

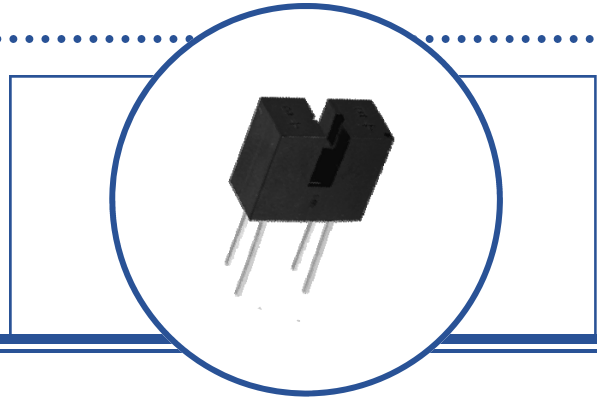
# Slotted Optical Switch

## OPB847, OPB848



### Features:

- Non-contact switching
- Apertured for high resolution
- Hermetically sealed components



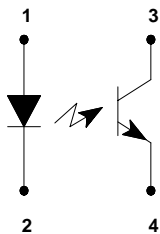
### Description:

The **OPB847** and **OPB848** consists of a gallium aluminum arsenide LED and a silicon phototransistor, which is soldered into a printed PCBoard and mounted in a high-temperature plastic housing on opposite sides of a 0.100 inch (2.540 mm) wide slot. Both device types have a .025 (0.635mm) inch by .060 inch (1.524 mm) aperture in front of the phototransistor for high resolution positioning sensing. Phototransistor switching takes place when an opaque object passes through the slot.

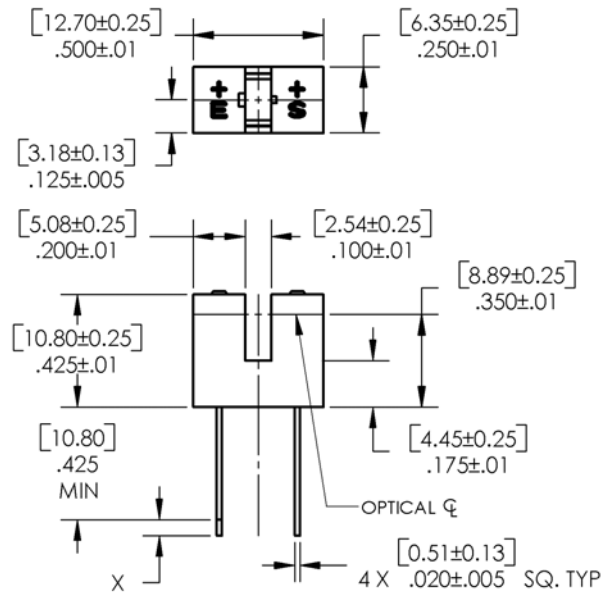
### Applications:

- 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
OPB847	890 nm	Transistor	0.100" / 0.250"	0.025" / 0.025"	0.425" / 0.300"
OPB848					



Pin #	Description
1	Anode
2	Cathode
3	Emitter
4	Collector



DIMENSIONS ARE IN: [ MILLIMETERS ] INCHES



RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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

Operating and Storage Temperature Range	-40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron]	240° C

**Input Diode**

Forward DC Current	50 mA
Reverse Voltage	2.0 V
Power Dissipation <sup>(2)</sup>	100 mW

**Output Phototransistor**

Collector-Emitter Voltage	24 V
Emitter-Collector Voltage	7 V
Power Dissipation <sup>(2)</sup>	100 mW

**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**

$V_F$	Forward Voltage <sup>(4)</sup>	1.00	1.35	1.70	V	$I_F = 20\text{ mA}$
		1.20	1.55	1.90		$I_F = 20\text{ mA}, T_A = -55^\circ\text{C}$
		1.80	1.20	1.60		$I_F = 20\text{ mA}, T_A = 100^\circ\text{C}$
$I_R$	Reverse Current	-	0.10	100	$\mu\text{A}$	$V_R = 2\text{ V}$

