High Reliability Optically Coupled Isolator

OPI150TX, OPI150TXV

Features:

- High current transfer ratio
- 50 kV electrical isolation
- Base contact lead for conventional transistor biasing
- TX and TXV devices processed to MIL-PRF-19500

Description:

Each **OPI150TX** and **OPI150TXV** is an optically coupled isolator that consists of a gallium aluminum arsenide infrared light emitting diode (OP235TX or OP235TXV) which is optically coupled to a NPN silicon phototransistor component (OP804TX or OP804TXV) by means of a light pipe and sealed in a high dielectric plastic housing.

These devices are designed for applications that require high voltage isolation between input and output.

TX and TXV device components are processed to OPTEK's military screening program patterned after MIL-PRF-19500.

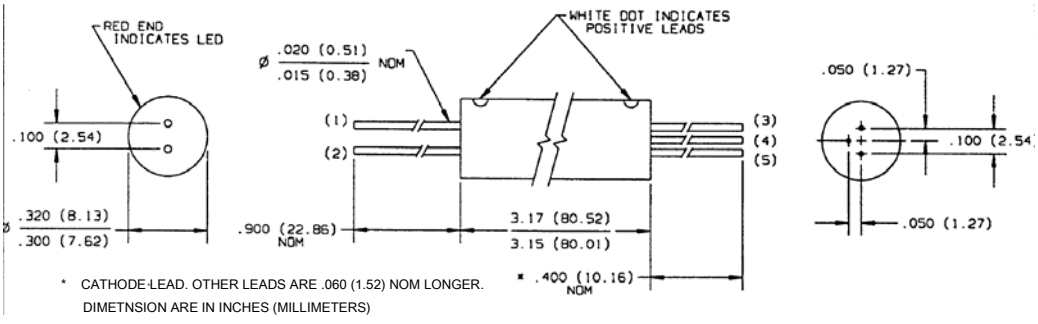
Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Contact your local representative or OPTEK for more information.

Applications:

- Requiring high voltage isolation between input and output
- Electrical isolation in dirty environments
- Industrial equipment
- Medical equipment
- Office equipment

Part Number	LED Peak Wavelength	Sensor	Isolation Voltage (,000)	CTR Min / Max	I_F (mA) Typ / Max	V_{CE} (Volts) Max	Lead Length / Spacing
OPI150TX	890 nm	Transistor	50	10 / NA	16 / 50	30	0.40" / 3.16"
OPI150TXV							



* CATHODE LEAD. OTHER LEADS ARE .060 (1.52) NOM LONGER.
DIMETNSION ARE IN INCHES (MILLIMETERS)

** THIS DIMENSION IS CONTROLLED AT THE HOUSING SURFACE

Pin#	LED	Pin#	Transistor
1	Anode	4	Collector
2	Cathode	3	Emitter

OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
www.optekinc.com | www.ttelectronics.com

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Operating Temperature Range	-65° C to +125° C
Storage Temperature Range	-65° C to +150° C
Input-to-Output Isolation Voltage(1)	±50 kVDC
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 seconds with soldering iron]	260° C

Input Diode

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

Output Photosensor

Continuous Collector Current	50 mA
Collector-Base Voltage	50 V
Collector-Emitter Voltage	50 V
Emitter-Base Voltage	7 V
Power Dissipation(3)	250 mW

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode (See OP236TX for additional information - for reference only)						
V_F	Forward Voltage(5)	1.00	1.40	1.70	V	I_F = 30 mA
		1.20	1.60	1.90		I_F = 30 mA, T_A = -55° C
		0.90	1.15	1.50		I_F = 30 mA, T_A = 100° C
I_R	Reverse Current	-	0.10	10	µA	V_R = 2 V
Output Phototransistor (See OP805TX for additional information - for reference only)						
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	50	10	-	V	I_C = 100 µA , I_E = 0, I_F = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50	80	-	V	I_C = 1 mA , I_B= 0, I_F = 0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	7	11	-	V	I_E = 100 µA , I_C = 0, I_F = 0
I_{CEO}	Collector-Emitter Dark Current	-	0.20	100	na	V_{CE} = 10 V, I_B = 0, I_F = 0
		-	10	100	µA	V_{CE} = 10 V, I_B = 0, I_F = 0, T_A = 100° C
I_{CBO}	Collector-Base Dark Current	-	0.10	10	nA	V_{CB} = 10 V, I_E = 0, I_F = 0

Notes:

(1) Measured with input leads shorted together and output leads shorted together in air with a maximum relative humidity of 50%.
(2) Derate linearly 2.00 mW/° C above 25° C.
(3) Derate linearly 2.50 mW/° C above 25° C.
(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.

OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
www.optekinc.com | www.ttelectronics.com

Electrical Characteristics (T_A = 25°C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Combined						
$I_{C(ON)}$	On-State Collector Current[1]	1.0	-	-	mA	V_{CE} = 5 V, I_B = 0, I_F = 10 mA
		0.6	-	-		V_{CE} = 5 V, I_B = 0, I_F = 10 mA, T_A = -55° C
		0.6	-	-		V_{CE} = 5 V, I_B = 0, I_F = 10 mA, T_A = 100° C
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	-	0.20	0.30	V	I_C = 1 mA, I_B = 0, I_F = 16 mA
V_{ISO}	Isolation Voltage (Input to Output)[2]	50	-	-	kV	See note 2.
t_r	Output Rise Time	-	8	15	µs	V_{CC} = 10 V, I_C = 2 mA, R_L = 100Ω
t_f	Output Fall Time	-	8	15		

Notes:

(1) 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.

(2) Measured with input leads shorted together and output leads shorted together in air with a maximum relative humidity of 50%.

OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
www.optekinc.com | www.ttelectronics.com