



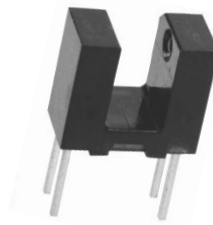
# Slotted Optical Switch



## OPB610, OPB611, OPB620, OPB621

### Features:

- Non-contact switching
- Printed circuit board mounting
- Enhanced signal to noise ratio
- PIN photodiode sensor for high speed (OPB611, 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 **OPB611**, **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.

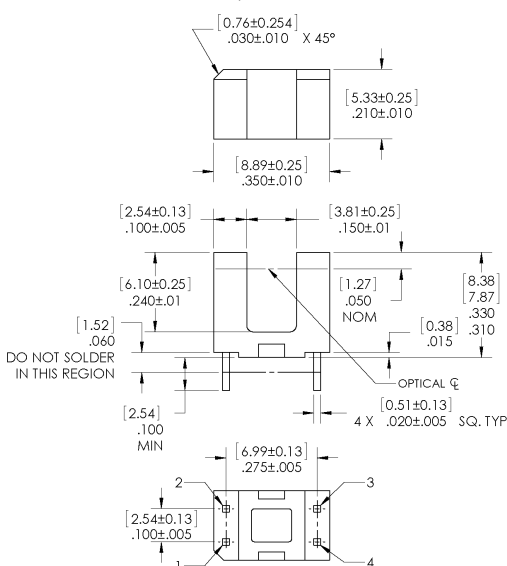
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

### Applications:

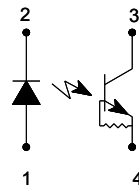
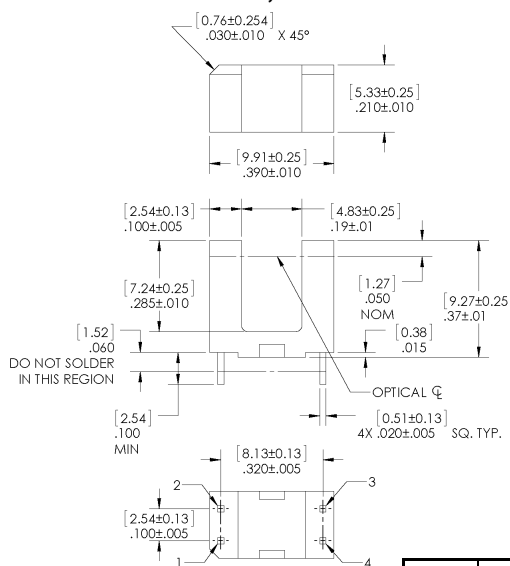
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

| Ordering Information |                     |                |                    |                           |                       |
|----------------------|---------------------|----------------|--------------------|---------------------------|-----------------------|
| Part Number          | LED Peak Wavelength | Sensor         | Slot Width / Depth | Aperture Emitter / Sensor | Lead Length / Spacing |
| OPB610               | 890 nm              | Rbe Transistor | 0.150" / 0.240"    | 0.06" / 0.06"             | 0.100" / 0.275"       |
| OPB611               |                     | Diode          |                    |                           |                       |
| OPB620               |                     | Rbe Transistor | 0.190" / 0.285"    |                           | 0.100" / 0.320"       |
| OPB621               |                     | Diode          |                    |                           |                       |

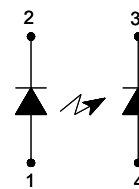
### OPB610, OPB611



### OPB620, OPB621



### OPB610, OPB620



### OPB611, OPB621

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



RoHS

DIMENSIONS ARE IN:  
[ MILLIMETERS ]  
INCHES

### 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.

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

# Slotted Optical Switch

OPB610, OPB611, OPB620, OPB621



## 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 (1.6mm) from the case for 5 sec. with soldering iron] <sup>(1)</sup> | 260° C           |

