

DATA SHEET

OLI910: Miniature Photovoltaic Optocoupler for Hybrid Assembly

Features

- Performance guaranteed over $-55\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$ ambient temperature range
- 1500 V_{DC} electrical isolation
- High open-circuit voltage
- High short-circuit current
- Small size for hybrid assembly
- High reliability construction
- Isolated voltage source

Description

The OLI910 consists of a pair of LEDs that are optically coupled to a dielectrically isolated photovoltaic diode array, packaged on a thick film ceramic substrate. When the LED is energized, the infrared emission is detected by the photovoltaic array and a DC output voltage is generated. This electrically isolated voltage can be used to drive the gates of Metal Oxide Semiconductor (MOS) devices.

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

Note: Certain cleaning processes may be harmful to these devices. Contact Isolink for details.

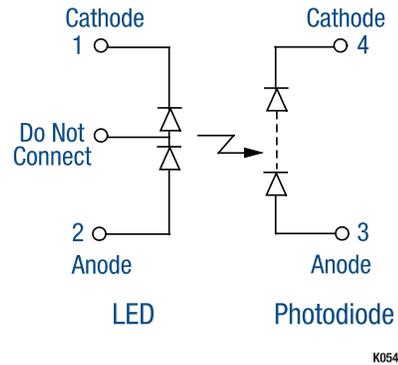


Figure 1. OLI910 Block Diagram

Figure 1 shows the OLI910 functional block diagram. Table 1 provides the OLI910 absolute maximum ratings. Table 2 provides the OLI910 electrical specifications.

Figures 2 through 6 illustrate the OLI910 typical performance characteristics. Figure 7 shows the OLI910 package dimensions.

Table 1. OLI910 Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Minimum	Maximum	Units
Coupled				
Input to output isolation voltage (Note 2)	V _{DC}	-1500	+1500	V
Storage temperature range	T _{STG}	-65	+150	°C
Operating temperature range	T _A	-55	+125	°C
Mounting temperature range (3 minutes maximum)			+240	°C
Input Diode				
Average input current	I _{DD}		50	mA
Peak forward current (≤1 ms duration)	I _F		100	mA
Reverse voltage	V _R		5	V
Power dissipation	P _D		100	mW
Output Detector				
Forward voltage	V _F		20	V
Reverse voltage	V _R		200	V

Note 1: Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to the device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

Note 2: Measured between pins 1 and 6 shorted together, and pins 2, 3, 4, and 5 shorted together. T_A = 25°C and duration = 1 s.

CAUTION: Although this device is designed to be as robust as possible, electrostatic discharge (ESD) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions should be used at all times.

Table 2. OLI910 Electrical Specifications (Note 1)
(T_A = -55 °C to +125 °C, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Open circuit voltage	V _{OC}	I _F = 10.0 mA	7.5	13.0		V
Short circuit current	I _{SC}	I _F = 10 mA	-7	-20		μA
Input:						
Forward voltage	V _F	I _F = 10mA, T _A = 25 °C I _F = 10mA, T _A = 55 °C I _F = 10mA, T _A = 125 °C	2.4 2.8 2.2	2.8	3.2 3.6 3.0	V V V
Reverse breakdown voltage	B _{VR}	I _R = 10 μA	5			V
Output leakage current (Note 2)	I _{L_O}	R _H ≤ 50%, 1500 V _{DC} , T _A = 25 °C, Duration = 1 s			1	μA
Time:						
Turn on	t _{ON}	I _F = 10 mA, PW = 100 μs, f = 1 kHz, C = 15 pf, T _A = 25 °C, R _L = 10 MΩ		60		μs
Turn off	t _{OFF}	t _{ON} = 0% to 90% t _{OFF} = 100% to 10%		400		μs

Note 1: Performance is guaranteed only under the conditions listed in the above table.

Note 2: Measured between pins 1 and 6 shorted together, and pins 2, 3, 4, and 5 shorted together. T_A = 25°C and duration = 1 s.

