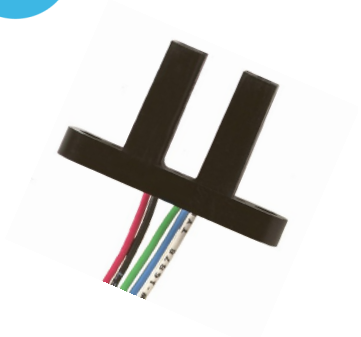
Photologic® Slotted Optical Switch

OPB916 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 0.635” (16.13 mm)

Description:

The **OPB916** 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:

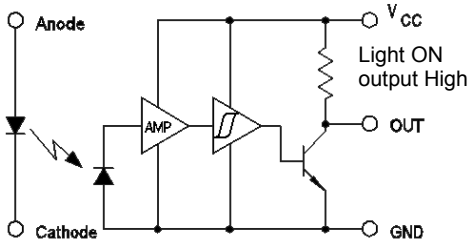
- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Ordering Information

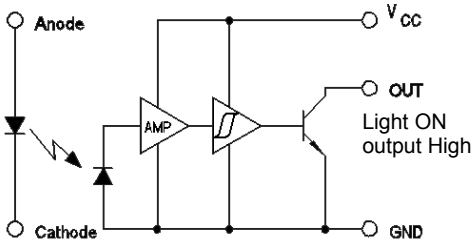
Part Number	LED Peak Wavelength	Sensor Photologic®	Slot Width / Depth	Aperture Emitter / Sensor	Lead Length / Wire
OPB916BZ	880 nm	10K Pull-Up	0.200” / 0.635”	0.05" / 0.01"	24" / 26 AWG Wire
OPB916IZ		Inv-10K Pull-Up			
OPB916BOCZ		Open-Collector			

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

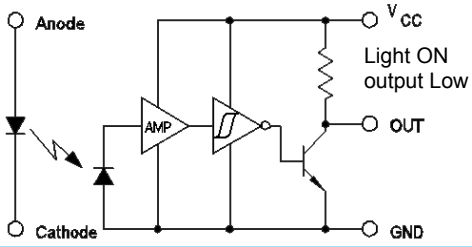
OPB916B 10K Pull-Up



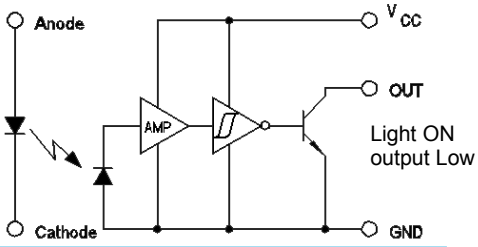
OPB916BOC Open-Collector



OPB916I Inverted 10K Pull-Up



OPB916IOC 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.

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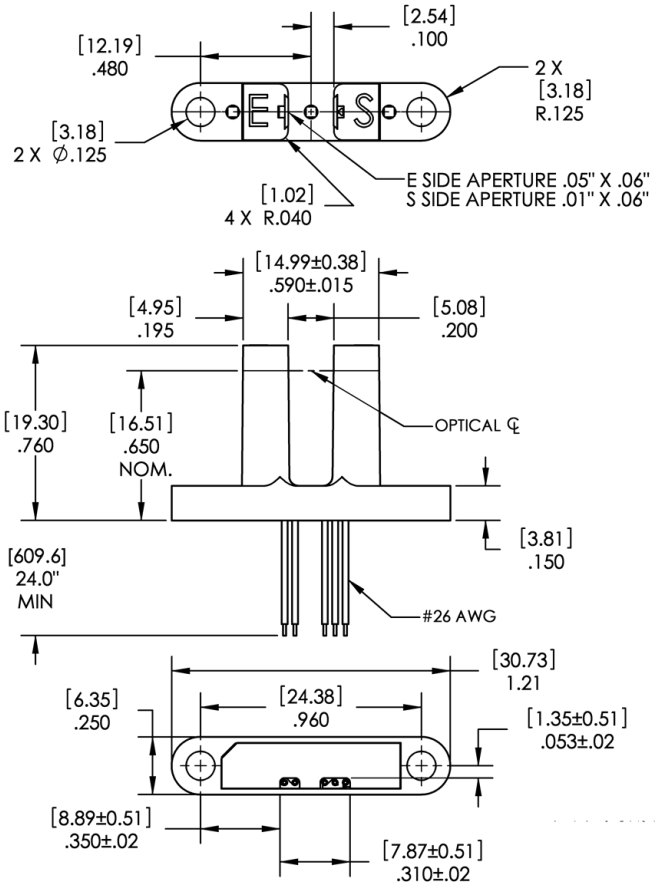

