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:

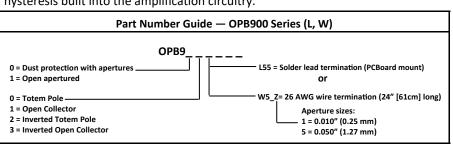
The **OPB900** - **OPB913** series of Photologic® Integrated Circuit Switches provide optimum flexibility for the design engineer. Building from a standard housing with a 0.375" (9.5mm) wide slot, a user can specify the type and polarity of the TTL output and the type of shell material.

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.

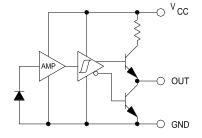
All versions have the added stability of hysteresis built into the amplification circuitry.

Applications:

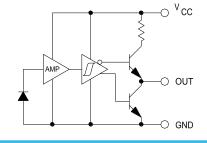
- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing
- Object sensing



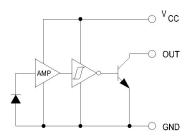
Totem-Pole-Output



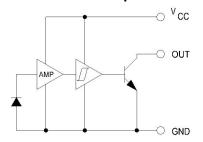
Inverted Totem-Pole



Open-Collector-Output



Inverted Open Collector





General Note

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Electrical Specifications [30.99±0.25] 1.22±.01 [30.99±0.25] PIN #1 INDICATOR 25.40±0.25 [25.40±0.25] 1.00±.01 PIN #1 INDICATOR 1.000±.01 S S [3.18±0.13] 2 × **Ø**.125±.005 [3.18±0.13] **Ø**.125±.005 [3.18±0.13] [3.18±0.13] 125±.005 .125±.005 [18.67±0.25] [18.67±0.25] .735±.01 [2.79] [9.53±0.25] .375±.01 [2.79] 9.53±0.25 [10.80±0.25] .110 NOM .375±.01 .425±.01 NOM [2.54±0.25] [2.03±0.13] [10.80±0.25] .100±.01 .080±.005 .425±.01 [10.80] [2.54±0.25] [2.03±0.13] .425 .100±.01 [1.02] .080±.005 MIN MIN 040 [0.51±0.13] .020±.005 SQ. TYP [4.83±0.25] 14.73 .190±.01 580 [1.91±0.13] [6.35±0.25] .560 .075±.005 [6.35±0.25] [4.83±0.25] .250±.01 .190±.01 [MILLIMETERS] DIMENSIONS ARE IN: [3.81±0.25] [2.54±0.25] .100±.01 .150±.01 [16.38±0.13]

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)

.645±.005

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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 V_{CC} = 4.75 V, I_{OL} = 12.8 mA, I_F = 0 mA⁽¹⁾

 $V_{CC} = 4.75 \text{ V}, I_{OL} = 12.8 \text{ mA}, I_F = 20 \text{ mA}^{(1)}$

 $V_{CC} = 4.75 \text{ V}, I_{OH} = -800 \mu\text{A}, I_{F} = 20 \text{ mA}^{(1)}$

 V_{CC} = 4.75 V, I_{OH} = -800 μ A, I_F = 0 $mA^{(1)}$

 $V_{CC} = 4.75 \text{ V}$, $V_{OH} = 30 \text{ V}$, $T_A = 25^{\circ} \text{ C}$

 $V_{CC} = 4.75 \text{ V}, V_{OH} = 30 \text{ V}, T_A = 25^{\circ} \text{ C}$

 $V_{CC} = 5 \text{ V}, T_A = 25^{\circ} \text{ C}$

 $V_{CC} = 5.25 \text{ V, } I_F = 20 \text{ mA}$

 $V_{CC} = 5.25 \text{ V, } I_F = 0 \text{ mA}$

 $V_{CC} = 5 \text{ V, } T_A = 25^{\circ} \text{ C}$

R_L = 8 TTL Loads (Totem-Pole)

 $R_L = 360 \Omega$ (Open-Collector)

 $V_{CC} = 5 V$

Output = GND

Output = GND

 $I_F = 0$ or 20 mA

OPB900 through OPB913 Series (L, W_Z)

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
put Diod	e (See OP240B for more information — for refe	erence o	nly)			
V_{F}	Forward Voltage	-	-	1.7	V	I _F = 20 mA, T _A = 25° C
I _R	Reverse Current		-	100	μΑ	V _R = 2 V, T _A = 25° C
tput Pho	otologic® Sensor (See OPL560 for more inform	ation —	for refe	erence on	ly)	
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⁾
CCL	Inverted Totem-Pole Output Inverted Open-Collector Output	-	-	15	mA	V _{CC} = 5.25 V, I _F = 20 mA ⁽¹⁾
Іссн	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⁾

0.4

0.4

100

100

20

-100

-100

2

70

5

2.4

-30

-30

٧

٧

μΑ

mA

mA

ns

Notes:

 V_{OL}

 V_{OH}

 I_{OH}

 $I_F(+)$

 $I_{F}(+)/I_{F}(-)$

 I_{OS}

 t_r , t_f

 t_{PLH} , t_{PHL}

Hysteresis

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

General Note

Inverted Open-Collector Output

Buffered Open-Collector Output

Inverted Open-Collector Output

Low Level Supply Current:

Buffered Totem-Pole Output

Inverted Totem-Pole Output

High Level Output Voltage:

Buffered Totem-Pole Output

Inverted Totem-Pole Output
High Level Output Current:

Buffered Open-Collector Output

Inverted Open-Collector Output

Short Circuit Output Current:

Buffered Totem-Pole Output

Inverted Totem-Pole Output

Output Rise Time, Output Fall Time

Propagation Delay Low-High and High-Low

LED Positive-Going Threshold Current