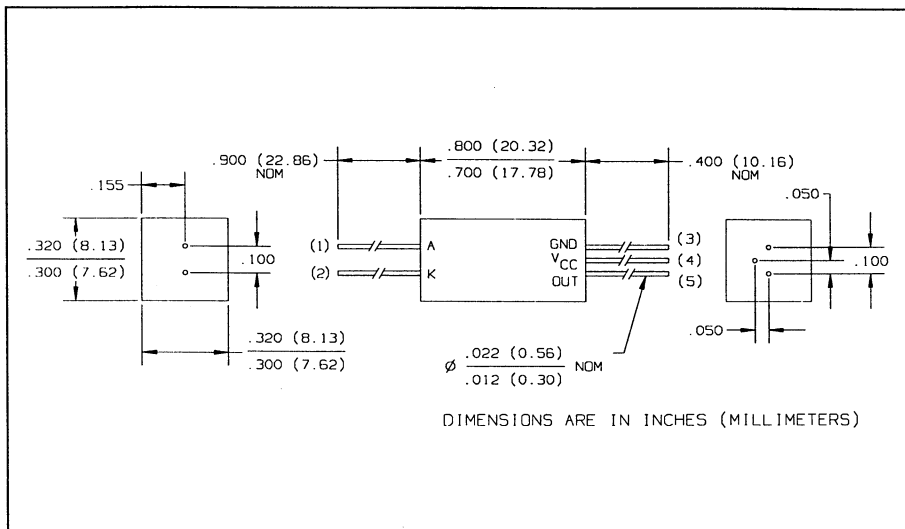
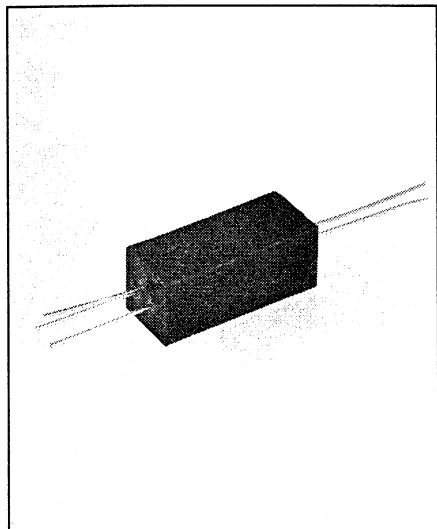


Hi-Rel Photologic® Optically Coupled Isolator Type OPI125TXV



Features

- High current transfer ratio
- 15 kV electrical isolation
- Direct TTL/LSTTL interface
- High noise immunity
- Data rates to 250 Kbaud
- Components processed to Optek's Hi-Rel screening program

Description

The OPI125TXV is an optically coupled isolator consisting of a gallium aluminum arsenide infrared light emitting diode (OP235TXV) and a monolithic integrated circuit which incorporates a photodiode, a linear amplifier and a Schmitt trigger on a single die (OPL800TXV) sealed in a high dielectric plastic housing. The device features TTL/LSTTL compatible logic level output which can drive up to 8 TTL loads directly without additional circuitry. Also featured are medium speed data rates to 250 Kbaud with typical rise and fall times of 70 nsec. This device is designed for applications requiring high voltage isolation between input and output. High reliability processing is patterned after MIL-PRF-19500 and MIL-STD-883. Typical screening and lot acceptance tests are provided on page 13-4.

Absolute Maximum Ratings ($T_A = 25^\circ \text{C}$ unless otherwise noted)

Input-to-Output Isolation Voltage	$\pm 15 \text{ kVDC}^{(1)}$
Operating Temperature Range	-65°C to $+125^\circ \text{C}$
Storage Temperature Range	-65°C to $+150^\circ \text{C}$
Soldering Temperature [1/16 in. (1.6 mm) from case for 5 sec, with soldering iron]	240°C

