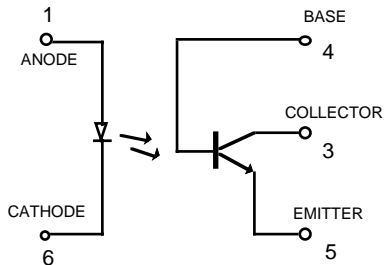




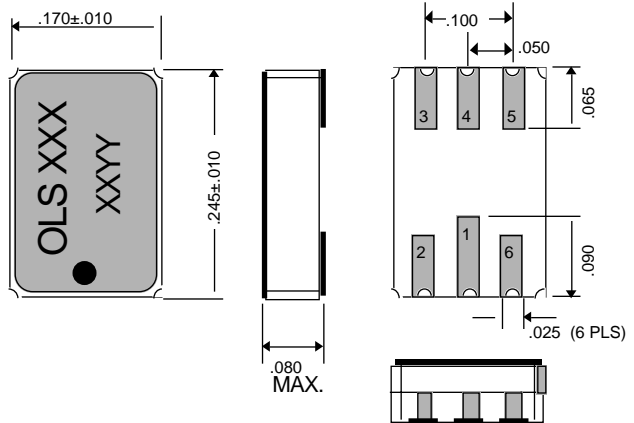
ISO LINK

OLS 249

Radiation Tolerant Phototransistor Hermetic Surface Mount Optocoupler



SCHEMATIC



PACKAGE OUTLINE

Features

- ◆ Hermetic SMT package
- ◆ 1500 Vdc electrical isolation
- ◆ High current transfer ratio
- ◆ Small package size
- ◆ High reliability and rugged construction
- ◆ Hi-rel screening available
- ◆ Radiation tolerant

Description

The OLS249 consists of a light emitting diode optically coupled to a NPN silicon phototransistor mounted and coupled in a custom hermetic surface mount LCC package. The very low input current makes the OLS249 well suited for direct CMOS to LSTTL / TTL interfaces.

Electrical parameters are similar to the JEDEC registered 4N49 optocoupler but with much better CTR degradation characteristics due to radiation exposure

Special electrical parametric selections are available on request.

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. Derate linearly to 125°C free-air temperature at 0.67 mA / °C above 65°C.
3. For pulse width $\leq 1 \mu\text{s}$, pulse repetition rate ≤ 300 pps.
4. Derate linearly to 125°C free-air temperature at 3.0 mW / °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 (10 seconds max.)	240 °C
Input Diode	
Average Input Current ²	40 mA
Peak Forward Current ³	1 A
Reverse Voltage	2.0 V
Output Detector	
Collector - Emitter Voltage	40 V
Emitter - Base Voltage	7 V
Collector - Base Voltage	45 V
Continuous Collector Current	50 mA
Power Dissipation ⁴	300 mW

ELECTRICAL CHARACTERISTIC (T_A = 25 °C, Unless Otherwise Specified)

Parameter	Symbol	Min	Max	Units	Test Conditions	Fig.	Note	
On-State Collector Current	I _{C(ON)}	2.0	12	mA	I _F = 1 mA, V _{CE} = 5.0V	2,3		
		2.8		mA	I _F = 2 mA, V _{CE} = 5.0V, T _A = -55°C			
		2.0		mA	I _F = 2 mA, V _{CE} = 5.0V, T _A = 100°C			
On-State Coll.-Base Current	I _{CB(ON)}	30		μA	I _F = 10 mA, V _{CB} = 5.0V			
Saturation Voltage	V _{CE(SAT)}		0.3	V	I _F = 2mA, I _C = 2.0mA			
Breakdown Voltage	B _V			V	I _{CE} = 1 mA			
		Collector to Emitter	B _V CEO	40	V	I _{CB} = 100 μA		
		Collector to Base	B _V CB0	45	V	I _{EB} = 100 μA		
Emitter to Base	B _V EBO	7	V					
Off-State Leakage Current	I _{CE(OFF)}		100	nA	V _{CE} = 20V			
		Collector to Emitter		100	μA	V _{CE} = 20V, T _A = 100 °C		
		Collector to Base	I _{CB(OFF)}	10	nA	V _{CB} = 20V		
Input Forward Voltage	V _F	1.8	2.2	V	I _F = 10mA, T _A = -55°C	1		
		1.4	1.8	V	I _F = 10mA	1		
		1.2	1.6	V	I _F = 10mA, T _A = 100°C	1		
Input Reverse Current	I _R		100	μA	V _R = 2.0V			
Input to Output Resistance	r _{I-O}	10 ¹¹		Ω	V _{I-O} = ±1000Vdc		1	
Input to Output Capacitance	c _{I-O}		5	pF	V _{I-O} = 0V, f = 1 MHz		1	
Rise Time	t _r		25	μS	V _{CC} = 10V, R _L = 100 Ω	4		
Fall Time	t _f		25	μS	I _F = 5mA			

