

**DATA SHEET**

# OLS910: Hermetic Surface Mount Photovoltaic Optocoupler

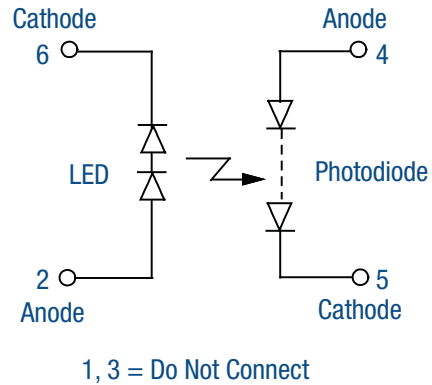
## Features

- Performance guaranteed over  $-55\text{ }^{\circ}\text{C}$  to  $+125\text{ }^{\circ}\text{C}$  ambient temperature range
- 1500 V<sub>DC</sub> electrical isolation
- High open-circuit voltage
- High short-circuit current
- Small hermetic surface mount package
- High reliability and rugged construction
- Isolated voltage source
- Offers 100% high reliability screenings

## Description

The OLS910 consists of a pair of LEDs that are optically coupled to a dielectrically isolated photovoltaic diode array, packaged in a small hermetic Leadless Chip Carrier (LCC). 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 reflow soldering or conductive epoxies.



**Figure 1. OLS910 Block Diagram**

Figure 1 shows the OLS910 functional block diagram. Table 1 provides the OLS910 absolute maximum ratings. Table 2 provides the OLS910 electrical specifications.

Figures 2 through 6 illustrate the OLS910 typical performance characteristics. Figure 7 shows the OLS910 package dimensions.

**Table 1. OLS910 Absolute Maximum Ratings (Note 1)**

Parameter	Symbol	Minimum	Maximum	Units
<b>Coupled</b>				
Input to output isolation voltage	V <sub>DC</sub>	-1500	+1500	V
Storage temperature range	T <sub>STG</sub>	-65	+150	°C
Operating temperature range	T <sub>A</sub>	-55	+125	°C
Mounting temperature range (3 minutes maximum)			+240	°C
<b>Input Diode</b>				
Average input current	I <sub>DD</sub>		50	mA
Peak forward current (≤1 ms duration)	I <sub>F</sub>		100	mA
Reverse voltage	V <sub>R</sub>		5	V
Power dissipation	P <sub>D</sub>		100	mW
<b>Output Detector</b>				
Forward voltage	V <sub>F</sub>		20	V
Reverse voltage	V <sub>R</sub>		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.

**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.

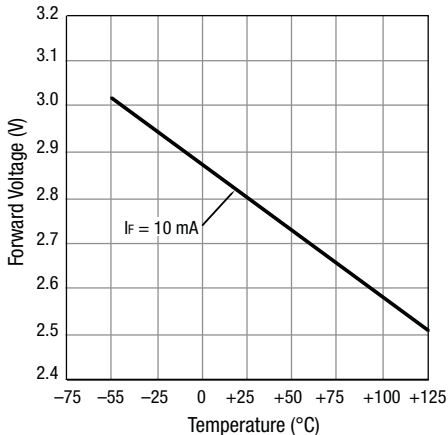
**Table 2. OLS910 Electrical Specifications (Note 1)**  
**(T<sub>A</sub> = -55 °C to +125 °C, Unless Otherwise Noted)**

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

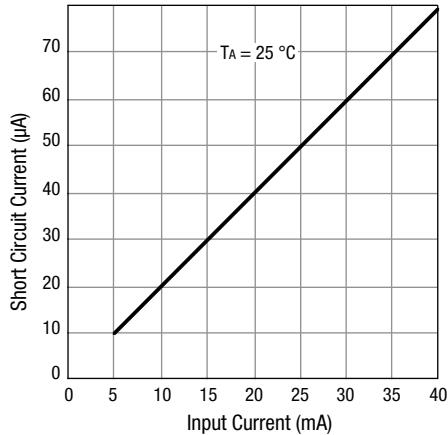
**Note 1:** Performance is guaranteed only under the conditions listed in the above table.

