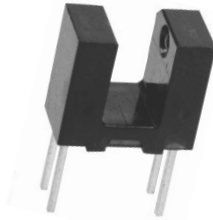




# Slotted Optical Switch

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.

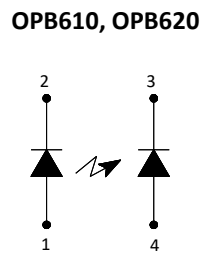
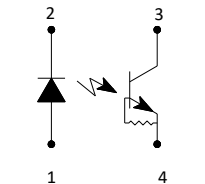
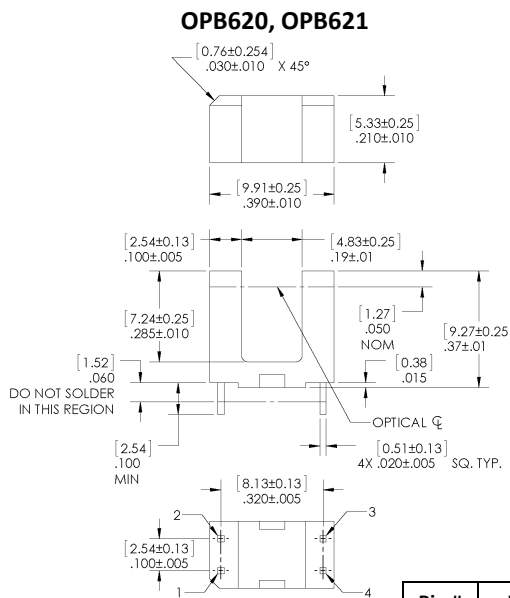
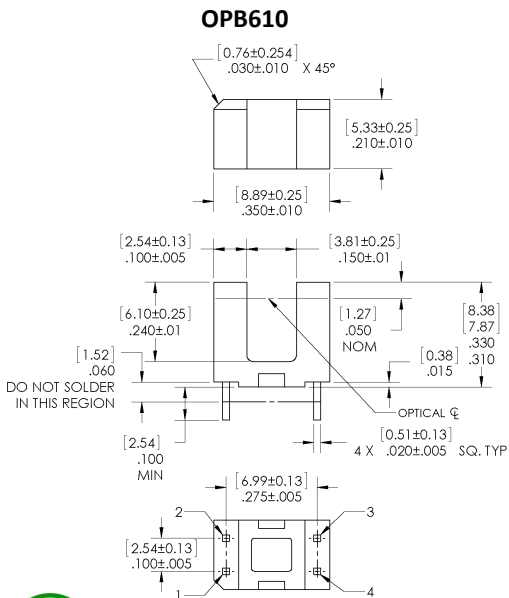
The **OPB621** slotted optical switch consists of an infrared emitting diode and a PIN photodiode with a polysulfone housing that is opaque to visible light, but transmissive to infrared. The low  $t_r/t_f$  of the PIN photodiode is ideal for high-speed operation. The sensitivity to ambient radiation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



RoHS

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

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

## General Note

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2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200  
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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] <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

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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
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**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	$\mu\text{A}$	$V_R = 3\text{ V}$

**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 (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	$\mu\text{A}$	

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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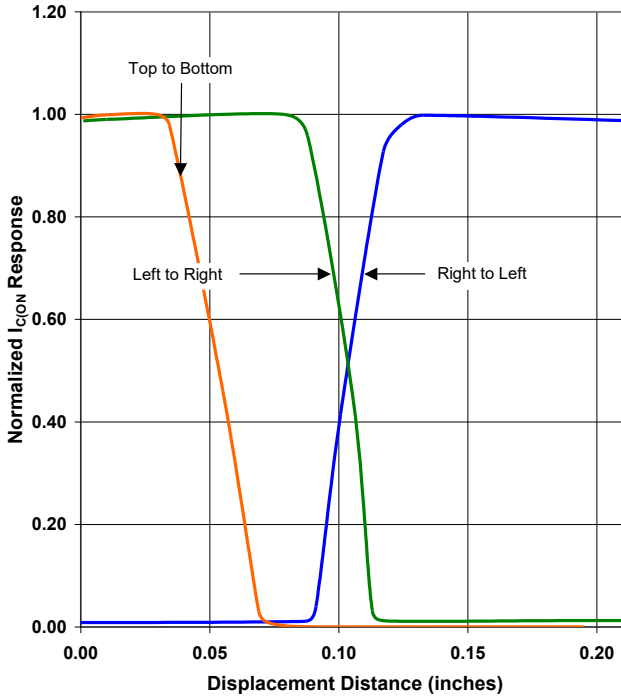
OPB610, OPB620, OPB621