**Output Phototransistor**

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	24	110	-	V	$I_C = 1\text{ mA}, I_F = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	10	-	V	$I_E = 100\ \mu\text{A}, I_F = 0$
$I_{C(OFF)}$	Collector-Emitter Dark Current	-	0.20	100	nA	$V_{CE} = 10\text{ V}, I_F = 0$
		-	10	100	$\mu\text{A}$	$V_{CE} = 10\text{ V}, I_F = 0, T_A = 100^\circ\text{C}$

Notes:

- (1) Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.00 mW/° C above 25° C.
- (3) Methanol and isopropanol are recommended as cleaning agents.
- (4) Measurement is taken during the last 500  $\mu\text{s}$  of a single 1.0 ms test pulse. Heating due to increased pulse rate or pulse width can cause change in measurement results.

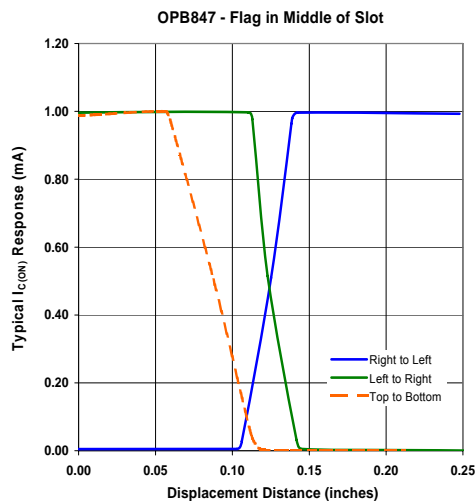
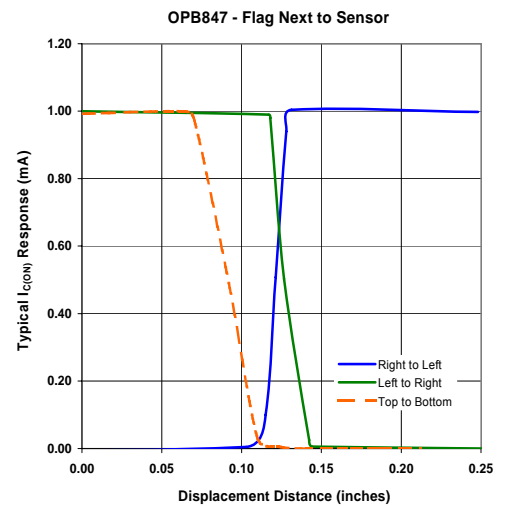
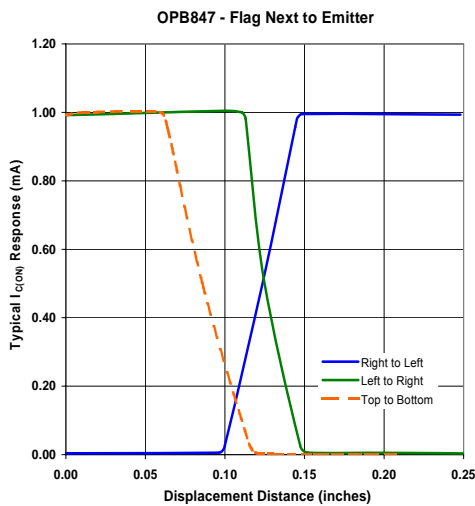
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**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Combined</b>						
$I_{C(ON)}$	On-State Collector Current <sup>(1)</sup> OPB847 OPB848	4.0 1.0	- -	- -	mA	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$ $V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage OPB847 OPB848		0.30 0.30	0.40 0.40	V	$I_C = 2\text{ mA}, I_F = 20\text{ mA}$ $I_C = 500\text{ }\mu\text{A}, I_F = 20\text{ mA}$
$t_r$	Output Rise Time OPB847 OPB848		12 8	20 15	$\mu\text{s}$	$V_{CC} = 10\text{ V}, I_F = 20\text{ mA}, R_L = 1000\Omega$
$t_f$	Output Fall Time OPB847 OPB848		12 8	20 15		

Notes:

- (1) Measurement is taken during the last 500  $\mu\text{s}$  of a single 1.0 ms test pulse. Heating due to increased pulse rate or pulse width can cause change in measurement results.



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