

DATA SHEET

OLH910: Hermetic Photovoltaic Optocoupler

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
- Hermetic package
- High reliability and rugged construction

Description

The OLH910 consists of a pair of LEDs that are optically coupled to a dielectrically isolated photovoltaic diode array, packaged in a hermetically-sealed, 8-pin dual in-line ceramic package. 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 MOS devices.

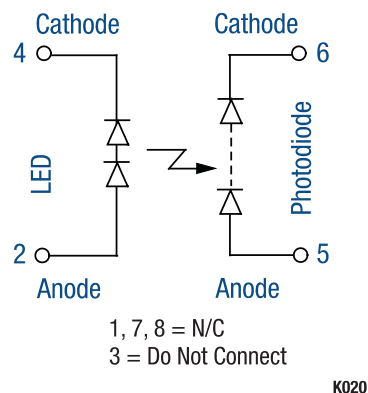


Figure 1. OLH910 Block Diagram

Figure 1 shows the OLH910 functional block diagram. Table 1 provides the OLH910 absolute maximum ratings. Table 2 provides the OLH910 electrical specifications.

Figures 2 through 6 illustrate the OLH910 typical performance characteristics. Figure 7 shows the OLH910 switching test circuit. Figure 8 provides the OLH910 package dimensions.

Table 1. OLH910 Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Minimum	Maximum	Units
<i>Coupled</i>				
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
Lead temperature (1.6 mm from case for 10 seconds)			+240	°C
<i>Input Diode</i>				
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
<i>Output Detector</i>				
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 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, 2, 3, and 4 shorted together, and pins 5, 6, 7, and 8 shorted together. T_A = 25°C and duration = 1 second.

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. OLH910 Electrical Specifications (Note 1)
($T_A = -55\text{ }^\circ\text{C}$ to $+125\text{ }^\circ\text{C}$, Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Minimum	Typical	Maximum	Units
Open circuit voltage	V _{oc}	I _F = 10 mA	7.5	13.0		V
Short circuit current	I _{sc}	I _F = 10 mA	-7.0	-20.0		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	0	0	V
Output leakage current (Note 2)	I _{l_o}	Relative humidity ≤50 % 1500 V _{oc} T _A = 25 °C, Duration = 1 second			1	μA
Times:						
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: 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, 2, 3, and 4 shorted together, and pins 5, 6, 7, and 8 shorted together. T_A = 25°C and duration = 1 second.