Obsolete (OPB611)

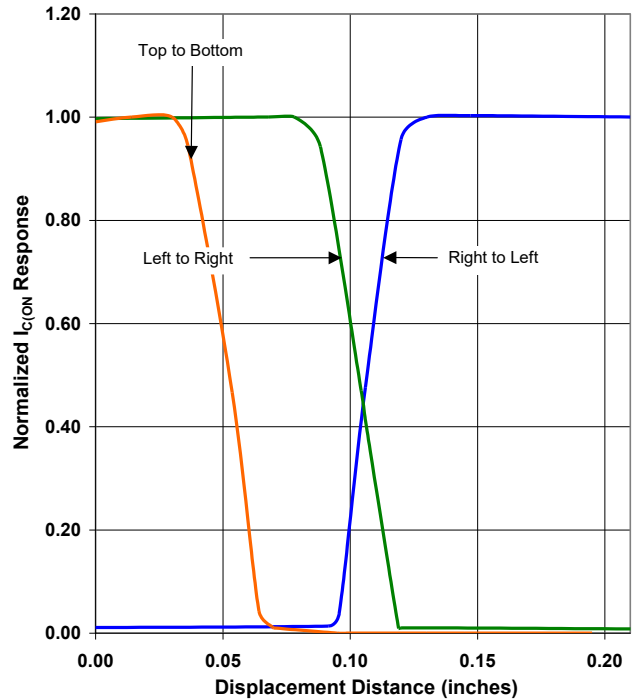


## Performance

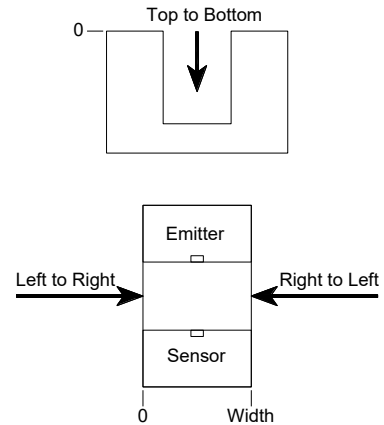
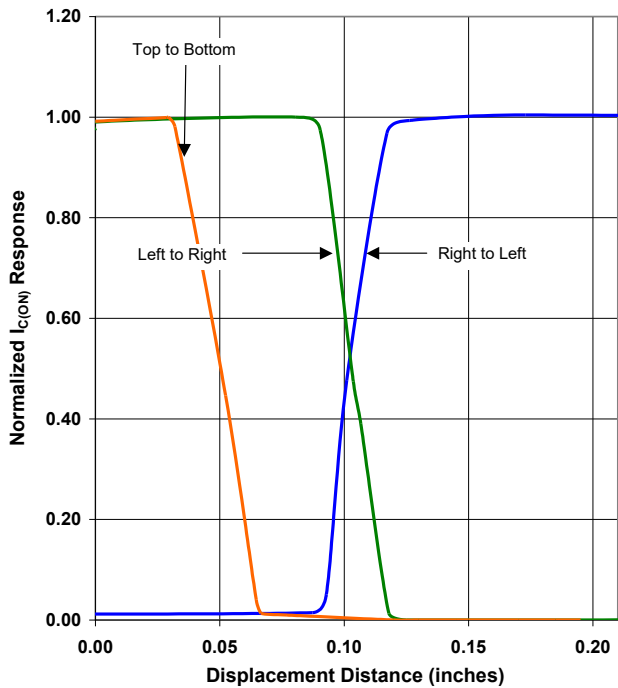
OPB610 - Flag Next to Emitter



