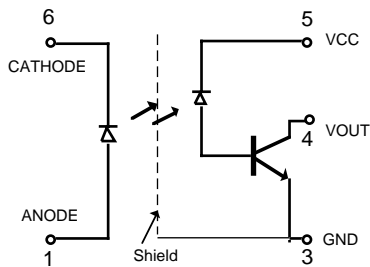


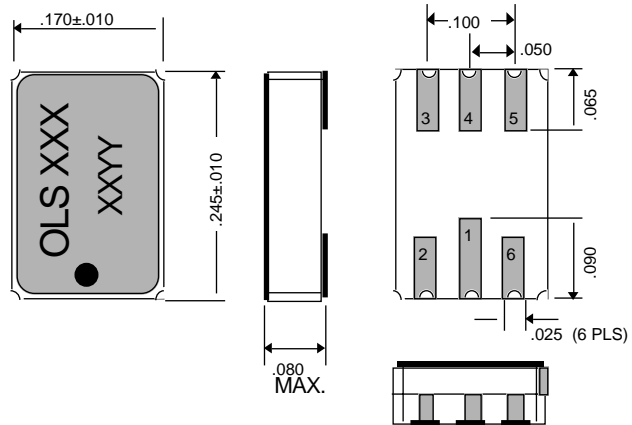


OLS 303

Hermetic Surface Mount Wide Bandwidth Optocoupler



SCHEMATIC



PACKAGE OUTLINE

Features

- ◆ *Electrical parameters guaranteed over -55°C to +125°C ambient temp. range*
- ◆ *1500 Vdc electrical isolation*
- ◆ *High Gain , 10 dB Typical*
- ◆ *Open collector output*
- ◆ *High reliability and rugged construction*
- ◆ *Similar to 6N135 / 6, 4N55 type optocouplers*
- ◆ *Radiation tolerant*
- ◆ *Hi-Rel screenings on this products is available*

Description

The OLS 303 is suitable for wide bandwidth analog applications. Each OLS 303 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 the bandwidth by orders of magnitude as compared to standard phototransistors. The internal shield provides excellent common-mode immunity performance.

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 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	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, V _{cc}	-0.5 V to 18 V
Output Voltage, V _{out}	-0.5 V to 18 V
Power Dissipation	50 mW
Derate Linearly from 100°C	1.4 mW/°C

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	20	50	80	%	I _F = 5 mA, V _{CE} =1.2 V		2
Gain	G	4	10	16	dB	I _F = 5 mA, V _{CE} =1.2 V, R _c =2.1K, f =10Khz	2	
Collector to Emitter Saturation Voltage	V _{CE(sat)}		.15	0.4	V	I _F =10 mA, I _{OL} =1.5mA, V _{CC} =4.5V		
Collector to Emitter Breakdown Voltage	B _{VCEO}	18			V	I _F = 0mA, I _{CE} = 1mA		
Collector to Emitter Leakage Current	I _{CEO}		.05	100	μA	I _F =0mA, V _O =15V, V _{CC} =open		
Supply Current	I _{CC}		.05	10	μA	I _F = 0mA, V _{CC} =15V, V _O =open		
Input Forward Voltage	V _F		1.8	2.5	V	I _F = 10 mA	1	
Input Reverse Breakdown Voltage	B _{VR}	3			V	I _R = 10 μA		
Input to Output Leakage Current	I _{I-O}			1.0	μA	R _H ≤ 50%, V _{I-O} =1500Vdc		1
Input to Output Capacitance	C _{I-O}		0.5	2.0	pF	V _{I-O} = 0.0Vdc, f = 1Mhz		
Bandwidth @ 45° Phase Shift @ - 3 dB	Bw Bw	150	300 450		Khz Khz	I _F = 5 mA, V _{CE} = 1.2V, R _c = 2.1 KΩ,	3,4	

ALL TYPICAL @ T_A = 25°C

TYPICAL PERFORMANCE CURVES

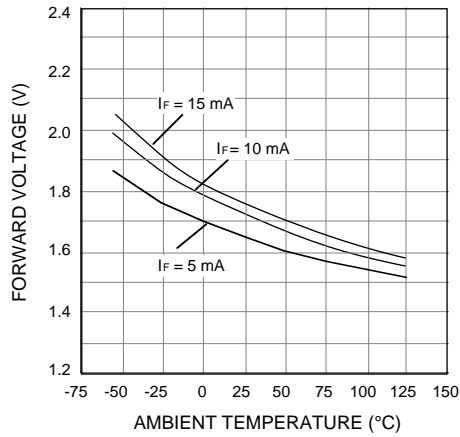


Fig. 1 - LED Forward Characteristics

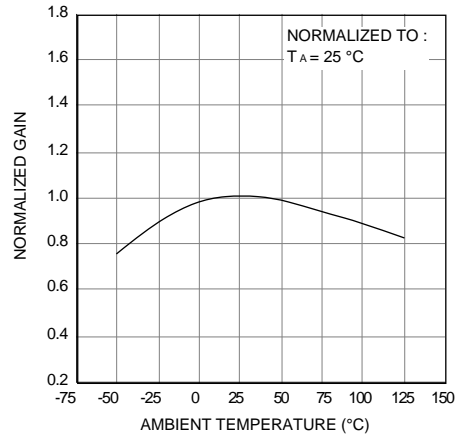


Fig. 2 - Normalized Gain vs. Temperature

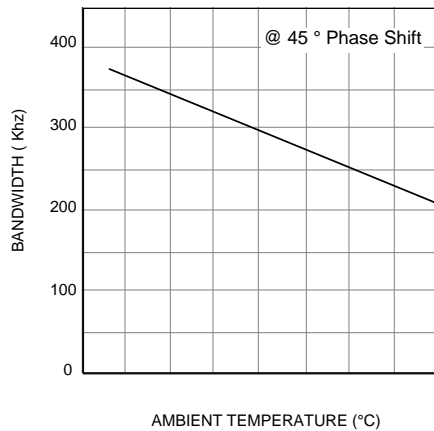


Fig. 3 - Bandwidth vs. Temperature

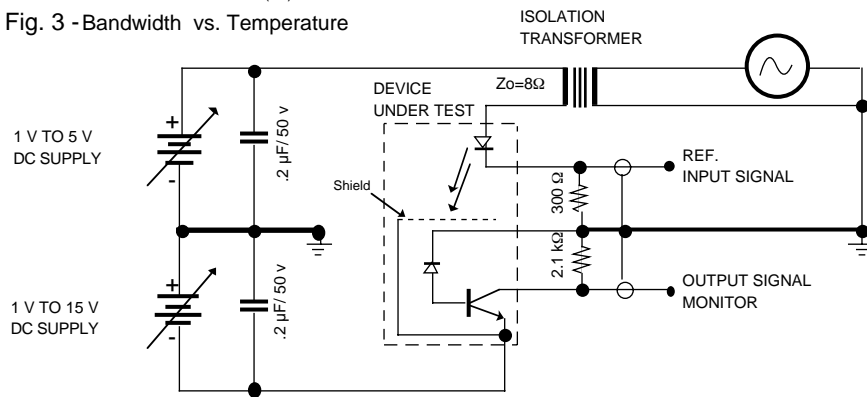


Fig. 4 - Gain and Bandwidth Test Circuit