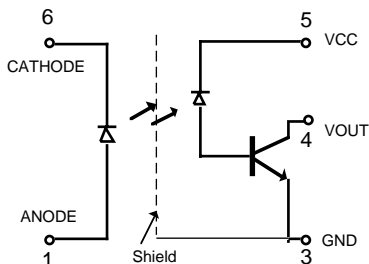




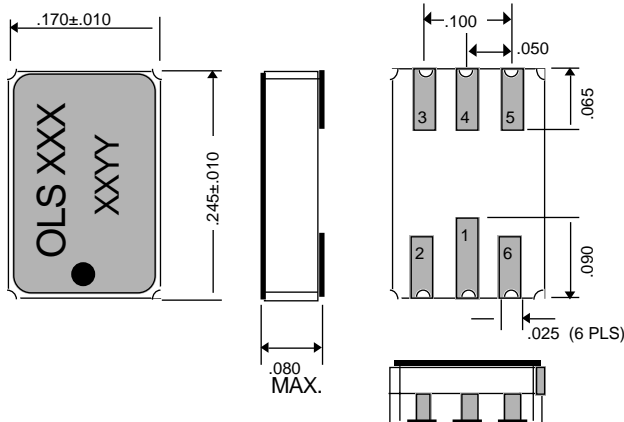
# ISO LINK

## OLS 300

### Hermetic Surface Mount High-Speed Optocoupler



SCHEMATIC



PACKAGE OUTLINE

## Features

- ◆ *Electrical parameters guaranteed over -55°C to +125°C ambient temp. range*
- ◆ *1500 Vdc electrical isolation*
- ◆ *High-Speed, 1 Mbit/s typical*
- ◆ *Open collector output*
- ◆ *High reliability and rugged construction*
- ◆ *Similar to 6N135/6, 4N55 type optocouplers*
- ◆ *Hi-Rel screenings on this products is available*

## Description

The OLS 300 is suitable for interfacing TTL to LSTTL, TTL or CMOS as well as wide bandwidth analog applications. Each OLS 300 has a light emitting diode and an integrated photo-diode transistor detector mounted and coupled in a custom hermetic surface mount LCC ceramic package providing 1500 Vdc electrical isolation between input and output. The integrated photo-diode transistor improves switching speed by orders of magnitude as compared to standard photo-transistors, by reducing the base to collector capacitance.

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 <sup>1</sup> | ± 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                         | 8 mA            |
| Peak Output Current                            | 16 mA           |
| Supply Voltage, Vcc                            | -0.5 V to 18 V  |
| Output Voltage, Vout                           | -0.5 V to 18 V  |
| Power Dissipation                              | 50 mW           |
| Derate Linearly from 100°C                     | 1.4 mW/°C       |

## ELECTRICAL CHARACTERISTIC ( T<sub>A</sub> = - 55 °C to +125 °C, Unless Otherwise Specified )

| Parameter                                | Symbol           | Min | Typ. | Max | Units | Test Conditions  | Fig. | Note |
|--|------------------|-----|------|-----|-------|--|------|------|
| Current Transfer Ratio                   | CTR              | 15  | 25   |     | %     | I <sub>F</sub> =10 mA, V <sub>O</sub> =0.4 V, V <sub>CC</sub> =4.5 V           | 2    | 2    |
| Logic Low Output Voltage                 | V <sub>OL</sub>  |     | .15  | 0.4 | V     | I <sub>F</sub> =10 mA, I <sub>OL</sub> =1.5mA, V <sub>CC</sub> =4.5V           |      |      |
| Logic High Output Current                | I <sub>OH</sub>  |     | .05  | 100 | μA    | I <sub>F</sub> =0mA, V <sub>O</sub> =V <sub>CC</sub> =15V                      |      |      |
| Logic Low Supply Current                 | I <sub>CCL</sub> |     | 40   | 200 | μA    | I <sub>F</sub> =10mA, V <sub>CC</sub> =15V, V <sub>O</sub> =open               |      |      |
| Logic High Supply Current                | I <sub>CCH</sub> |     | .05  | 10  | μA    | I <sub>F</sub> =0mA, V <sub>CC</sub> =15V, V <sub>O</sub> =open                |      |      |
| Input Forward Voltage                    | V <sub>F</sub>   |     | 1.7  | 2.5 | V     | I <sub>F</sub> =10 mA  |      |      |
| Input Reverse Breakdown Voltage          | B <sub>VR</sub>  | 3   |      |     | V     | I <sub>R</sub> =10 μA  | 1    |      |
| Input to Output Leakage Current          | I <sub>I-O</sub> |     |      | 1.0 | μA    | Relative Humidity ≤ 50%,<br>T <sub>A</sub> = 25°C, V <sub>I-O</sub> = 1500 Vdc |      | 1    |
| Propagation Delay Time Logic High to Low | t <sub>PHL</sub> |     | 0.3  | 1.0 | μS    | I <sub>F</sub> =10 mA, V <sub>CC</sub> = 5V,<br>R <sub>L</sub> =4.1 KΩ,        | 3,4  |      |
| Propagation Delay Time Logic Low to High | t <sub>PLH</sub> |     | 0.5  | 2.0 | μS    | I <sub>F</sub> =10 mA, V <sub>CC</sub> = 5V,<br>R <sub>L</sub> = 4.1 KΩ,       | 3,4  |      |

