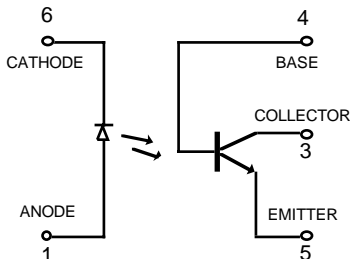


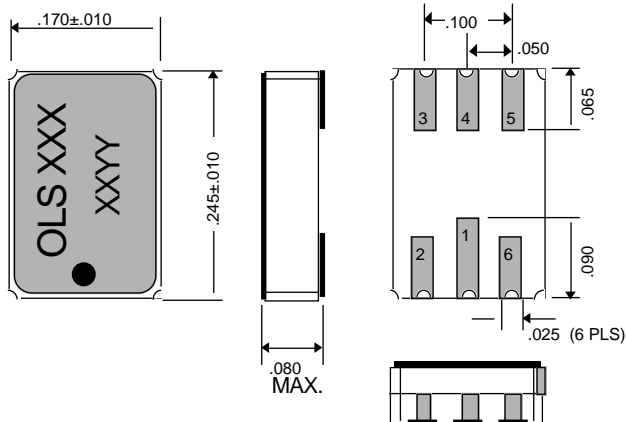


ISO LINK

OLS 100 Hermetic Surface Mount Phototransistor Optocoupler



SCHMATIC



PACKAGE OUTLINE

Features

- ◆ Current transfer ratio guaranteed over -55°C to $+125^{\circ}\text{C}$ ambient temp. range
- ◆ 1500 Vdc electrical isolation
- ◆ High current transfer ratio - 75% min. over temperature
- ◆ High current transfer ratio at low input current - 100% at $I_F=1\text{mA}$ over temp.
- ◆ High reliability and rugged construction
- ◆ CTR comparable to darlington output but with low saturation $V_{CE} = 0.15\text{V}$
- ◆ Similar to 4N2X, 4N4X type Optocouplers
- ◆ Hi-Rel screenings on this products is available.

Description

The OLS 100 is designed especially for application requiring optical isolation with high current transfer ratio and low saturation voltage (V_{ce}). Each OLS 100 consists of a light emitting diode and a NPN silicon phototransistor mounted and coupled in a custom hermetic surface mount LCC package. The very low input current makes the OLS 100 well suited for direct CMOS to LSTTL / TTL interfaces.

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%.
3. Derate linearly 3.0 mW / $^{\circ}\text{C}$ above 25°C

Absolute Maximum Ratings

Coupled	
Input to Output Isolation Voltage ¹	± 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	40 mA
Peak Forward Current (≤ 1mS duration)	60 mA
Reverse Voltage	3.0 V
Power Dissipation	70 mW
Output Detector	
Collector - Emitter Voltage	35 V
Emitter - Collector Voltage	7 V
Collector - Base Voltage	70 V
Power Dissipation	200 mW ³

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	100	200		%	I _F = 10 mA, V _{CE} = 5.0V	2,3	2
		100	200		%	I _F = 1mA, V _{CE} = 5.0V		
Saturation Voltage	VCE _(SAT)		0.15	0.3	V	I _F = 10mA, I _C = 2.0mA		
Breakdown Voltage								
Collector to Emitter	BV _{CEO}	30			V	I _{CE} = 100 μA, T _A = 25 °C		
Collector to Base	BV _{CBO}	70			V	I _{CB} = 10 μA, T _A = 25 °C		
Emitter to Collector	BV _{ECO}	5			V	I _{EC} = 100 μA, T _A = 25 °C		
Leakage Current								
Collector to Emitter	I _{CEO}			100	nA	V _{CE} = 20V, T _A = 25 °C		
				100	μA	V _{CE} = 20V, T _A = 100 °C		
Input Forward Voltage	V _F	0.90	1.3	1.7	V	I _F = 10mA	1	
Input Reverse Current	I _R			100	μA	V _R = 3.0V		
Input to Output Leakage Current	I _{I-O}			1.0	μA	Relative Humidity ≤ 50% T _A = 25 °C, V _{I-O} = 1500 Vdc		1
Turn On Time	t _{ON}		5	15	μS		4,5	
Turn Off Time	t _{OFF}		5	15	μS	V _{CC} = 10V, R _L = 100 Ω I _C = 2mA, T _A = 25 °C		

