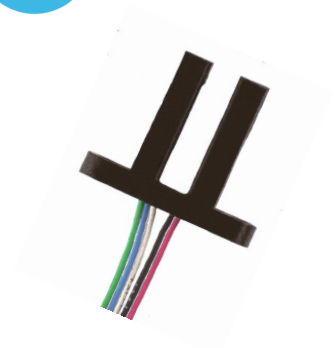
Photologic® Slotted Optical Switch

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:

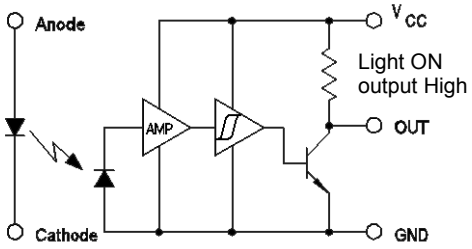
- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Ordering Information

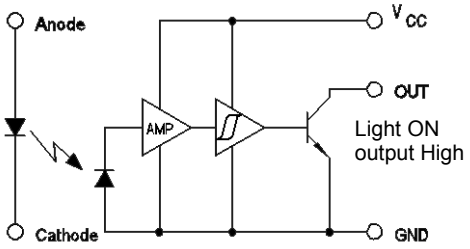
Part Number	LED Peak Wavelength	Sensor Photologic®	Slot Width/ Depth	Aperture Emitter/ Sensor	Lead Length / Wire
OPB917BZ	880 nm	10K Pull-Up	0.200” / 0.635”	0.05" / 0.01"	24" / 26 AWG Wire
OPB917IZ		Inv-10K Pull-Up			
OPB917BOCZ		Open-Collector			
OPB917IOCZ		Inv-Open-Collector			

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

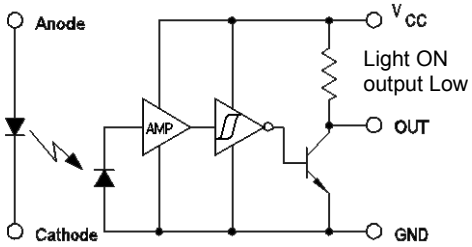
OPB917BZ 10K Pull-Up



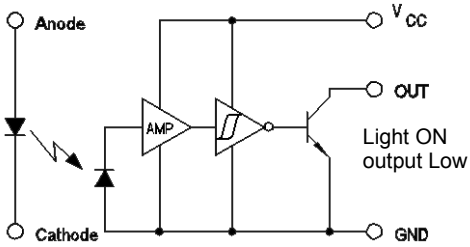
OPB917BOCZ Open-Collector



OPB917IZ Inverted 10K Pull-Up



OPB917IOCZ Inverted Open-Collector



RoHS

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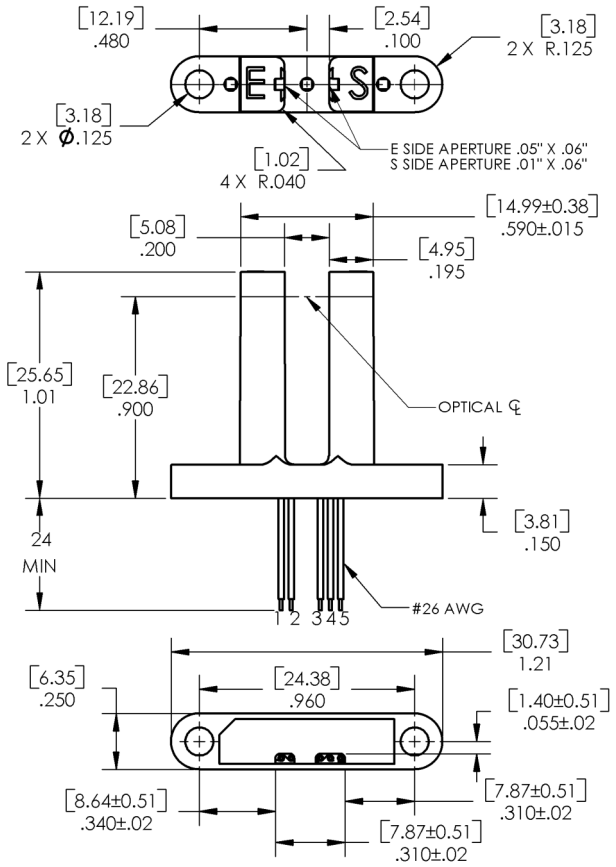

Color	Description
Red	Anode
Black	Cathode
Green	Ground
Blue	Output
White	V_{CC}

DIMENSIONS ARE IN: **[MILLIMETERS]**
INCHES

Absolute Maximum Ratings (T_A = 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](1)	260°C
Input Infrared LED	
Supply Voltage, V_{CC} (not to exceed 3 seconds)	18 V
Input Diode Power Dissipation(2)	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(3)	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_F = 0 mA.
(5) All parameters tested using pulse technique.

