

DATA SHEET

OLS910: Hermetic Surface-Mount Photovoltaic Optocoupler

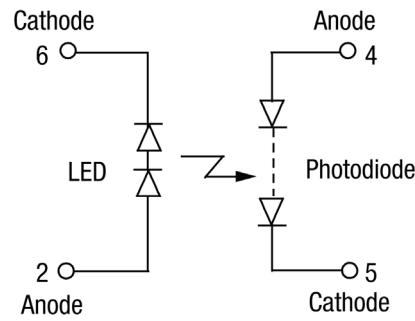
Features

- 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.



1, 3 = Do Not Connect

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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 Ratings¹

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 Specifications¹(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 = 10 mA, T _A = 25 °C I _F = +10 mA, T _A = -55 °C I _F = 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	B _{VR}	I _R = 10 µA		5		V
Output leakage current ²	I _{OL}	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 V to 90% 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

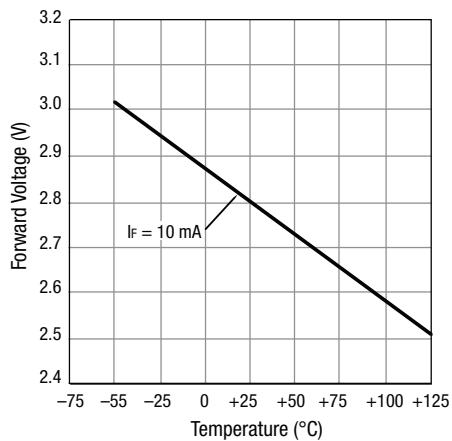


Figure 2. LED Forward Voltage vs Temperature

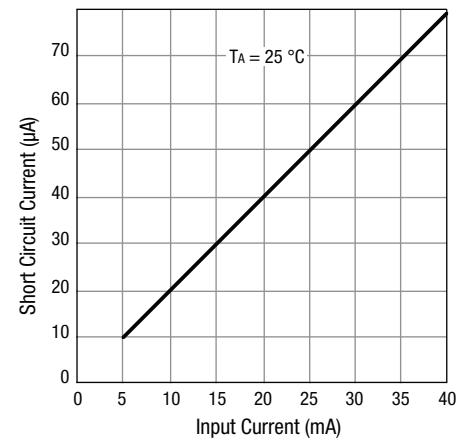


Figure 3. Short Circuit Current vs Input Current

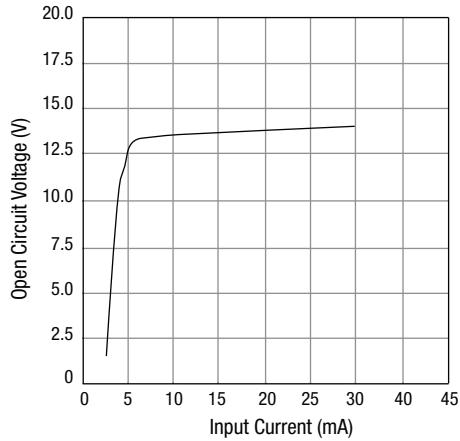


Figure 4. Open Circuit Voltage vs Input Current

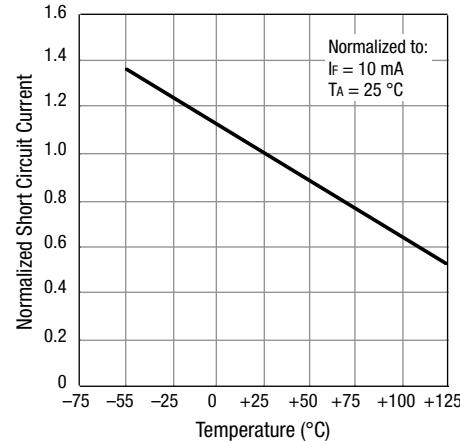


Figure 5. Normalized Short Circuit Current vs Temperature

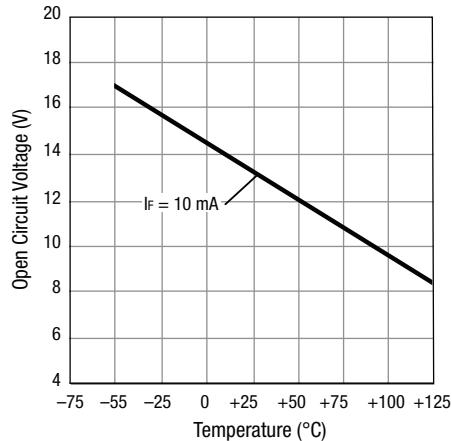


Figure 6: Open Circuit Voltage vs Temperature

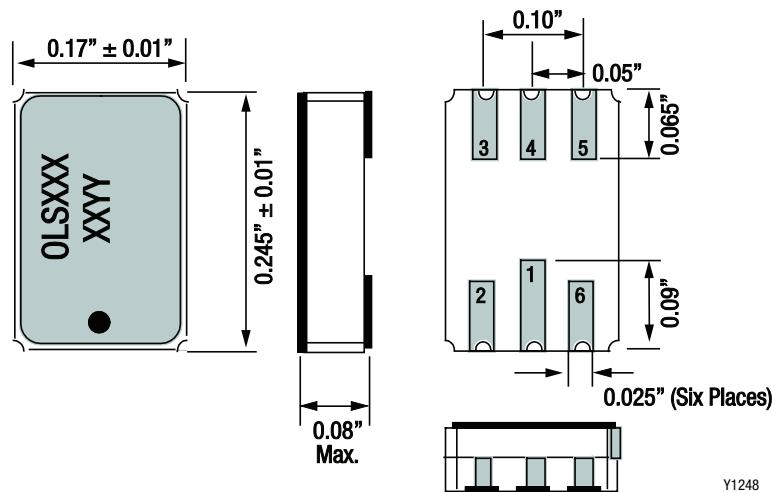


Figure 7. OLS910 Package Dimensions

Ordering Information

Part Number	Product Description
OLS910	Hermetic Surface Mount Photovoltaic Optocoupler

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