### Input Diode

|   |        |
|---|--------|
| Forward DC Current  | 50 mA  |
| Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps) | 3 A    |
| Reverse DC Voltage  | 3 V    |
| Power Dissipation <sup>(2)</sup>                            | 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 <sup>(3)</sup> | 200 mW |

#### 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.

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

### 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<br>OPB610, OPB620<br>OPB621 | -    | - | 1.6  | V             | $I_F = 10\text{ mA}$ |
|       |   | 1.15 | - | 1.45 | V             | $I_F = 10\text{ mA}$ |
| $I_R$ | Reverse Current                             | -    | - | 100  | $\mu\text{A}$ | $V_R = 3\text{ V}$   |

**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 (OPB611, 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<br>OPB610, OPB620               | - | - | 0.4 | V             | $I_F = 5\text{ mA}, I_C = 100\ \mu\text{A}$              |
| $I_{C(ON)}$ | On-State Collector/Diode Current<br>OPB610, OPB620<br>OPB611, OPB621 | 1 | - | -   | mA            | $I_F = 5\text{ mA}, V_{CE} = 5\text{ V}$ (gap unblocked) |
|             |  | 9 | - | 90  | $\mu\text{A}$ | $V_R = 5\text{ V}, I_F = 20\text{ mA}$ (gap unblocked)   |

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 ketones. It is recommended that a trial exposure to flux & cleaning chemicals is performed to ensure sensor is not damaged.