OPB610 - Flag Next to Sensor



OPB610 - Flag in Middle of Slot



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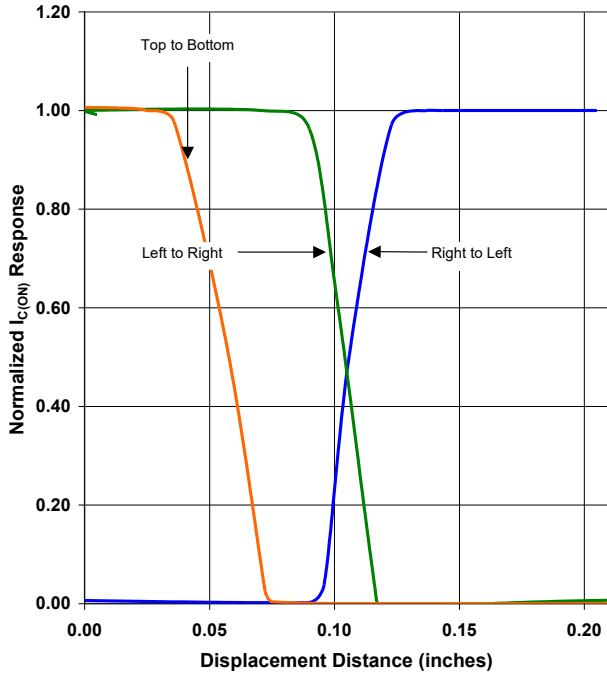
OPB610, OPB620, OPB621

Obsolete (OPB611)

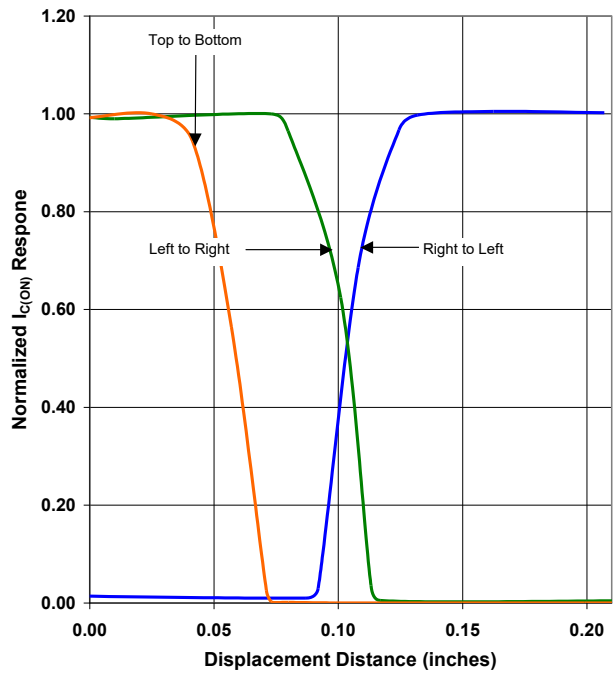


## Performance

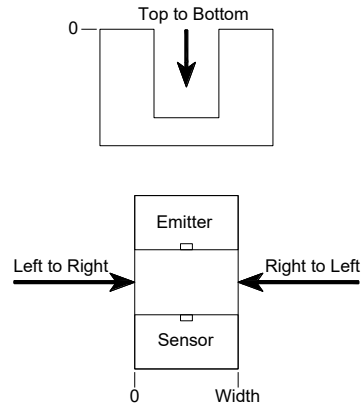
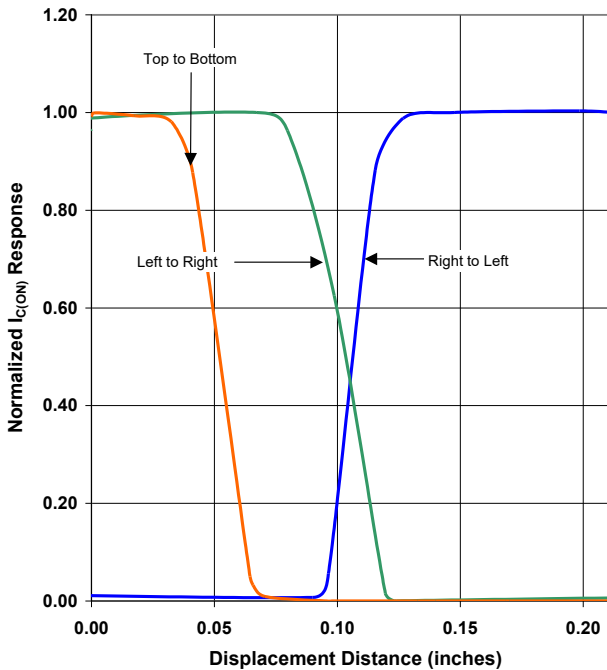
OPB620 - Flag Next to Emitter



OPB620 - Flag Next to Sensor



OPB620 - Flag in Middle of Slot




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-  Alternative Solution
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