

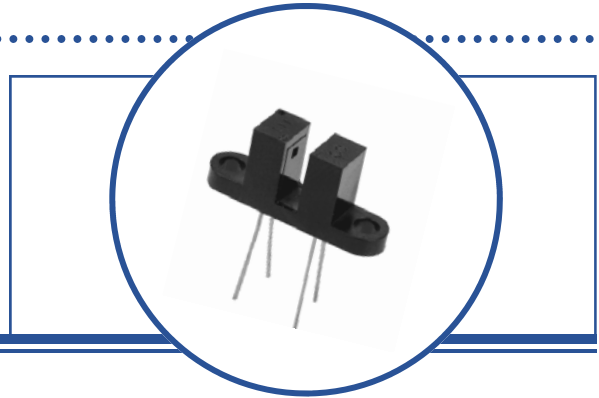
# Slotted Optical Switch

OPB852A1, OPB852A2, OPB852A3  
 OPB853A1, OPB853A2, OPB853A3



## Features:

- Inexpensive opaque plastic housing
- Choice of transistor (OPB852) or photodarlington (OPB853) output
- 0.125" (3.18 mm) slot width
- 0.290" (7.37 mm) lead spacing
- Apertured for high resolution



## Description:

Slotted optical switches in the **OPB852**, and **OPB853** series consist of an infrared emitting diode and a NPN silicon phototransistor or photodarlington, mounted on opposite sides of a 0.125" (3.175 mm) wide slot. The **OPB852A**, **OPB852B** and **OPB852C** have phototransistor output, while the **OPB853A**, **OPB853B** and **OPB853C** have photodarlington output.

On each of these devices, the emitter has a molded-in aperture of 0.050" x 0.050" (1.270 mm x 1.270 mm) and the phototransistor (**OPB852**) or photodarlington (**OPB853**) has a molded-in aperture of 0.010" x 0.050" (0.254 mm x 1.270 mm).

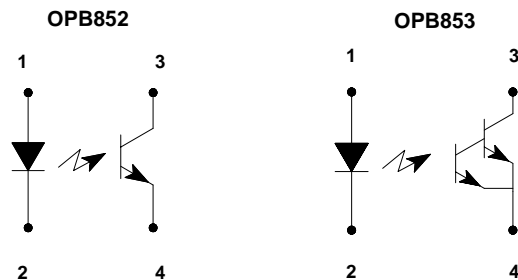
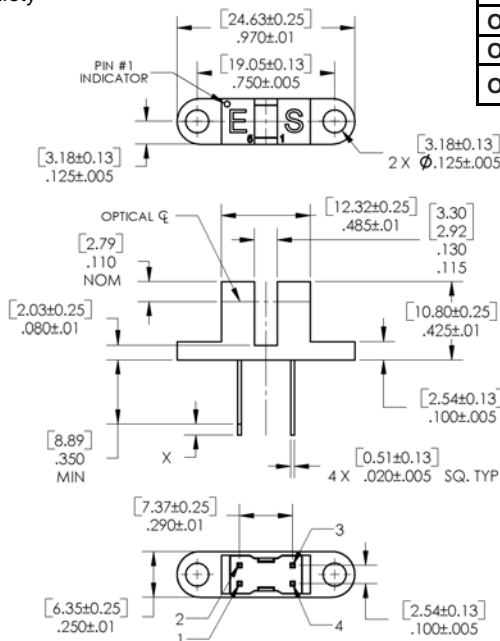
Phototransistor or photodarlington switching occurs when an opaque object passes through the slot.

