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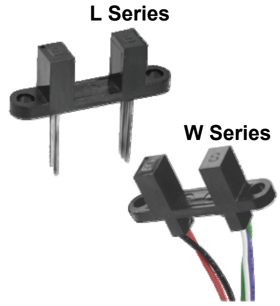
Sensing and Control

Photologic ® Slotted Optical Switch "Wide Gap" Series

OPB900 through OPB913 Series (L, W_Z)



Features:

- 0.375" (9.5 mm) wide gap
- Choice of logical output configurations
- Choice of opaque or IR transmissive housing material
- Choice of PCBoard or 26 AWG, UL rated wire
- Data rates to 250 kBaud

Description:

The **OPB900** - **OPB913** series of Photologic® Integrated Circuit Switches provide optimum flexibility for the design engineer. Building from a standard housing with a 0.375" (9.5mm) wide slot, a user can specify the type and polarity of the TTL output and the type of shell material.

Electrical output can be specified as either TTL Totem Pole (buffered) or TTL Open Collector, either of which can be supplied with an inverted output polarity.

All versions have the added stability of hysteresis built into the amplification circuitry.

Applications:

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

Part Number Guide — OPB900 Series (L, W)

OPB9_ _ _ _ _ _

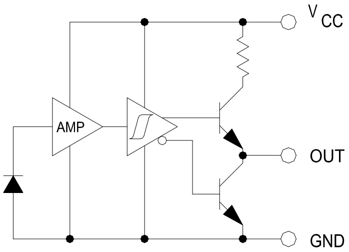
0 = Dust protection with apertures
1 = Open apertured

0 = Totem Pole
1 = Open Collector
2 = Inverted Totem Pole
3 = Inverted Open Collector

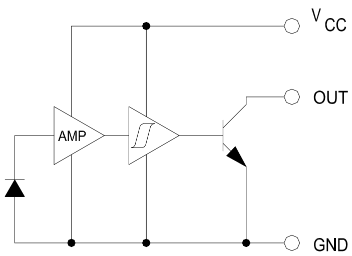
L55 = Solder lead termination (PCBoard mount)
or
W5_Z= 26 AWG wire termination (24" [61cm] long)

Aperture sizes:
1 = 0.010" (0.25 mm)
5 = 0.050" (1.27 mm)

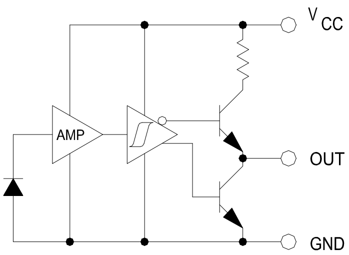
Totem-Pole-Output



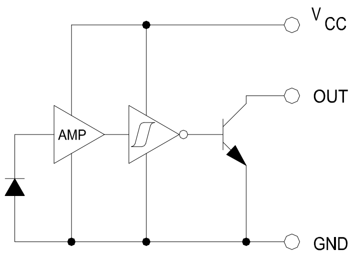
Open-Collector-Output



Inverted Totem-Pole



Inverted Open Collector



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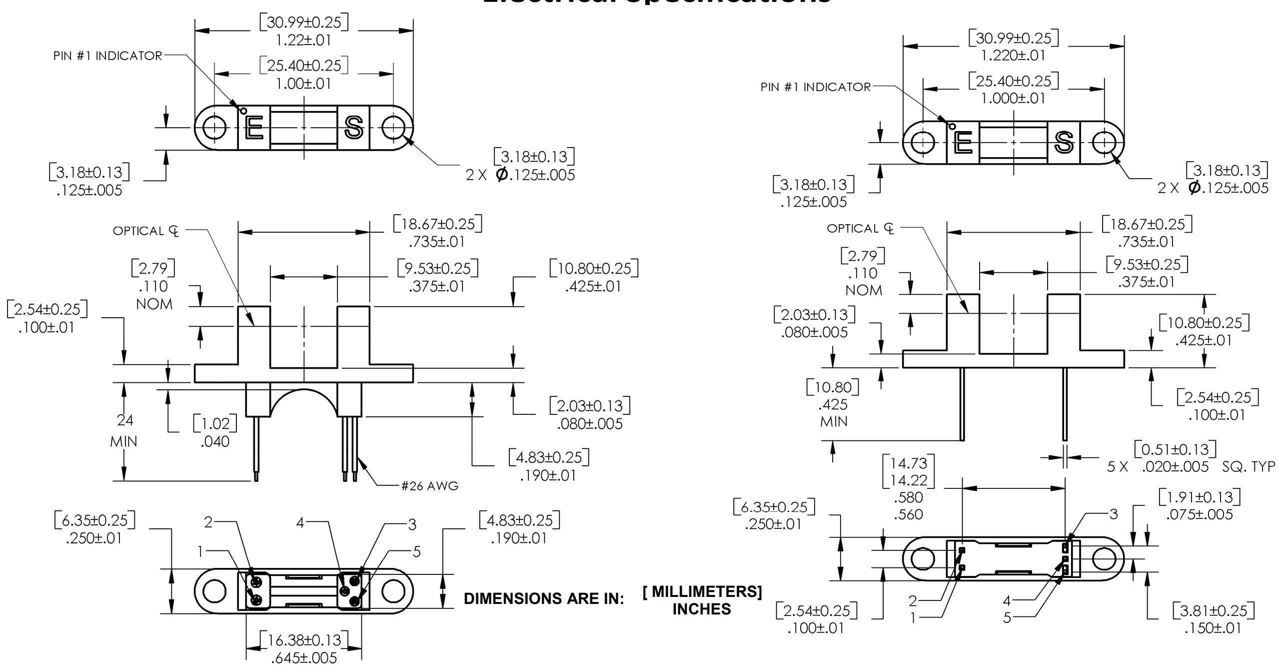
Electrical Specifications



