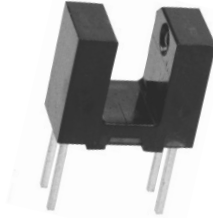


Slotted Optical Switch

OPB610, OPB620, OPB621

Obsolete (OPB611)



Features:

- Non-contact switching
- Printed circuit board mounting
- Enhanced signal to noise ratio
- PIN photodiode sensor for high speed (OPB621)
- Lead centers: 0.275" (OPB61_) / 0.320" (OPB62_)

Description:

The **OPB610** and **OPB620** slotted optical switches consist of an infrared emitting diode and an NPN silicon phototransistor with an enhanced low current roll-off to improve contrast ratio and immunity to background irradiance.

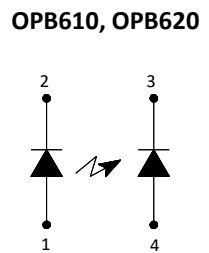
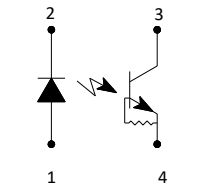
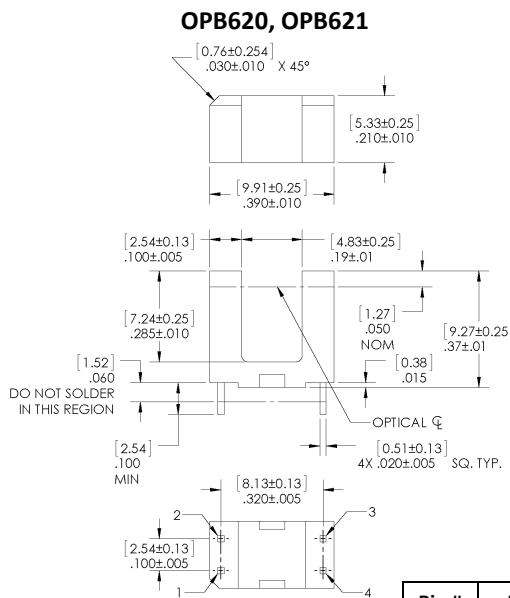
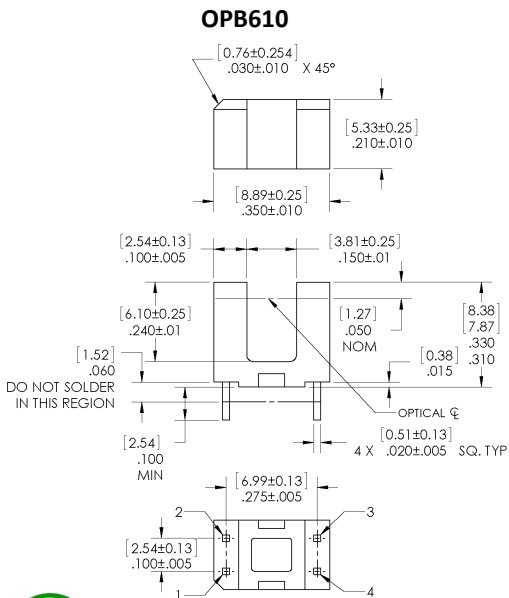
The **OPB621** slotted optical switch consists of an infrared emitting diode and a PIN photodiode with a polysulfone housing that is opaque to visible light, but transmissive to infrared. The low t_r/t_f of the PIN photodiode is ideal for high-speed operation. The sensitivity to ambient radiation is minimized.

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

Applications:

- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

| Ordering Information | | | | |
|----------------------|---------------------|----------------|--------------------|---------------------------|
| Part Number | LED Peak Wavelength | Sensor | Slot Width / Depth | Aperture Emitter / Sensor |
| OPB610 | 890 nm | Rbe Transistor | 0.150" / 0.240" | 0.06" / 0.06" |
| OPB611 Obsolete | | Diode | | |
| OPB620 | 890 nm | Rbe Transistor | 0.190" / 0.285" | 0.100" / 0.320" |
| OPB621 | | Diode | | |



OPB621

| Pin # | LED | Pin # | Transistor / Diode |
|-------|---------|-------|---------------------|
| 1 | Anode | 4 | Emitter / Anode |
| 2 | Cathode | 3 | Collector / Cathode |



RoHS

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

General Note

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Slotted Optical Switch

OPB610, OPB620, OPB621

Obsolete (OPB611)