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

## Applications:

- Non-contact interruptive object sensing
- Assembly line automation
- Machine automation
- Equipment security
- Machine safety

Part Number	LED Peak Wavelength	Sensor	Slot Width/Depth	Aperture Emitter/Sensor	Lead Length / Spacing
OPB852A1	890 nm	Transistor	0.120" / 0.315"	0.05" / 0.01"	0.425" / 0.290"
OPB852A2					
OPB852A3					
OPB853A1		Darlington			
OPB853A2					
OPB853A3					



Pin #	Description
1	Anode
2	Cathode
3	Collector
4	Emitter



RoHS

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

Storage & Operating Temperature Range	-40°C to +85° C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron]	260° C <sup>(1)</sup>

**Input Diode**

Forward DC Current	40 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)	3 A
Reverse DC Voltage	2 V
Power Dissipation	100 mW <sup>(2)</sup>

**Output Phototransistor**

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 mW <sup>(2)</sup>

**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 OP140 for additional information—OPB852A\_, OP245 for additional information—OPB853A)

$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$

**Output Phototransistor** (see OP550 for additional information—OPB852A\_, OP565 for additional information—OPB853A)

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	$I_C = 1\text{ mA}$ $I_C = 1\text{ mA}$
	OPB852A1, OPB852A2, OPB852A3 OPB853A1, OPB853A2, OPB853A3	15	-	-	V	
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector-Emitter Dark Current	-	-	100	nA	$V_{CE} = 10\text{ V}$