ALL TYPICAL @ T<sub>A</sub> = 25°C

# TYPICAL PERFORMANCE CURVES

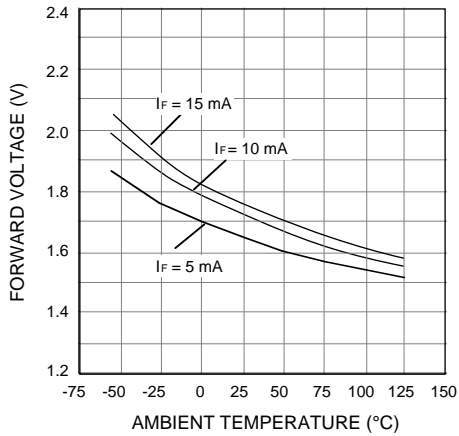


Fig. 1 - LED Forward Characteristics

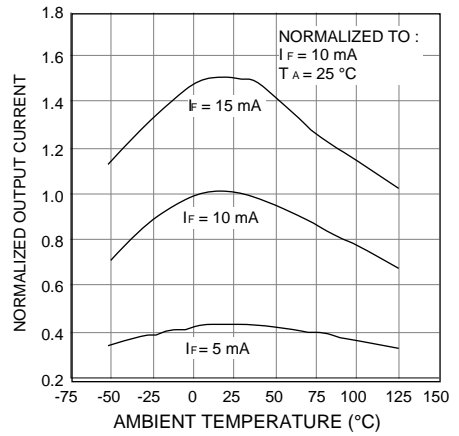


Fig. 2 - Normalized Output Current vs.  $I_F$  vs. Temperature

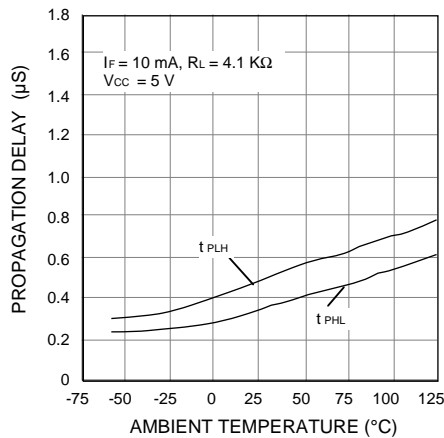


Fig. 3 - Propagation Delay vs. Temperature

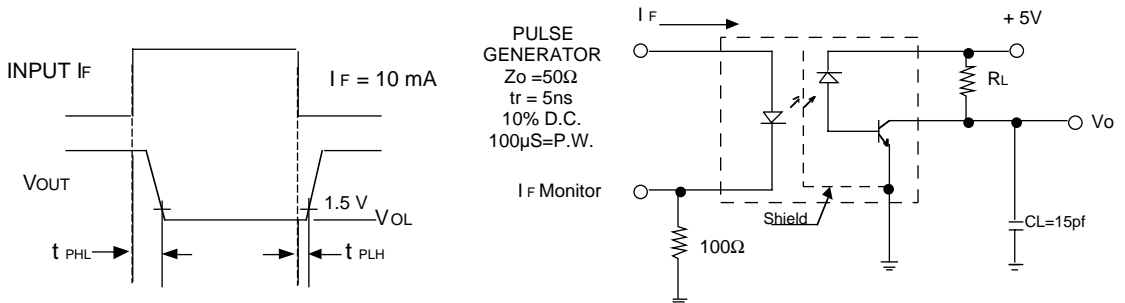


Fig. 4 - Switching Test Circuit