Electrical Specifications

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

| | |
|---|-------------------|
| Storage and Operating Temperature Range | -40° C to +100° C |
| Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron] ⁽¹⁾ | 260° C |

Input Diode

| | |
|---|--------|
| Forward DC Current | 50 mA |
| Peak Forward Current (1 μs pulse width, 300 pps) | 3 A |
| Reverse DC Voltage | 3 V |
| Power Dissipation ⁽²⁾ | 100 mW |

Output Photodiode (OPB621)

| | |
|---------------------------|--------|
| Reverse Breakdown Voltage | 60 V |
| Power Dissipation | 100 mW |

Output Phototransistor (OPB610, OPB620)

| | |
|----------------------------------|--------|
| Collector-Emitter Voltage | 24 V |
| Emitter-Reverse Current | 10 mA |
| Collector DC Current | 30 mA |
| Power Dissipation ⁽³⁾ | 200 mW |

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Slotted Optical Switch

OPB610, OPB620, OPB621

Obsolete (OPB611)



Electrical Specifications

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

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

Input Diode (See OP240 for additional information)

| | | | | | | |
|-------|---|------|---|------|---------------|----------------------|
| V_F | Forward Voltage OPB610, OPB620 OPB621 | - | - | 1.6 | V | $I_F = 10\text{ mA}$ |
| | | 1.15 | - | 1.45 | V | $I_F = 10\text{ mA}$ |
| I_R | Reverse Current | - | - | 100 | μA | $V_R = 3\text{ V}$ |

Output Phototransistor (OPB610, OPB620) (See OP505 for additional information)

| | | | | | | |
|---------------|-------------------------------------|-----|---|-----|----|-----------------------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | 24 | - | - | V | $I_C = 100\ \mu\text{A}$ |
| BV_{ECO} | Emitter-Collector Breakdown Voltage | 0.4 | - | - | V | $I_{CE} = 100\ \mu\text{A}$ |
| I_{CEO} | Collector-Emitter Dark Current | - | - | 100 | nA | $V_{CE} = 5\text{ V}$ |

Output Photodiode (OPB621) (See OP999 for additional information)

| | | | | | | |
|-------------|---------------------------|----|---|-----|----|---|
| I_D | Dark Current | - | - | 65 | nA | $V_R = 30\text{ V}, E_E = 0\text{ mW}$ |
| $V_{(BR)R}$ | Reverse Breakdown Voltage | 60 | - | - | V | $I_R = 100\ \mu\text{A}, E_E = 0\text{ mW}$ |
| V_F | Forward Voltage | - | - | 1.0 | V | $I_F = 1\text{ mA}, E_E = 0\text{ mW}$ |

Combined

| | | | | | | |
|-------------|--|---|---|-----|---------------|--|
| V_{SAT} | Collector-Emitter Saturation Voltage OPB610, OPB620 | - | - | 0.4 | V | $I_F = 5\text{ mA}, I_C = 100\ \mu\text{A}$ |
| $I_{C(ON)}$ | On-State Collector/Diode Current OPB610, OPB620 OPB621 | 1 | - | - | mA | $I_F = 5\text{ mA}, V_{CE} = 5\text{ V}$ (gap unblocked) $V_R = 5\text{ V}, I_F = 20\text{ mA}$ (gap unblocked) |
| | | 9 | - | 90 | μA | |

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum of 20 grams force may be applied to leads when soldering.
- (2) Derate linearly 1.33 mW/ $^\circ\text{C}$ above 25 $^\circ\text{C}$.
- (3) Derate linearly 2.0 mW/ $^\circ\text{C}$ above 25 $^\circ\text{C}$.
- (4) Plastic body is soluble in chlorinated hydrocarbons and keytones. It is recommended that a trial exposure to flux & cleaning chemicals is performed to ensure sensor is not damaged.

