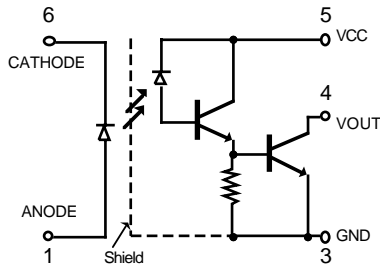




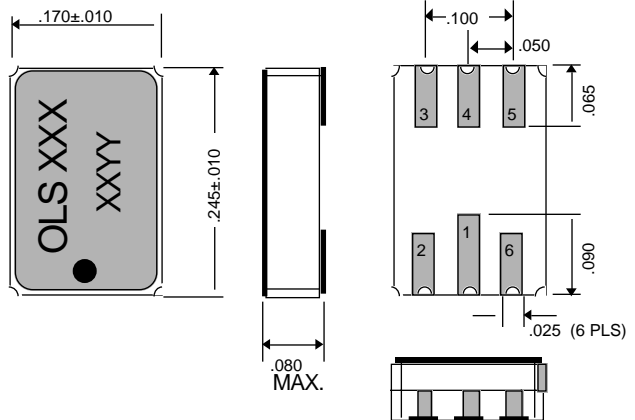
ISO LINK

OLS 400

Hermetic Surface Mount Low Input-Current Optocoupler



SCHEMATIC



PACKAGE OUTLINE

Features

- ◆ *Electrical parameters guaranteed over -55°C to +125°C ambient temp. range*
- ◆ *1500 Vdc electrical isolation*
- ◆ *Low input current - 0.5 mA*
- ◆ *Low output saturation voltage - 0.1 V typical*
- ◆ *High current transfer ratio - 1000% typical*
- ◆ *Low power consumption*
- ◆ *Similar to industry standard parts - 6N138 / 6N139 in plastic and 6N140 in hermetic DIP packages*
- ◆ *100% hi-rel screenings are offered*

Description

The OLS 400 has high current transfer ratio at very low input currents making it ideal for applications such as MOS, CMOS, and low power logic interfacing or RS232C data transmission systems. Each OLS 400 has a light emitting diode and a integrated photodiode-darlington detector IC mounted and coupled in a custom hermetic surface mount LCC package providing 1500 Vdc electrical isolation between input and output. The darlington detector has an integrated base to emitter resistor for superior high temperature performance. The split darlington design permits lower output saturation voltage and higher switching speed operation than possible with conventional photodarlington design.

Device mounting is achieved with reflow soldering or conductive epoxies.

NOTES:

1. Measured between pins 1, 2 and 6 shorted together and pins 3, 4, and 5 shorted together. $T_A = 25^\circ\text{C}$ and duration = 1 second.
2. Current transfer ratio is defined as the ratio of output collector current, I_C to the forward LED current, I_F , times 100%.

Absolute Maximum Ratings

Coupled	
Input to Output Isolation Voltage	± 1500 Vdc
Storage Temperature Range	-65°C to +150°C
Operation Temperature Range	-55°C to +125°C
Mounting Temperature Range (3 minutes max.)	240°C
Input Diode	
Average Input Current	20 mA
Peak Forward Current (≤ 1mS duration)	40 mA
Reverse Voltage	5.0 V
Power Dissipation	36 mW
Output Detector	
Average Output Current	40 mA
Supply Voltage, Vcc	-0.5 V to 20 V
Output Voltage, Vout	-0.5 V to 20 V
Power Dissipation	50 mW

ELECTRICAL CHARACTERISTIC (T_A = - 55 °C to +125 °C, Unless Otherwise Specified)

Parameter	Symbol	Min	Typ.	Max	Units	Test Conditions	Fig.	Note
Current Transfer Ratio	CTR	300			%	IF=0.5 mA, Vo=0.4v, VCC=4.5v	2	2
		300			%	IF=1.6 mA, Vo=0.4v, VCC=4.5v		
		200			%	IF=5.0 mA, Vo=0.4v, VCC=4.5v		
Logic Low Output Voltage	VoL		.1	.4	V	IF=0.5 mA, IoL=1.5mA, Vcc=4.5v		
			.2	.4	V	IF=5mA, IoL=10mA, Vcc=4.5v		
Logic High Output Current	IoH		.005	250	µA	IF=0mA, Vo=Vcc=18v		
Logic Low Supply Current	IcCL		0.6	2.0	mA	IF=1.6mA, Vcc=18v		
Logic High Supply Current	IcCH		.01	40	µA	IF=0mA, Vcc=18v		
Input Forward Voltage	VF		1.65	2.0	V	IF=1.6mA	1	
Input Reverse Breakdown Voltage	BvR	3			V	IR=10 µA		
Input to Output Leakage Current	I _{I-O}			1.0	µA	Relative Humidity ≤ 50%, T _A = 25°C, V _{I-O} = 1500 Vdc		1
Propagation Delay Time Logic High to Low	t _{PHL}		26	100	µS	IF=0.5mA, RL=4.7 KΩ,	Vcc=5v TA=25°C	3,4,5
			2	10	µS	IF=5mA, RL =680 Ω		
Propagation Delay Time Logic Low to High	t _{PLH}		28	60	µS	IF=0.5mA, RL=4.7 KΩ,		
			10	30	µS	IF=5mA, RL =680 Ω		

