

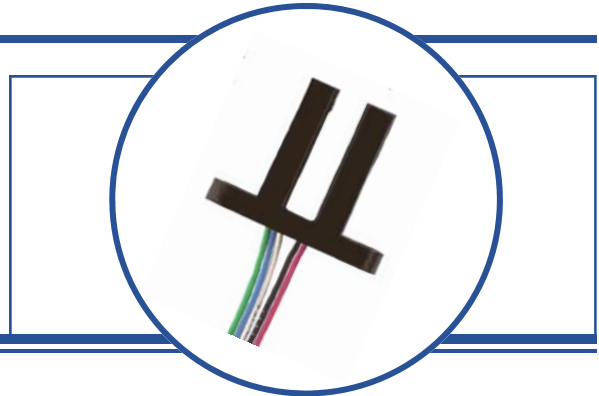
# Photologic® Slotted Optical Switch

## OPB917 Series



### Features:

- Low power consumption
- Data rates to 250 kBaud
- Choice of two logic states and two electrical outputs
- 24" (610 mm) minimum 26 AWG UL listed wires
- Slot width 0.20" (5.08 mm)
- Slot Depth 0.86" (21.84 mm)



### Description:

The **OPB917** series of Photologic® photo integrated circuit switches provide optimum flexibility. Each switch consists of an infrared Light Emitting Diode (LED) and a Photologic® photo integrated circuit, mounted in an opaque housing with clear windows for dust protection. The deep slot allows for a longer reach of the optical path from the 0.650" (16.5 mm) mounting plane. Internal apertures are 0.010" x .060" (.25 mm x 1.52 mm) for the Photologic's "S" side and 0.05" x 0.06" (1.27 mm x 1.52 mm) for the LED "E" side.

Devices in this series exhibit stable performance over supply voltages ranging from 4.5 V to 16.0 V, and may be specified as buffered or inverted with an internal 10 kΩ pull-up resistor or open collector output. Devices are TTL/ LSTTL compatible and can drive up to 10 TTL loads.

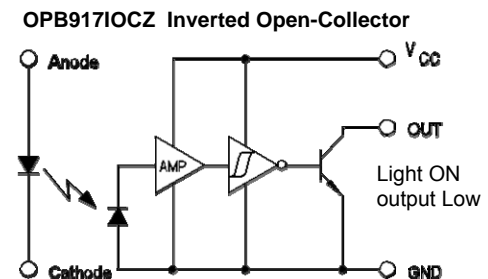
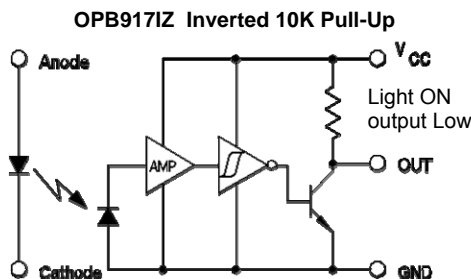
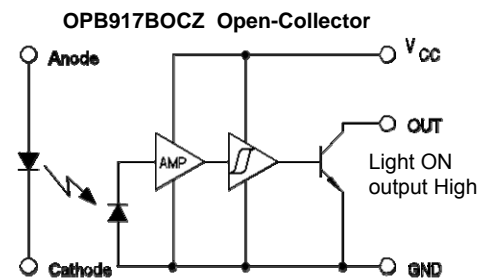
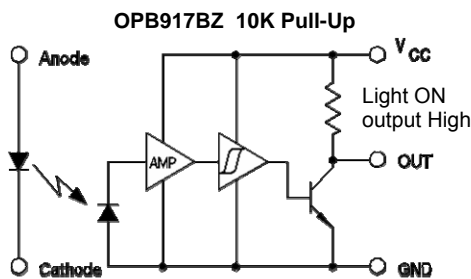
Custom electrical, wire or cabling are available. Contact your local representative or OPTEK for more information.

