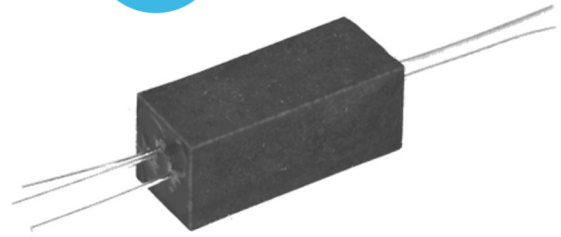


# Photologic® Optically Coupled Isolator

OPI127-032



## Features:

- 15 kV input-to-output isolation voltage
- Direct TTL/STTL interface
- High noise immunity
- Data rates to 250 KBit/s
- Hermetically sealed
- UL File No. E 58730\*

## Description:

The **OPI127-032** consists of an optically coupled isolator with a gallium arsenide infrared emitting diode coupled to a monolithic integrated circuit. This circuit incorporates a photodiode, a linear amplifier and a Schmitt trigger on a single silicon chip. For maximum long-term stability, both the diode and the Photologic® sensor are hermetically sealed in separate packages and then mounted in a high dielectric plastic housing.

This device features TTL/LSTTL compatible logic level output that can drive up to 8 TTL loads directly without additional circuitry. Also featured are medium-speed data rates to 250 KBit/s, with typical rise and fall times of 70 nanoseconds.

\*UL recognition is for 15 KV<sub>DC</sub> to 100° C.

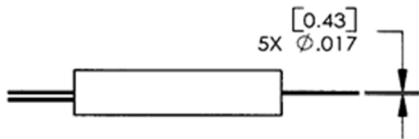
For more information, contact your local representative or OPTEK.

## Applications:

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

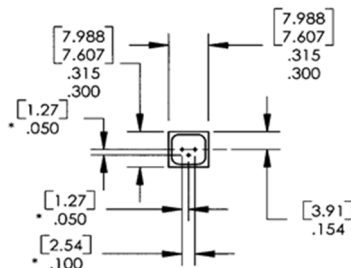
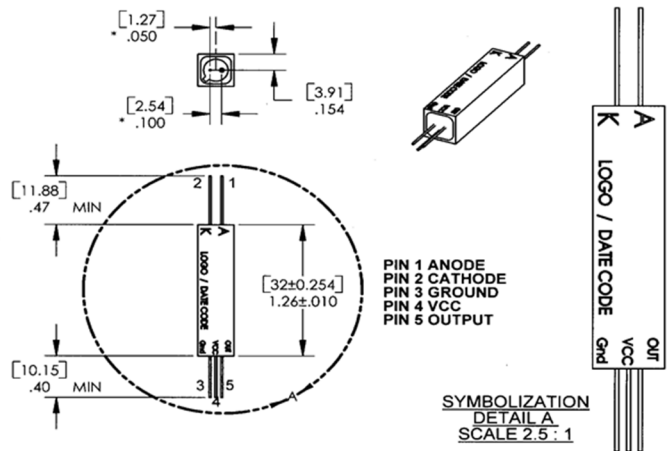
Ordering Information								
Part Number	LED Peak Wavelength	Sensor Photologic®	Isolation Voltage (,000)	t <sub>PLH</sub> / t <sub>PHL</sub> Typ (μs)	I <sub>F</sub> (mA) Typ / Max	V <sub>CE</sub> (Volts) Max	Lead Length / Spacing	Length
OPI127-032	890nm	Inverted Totem Pole	15	5 / 5	7.5 / 25	35.0	0.40" / 0.050"	1.26" [32 mm]

Pin #	LED	Pin #	Photologic®
1	Anode	5	Output
2	Cathode	4	Vcc
		3	Ground



### NOTES:

1. DIMENSIONS ARE IN INCHES [MM].
2. DIMENSIONS WITH \* ARE CONTROLLED AT HOUSING EGRESSION.



RoHS

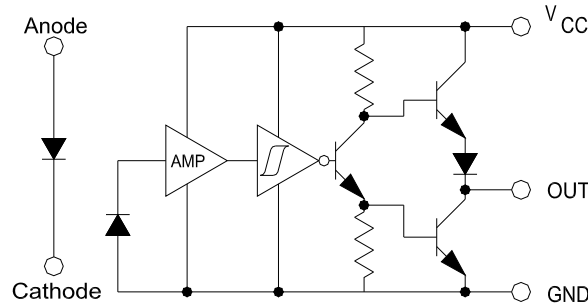
### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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### Electrical Specifications