Input Diode

Forward DC Current	25 mA
Reverse Voltage	2.0 V
Power Dissipation	200 mW ⁽²⁾

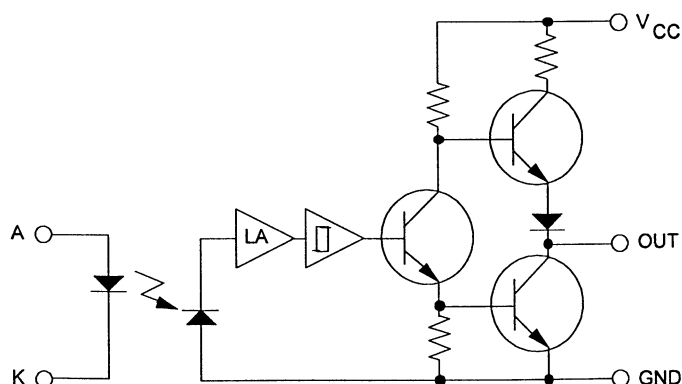
Output Photologic®

Supply Voltage, V_{CC} (not to exceed 3 seconds)	+10.0 V
Duration of Output Short to V_{CC} or Ground	1.00 sec.
Power Dissipation	200 mW ⁽³⁾

Notes:

- (1) Measured with input leads shorted together and output leads shorted together in air with a maximum relative humidity of 50%. If suitably encapsulated or oil immersed, the isolation voltage is increased to at least 25 kV.
- (2) Derate linearly $2.00 \text{ mW}/^\circ \text{C}$ above 25°C .
- (3) Derate linearly $2.0 \text{ mW}/^\circ \text{C}$ above 25°C .

OPI125TXV Schematic



Type OPI125TXV

Electrical Characteristics ($T_A = 25^\circ \text{C}$ unless otherwise noted)

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
Input Diode						
V_F	Forward Voltage ⁽⁵⁾	0.90	1.25	1.50	V	$I_F = 10.0 \text{ mA}$
		1.00	1.45	1.70	V	$I_F = 10.0 \text{ mA}, T_A = -55^\circ \text{C}$
		0.70	1.10	1.30	V	$I_F = 10.0 \text{ mA}, T_A = 100^\circ \text{C}$
I_R	Reverse Current		0.1	10	μA	$V_R = 2.0 \text{ V}$
Photologic[®]						
V_{CC}	Operating Supply Voltage	4.8		5.2	V	
I_{CC}	Supply Current		7.0	15.0	mA	$V_{CC} = 5.2 \text{ V}, I_F = 0 \text{ or } 7.5 \text{ mA}$
Coupled						
$I_{F(+)}$	LED Positive-Going Threshold Current ⁽⁵⁾			7.5	mA	$V_{CC} = 5.0 \text{ V}$
				7.5	mA	$V_{CC} = 5.0 \text{ V}, T_A = -55^\circ \text{C}$
				7.5	mA	$V_{CC} = 5.0 \text{ V}, T_A = 100^\circ \text{C}$
$I_{F(+)} / I_{F(-)}$	Hysteresis Ratio		2.0			
V_{OL}	Low Level Output Voltage			0.40	V	$V_{CC} = 4.8 \text{ V}, I_{OL} = 13.0 \text{ mA}, I_F = 0$
V_{OH}	High Level Output Voltage	2.4			V	$V_{CC} = 4.8 \text{ V}, I_{OH} = -800 \mu\text{A}, I_F = 7.5 \text{ mA}$
I_{OS}	Short Circuit Output Current	-30.0		-120	mA	$V_{CC} = 5.2 \text{ V}, I_F = 7.5 \text{ mA}, \text{Output} = \text{GND}$
V_{IOS}	Isolation Voltage (Input-to-Output)	15.0			kV	See Note 1
t_r, t_f	Output Rise Time and Fall Time		70.0	100	ns	$V_{CC} = 5.0 \text{ V}, T_A = 25^\circ \text{C}, I_F = 0 \text{ or } 10.0 \text{ mA}$
t_{PLH}, t_{PHL}	Propagation Delay, Low to High & High to Low		5.0	10.0	μs	$I_F = 10.0 \text{ kHz}, \text{DC} = 50\%, R_L = 8 \text{ TTL Loads}$

(4) Methanol or isopropanol are recommended as cleaning agents.

(5) Measurement is taken during the last 500 μs of a single 1.0 ms test pulse. Heating due to increased pulse rate or pulse width can cause change in measurement results.

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