TYPICAL PERFORMANCE CURVES

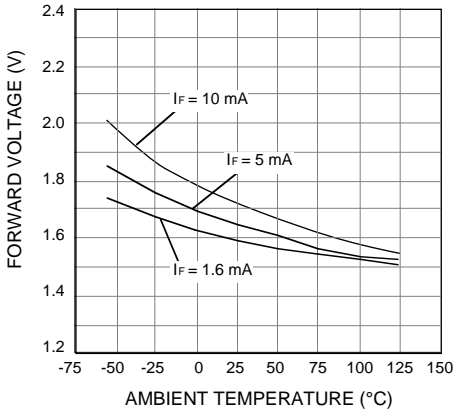


Fig. 1 - LED Forward Characteristics

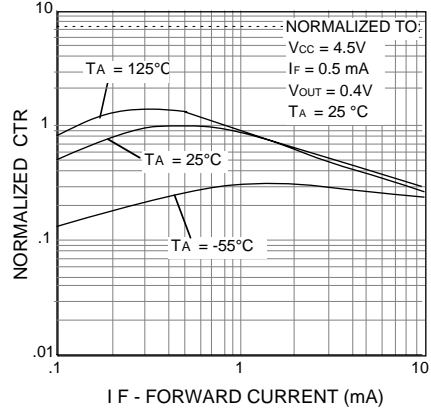


Fig. 2 - Normalized CTR vs. Input Diode Forward Current.

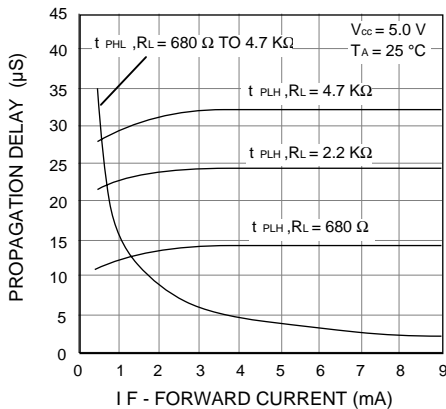


Fig. 4 - Propagation Delay vs. Input Diode Current

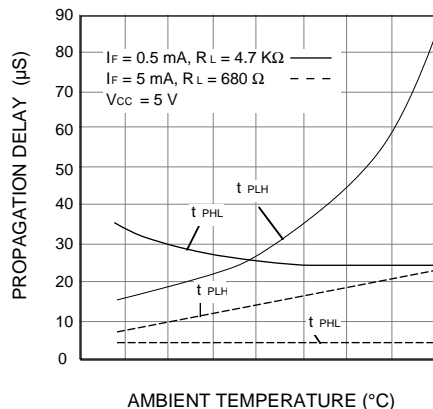


Fig. 3 - Propagation Delay vs. Temperature

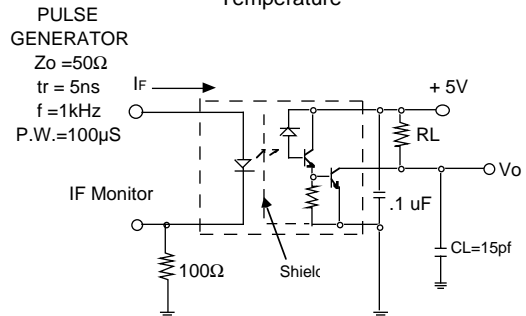
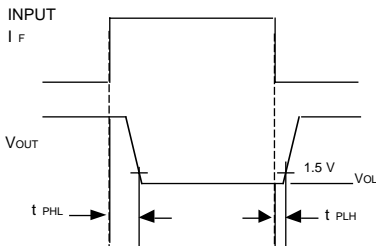


Fig. 5 - Switching Test Circuit