**OPI127-032 - Inverted Totem Pole Output**



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

Storage Temperature	-55° C to +100° C
Operating Temperature	-55° C to +100° C
Supply Voltage, $V_{CC}$ (not to exceed 3 seconds)	+10 V
Input-to-Output Isolation Voltage <sup>(1)(2)</sup>	± 15 kVDC
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron) <sup>(3)</sup>	260° C
<b>Input Diode</b>	
Forward DC Current	25 mA
Reverse DC Voltage	2 V
Power Dissipation <sup>(4)</sup>	200 mW
<b>Output Photosensor</b>	
Output Photologic® Power Dissipation <sup>(5)</sup>	120 mW
Duration of Output Short to VCC or Ground	1.00 second
Voltage at Output Lead	35 V

Notes:

- (1) Measured with input and output leads shorted.
- (2) UL recognition is for 3500 Vrms at 60 Hz.
- (3) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (4) Derate linearly 1.33 mW/° C above 25° C.
- (5) Derate linearly 3.40 mW/° C above 90° C.

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### Electrical Specifications

#### Electrical Characteristics (T<sub>A</sub> = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Diode Input</b> (See OP130 and OP230 for additional information - for reference only)						
V <sub>F</sub>	Forward Voltage	-	-	1.5	V	I <sub>F</sub> = 10 mA, T <sub>A</sub> = 25° C
I <sub>R</sub>	Reverse Current	-	-	100	μA	V <sub>R</sub> = 2 V, T <sub>A</sub> = 25° C
I <sub>F</sub> (+)	LED Positive-Going threshold Current	-	-	7.5	mA	V <sub>CC</sub> = 5 V, T <sub>A</sub> = 25° C
I <sub>F</sub> (+)/I <sub>F</sub> (-)	Hysteresis Ratio	-	2.0	-	-	-
<b>Photologic® Output</b> (See OP800 and OP801 for additional information - for reference only)						
V <sub>CC</sub>	Operating Supply Voltage	4.5	-	5.5	V	-
I <sub>CC</sub>	Supply Current	-	-	20	mA	V <sub>CC</sub> = 5.5 V, I <sub>F</sub> = 0 or 7.5 mA
V <sub>OL</sub>	Low Level Output Voltage	-	-	0.40	V	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 13 mA, I <sub>F</sub> = 0 mA V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 13 mA, I <sub>F</sub> = 7.5 mA
V <sub>OH</sub>	High Level Output Voltage	2.4	-	-	V	V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = -800 μA, I <sub>F</sub> = 7.5 mA V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = -800 μA, I <sub>F</sub> = 0 mA
I <sub>OS</sub>	Short Circuit Output Current	-20	-	-120	mA	V <sub>CC</sub> = 5.5 V, I <sub>F</sub> = 7.5 mA, Output = GND V <sub>CC</sub> = 5.5 V, I <sub>F</sub> = 0 mA, Output = GND
I <sub>OH</sub>	High Level Output Current	-	-	100	μA	V <sub>CC</sub> = 4.5 V, V <sub>OH</sub> = 30 V, I <sub>F</sub> = 7.5 mA V <sub>CC</sub> = 4.5 V, V <sub>OH</sub> = 30 V, I <sub>F</sub> = 0 mA
t <sub>r</sub> , t <sub>f</sub>	Output Rise Time, Output Fall Time	-	100	-	ns	V <sub>CC</sub> = 5 V, T <sub>A</sub> = 25° C, I <sub>F</sub> = 0 or 10 mA, f = 10 kHz, D.C. = 50 %, RL = 8 TTL loads
t <sub>r</sub> , t <sub>f</sub>	Output Rise Time, Output Fall Time	-	100	-	ns	V <sub>CC</sub> = 5 V, T <sub>A</sub> = 25° C, I <sub>F</sub> = 0 or 10 mA, f = 10 kHz, D.C. = 50 %, RL = 8 TTL loads
t <sub>PLH</sub> , t <sub>PHL</sub>	Propagation Delay, Low-High, High-Low	-	5	-	μs	V <sub>CC</sub> = 5 V, T <sub>A</sub> = 25° C, I <sub>F</sub> = 0 or 10 mA, f = 10 kHz, D.C. = 50 %, RL = 8 TTL loads

#### Notes:

- (1) Measured with input and output leads shorted in air with a maximum relative humidity of 50 %. If suitably encapsulated or oil-immersed, the isolation voltage is increased to 25 kV minimum.

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