**Note 2:** Measured between pins 1, 2, and 6 shorted together, and pins 3, 4, and 5 shorted together. T<sub>A</sub> = 25°C and duration = 1 s.

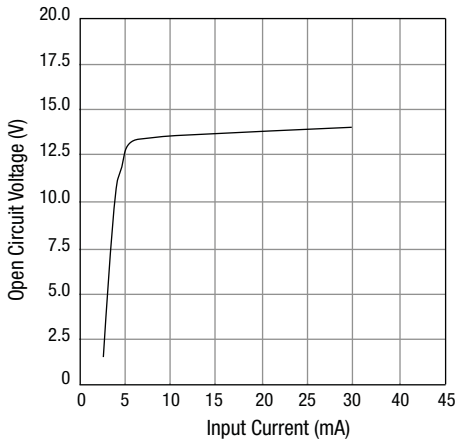
**Typical Performance Characteristics**



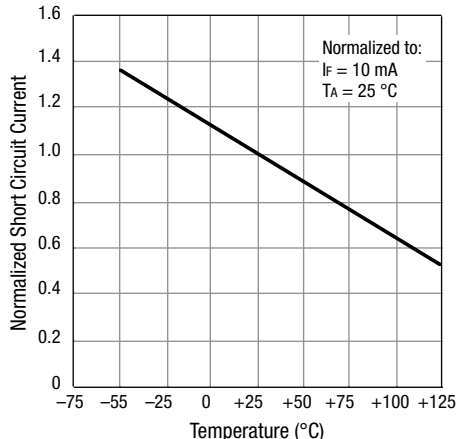
**Figure 2. LED Forward Voltage vs Temperature**



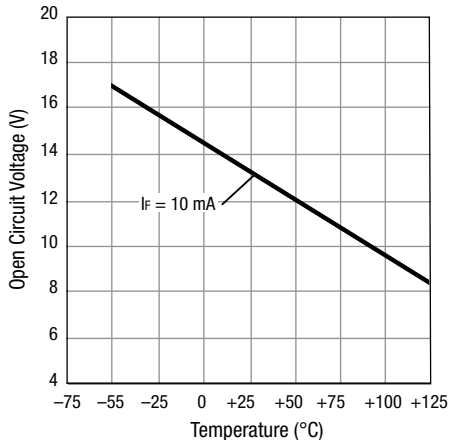
**Figure 3. Short Circuit Current vs Input Current**



**Figure 4. Open Circuit Voltage vs Input Current**



**Figure 5. Normalized Short Circuit Current vs Temperature**



**Figure 6: Open Circuit Voltage vs Temperature**

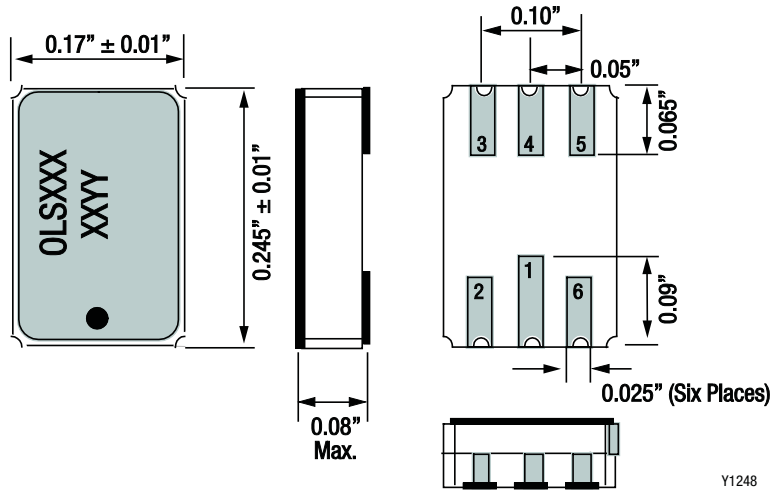


Figure 7. OLS910 Package Dimensions

**Ordering Information**

Model Name	Manufacturing Part Number
OLS910: Hermetic Surface Mount Photovoltaic Optocoupler	OLS910

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