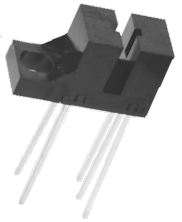
Photologic® Slotted Optical Switch

OPB120A, OPB120B, OPB121B, OPB122B



Features:

- Choice of output configuration
- Printed circuit board mounting
- Opaque plastic housing
- Low profile
- 0.080” (2.03 mm) wide slot
- 0.275” (6.99 mm) lead spacing

Description:

The **OPB120** through **OPB123** devices consist of an infrared emitting diode and a Photologic® sensor (which is a monolithic integrated circuit that incorporates a linear amplifier and a Schmitt Trigger). The **OPB120** series have an LED and Photologic® sensor mounted on opposite sides of a 0.080” (2.03 mm) wide gap of an opaque housing. The OPB12_A series have a molded 0.040” (1.02 mm) wide apertures located over both the emitter and the Photologic® sensor. The OPB12_B seriesseries have a molded 0.040” (1.016 mm) wide apertures located over the emitter and 0.010” (0.254 mm) over the Photologic® sensor. All devices in this series have the added stability utilizing hysteresis built into the amplification circuitry.

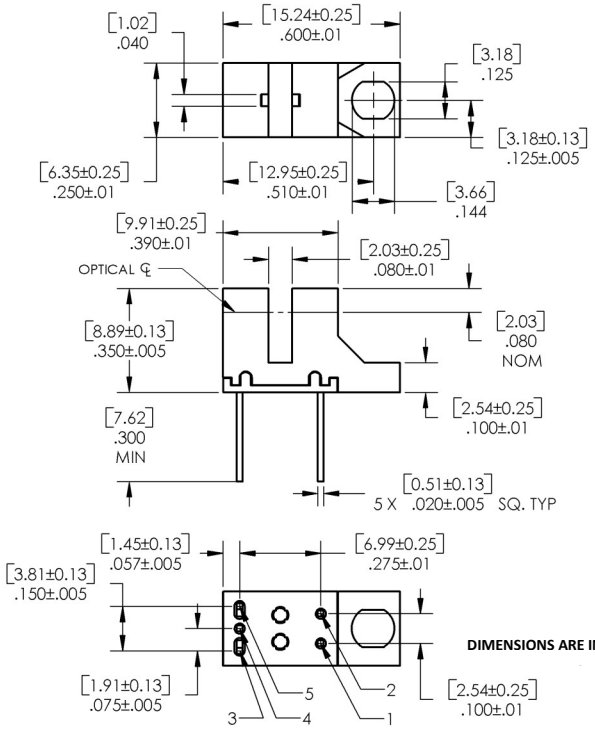
The electrical output can be specified as either buffered Totem-Pole **(OPB 120A, OPB120B)**, buffered Open-Collector **(OPB121B)**, and Inverted Totem-Pole **(OPB122B)**.

Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

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

Pin #	Description
1	Cathode
2	Anode
3	V_{CC}
4	Output
5	Ground



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

Ordering Information		
Part Number	**Sensor Photologic®**	**Aperture Emitter/Sensor**
OPB120A	Totem-Pole	0.04" / 0.04"
OPB120B		0.04" / 0.01"
OPB121B	Open-Collector	0.04" / 0.01"
OPB122B	Inverted Totem-Pole	0.04" / 0.01"

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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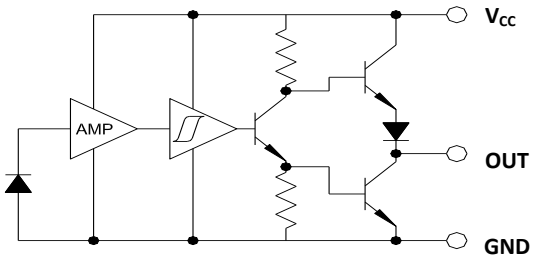
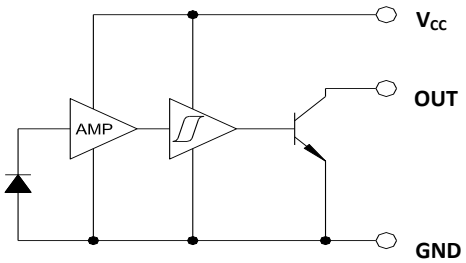
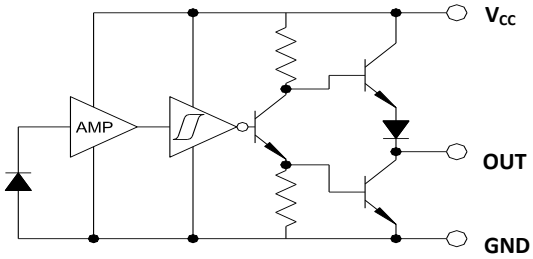
OPB120 Buffered Totem-Pole



