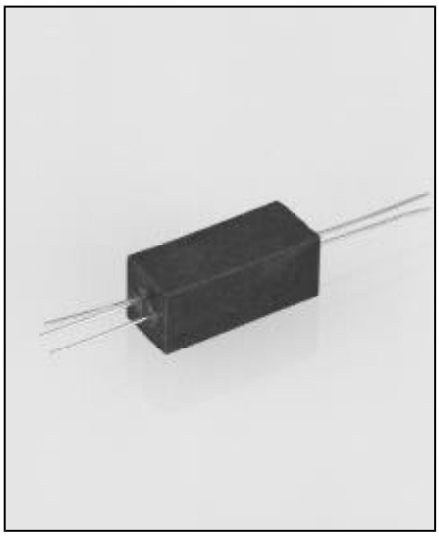
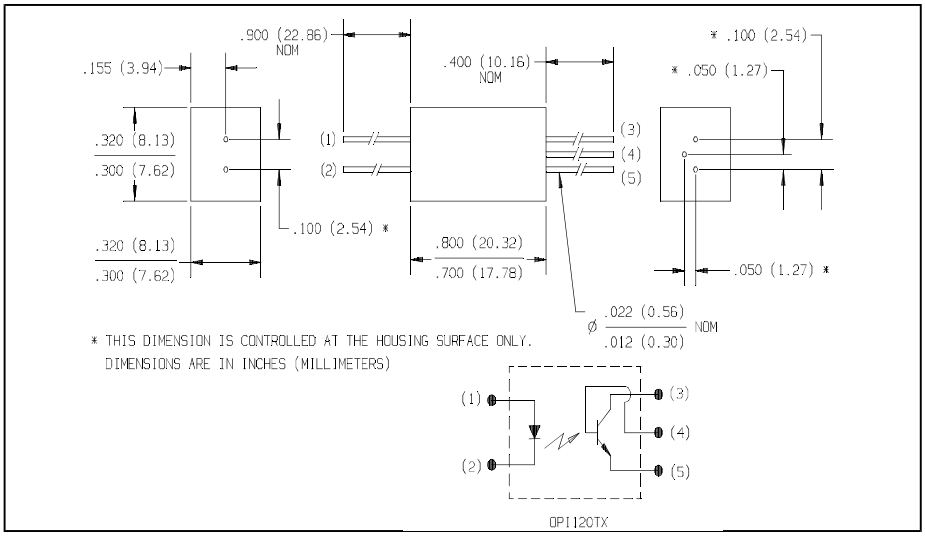
Hi-Rel Optically Coupled Isolator
Types OPI120TX, OPI120TXV





Features

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

Description

The OPI120TX and OPI120TXV are optically coupled isolators, each consisting of a gallium aluminum arsenide infrared light emitting diode (OP235TX or OP235TXV) and an NPN silicon phototransistor (OP804TX or OP804TXV) sealed in a high dielectric plastic housing. This series is designed for applications requiring high voltage isolation between input and output.

High reliability processing is performed at the component level in accordance with MIL-PRF-19500 for both the infrared light emitting diode and the NPN silicon phototransistor.Typical screening and lot acceptance tests are provided on page 13-4.

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

Input-to-Output Isolation Voltage . . . . . ± 15 kVDC(1)
Operating Temperature Range . . . . . -65° C to +125° C
Storage Temperature Range . . . . . -65° C to +150° C
Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] . . . . . 240° C

Input Diode

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

Output Photosensor

Continuous Collector Current . . . . . 50 mA
Collector-Base Voltage . . . . . 30 V
Collector-Emitter Voltage. . . . . 30 V
Emitter-Base Voltage . . . . . 5.0 V
Power Dissipation . . . . . 250 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 2.0 mW/° C above 25° C.
(3) Derate linearly 2.5 mW/° C above 25° C.
(4) Methanol or isopropanol are recommended as cleaning agents.

Types OPI120TX, OPI120TXV

Electrical Characteristics ($T_A = 25^o$ C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage(5)	1.00	1.40	1.70	V	I_F = 30 mA
		1.20	1.60	1.90	V	I_F = 30 mA, $T_A = -55^o$ C
		0.90	1.15	1.50	V	I_F = 30 mA, $T_A = 100^o$ C
I_R	Reverse Current		0.1	10	µA	V_R = 2 V
Output Phototransistor						
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	30	40		V	I_C = 100 µA, I_E = 0, I_F = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	40		V	I_C = 100 µA, I_B = 0, I_F = 0
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	5.0			V	I_E = 100 µA, I_C = 0, I_F = 0
$I_{C(OFF)}$	Collector-Emitter Dark Current		0.2	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, $T_A = 100^o$ C
$I_{CB(OFF)}$	Collector-Base Dark Current		0.1	10.0	nA	V_{CB} = 10 V, I_E = 0, I_F = 0
Coupled						
$I_{C(ON)}$	On-State Collector Current(5)	2.0			mA	V_{CE} = 5 V, I_B = 0, I_F = 10 mA
		1.2			mA	V_{CE} = 5 V, I_B = 0, I_F = 10 mA, $T_A = -55^o$ C
		1.2			mA	V_{CE} = 5 V, I_B = 0, I_F = 10 mA, $T_A = 100^o$ C
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.25	0.30	V	I_C = 2 mA, I_B = 0, I_F = 20 mA
V_{ISO}	Isolation Voltage (Input to Output)	15.0	30.0		kV	See Note 1
t_r	Output Rise Time		8.0	15.0	µs	V_{CC} = 10 V, I_C = 2 mA, R_L = 100 Ω
t_f	Output Fall Time		8.0	15.0	µs	V_{CC} = 10 V, I_C = 2 mA, R_L = 100 Ω

(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 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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