

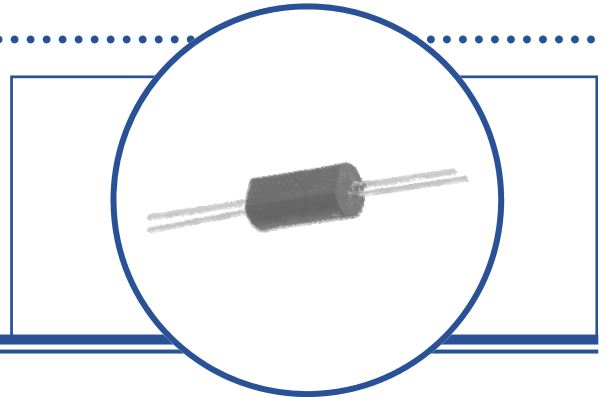
Optically Coupled Isolator

OPI110, OPI113, OPI1264 Series



Features:

- 10 kV electrical isolation
- Choice of phototransistor or photodarlington output
- Low-cost plastic housing
- UL recognized File No. E58730*



Description:

Each Optoisolator in this data sheet contains an infrared Light Emitting Diode (LED) and a NPN silicon Photosensor. The **OPI110** and **OPI1264** devices have 890 nm Light Emitting Diode (LED) and NPN phototransistor sensor, whereas the **OPI113** has a 890 nm LED and a photodarlington sensor. The devices are sealed in a precast opaque housing with an optically transmissive path between the LED and the photosensor.

The Optoisolators in this data sheet are UL approved under E 58730.

This series is designed for transmission of information between one power supply voltage and another where the potentials during surge conditions are not greater than the guaranteed isolation voltage.

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

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 | Isolation Voltage (.000) | CTR Min / Max | I _F (mA) Typ / Max | V _{CE} (Volts) Max | Lead Length / Spacing |
| OPI110 | 890 nm | Transistor | 10 | 12.5 / NA | 10 / 40 | 30 | 0.50" / 0.55" |
| OPI110A | | | | 25 / NA | | | |
| OPI110B | | | | 50 / 125 | | | |
| OPI110C | | | | 100 / NA | | | |
| OPI113 | | Photodarlington | | 50 / NA | 5 / 40 | | |
| OPI1264 | | Transistor | | 12.5 / NA | 10 / 40 | | |
| OPI1264A | | | | 25 / NA | | | |
| OPI1264B | | | | 50 / 125 | | | |
| OPI1264C | | | | 100 / NA | | | |



RoHS

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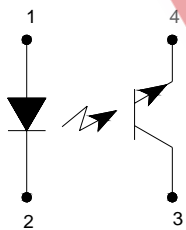
Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| | |
|--|-------------------|
| Storage Temperature ⁽¹⁾⁽²⁾ | -40° C to +100° C |
| Operating Temperature | -40° C to +85° C |
| Input-to-Output Isolation Voltage | ± 10 kVDC |
| Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron) ⁽³⁾ | 260° C |
| Input Diode | |
| Forward DC Current ⁽⁴⁾ | 40 mA |
| Reverse DC Voltage | 2 V |
| Power Dissipation ⁽⁵⁾ | 50 mW |
| Output Photosensor | |
| Collector-Emitter Voltage OPI110, OPI1264 OPI113 | 30 15 |
| Emitter-Collector Voltage | 5 |
| Power Dissipation ⁽⁶⁾ | 100 mW |

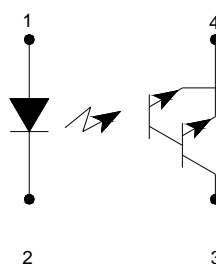
Notes:

- (1) Measured with input and output leads shorted. Typical input/output capacitance is 0.06 pF.
- (2) UL recognition is for 3500 VAC for one minute.
- (3) RMA flux is recommended. The duration can be extended to 10 seconds maximum when flow soldering.
- (4) Derate linearly 0.67 mA/°C above 25°C.
- (5) Derate linearly 0.83 mA/°C above 25°C.
- (6) Derate linearly 1.67 mA/°C above 25°C.