Typical Performance Characteristics

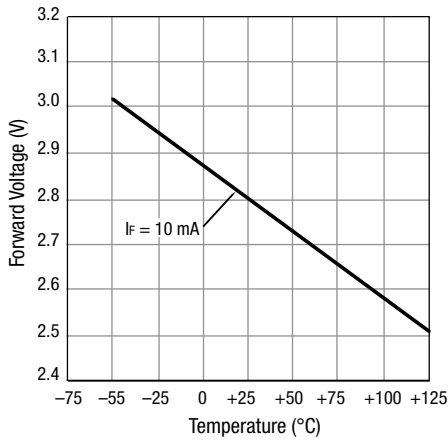


Figure 2. LED Forward Voltage vs Temperature

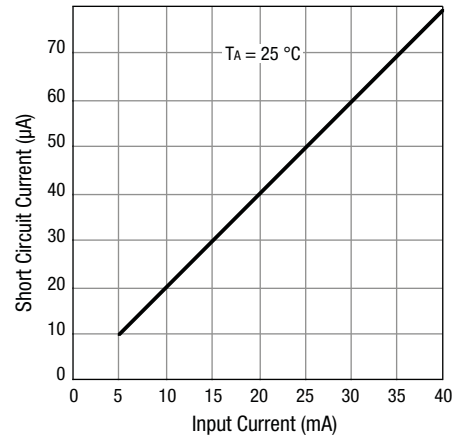


Figure 3. Short Circuit Current vs Input Current

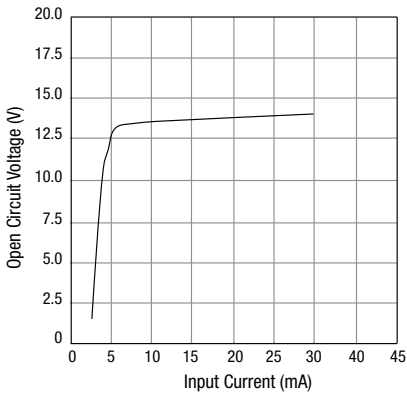


Figure 4. Open Circuit Voltage vs Input Current

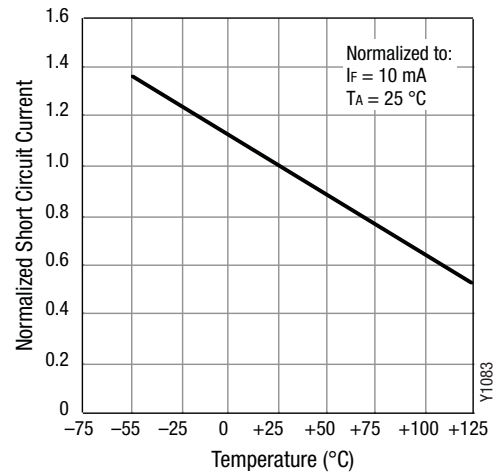


Figure 5. Normalized Short Circuit Current vs Temperature

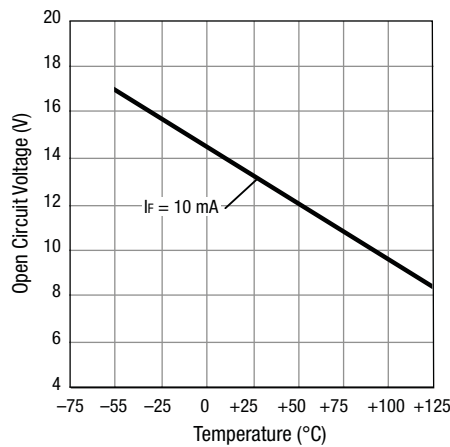
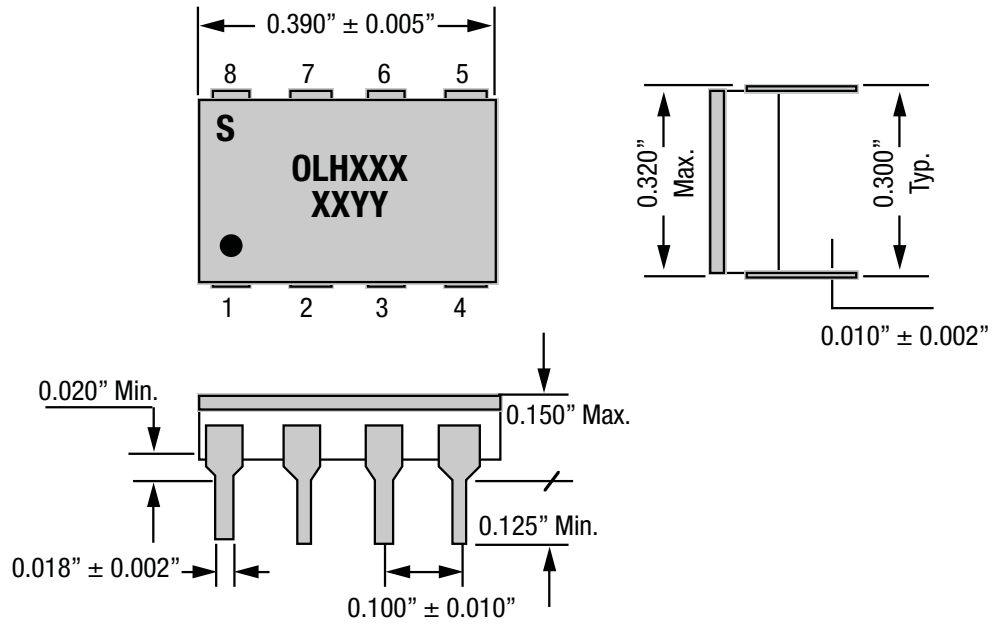


Figure 6. Open Circuit Voltage vs Temperature



K021

Figure 7. OLH910 Package Dimensions

Ordering Information

Model Name	Manufacturing Part Number
OLH910: Hermetic Photovoltaic Optocoupler	OLH910

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