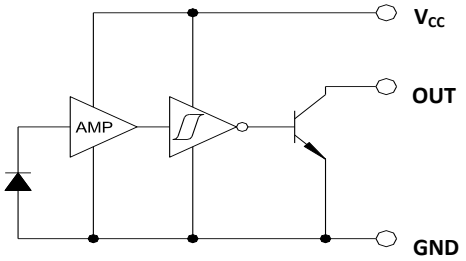
OPB121 Buffered Open-Collector



OPB122 Inverted Totem-Pole



OPB123 Inverted Open-Collector



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Electrical Specifications

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Supply Voltage (not to exceed 3 seconds)	10 V
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 Diode	
Input Diode Power Dissipation(2)	100 mW
Output Photologic® Power Dissipation(4)	200 mW
Total Device Power Dissipation(5)	300 mW
Output Photologic®	
Voltage at Output Lead (Open Collector Output - OPB121, OPB122, OPB123)	35 V
Forward D.C. Current	40 mA
Reverse D.C. Current	2 V

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(2) Derate linearly 2.22 mW/°C above 25°C
(3) Normal application would be with light source blocked, simulated by I_F = 0.
(4) Derate linearly 4.44 mW/°C above 25°C
(5) Derate linearly 6.66 mW/°C above 25°C
(6) Applies to Totem Pole configurations (OPB120A, OPB120B) only.
(7) 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 (see OP240 for additional information)						
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 OPL560 for additional information)						
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
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
	Inverted Totem-Pole Output Inverted Open-Collector Output	-	-	15	mA	V_{CC} = 5.25 V, I_F = 0 mA(1)
V_{OL}	Low Level Output Voltage: 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
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
	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 Voltage: Buffered Open-Collector Output	-	-	100	µA	V_{CC} = 4.75 V, V_{OH} = 30 V, I_F = 25 mA, T_A = 25° C
	Inverted Open-Collector Output	-	-	100	µA	V_{CC} = 4.75 V, V_{OH} = 30 V, I_F = 0 mA, T_A = 25° C
$I_F(+)$	LED Positive-Going Threshold Current	-	-	15	mA	V_{CC} = 5 V, T_A = 25° C
$I_F(+)/I_F(-)$	Hysteresis	-	2	-	-	V_{CC} = 5 V

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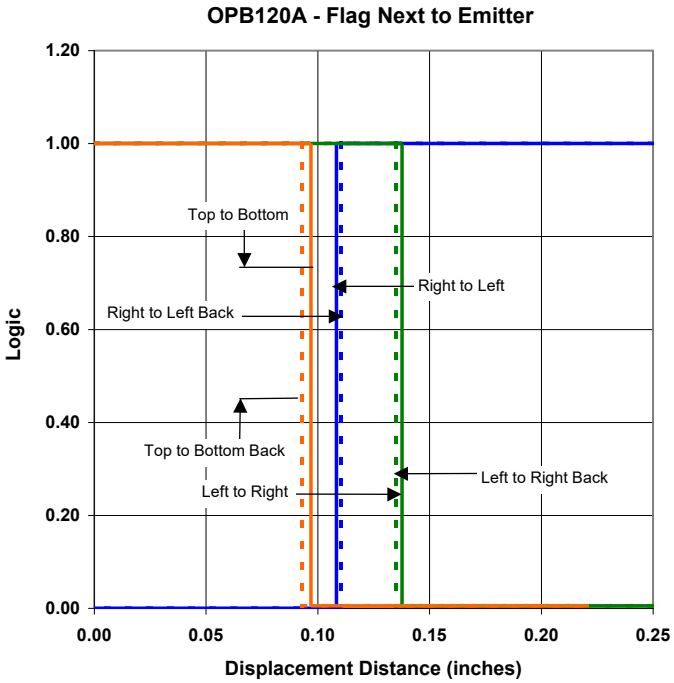
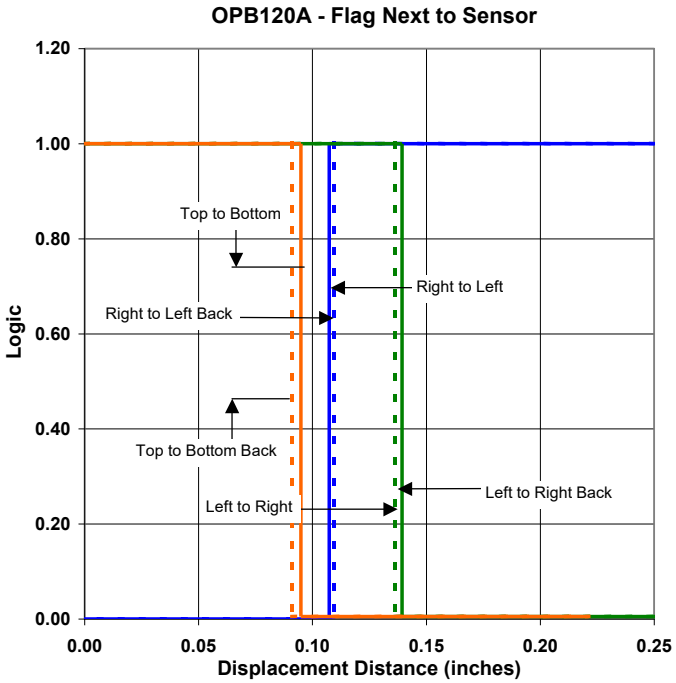
Electrical Specifications