Typical Performance Characteristics

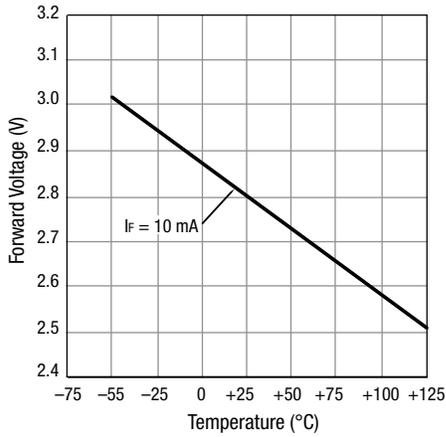


Figure 2. LED Forward Voltage vs Temperature

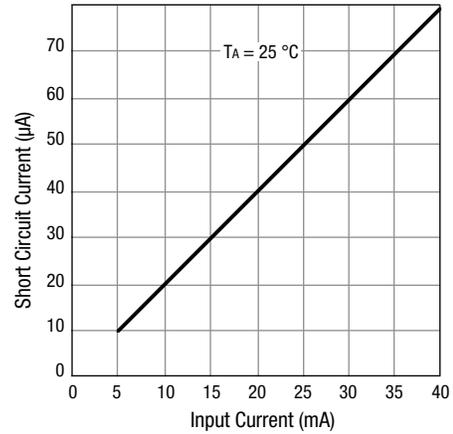


Figure 3. Short Circuit Current vs Input Current

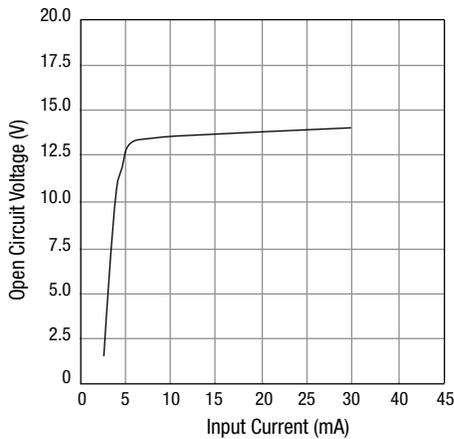


Figure 4. Open Circuit Voltage vs Input Current

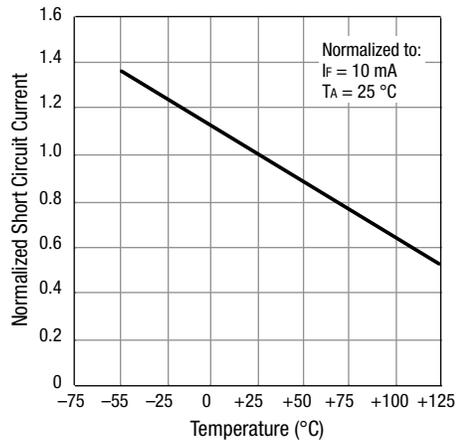


Figure 5. Normalized Short Circuit Current vs Temperature

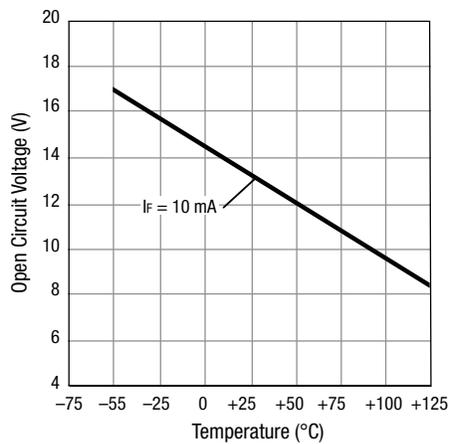


Figure 6: Open Circuit Voltage vs Temperature

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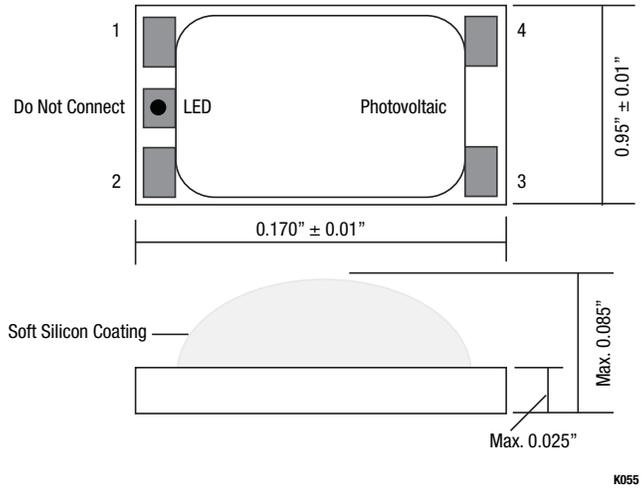


Figure 7. OLI910 Package Dimensions

Ordering Information

Model Name	Manufacturing Part Number
OLI910: Hybrid Photovoltaic Optocoupler	OLI910

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