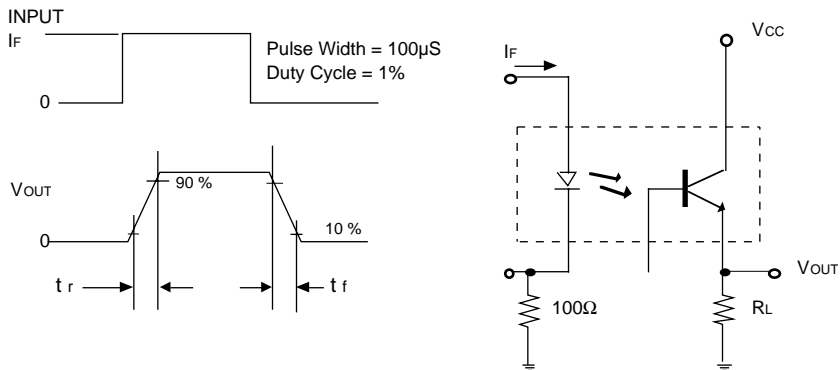


Fig. 4 - Switching Test Circuit