TYPICAL PERFORMANCE CURVES

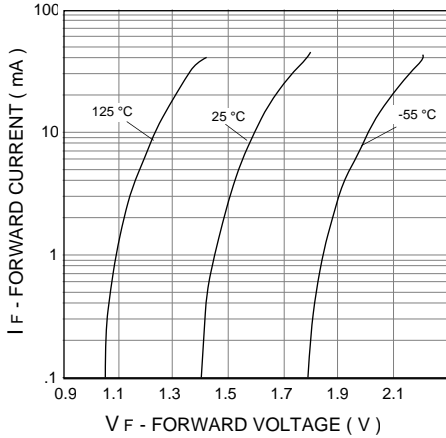


Fig. 1 - Diode Forward Characteristics

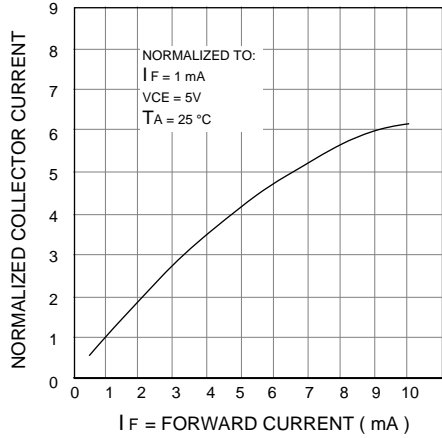


Fig. 2 - Normalized I_c vs. I_F

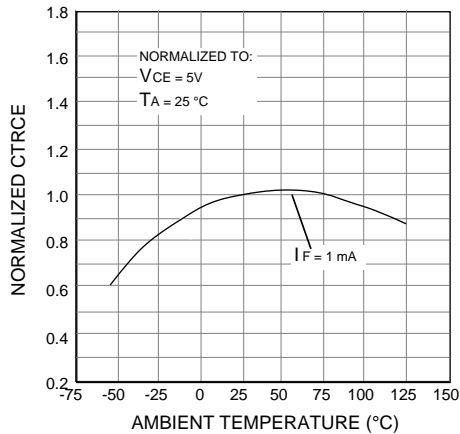


Fig. 3 - Normalized CTR vs. Temperature

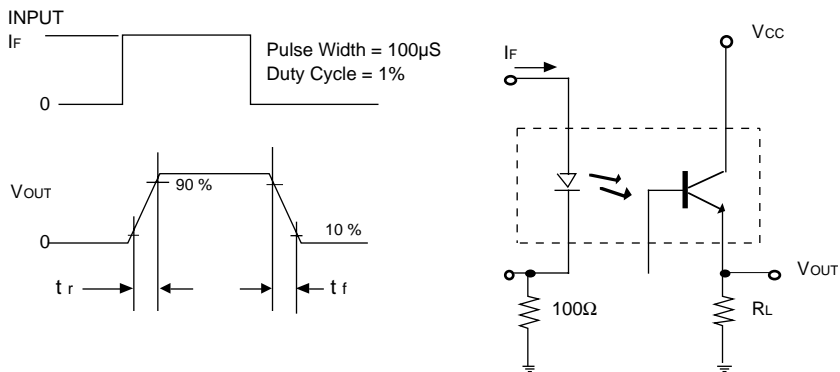


Fig. 4 - Switching Test Circuit