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Electrical Characteristics (T_A = 25° C unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage	-	1.3	1.8	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2 V, T_A = 25° C
Output Photologic® Sensor						
V_{CC}	Operating DC Supply Voltage	4.5	-	16	V	-
I_{CCL}	Low Level Supply Current: Buffered with 10k pull-up(1) Buffered Open-Collector Output(1)	-	-	7	mA	V_{CC} = 16 V, I_F = 0 mA, No Output Load
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7	mA	V_{CC} = 16 V, I_F = 10 mA, No Output Load
I_{CCH}	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	6	mA	V_{CC} = 16 V, I_F = 10 mA, No Output Load
	Inverted with 10k pull-up: Inverted Open-Collector Output(1)	-	-	6	mA	V_{CC} = 16 V, I_F = 0 mA, No Output Load
V_{OL}	Low Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	- -	- -	0.4 0.4	V	V_{CC} = 4.5 V, I_{OL} = 0 mA, I_F = 0 mA V_{CC} = 4.5 V, I_{OL} = 16 mA, I_F = 0 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output	- -	- -	0.4 0.4	V	V_{CC} = 4.5 V, I_{OL} = 0 mA, I_F = 10 mA V_{CC} = 4.5 V, I_{OL} = 16 mA, I_F = 10 mA
V_{OH}	High Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	V_{CC} 2.4	Vcc- 1.5	-	V	. V_{CC} = 4.5 V to 16 V, I_F = 10 mA, No Output Load
	Inverted with 10k pull-up: Inverted Open-Collector Output(1)	V_{CC} 2.4	Vcc- 1.5	-	V	V_{CC} = 4.5 V to 16 V, I_F = 0 mA, No Output Load
I_{OH}	High Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	-	1.0	14	µA	V_{CC} = 4.5 V, I_F = 10 mA, V_{OH} = 30 V
	Inverted with 10k pull-up: Inverted Open-Collector Output(1)	-	1.0	14	µA	V_{CC} = 4.5 V, I_F = 0 mA, V_{OH} = 30 V
$I_{F(+)}$	LED Positive-Going Threshold Current Buffered with 10k pull-up Buffered Open-Collector Output	-	5	10	mA	V_{CC} = 5 V, I_{OL} = 0 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output(1)	-	5	10	mA	V_{CC} = 4.5 V, I_{OL} = 16 mA

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Electrical Characteristics (T_A = 25° C unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{F(+)}/I_{F(-)}$	Hysteresis	-	1.5	-	-	V_{CC} = 5 V
$t_r t_f$	Rise Time, Fall Time	-	50	-	ns	V_{CC} = 5 V, I_F = 0 or 10 mA, R_L = 300 Ω to 5 V, C_L = 50 pF
$t_{PLH} t_{PHL}$	Propagation Delay	-	3	-	µs	V_{CC} = 5 V, I_F = 0 or 10 mA, R_L = 300 Ω to 5 V, C_L = 50 pF

Notes:
(1) Normal application would be with light source blocked, simulated by I_F = 0 mA.
(2) All parameters tested using pulse technique.

