

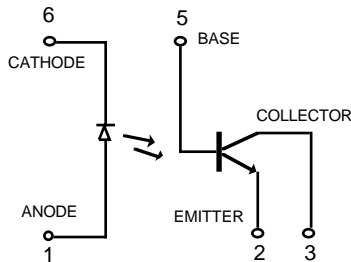


# ISO LINK

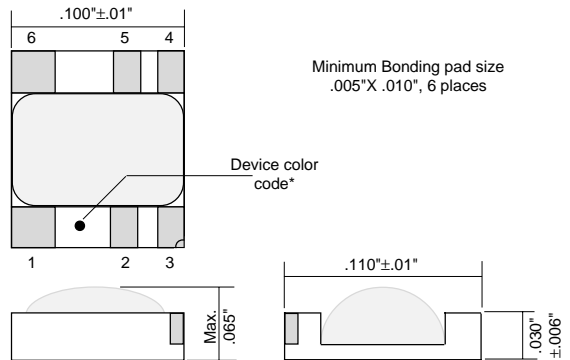
## OLI 100

### Miniature Photo-Transistor Optocoupler

For Hybrid Assembly



SCHMATIC



Color code - Brown

PACKAGE OUTLINE

## Features

- ◆ Current transfer ratio guaranteed over  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  ambient temp. range
- ◆ 1500 Vdc electrical isolation
- ◆ Small foot print for hybrid device
- ◆ High current transfer ratio - 100% min. over temperature
- ◆ High current transfer ratio at low input current - 100% at  $I_F = 1\text{mA}$  over temperature
- ◆ High reliability and rugged construction
- ◆ CTR comparable to darlington output but with low saturation  $V_{CE} = 0.15\text{Vtyp.}$
- ◆ Similar to 4N2X, 4N3X type optocouplers
- ◆ Custom package available Call Factory

## Description

The OLI 100 is designed especially for hybrid application requiring optical isolation with high current transfer ratio and low saturation  $V_{ce}$ . Each OLI 100 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 100 well suited for direct CMOS to LSTTL / TTL interfaces.

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<sup>4</sup>.

### NOTE:

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. Current transfer ratio is defined as the ratio of output collector current,  $I_C$  to the forward LED current,  $I_F$ , times 100%.
3. Derate linearly at 3.0 mW /  $^{\circ}\text{C}$  above 25  $^{\circ}\text{C}$
4. Certain cleaning process may be harmful to this device; consult factory for details

## Absolute Maximum Ratings

Coupled	
Input to Output Isolation Voltage <sup>1</sup>	± 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	35 V
Emitter - Collector Voltage	7 V
Collector - Base Voltage	70 V
Power Dissipation	200 mW <sup>3</sup>

### ELECTRICAL CHARACTERISTIC ( T<sub>A</sub> = - 55 °C to +125 °C, Unless Otherwise Specified )

Parameter	Symbol	Min	Typ.	Max	Units	Test Conditions	Fig.	Note
Current Transfer Ratio	CTR	100	200		%	I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5.0V	2,3	2
		100	200		%	I <sub>F</sub> = 1mA, V <sub>CE</sub> = 5.0V		
Saturation Voltage	VCE <sub>(SAT)</sub>		0.15	0.3	V	I <sub>F</sub> = 10mA, I <sub>C</sub> = 2.0mA		
Breakdown Voltage								
Collector to Emitter	BV <sub>CEO</sub>	30			V	I <sub>CE</sub> = 100 μA, T <sub>A</sub> = 25 °C		
Collector to Base	BV <sub>CBO</sub>	70			V	I <sub>CB</sub> = 10 μA, T <sub>A</sub> = 25 °C		
Emitter to Collector	BV <sub>ECO</sub>	5			V	I <sub>EC</sub> = 100 μA, T <sub>A</sub> = 25 °C		
Leakage Current	I <sub>CEO</sub>			100	nA	V <sub>CE</sub> = 20V, T <sub>A</sub> = 25 °C	1	
Collector to Emitter				100	μA	V <sub>CE</sub> = 20V, T <sub>A</sub> = 100 °C		
Input Forward Voltage	V <sub>F</sub>	0.90	1.3	1.7	V	I <sub>F</sub> = 10mA		
Input Reverse Current	I <sub>R</sub>			100	μA	V <sub>R</sub> = 3.0V		
Input to Output Leakage Current	I <sub>I-O</sub>			1.0	μA	Relative Humidity ≤ 50% T <sub>A</sub> = 25 °C, V <sub>I-O</sub> = 1500 Vdc		1
Turn On Time	t <sub>ON</sub>		5	15	μS	V <sub>CC</sub> = 10V, R <sub>L</sub> = 100 Ω I <sub>C</sub> = 2mA, T <sub>A</sub> = 25 °C	4,5	
Turn Off Time	t <sub>OFF</sub>		5	15	μS			

