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:

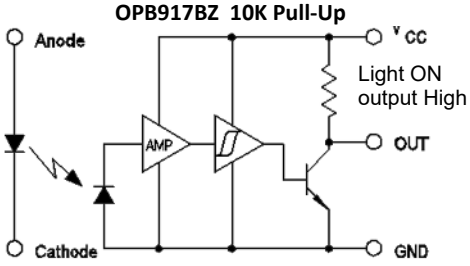
- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Ordering Information

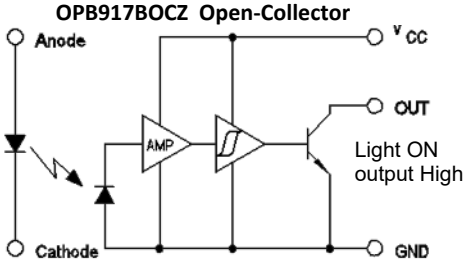
Part Number	LED Peak Wavelength	Sensor Photologic®	Slot Width/ Depth	Aperture Emitter/ Sensor	Lead Length / Wire
OPB917BZ	880 nm	10K Pull-Up	0.200” / 0.635”	0.05" / 0.01"	24" / 26 AWG Wire
OPB917IZ		Inv-10K Pull-Up			
OPB917BOCZ		Open-Collector			
OPB917IOCZ		Inv-Open-Collector			

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

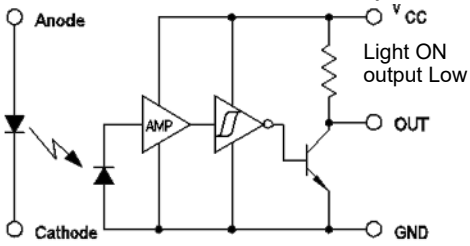
OPB917BZ 10K Pull-Up



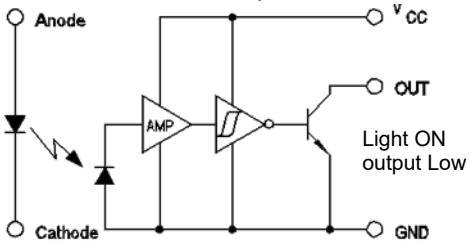
OPB917BOCZ Open-Collector



OPB917IZ Inverted 10K Pull-Up



OPB917IOCZ Inverted Open-Collector



RoHS

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics’ own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

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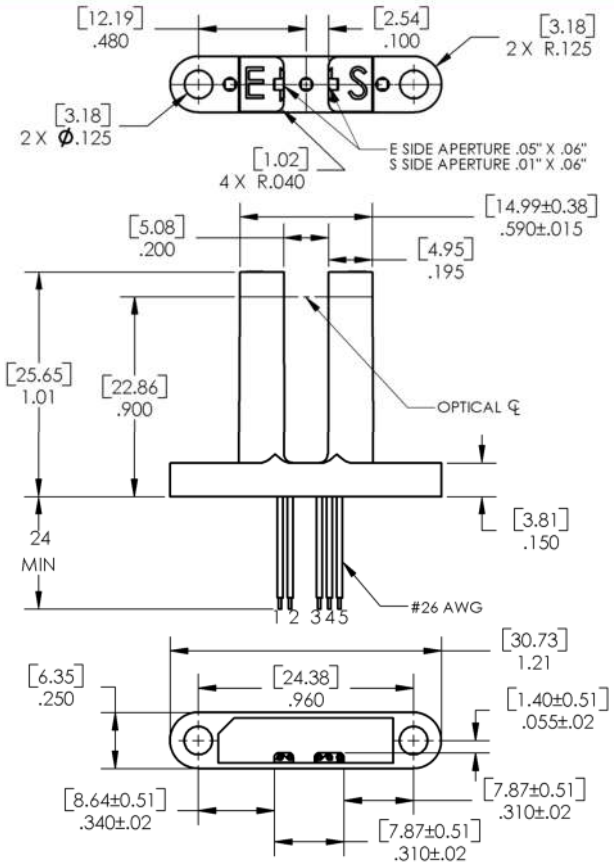
OPB917 Series



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 Specifications

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)

