

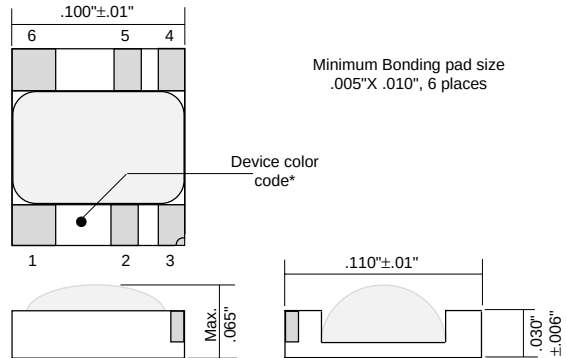
SCHEMATIC

Features

- ◆ *Current transfer ratio guaranteed over -55°C to +100°C ambient temp. range*
- ◆ *1500 Vdc electrical isolation*
- ◆ *Small foot print for hybrid device*
- ◆ *More Radiation tolerant than 4N49 ⁴*
- ◆ *High current transfer ratio at low input current - 200% at $I_F = 2\text{mA}$ over temperature*
- ◆ *High reliability and rugged construction*
- ◆ *CTR comparable to darlington output but with low saturation $V_{CE} = 0.15\text{v typ.}$*
- ◆ *Similar to 4N4X type optocouplers*
- ◆ *Custom package available*
Call Factory ⁴

OLI 249

Radiation Tolerant Phototransistor Optocoupler For Hybrid Assembly



Color Code - BLACK

PACKAGE OUTLINE

Description

The OLI 249 is designed especially for hybrid application requiring optical isolation with high current transfer ratio and low saturation V_{CE} . Each OLI 249 consists of a light emitting diode and a NPN silicon phototransistor mounted and coupled in a miniature custom ceramic package. The very low input current makes the OLI 249 well suited for direct CMOS to LSTTL / TTL interfaces. Electrical parameters are similar to the JEDEC registered 4N49 optocoupler but with much better CTR degradation characteristics due to radiation exposure.

Device mounting is achieved by standard hybrid assembly with non-conductive epoxies. Gold or aluminum wire bonding can be used to make electrical connections for maximum placement flexibility .

Special electrical parametric selections are available on request.

NOTES:

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

Absolute Maximum Ratings

Coupled		
Input to Output Isolation Voltage ¹		± 1500 Vdc
Storage Temperature Range		-65°C to +150°C
Operation Temperature Range		-55°C to +125°C
Mounting Temperature Range (3 minutes max.)		240°C
Input Diode		
Average Input Current		40 mA
Peak Forward Current (≤ 1mS duration)		60 mA
Reverse Voltage		3.0 V
Power Dissipation		70 mW
Output Detector		
Collector - Emitter Voltage		40 V
Emitter - Collector Voltage		7 V
Collector - Base Voltage		45 V
Power Dissipation		200 mW ³

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 2.8 2.0	12	mA mA mA	I _F = 1 mA, V _{CE} = 5.0V I _F = 2 mA, V _{CE} = 5.0V, T _A = -55°C I _F = 2 mA, V _{CE} = 5.0V, T _A = 100°C	2,3	
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 _{CB0}	45		V	I _{CB} = 100 μA		
Emitter to Base	BV _{EB0}	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 1.4 1.2	2.2 1.8 1.6	V V V	I _F = 10mA, T _A = -55°C I _F = 10mA I _F = 10mA, T _A = 100°C	1 1 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

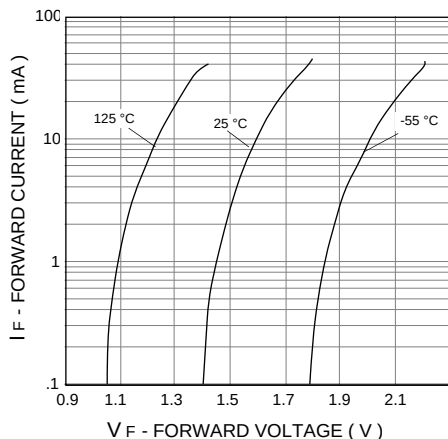


Fig. 1 - Diode Forward Characteristics

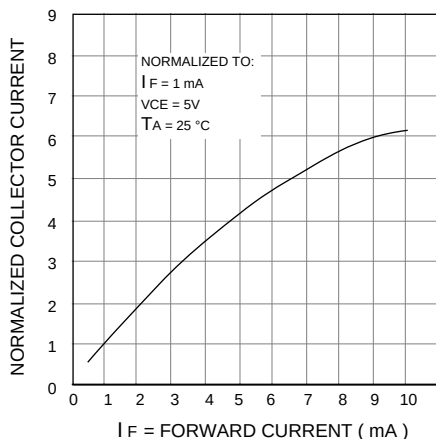


Fig. 2 - Normalized I_C vs. I_F

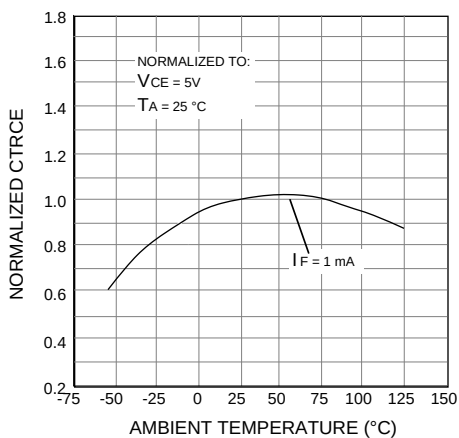


Fig. 3 - Normalized CTR vs. Temperature

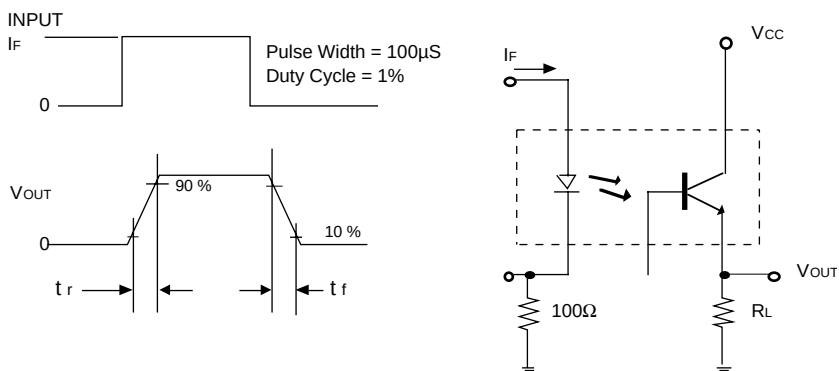


Fig. 4 - Switching Test Circuit