### Applications:

- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

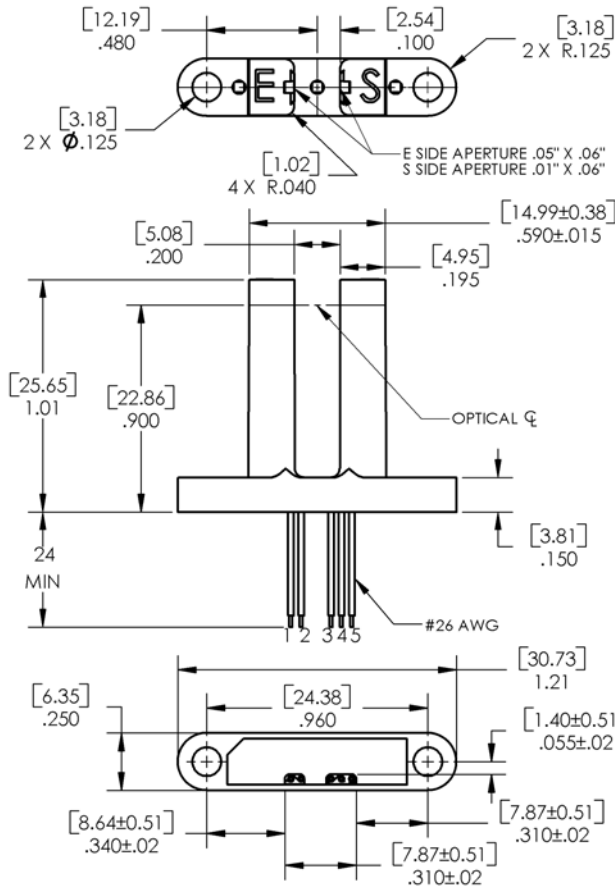
Ordering Information					
Part Number	LED Peak Wavelength	Sensor Photologic®	Slot Width/ Depth	Aperture Emitter/ Sensor	Lead Length / Wire
OPB917BZ	880 nm	10K Pull-Up	0.200" / 0.635"	0.05" / 0.01"	24" / 26 AWG Wire
OPB9167OCZ		Inv-10K Pull-Up			
OPB917IZ		Open-Collector			
OPB917IOCZ		Inv-Open-Collector			

Color	Description
Red	Anode
Black	Cathode
White	Vcc
Blue	Output
Green	Ground



RoHS

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



Color-Pin #	Description
Red-1	Anode
Black-2	Cathode
Green-3	Emitter
Blue-4	Output
White-5	V <sub>CC</sub>

DIMENSIONS ARE IN: [ MILLIMETERS]  
 INCHES

**Absolute Maximum Ratings** (T<sub>A</sub>=25°C unless otherwise noted)

Storage & Operating Temperature Range	-40°C to +80°C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] <sup>(1)</sup>	260°C

**Input Infrared LED**

Supply Voltage, V <sub>CC</sub> (not to exceed 3 seconds)	18 V
Input Diode Power Dissipation <sup>(2)</sup>	100 mW
Forward DC Current	50 mA

**Output Photologic®**

Voltage at Output Lead (Open Collector Output)	35 V
Diode Reverse DC Voltage	2 V
Output Photologic® Power Dissipation <sup>(3)</sup>	90 mW

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.33 mW/°C above 25°.
- (3) Derate linearly 2.50 mW/°C above 25°.
- (4) Normal application would be with light source blocked, simulated by I<sub>F</sub> = 0 mA.
- (5) All parameters tested using pulse technique.