**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.

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

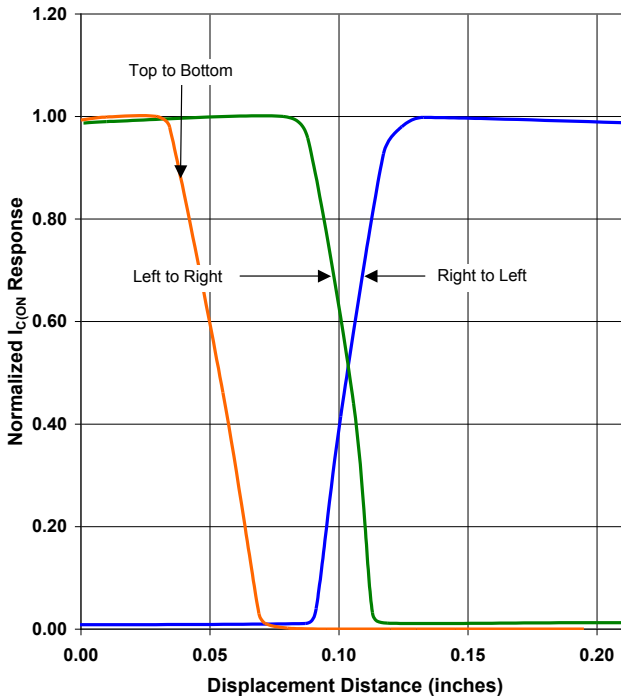
# Slotted Optical Switch

OPB610, OPB611, OPB620, OPB621

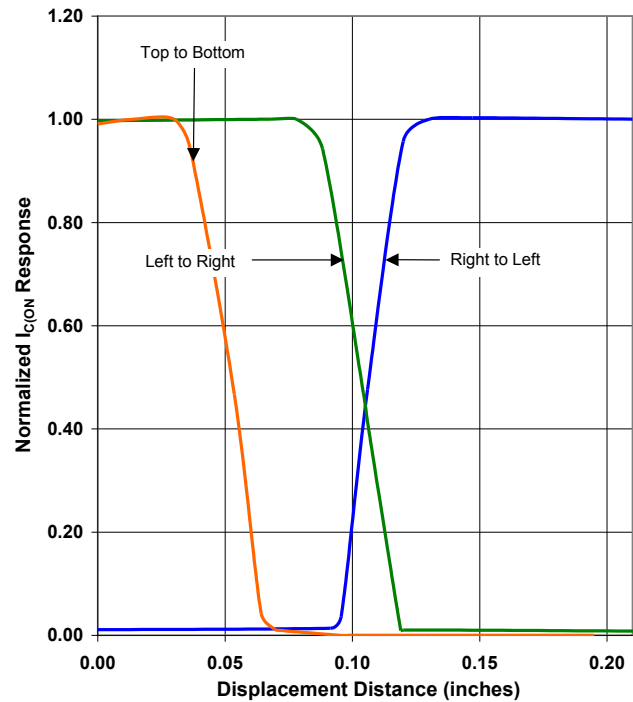


## Performance

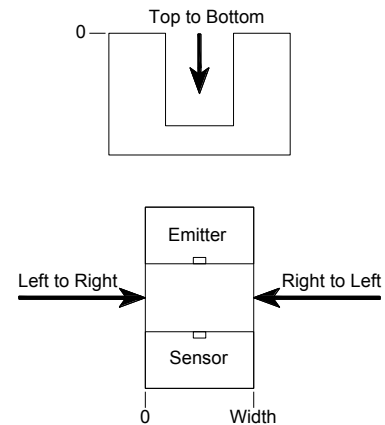
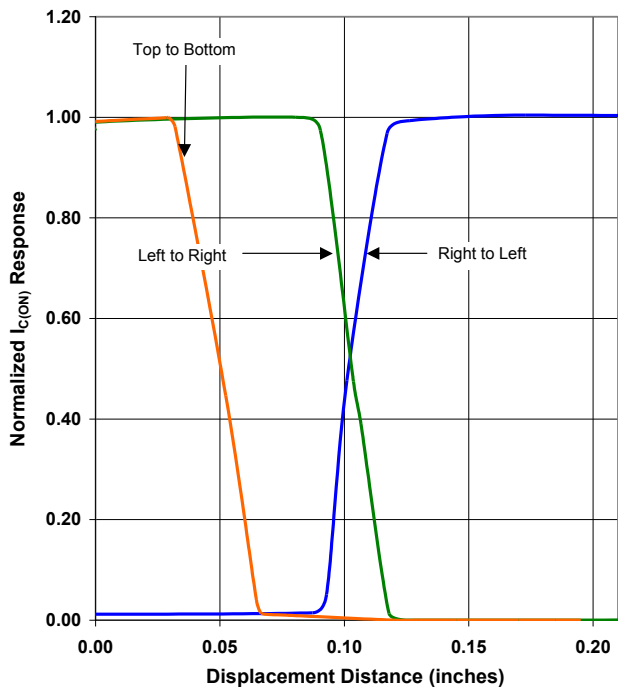
OPB610 - Flag Next to Emitter