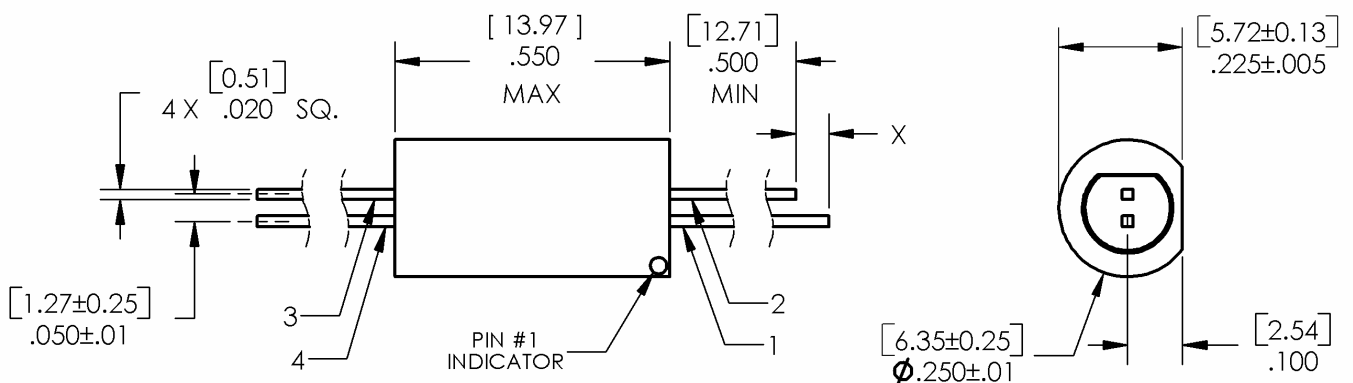
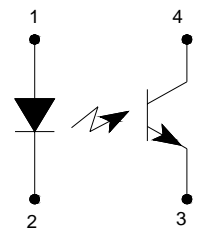
OPI110



OPI113



OPI1264



DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

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OPI110, OPI113, OPI1264 Series



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

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|--------|-----------|-----|-----|-----|-------|-----------------|
|--------|-----------|-----|-----|-----|-------|-----------------|

Input Diode (See OP265 for additional information - for reference only)

| | | | | | | |
|-------|-----------------|---|---|-----|---------------|----------------------|
| V_F | Forward Voltage | - | - | 1.6 | V | $I_F = 20\text{ mA}$ |
| I_R | Reverse Current | - | - | 100 | μA | $V_R = 2\text{ V}$ |

Output Photosensor (See OP505 for additional information - for reference only)

| | | | | | | |
|---------------|--|----------|--------|------------|----|--|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage OPI110, OPI1264 OPI113 | 30 15 | - - | - - | V | $I_C = 100\ \mu\text{A}$ $I_C = 100\ \mu\text{A}, I_F = 0$ |
| $V_{(BR)ECO}$ | Emitter-Collector Breakdown Voltage OPI110, OPI113 OPI1264 | 5 - | - - | - - | V | $I_E = 100\ \mu\text{A}, I_F = 0$ $I_E = 100\ \mu\text{A}$ |
| I_{CEO} | Collector-Emitter Dark Current OPI110, OPI1264 OPI113 | - - | - - | 100 100 | nA | $V_{CE} = 15\text{ V}, E_E = 0$ $V_{CE} = 10\text{ V}, E_E = 0$ |

Coupled

| | | | | | | |
|---------------|---|---|------------------------------|--------------------|------|--|
| I_C/I_F | DC Current Transfer Ratio OPI110, OPI1264 OPI110A, OPI1264A OPI110B, OPI1264B OPI110C, OPI1264C OPI113 | 12.5 25.0 50.0 100. 0 50.0 | - - - - - 400 | - - 125 - | % | $I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$ $I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$ $I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$ $I_F = 10\text{ mA}, V_{CE} = 5\text{ V}$ $I_F = 5\text{ mA}, V_{CE} = 2\text{ V}$ |
| $V_{CE(SAT)}$ | Collector Saturation Voltage OPI110, OPI1264 OPI113 | - - | - - | 0.4 1.2 | V | $I_F = 10\text{ mA}, I_C = 1.6\text{ mA}$ $I_F = 10\text{ mA}, I_C = 5\text{ mA}$ |
| I_{CEO} | Collector-Emitter Dark Current OPI110, OPI1264 OPI113 | - - | - - | 200 100 | nA | $V_{CE} = 20\text{ V}, I_F = 0$ $V_{CE} = 10\text{ V}, I_F = 0$ |
| V_{ISO} | Isolation Voltage | 10 | - | - | kVDC | See Note 1. |

Notes:

- (1) Measured with input and output leads shorted. Typical input/output capacitance is 0.06 pF.

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