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Slotted Optical Switch

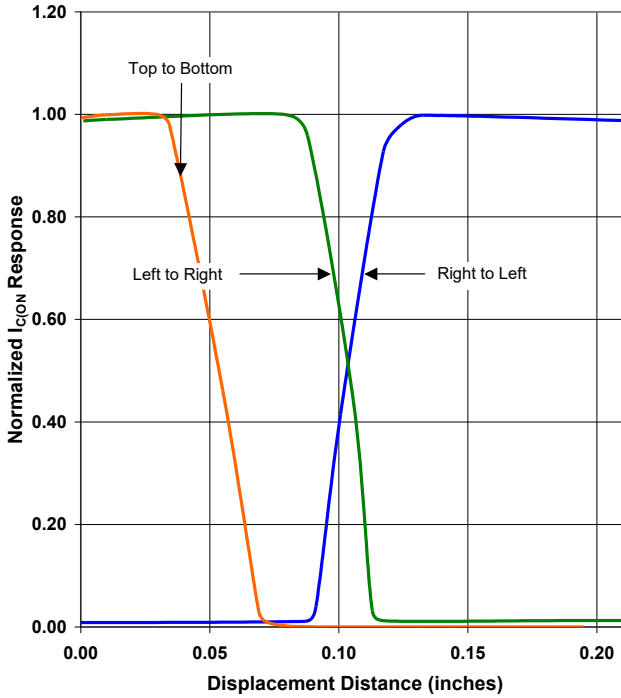
OPB610, OPB620, OPB621

Obsolete (OPB611)

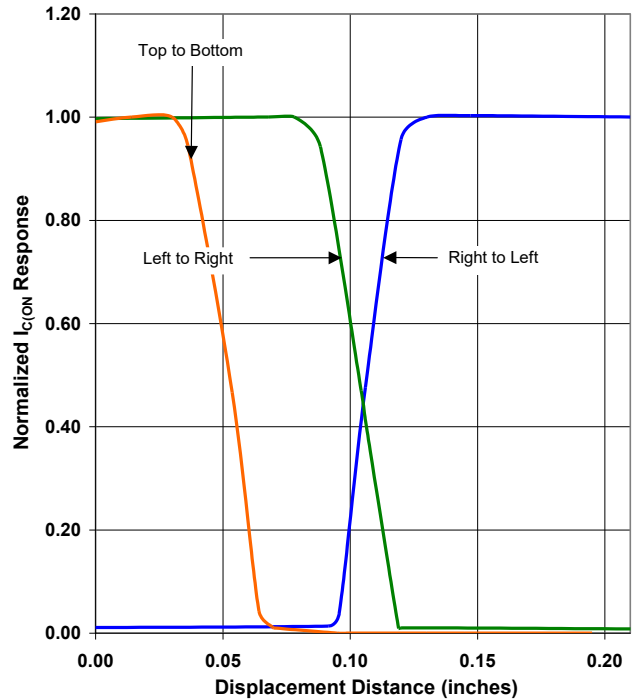


Performance

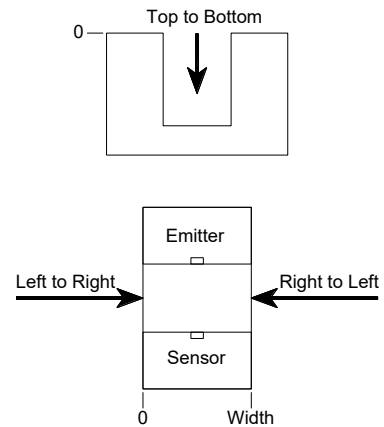
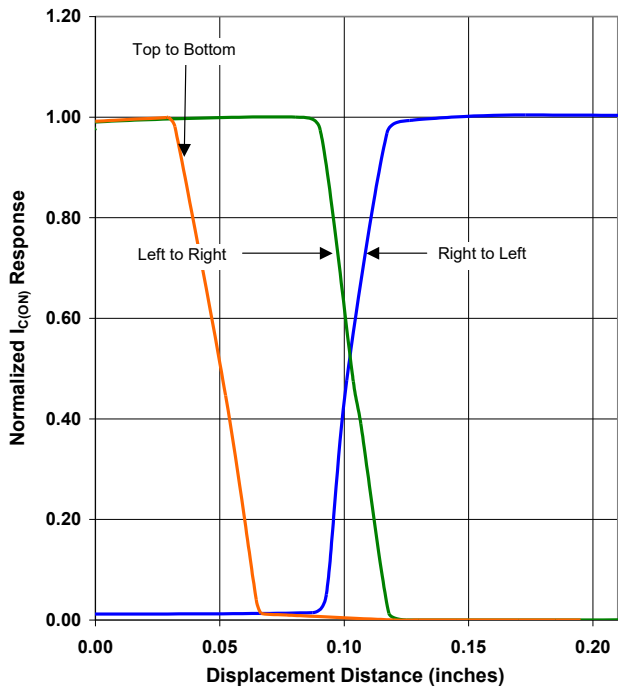
OPB610 - Flag Next to Emitter



OPB610 - Flag Next to Sensor



OPB610 - Flag in Middle of Slot



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