

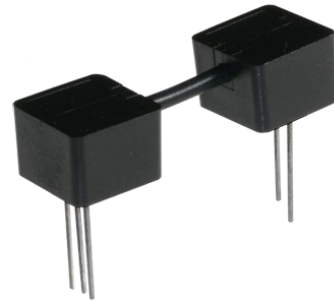
# Fiber Optic Isolator—Photologic® Sensor

## OPI1290 Series



### Features:

- Opaque plastic housings
- High noise immunity
- IR LED with Phototransistor Output
- 0.05" (1.27 mm) lead spacing
- Data Transfer through plastic fiber cable
- Isolation voltage 15 KV (OPI1290-032), Longer versions higher



### Description:

Each **OPI1290** consists of a IR LED and a Photologic® Totem-Pole output sensor, which are housed in separate opaque molded plastic housings and coupled by plastic fiber optic cable. The heavy-duty opaque housing shields the optical signal from dust, making this series of devices ideal for dust contaminated environments.

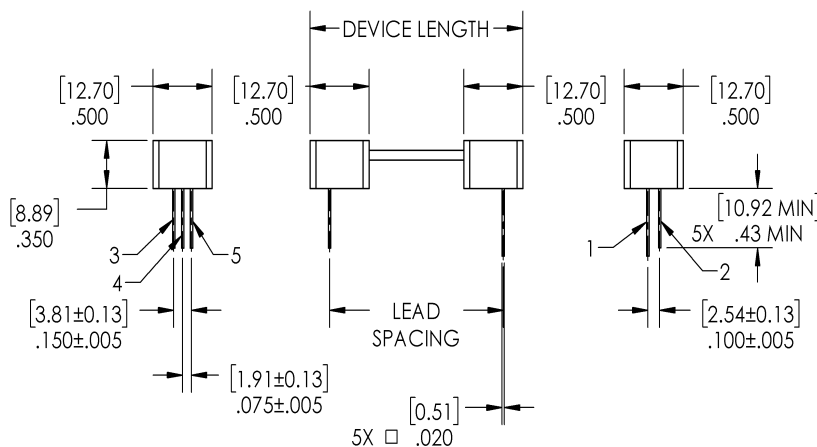
The **OPI1290** series are designed for applications that require high voltage isolation between input and output or signal communication over short distances. Depending on the length of the fiber optic cable, the emitter does not have to be optically in-line with the sensor. The isolation voltage is greater than 10 K volts per inch (Isolation distance between components) for all versions of the **OPI1290**.

Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information

### Applications:

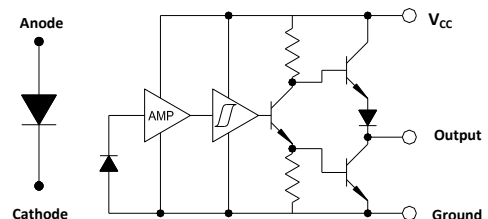
- Requiring High Voltage isolation between input and output
- Electrical isolation in dirty environments
- Industrial equipment
- Medical equipment
- Office equipment

| Ordering Information |                           |                            |                       |                     |                  |
|----------------------|---------------------------|----------------------------|-----------------------|---------------------|------------------|
| Part Number          | Lead Spacing<br>±.08" [2] | Device Length<br>±.08" [2] | Creepage<br>±.08" [2] | LED Peak Wavelength | LED Length       |
| OPI1290-032          | 1.42"<br>[36.1]           | 1.76"<br>[44.7]            | 1.40"<br>[35.6]       | 890 nm              | 0.43"<br>[11 mm] |
| OPI1290-066          | 2.78"<br>[70.6]           | 3.11"<br>[79.0]            | 2.76"<br>[70.1]       |                     |                  |
| OPI1290-080          | 3.30"<br>[83.8]           | 3.65"<br>[92.7]            | 3.28"<br>[83.3]       |                     |                  |



Tolerances are ± .010" [.25] unless otherwise stated dimensions are in inches [millimeters]

| PIN # | FUNCTION        |
|-------|-----------------|
| 1     | Anode           |
| 2     | Cathode         |
| 3     | V <sub>CC</sub> |
| 4     | Output          |
| 5     | Ground          |



### 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.

### Electrical Specifications

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

|                                                                                             |                       |
|---------------------------------------------------------------------------------------------|-----------------------|
| Storage Temperature Range (note 3)                                                          | -40° C to +80° C      |
| Operating Temperature Range (note 3)                                                        | -20° C to +75° C      |
| Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron] | 260° C <sup>(1)</sup> |
| Power Dissipation <sup>(2)</sup>                                                            | 100 mW                |