Color-Pin #	Description	Color-Pin #	Description	Color-Pin #	Description	Color-Pin #	Description	Color-Pin #	Description
Red-1	Anode	Black-2	Cathode	White-3	V_{CC}	Blue-4	Output	Green-5	Ground

Absolute Maximum Ratings (T_A = -40°C to + 70° Unless otherwise noted)

Storage Temperature	-40° C to +85° C
Operating Temperature	-40° C to +70° C
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron)(1)	260° C

Input Infrared LED

DC Forward Diode (LED) Current	40 mA
DC Reverse Diode (LED) Voltage	2 V
Input Diode Power Dissipation(1)	100 mW

Output Photologic®

Supply Voltage, V_{CC} (not to exceed 3 seconds)	10V
Voltage at Output Lead (Open Collector Output version)	35 V
Output Photologic® Power Dissipation(2)	200 mW
Total Device Power Dissipation(3)	300 mW

Notes:
(1) Derate linearly 2.22 mW/°C above 25°C
(2) Derate linearly 4.44 mW/°C above 25°C
(3) Derate linearly 6.66 mW/°C above 25°C
(4) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(5) Methanol or isopropanol are recommended as cleaning agents. The plastic housing is soluble in chlorinated hydrocarbons and keytones.

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Electrical Characteristics (T_A = -40°C to + 70° Unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode (See OPB240 for more information — for reference only)						
V_F	Forward Voltage	-	-	1.7	V	I_F = 20 mA, T_A = 25° C
I_R	Reverse Current	-	-	100	µA	V_R = 2 V, T_A = 25° C
Output Photologic® Sensor (See OPB560 for more information — for reference only)						
V_{CC}	Operating D.C. Supply Voltage	4.75	-	5.25	V	
I_{CCL}	Low Level Supply Current: Buffered Totem-Pole Output Buffered Open-Collector Output	-	-	15	mA	V_{CC} = 5.25 V, I_F = 0 mA(1)
	Inverted Totem-Pole Output Inverted Open-Collector Output	-	-	15	mA	V_{CC} = 5.25 V, I_F = 20 mA(1)
I_{CCH}	High Level Supply Current: Buffered Totem-Pole Output Buffered Open-Collector Output	-	-	15	mA	V_{CC} = 5.25 V, I_F = 20 mA(1)
	Inverted Totem-Pole Output Inverted Open-Collector Output	-	-	15	mA	V_{CC} = 5.25 V, I_F = 0 mA(1)
V_{OL}	Low Level Supply Current: Buffered Totem-Pole Output Buffered Open-Collector Output	-	-	0.4	V	V_{CC} = 4.75 V, I_{OL} = 12.8 mA, I_F = 0 mA(1)
	Inverted Totem-Pole Output Inverted Open-Collector Output	-	-	0.4	V	V_{CC} = 4.75 V, I_{OL} = 12.8 mA , I_F = 20 mA(1)
V_{OH}	High Level Output Voltage: Buffered Totem-Pole Output	2.4	-	-	V	V_{CC} = 4.75 V, I_{OH} = -800 µA, I_F = 20 mA(1)
	Inverted Totem-Pole Output	2.4	-	-	V	V_{CC} = 4.75 V, I_{OH} = -800 µA, I_F = 0 mA(1)
I_{OH}	High Level Output Current: Buffered Open-Collector Output	-	-	100	µA	V_{CC} = 4.75 V, V_{OH} = 30 V, T_A = 25° C
	Inverted Open-Collector Output	-	-	100	µA	V_{CC} = 4.75 V, V_{OH} = 30 V, T_A = 25° C
$I_F(+)$	LED Positive-Going Threshold Current	-	-	20	mA	V_{CC} = 5 V, T_A = 25° C
$I_F(+)/I_F(-)$	Hysteresis	-	2	-	-	V_{CC} = 5 V
I_{OS}	Short Circuit Output Current: Buffered Totem-Pole Output	-30	-	-100	mA	V_{CC} = 5.25 V, I_F = 20 mA Output = GND
	Inverted Totem-Pole Output	-30	-	-100	mA	V_{CC} = 5.25 V, I_F = 0 mA Output = GND
t_r, t_f	Output Rise Time, Output Fall Time	-	70	-	ns	V_{CC} = 5 V, T_A = 25° C I_F = 0 or 20 mA R_L = 8 TTL Loads (Totem-Pole) R_L = 360 Ω (Open-Collector)
t_{PLH}, t_{PHL}	Propagation Delay Low-High and High-Low	-	5	-	µs	