TYPICAL PERFORMANCE CURVES

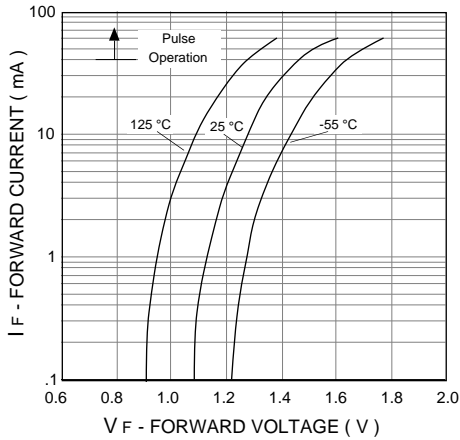


Fig. 1 - Diode Forward Characteristics

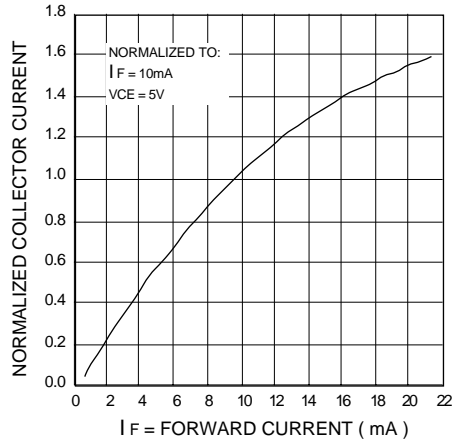


Fig. 2 - Normalized I_c vs. I_F

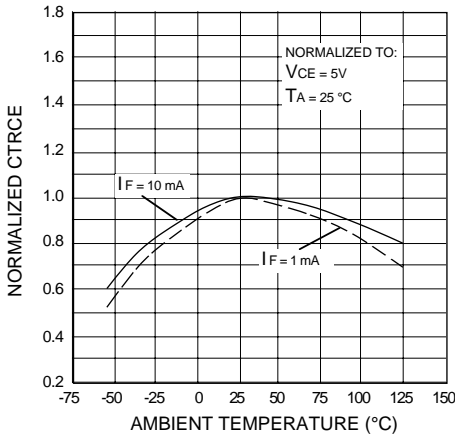


Fig. 3 - Normalized CTR vs. Temperature

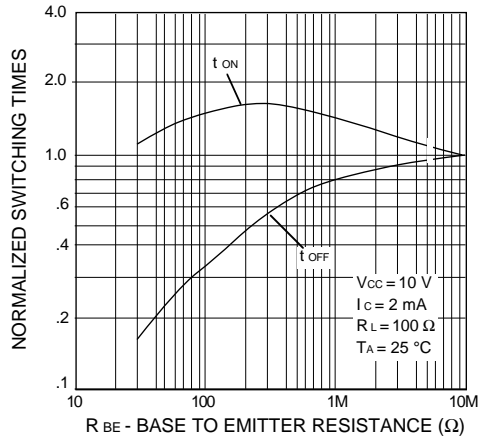


Fig. 4 - Switching Speed vs. R_{BE} Resistance

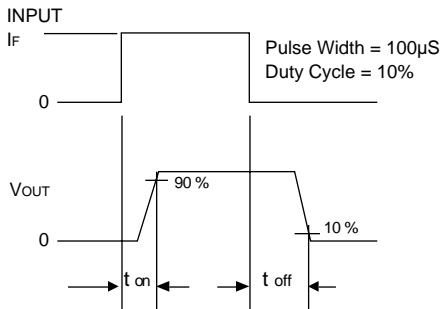


Fig. 5 - Switching Test Circuit

