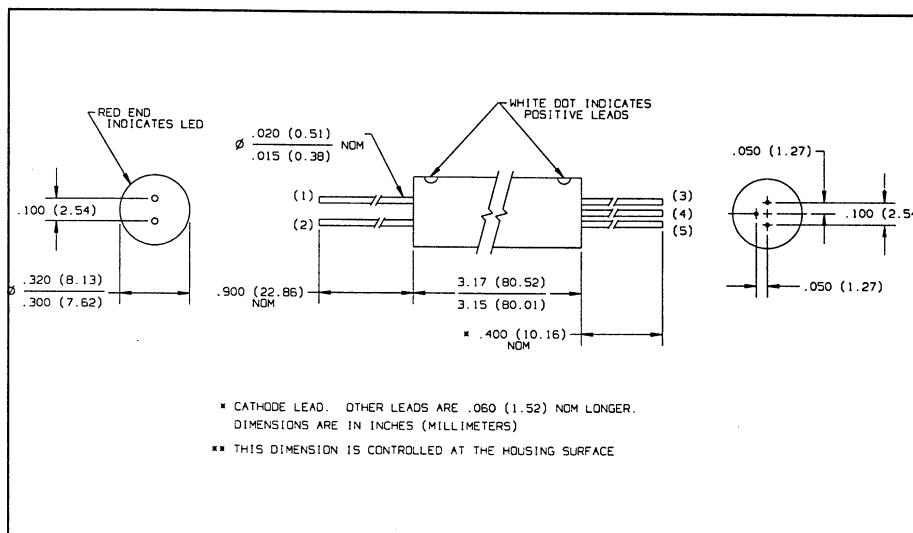
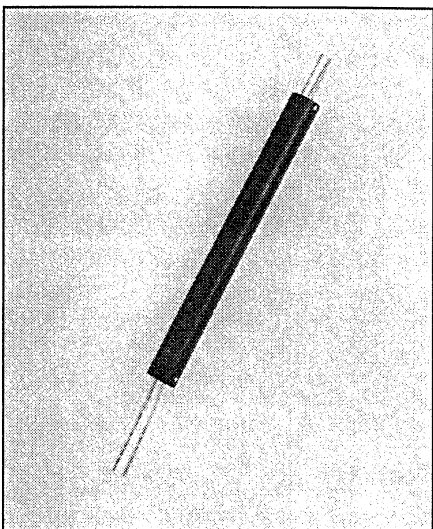


Optically Coupled Isolators

Types OPI150TX, OPI150TXV



Features

- High current transfer ratio
- 50kV electrical isolation
- Base contact lead for conventional transistor biasing
- Components processed to Optek's screening program patterned after MIL-PRF-19500 for TX and TXV devices.

Description

The OPI150TX and OPI150TXV are optically coupled isolators, consisting of a gallium aluminum arsenide infrared light emitting diode component (OP235TX or OP235TXV) and optically coupled to an NPN silicon phototransistor component (OP804TX or OP804TXV) by means of a light pipe and sealed in a high dielectric plastic housing. This series is designed for applications requiring very high voltage isolation between input and output.

High reliability processing is performed in accordance with MIL-PRF-19500 for both the infrared light emitting diode and the NPN silicon phototransistor at the component level. 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 Voltage	$\pm 50\text{ kVDC}^{(1)}$
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Operating Temperature Range	-65°C to $+125^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]	240°C

Input Diode

Continuous Forward Current	100 mA
Reverse Voltage	2.0 V
Power Dissipation	200 mW ⁽²⁾

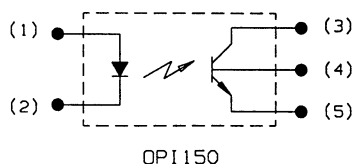
Output Photosensor

Continuous Collector Current	50 mA
Collector-Emitter Voltage	50 V
Emitter-Base Voltage	7.0 V
Collector-Base Voltage	50 V
Power Dissipation	250 mW ⁽³⁾

Notes:

- (1) Measured with input and output leads shored together in air with maximum relative humidity of 50%.
- (2) Derate linearly $2.00\text{ mW}/^\circ\text{C}$ above 25°C .
- (3) Derate linearly $2.50\text{ mW}/^\circ\text{C}$ above 25°C .
- (4) Methanol or isopropanol are recommended as cleaning agents.

Schematic



Types OPI150TX, OPI150TXV

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⁾	1.0	1.4	1.7	V	$I_F = 30 \text{ mA}$
		1.2	1.6	1.9	V	$I_F = 30 \text{ mA}, T_A = -55^\circ \text{C}$
		0.9	1.15	1.5	V	$I_F = 30 \text{ mA}, T_A = 100^\circ \text{C}$
I_R	Reverse Current		0.1	10	μA	$V_R = 2.0 \text{ V}$
Output Photosensor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50	80		V	$I_C = 1.0 \text{ mA}, I_B = 0, I_F = 0$
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	7.0	110		V	$I_E = 100 \mu\text{A}, I_C = 0, I_F = 0$
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	50	10.0		V	$I_C = 100 \mu\text{A}, I_E = 0, I_F = 0$
I_{CEO}	Collector-Emitter Dark Current		0.2	100	nA	$V_{CE} = 10.0 \text{ V}, I_B = 0, I_F = 0$
			10	100	μA	$V_{CE} = 10.0 \text{ V}, I_B = 0, I_F = 0, T_A = 100^\circ \text{C}$
I_{CBO}	Collector-Base Dark Current		0.1	10	nA	$V_{CB} = 10.0 \text{ V}, I_E = 0, I_F = 0$
Coupled						
$I_{C(ON)}$	On-State Collector Current ⁽⁵⁾	1.0			mA	$V_{CE} = 5 \text{ V}, I_B = 0, I_F = 10 \text{ mA}$
		0.6			mA	$V_{CE} = 5 \text{ V}, I_B = 0, I_F = 10 \text{ mA}, T_A = -55^\circ \text{C}$
		0.6			mA	$V_{CE} = 5 \text{ V}, I_B = 0, I_F = 10 \text{ mA}, T_A = 100^\circ \text{C}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.20	0.30	V	$I_C = 1.0 \text{ mA}, I_B = 0, I_F = 16.0 \text{ mA}$
V_{ISO}	Isolation Voltage (Input-to-Output)	50.0			kV	See Note 1
t_r	Output Rise Time		8.0	15.0	μs	$V_{CC} = 10.0 \text{ V}, I_C = 2.0 \text{ mA}, R_L = 100 \Omega$
t_f	Output Fall time		8.0	15.0	μs	$V_{CC} = 10.0 \text{ V}, I_C = 2.0 \text{ mA}, R_L = 100 \Omega$

(5) Measurement is taken during 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.

HI-REL OPTO
COMPONENTS

Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396