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

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Make Possible

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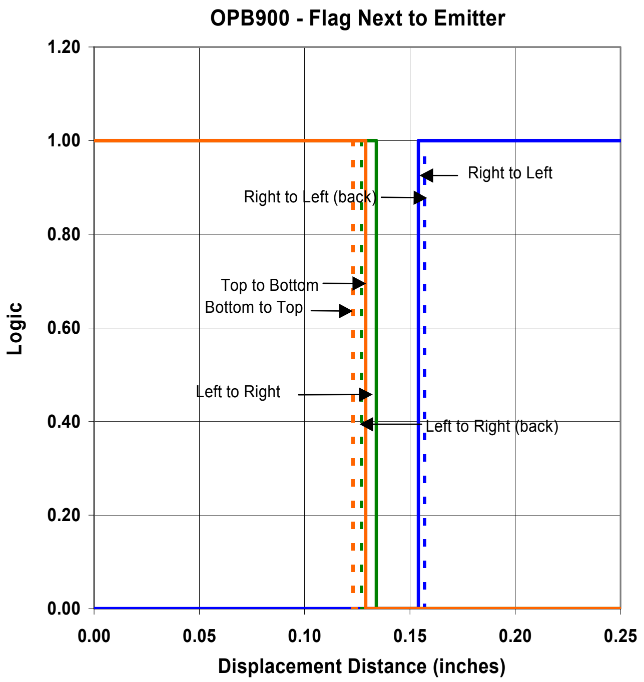

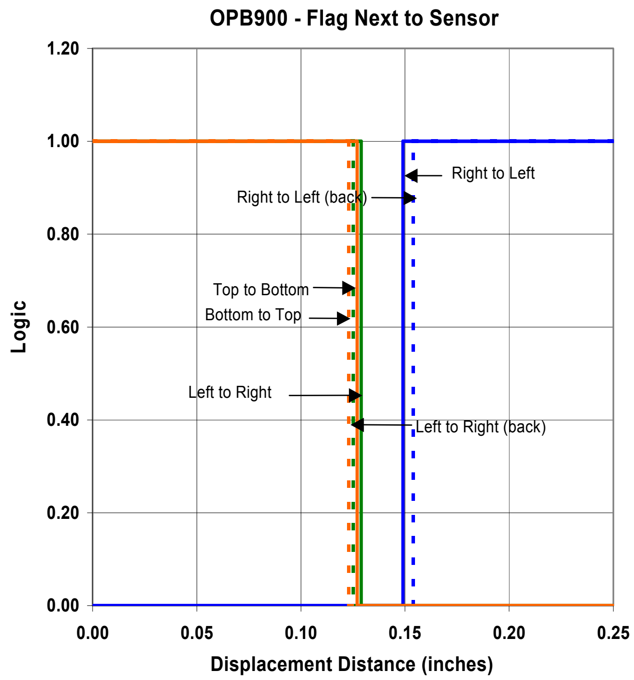

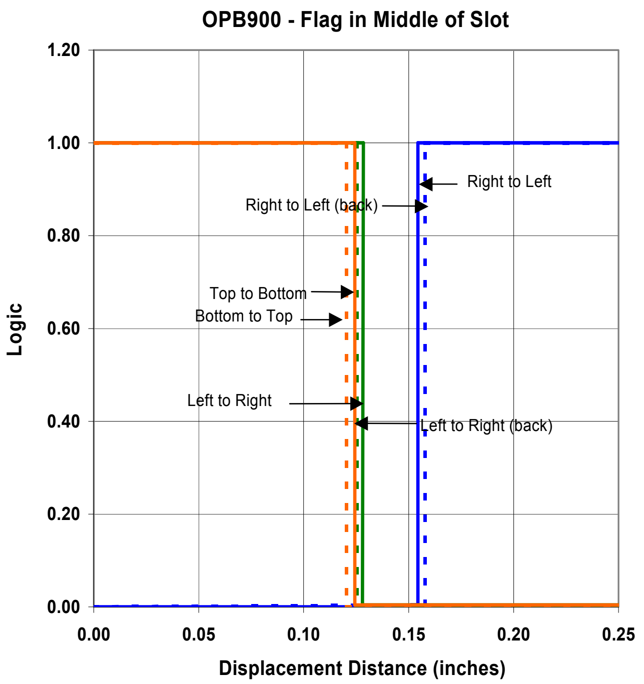

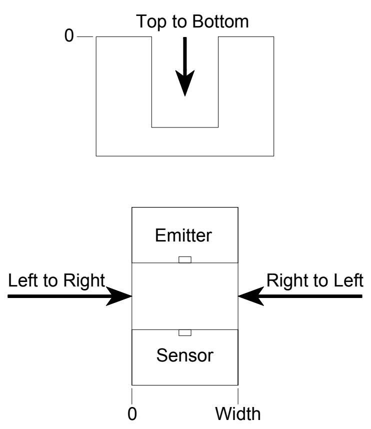

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