Color-Pin #	Description
Red	Anode
Black	Cathode
Green	Ground
Blue	Output
White	V_{CC}

Tolerence ±0.010 [0.254]

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)	
Storage & Operating Temperature Range	-40°C to +80°C
Input Infrared LED	
Diode Reverse DC Voltage	2 V
Input Diode Power Dissipation(2)	75 mW
Forward DC Current	50 mA
Output Photologic®	
Supply Voltage, V_{CC} (not to exceed 3 seconds)	18 V
Voltage at Output Lead (Open Collector Output)	30 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 1.67 mW/°C above 25°.
(3) Derate linearly 2.67 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	V	V_{CC} = 4.5 V, I_{OL} = 16 mA, I_F = 0 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	0.4	V	V_{CC} = 4.5 V, I_{OL} = 16 mA, I_F = 10 mA
V_{OH}	High Level Output Voltage: Buffered with 10k pull-up	V_{CC}-2.0	-	-	V	. V_{CC} = 4.5 V to 16 V, I_F = 10 mA, I_{OH} = 100 µA
	Inverted with 10k pull-up:	V_{CC}-2.0	-	-	V	V_{CC} = 4.5 V to 16 V, I_F = 0 mA,
I_{OH}	High Level Output Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	1.0	10	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	10	µA	V_{CC} = 4.5 V, I_F = 0 mA, V_{OH} = 30 V

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Electrical Characteristics (T_A = 25° C unless otherwise noted)						
SYMBOL	**PARAMETER**	**MIN**	**TYP**	**MAX**	**UNITS**	**TEST CONDITIONS**
Output Photologic® Sensor						
$I_{F(+)}$	LED Positive-Going Threshold Current Buffered with 10k pull-up Inverted with 10k pull-up	-	5	10	mA	V_{CC} = 5 V, No Output Load
	Buffered Open-Collector Output Inverted Open-Collector Output(1)	-	5	10	mA	V_{CC} = 4.5 V, I_{OL} = 16 mA
$I_{F(+)}/I_{F(-)}$	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	

