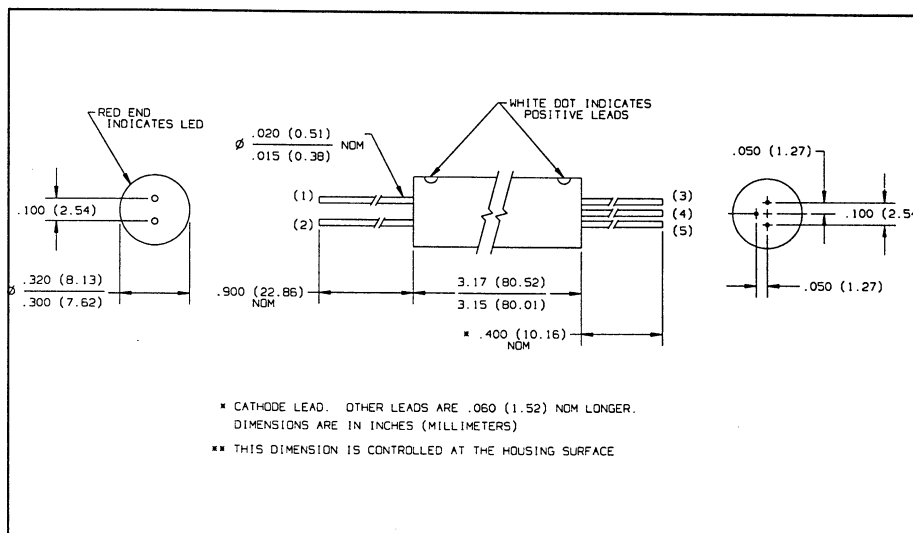
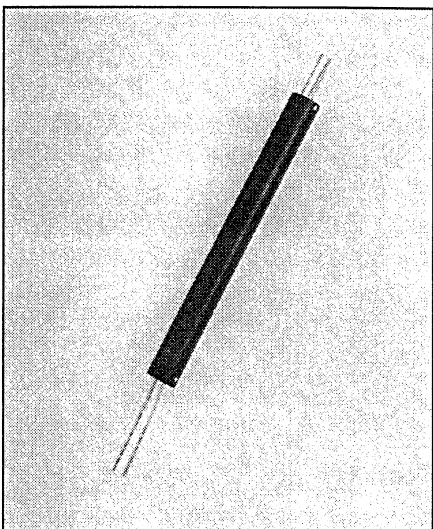


Optically Coupled Isolators

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⁾

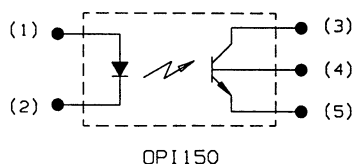
Output Photosensor

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.

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