# TYPICAL PERFORMANCE CURVES

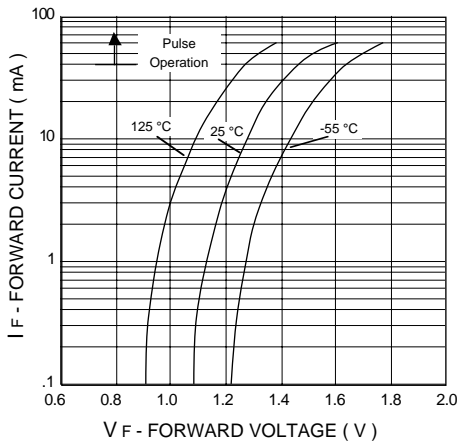


Fig. 1 - Diode Forward Characteristics

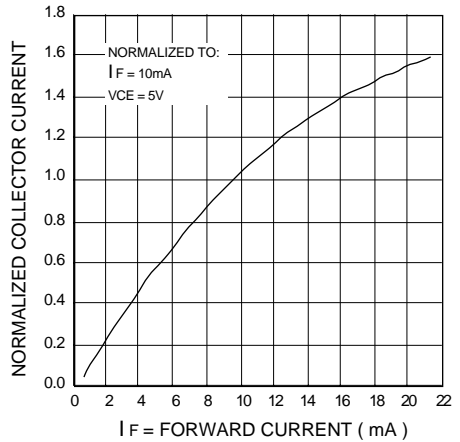


Fig. 2 - Normalized  $I_c$  vs.  $I_F$

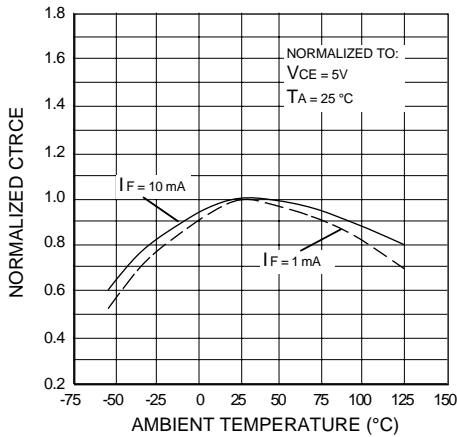


Fig. 3 - Normalized CTR vs. Temperature

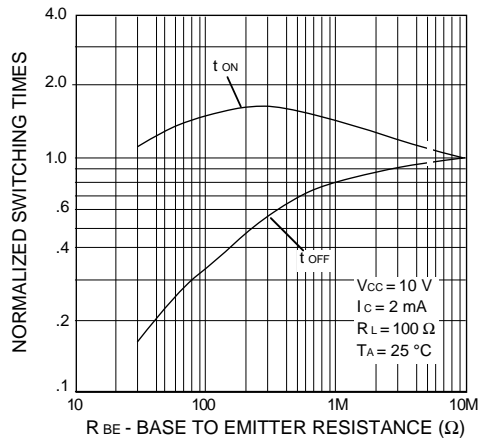


Fig. 4 - Switching Speed vs.  $R_{BE}$  Resistance

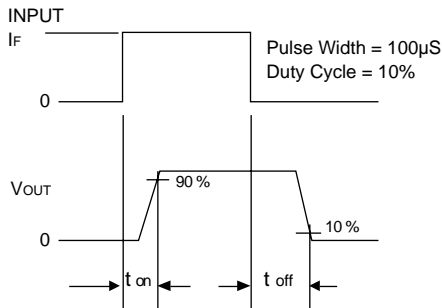


Fig. 5 - Switching Test Circuit