**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| SYMBOL                                                             | PARAMETER                                                                  | MIN  | TYP  | MAX  | UNITS            | TEST CONDITIONS                                                                                                                                  |
|--------------------------------------------------------------------|----------------------------------------------------------------------------|------|------|------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LED</b> (See OP240 for additional electrical information)       |                                                                            |      |      |      |                  |                                                                                                                                                  |
| $V_F$                                                              | On-State Collector Current                                                 | 1.2  | -    | 2.3  | V                | $I_F = 20\text{ mA}$                                                                                                                             |
| $I_R$                                                              | Collector-Dark Current                                                     | -    | -    | 80   | $\mu\text{A}$    | $V_R = 3.0\text{V}$                                                                                                                              |
| <b>Photologic® Sensor</b> - (See OP550 for additional information) |                                                                            |      |      |      |                  |                                                                                                                                                  |
| $V_{CC}$                                                           | Operating Supply Voltage                                                   | 4.5  | -    | 16   | V                | -                                                                                                                                                |
|                                                                    | Peak-to-Peak $V_{CC}$ Ripple Necessary to Cause False Triggering of Output | -    | -    | 2    | V                | $V_{CC} = 5\text{ V DC}$ , $f = \text{DC to } 50\text{ MHz}$                                                                                     |
| $I_{CC}$                                                           | Supply Current <sup>(4)</sup>                                              | -    | 8    | 15   | mA               | $E_E = 0$ or $3\text{ mW/cm}^2$ , $V_{CC} = 5.5\text{ V}$                                                                                        |
| $E_{ET(+)}$                                                        | Positive-Going Threshold Irradiance <sup>(2)</sup>                         | .25  | -    | 2.4  | $\text{mW/cm}^2$ | $V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$                                                                                                 |
| $E_{ET(+)} / E_{ET(-)}$                                            | Hysteresis Ratio                                                           | 1.50 | 2    | 2.5  | -                | -                                                                                                                                                |
| $V_{OH}$                                                           | Operating Supply Voltage                                                   | 2.1  | -    | -    | V                | $I_{OH} = -1\text{ }\mu\text{A}$ , $E_E = 1\text{ mW/cm}^2$                                                                                      |
| $V_{OL}$                                                           | Low Level Output Voltage                                                   | -    | 0.25 | 0.4  | V                | $V_{CC} = 4.5\text{ V}$ , $I_{OL} = 12.8\text{ mA}$ , $E_E = 0$                                                                                  |
| $I_{OS}$                                                           | Short Circuit Output Current                                               | -20  | -55  | -100 | mA               | $V_{CC} = 5.5\text{ V}$ , Output = GND, $E_E = 3\text{ mW/cm}^2$                                                                                 |
| $I_{OH}$                                                           | High Level Output Current <sup>(2)</sup>                                   | -    | 1    | 100  | $\mu\text{A}$    | $V_{CC} = 4.5\text{ V}$ , $V_{OH} = 30\text{ V}$ , $E_E = 3\text{ mW/cm}^2$                                                                      |
| $T_R$ & $T_F$                                                      | Output Rise & Fall Time                                                    | -    | 25   | 70   | ns               | $V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$ , $E_E = 0$ or $3\text{ mW/cm}^2$ , $f = 10\text{ kHz}$ , DC = 50%<br>RL = 8 TTL loads          |
| $tp_{EET(+)}$                                                      | Propagation Delay Positive-Going                                           | -    | 2.5  | 5.0  | $\mu\text{s}$    | $V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$ , $E_E = 0$ or $3\text{ mW/cm}^2$ , $R_L = 8\text{ TTL loads}$ , $f = 10\text{ kHz}$ , DC = 50% |
| $tp_{EET(-)}$                                                      | Propagation Delay Negative-Going                                           | -    | 2.5  | 5.0  | $\mu\text{s}$    | $V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$ , $E_E = 0$ or $3\text{ mW/cm}^2$ , $R_L = 360\text{ }\Omega$ , $f = 10\text{ kHz}$ , DC = 50%  |
| $t_{PLH}$ , $t_{PHL}$                                              | Propagation Delay (Low-High/High-Low)                                      | -    | 5.0  | -    | $\mu\text{s}$    | DC = 50%, $R_L = 10\text{ TTL Loads}$                                                                                                            |

**Notes:**

- (1) Derate linearly 2.5 mW/° C above 25° C for all devices in the OPL550, OPL551, OPL560, OPL561, OPL562 and OPL563 series.
- (2) Irradiance measurements are made with  $\lambda_i = 935\text{ nm}$ .
- (3) Storage and Operating temperature values are based on the plastic optical interface temperature ratings. Please reference UL1577 and UL file AVLvZ.E89328

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TT Electronics | OPTEK Technology  
1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200  
www.ttelectronics.com | sensors@ttelectronics.com



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**Наши контакты:**

**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331