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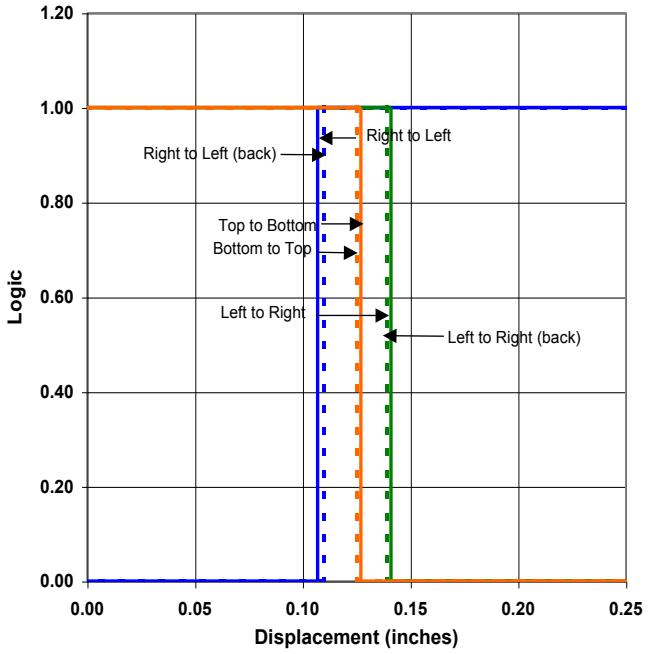
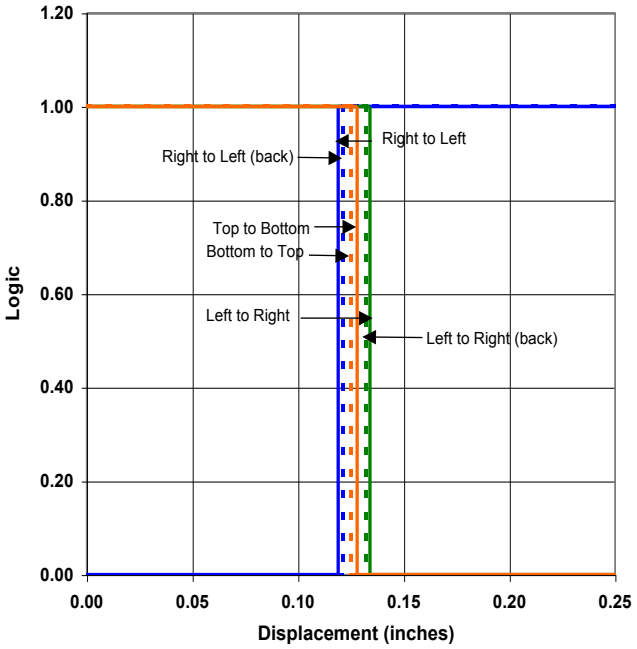
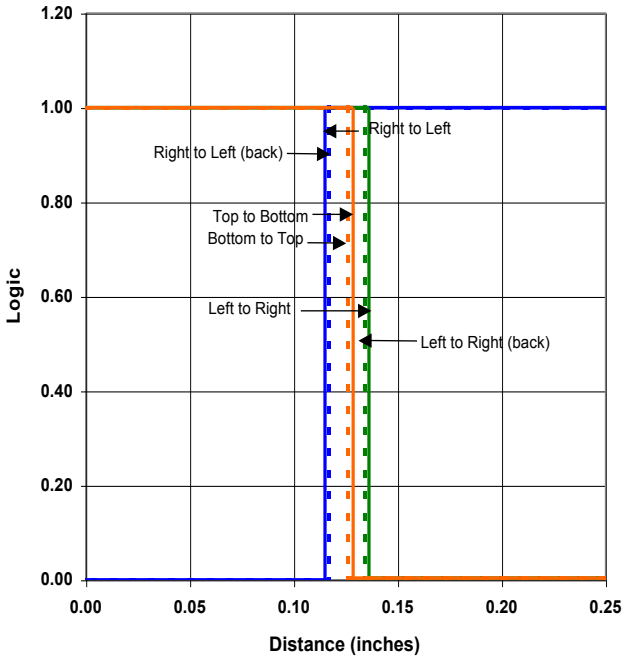
OPB917—Flag Next to Emitter

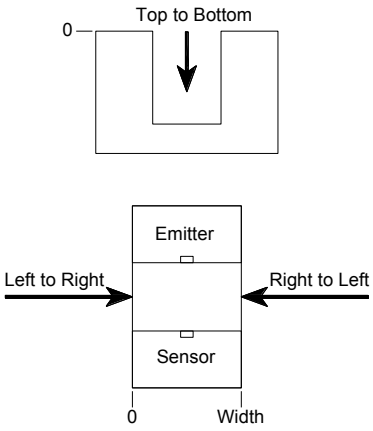


OPB917—Flag Next to Sensor



OPB917—Flag Middle of Slot





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