**Combined**

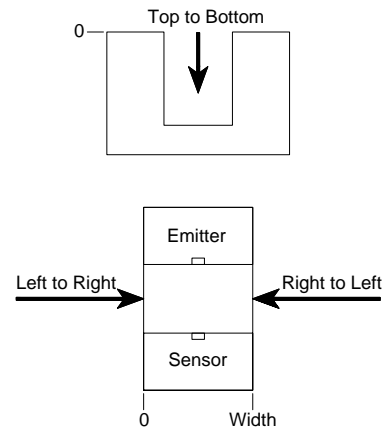
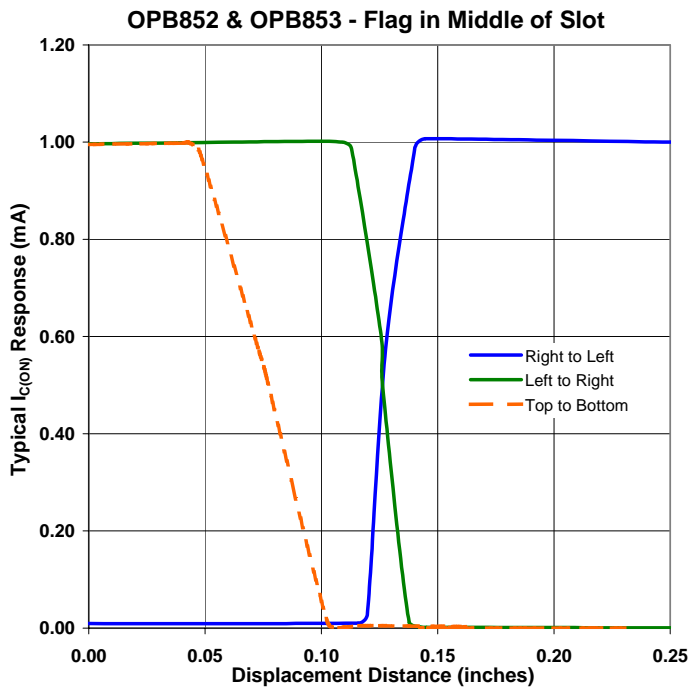
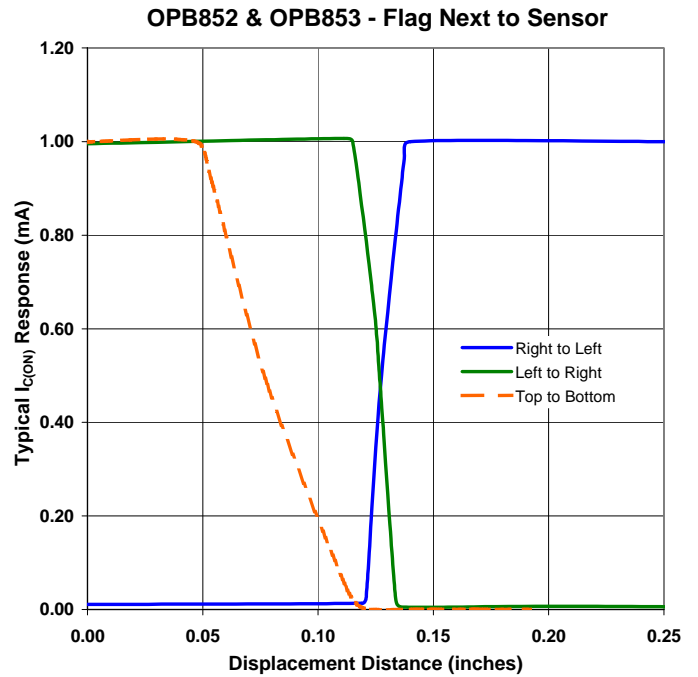
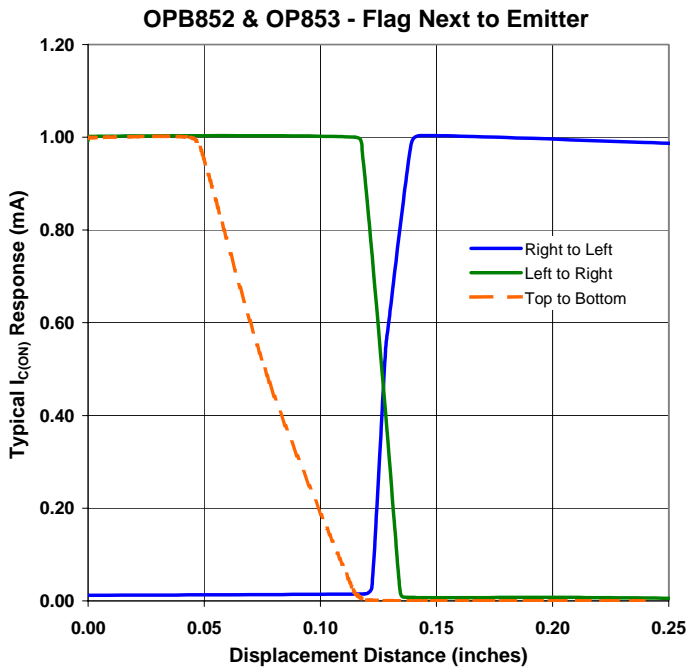
$V_{CE(SAT)}$	Saturation Voltage	-	-	0.4	V	$I_C = 500\ \mu\text{A}, I_F = 20\text{ mA}$ $I_C = 1.8\text{ mA}, I_F = 20\text{ mA}$ $I_C = 1.8\text{ mA}, I_F = 10\text{ mA}$
	OPB852A1, OPB852A2	-	-	0.4	V	
	OPB852A3 OPB853A1, OPB853A2, OPB853A3	-	-	1.0	V	
$I_{C(ON)}$	On-State Collector Current	1.0	-	-	mA	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$ $V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$ $V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$ $V_{CE} = 1.5\text{ V}, I_F = 5\text{ mA}$ $V_{CE} = 1.5\text{ V}, I_F = 5\text{ mA}$ $V_{CE} = 1.5\text{ V}, I_F = 5\text{ mA}$
	OPB852A1	2.0	-	-	mA	
	OPB852A2	4.0	-	-	mA	
	OPB852A3	2.5	-	-	mA	
	OPB853A1	5.0	-	-	mA	
	OPB853A2 OPB853A3	10.0	-	-	mA	

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.67 mW/° C above 25° C.
- (3) Methanol and isopropanol are recommended as cleaning agents. Housings are soluble in chlorinated hydrocarbons and ketones. Highly activated, water soluble fluxes may attack housings in some situations.
- (4) All parameters tested using pulse technique.

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