OPB610 - Flag Next to Sensor



OPB610 - Flag in Middle of Slot



### 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.

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

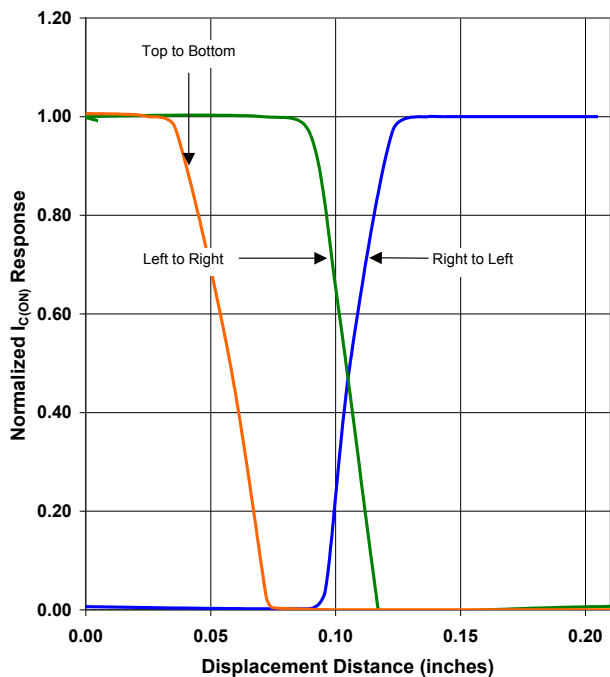
# Slotted Optical Switch

OPB610, OPB611, OPB620, OPB621

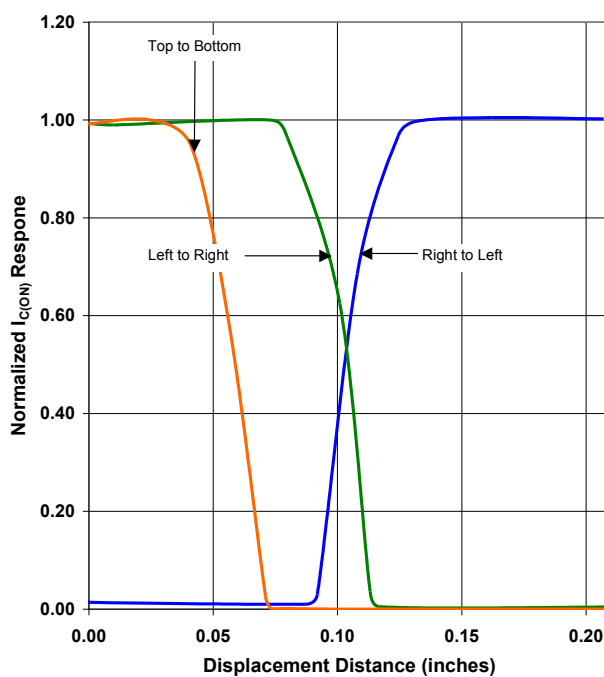


## Performance

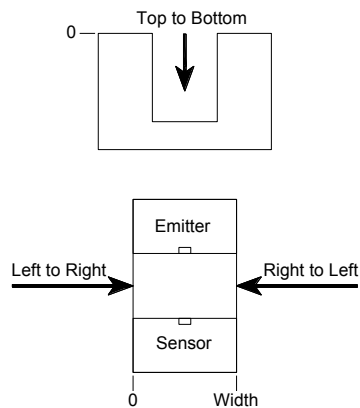
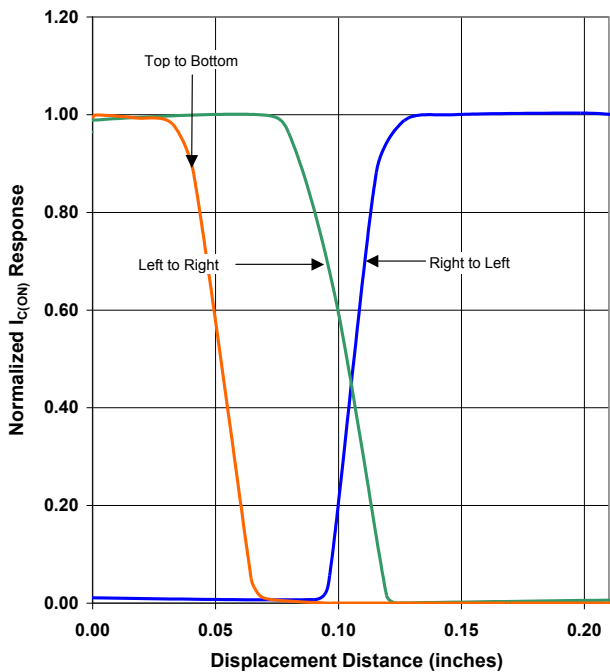
OPB620 - Flag Next to Emitter



OPB620 - Flag Next to Sensor



OPB620 - Flag in Middle of Slot




**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.

TT Electronics | OPTEK Technology  
 1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200  
[www.ttelectronics.com](http://www.ttelectronics.com) | [www.optekinc.com](http://www.optekinc.com)

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View OPB610 on WIN SOURCE](#)

 [TT Electronics](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management