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

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

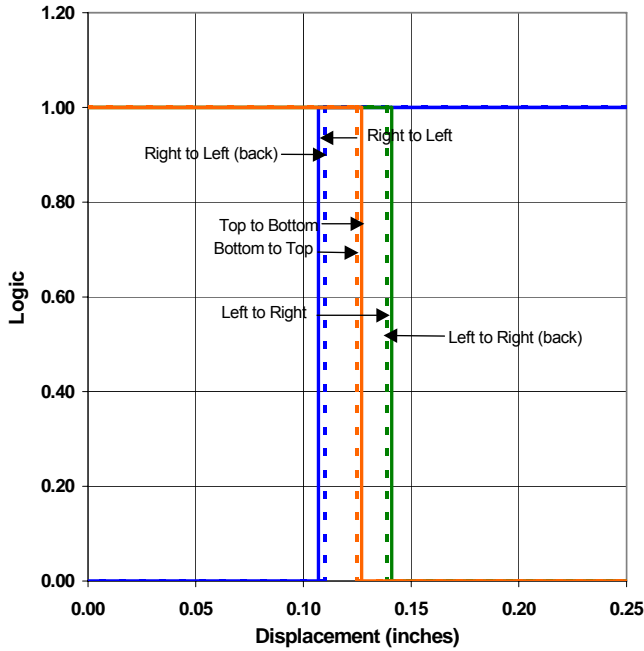
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>						
$V_F$	Forward Voltage	-	1.3	1.8	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}, T_A = 25^\circ\text{C}$
<b>Output Photologic® Sensor</b>						
$V_{CC}$	Operating DC Supply Voltage	4.5	-	16	V	-
$I_{CCL}$	Low Level Supply Current: Buffered with 10k pull-up <sup>(1)</sup> Buffered Open-Collector Output <sup>(1)</sup>	-	-	7	mA	$V_{CC} = 16\text{ V}, I_F = 0\text{ mA}, \text{No Output Load}$
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7	mA	$V_{CC} = 16\text{ V}, I_F = 10\text{ mA}, \text{No Output Load}$
$I_{CCH}$	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	6	mA	$V_{CC} = 16\text{ V}, I_F = 10\text{ mA}, \text{No Output Load}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	-	-	6	mA	$V_{CC} = 16\text{ V}, I_F = 0\text{ mA}, \text{No Output Load}$
$V_{OL}$	Low Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}, I_{OL} = 0\text{ mA}, I_F = 0\text{ mA}$ $V_{CC} = 4.5\text{ V}, I_{OL} = 16\text{ mA}, I_F = 0\text{ mA}$
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}, I_{OL} = 0\text{ mA}, I_F = 10\text{ mA}$ $V_{CC} = 4.5\text{ V}, I_{OL} = 16\text{ mA}, I_F = 10\text{ mA}$
$V_{OH}$	High Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	$V_{CC}$ 2.4	$V_{CC}-1.5$	-	V	$V_{CC} = 4.5\text{ V to }16\text{ V}, I_F = 10\text{ mA}, \text{No Output Load}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	$V_{CC}$ 2.4	$V_{CC}-1.5$	-	V	$V_{CC} = 4.5\text{ V to }16\text{ V}, I_F = 0\text{ mA}, \text{No Output Load}$
$I_{OH}$	High Level Output Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	1.0	14	$\mu\text{A}$	$V_{CC} = 4.5\text{ V}, I_F = 10\text{ mA}, V_{OH} = 30\text{ V}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	-	1.0	14	$\mu\text{A}$	$V_{CC} = 4.5\text{ V}, I_F = 0\text{ mA}, V_{OH} = 30\text{ V}$
$I_{F(+)}$	LED Positive-Going Threshold Current Buffered with 10k pull-up Buffered Open-Collector Output	-	5	10	mA	$V_{CC} = 5\text{ V}, I_{OL} = 0\text{ mA}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	-	5	10	mA	$V_{CC} = 4.5\text{ V}, I_{OL} = 16\text{ mA}$
$I_{F(+)} I_{F(-)}$	Hysteresis	-	1.5	-	-	$V_{CC} = 5\text{ V}$
$t_r, t_f$	Rise Time, Fall Time	-	50	-	ns	$V_{CC} = 5\text{ V}, I_F = 0\text{ or }10\text{ mA}, R_L = 300\ \Omega \text{ to } 5\text{ V}, C_L = 50\text{ pF}$
$t_{PLH}, t_{PHL}$	Propagation Delay	-	3	-	$\mu\text{s}$	

