DATA SHEET

OLS910: Hermetic Surface-Mount Photovoltaic Optocoupler

Features

- Performance guaranteed over -55 °C to +125 °C ambient temperature range
- 1500 V_{DC} 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.

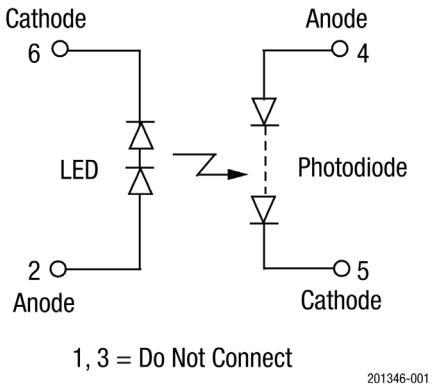

Figure 1. OLS910 Block Diagram

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[1]

Parameter	Symbol	Minimum	Maximum	Units
Coupled				
Input to output isolation voltage	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

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[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	If = 10 mA, T_A = 25 °C If = +10 mA, T_A = -55 °C If = 10 mA, T_A = 125 °C	2.4 +2.8 2.2	2.8	3.2 +3.6 3.0	V V V
Reverse breakdown voltage	BV_R	I_R = 10 µA	5			V
Output leakage current[2]	I_{I_O}	R_H ≤50%, 1500 V_{DC}, T_A = 25 °C, Duration = 1 s			1	µA
Time:		I_F = 10 mA, PW = 100 µs, f = 1 kHz, C = 15 pf, T_A = 25 °C, R_L = 10 MΩ				
Turn on	t_{ON}	t_{ON} = 0 V to 90%		60		µs
Turn off	t_{OFF}	t_{OFF} = V_{OC} to 10%		400		µs

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

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

Typical Performance Characteristics

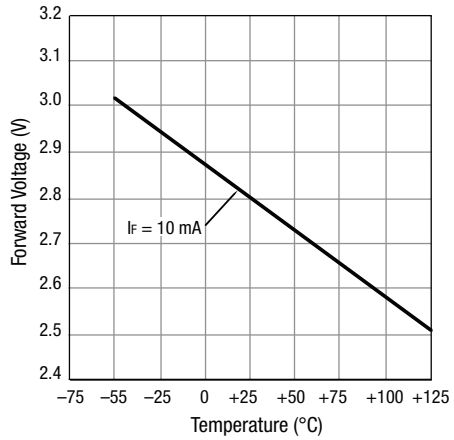

Figure 2. LED Forward Voltage vs Temperature

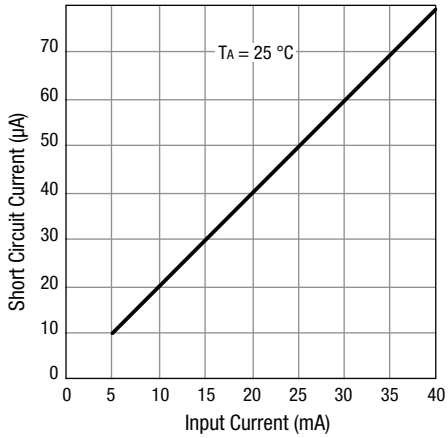

Figure 3. Short Circuit Current vs Input Current

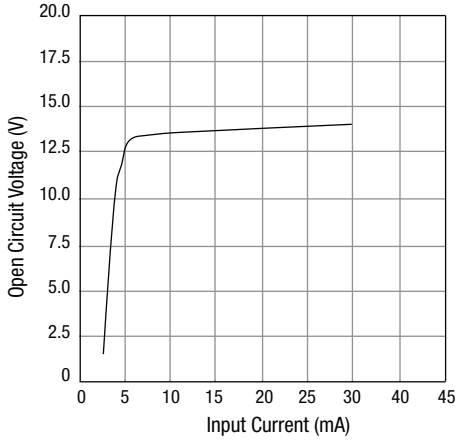

Figure 4. Open Circuit Voltage vs Input Current

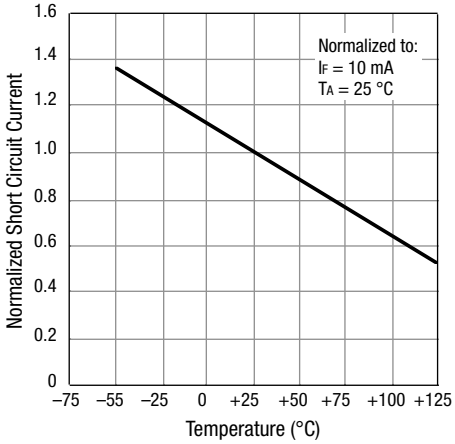

Figure 5. Normalized Short Circuit Current vs Temperature

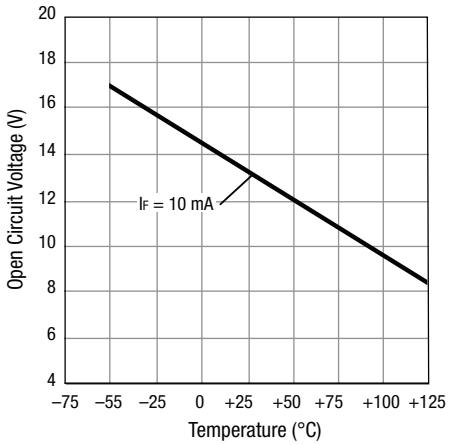

Figure 6: Open Circuit Voltage vs Temperature

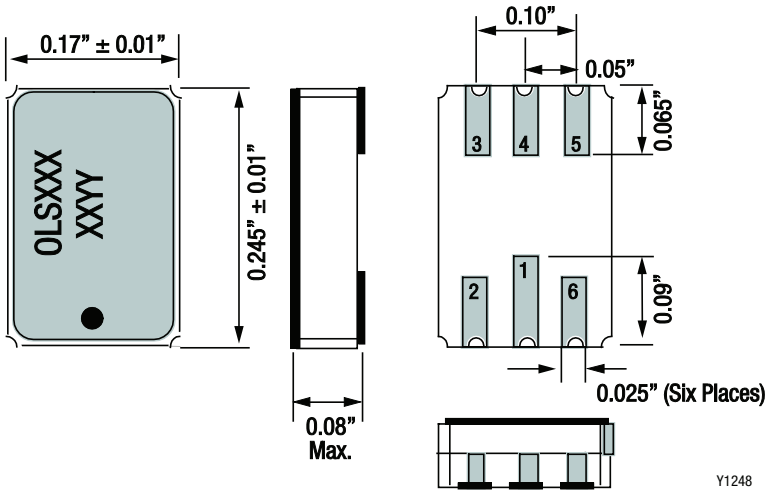

Figure 7. OLS910 Package Dimensions

Ordering Information

Part Number	Product Description
OLS910	Hermetic Surface Mount Photovoltaic Optocoupler