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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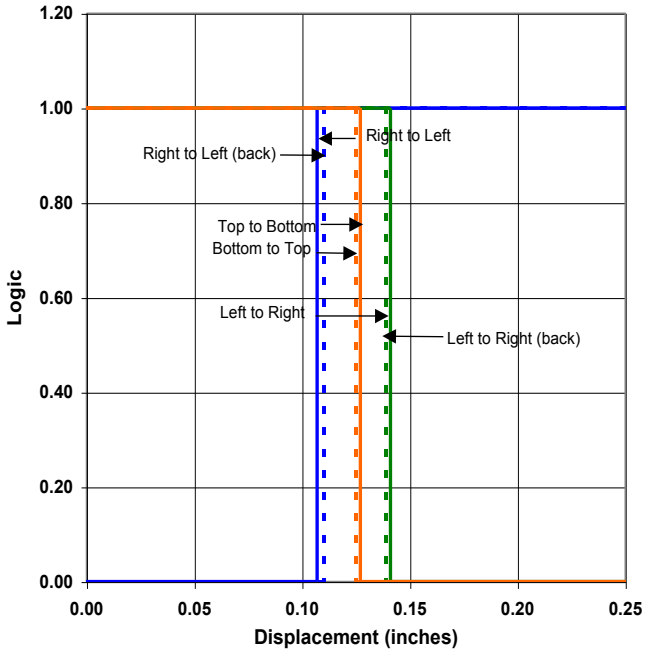
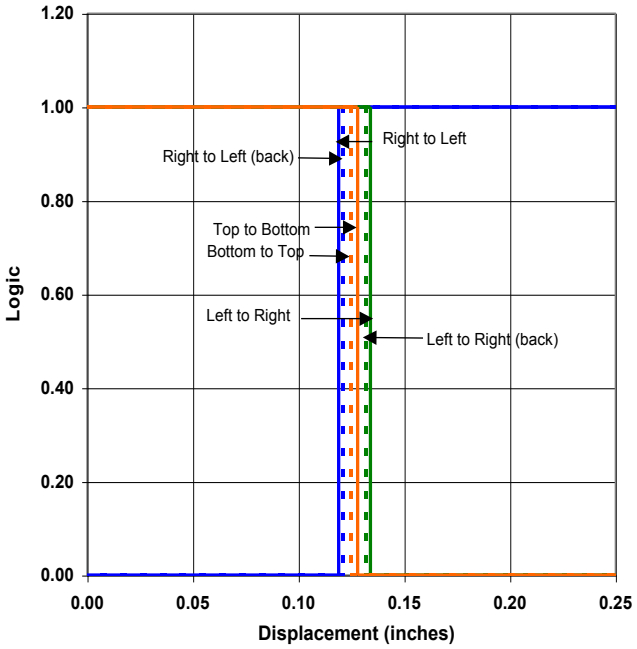
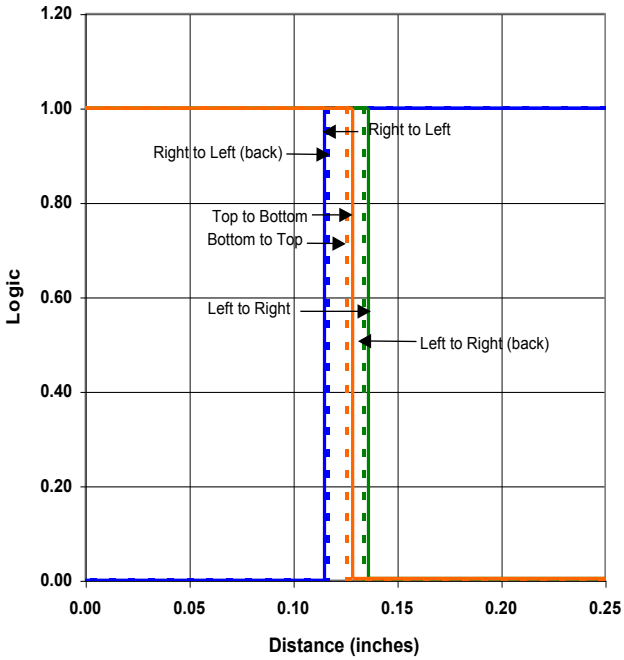
OPB916B - Flag Next to Emitter

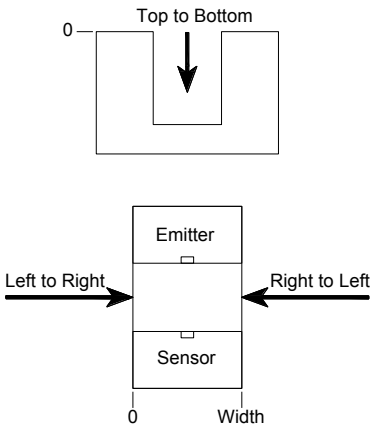


OPB916B - Flag Next to Sensor



OPB916B - Flag in Middle of Slot





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Issue	Change Description	Approval	Date
A	Initial Release, new format	Steve Coble	12/13/06
A.1	Fixed Ordering Table page 1	Bob Procsal	1/25/08
A.2	Fixed nomenclature on schematics page 1	Mark Miller	8/04/08
A.3	Changed mechanical drawing, Absolute Max Ratings and some Electrical Characteristics	Mark Miller	08/07/08
B	Transferred to the new TT Electronics template	L. Timpa	10/6/16

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