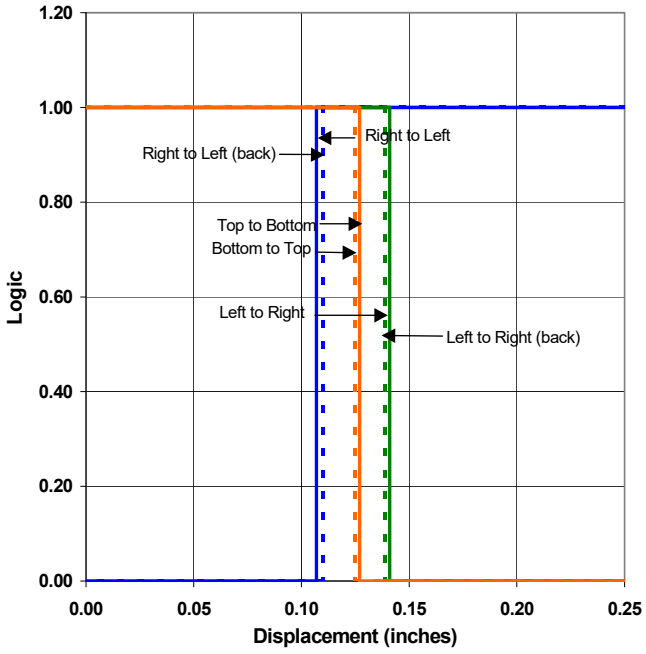
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{F(+)}/I_{F(-)}$	Hysteresis	-	1.5	-	-	V_{CC} = 5 V
$t_r t_f$	Rise Time, Fall Time	-	50	-	ns	V_{CC} = 5 V, I_F = 0 or 10 mA, R_L = 300 Ω to 5 V, C_L = 50 pF
$t_{PLH} t_{PHL}$	Propagation Delay	-	3	-	µs	V_{CC} = 5 V, I_F = 0 or 10 mA, R_L = 300 Ω to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

Notes:

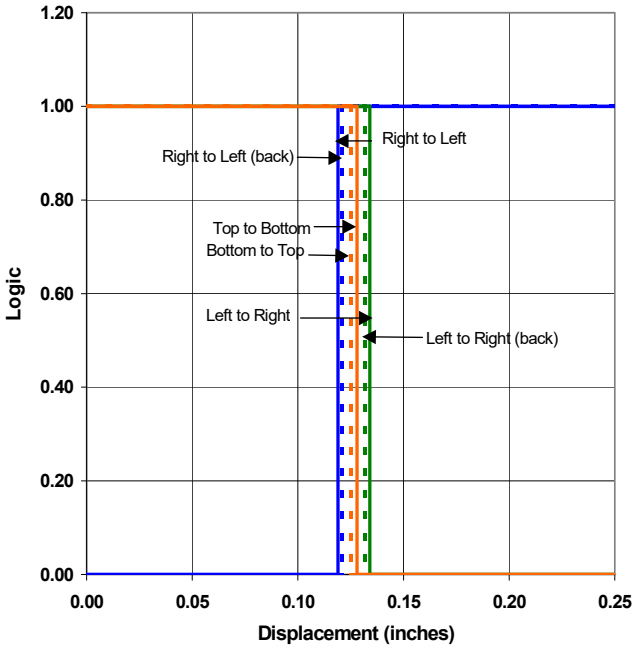
(1) Normal application would be with light source blocked, simulated by I_F = 0 mA.

(2) All parameters tested using pulse technique.

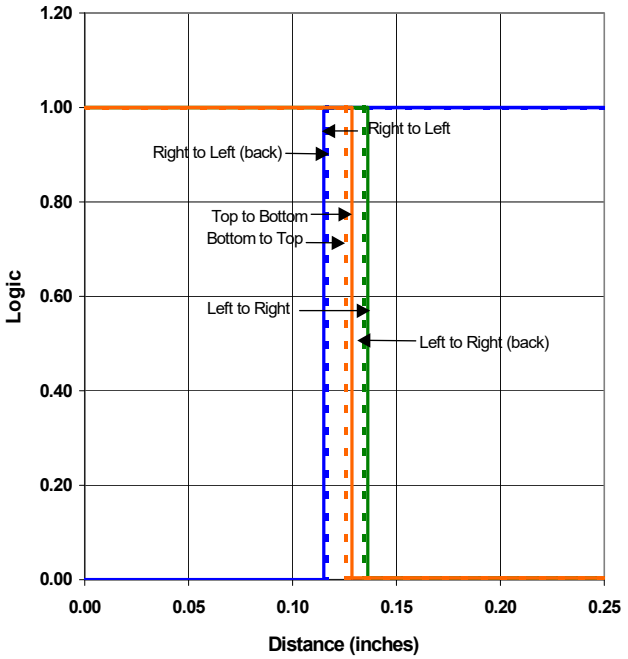
OPB917—Flag Next to Emitter

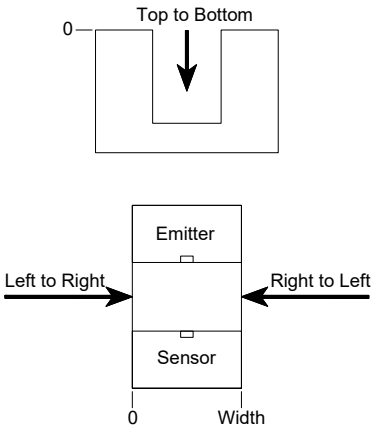


OPB917—Flag Next to Sensor



OPB917—Flag Middle of Slot





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