Notes:

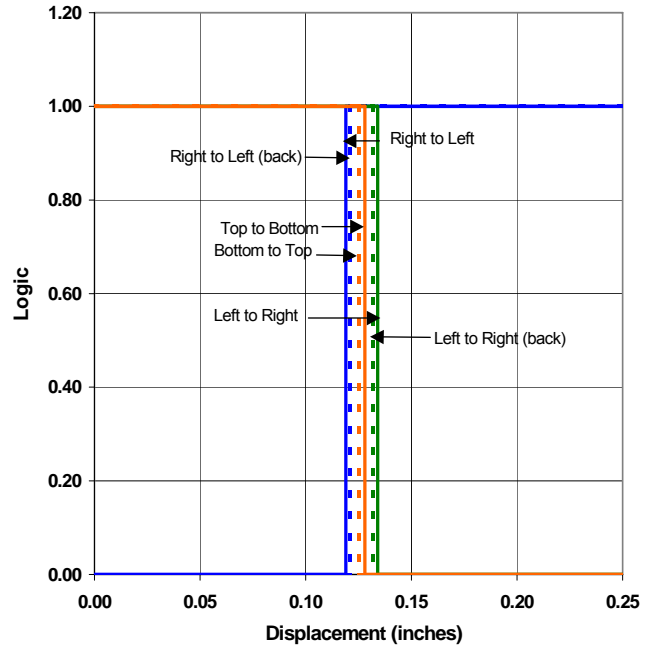
- (1) Normal application would be with light source blocked, simulated by  $I_F = 0\text{ mA}$ .
- (2) All parameters tested using pulse technique.

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

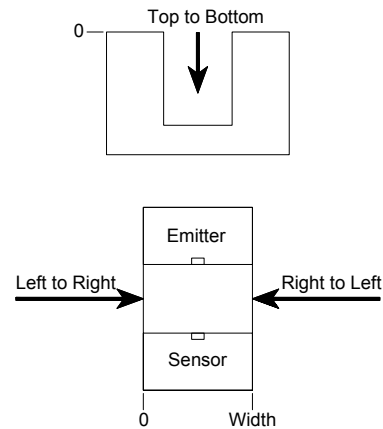
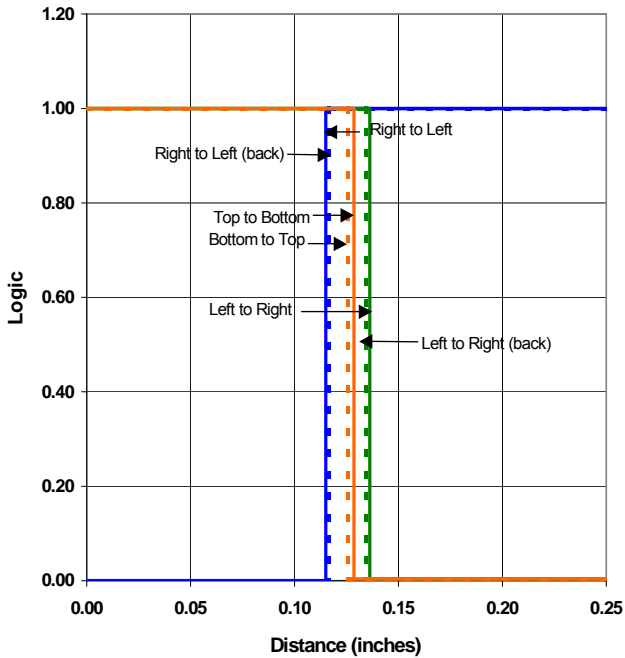
**OPB917—Flag Next to Emitter**



**OPB917—Flag Next to Sensor**



**OPB917—Flag Middle of Slot**



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