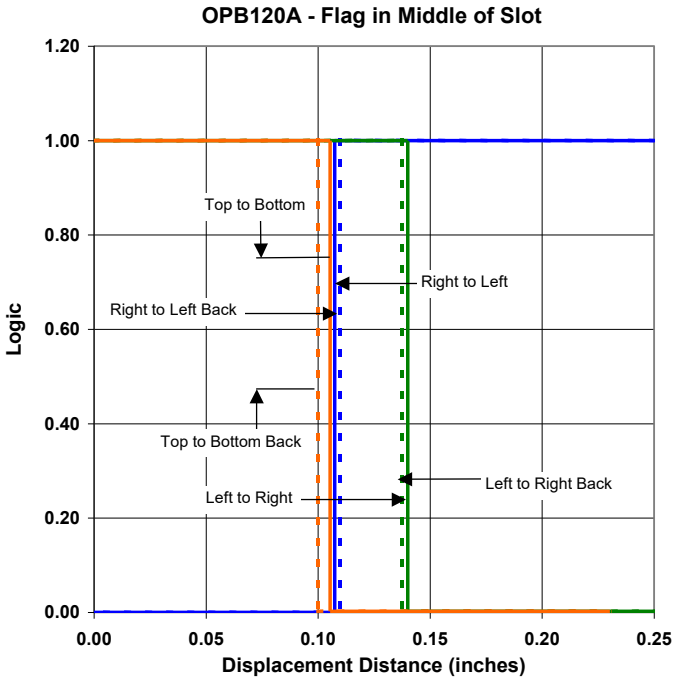
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I_{OS}	Short Circuit Output Current: Buffered Totem-Pole Output	-20	-	-100	mA	V_{CC} = 5.25 V, I_F = 20 mA(2) Output = GND
	Inverted Totem-Pole Output	-20	-	-100	mA	V_{CC} = 5.25 V, I_F = 0 mA(2) 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 & High-Low	-	5	-	µs	

Notes:
(1) Normal application would be with light source blocked, simulated by I_F = 00.
(2) Applies to Totem Pole configurations (OPB120A, OPB120B) only.







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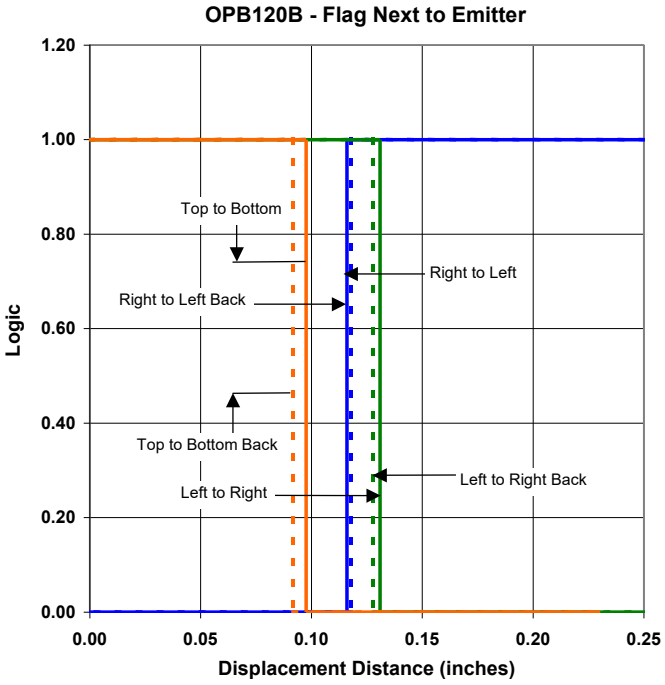

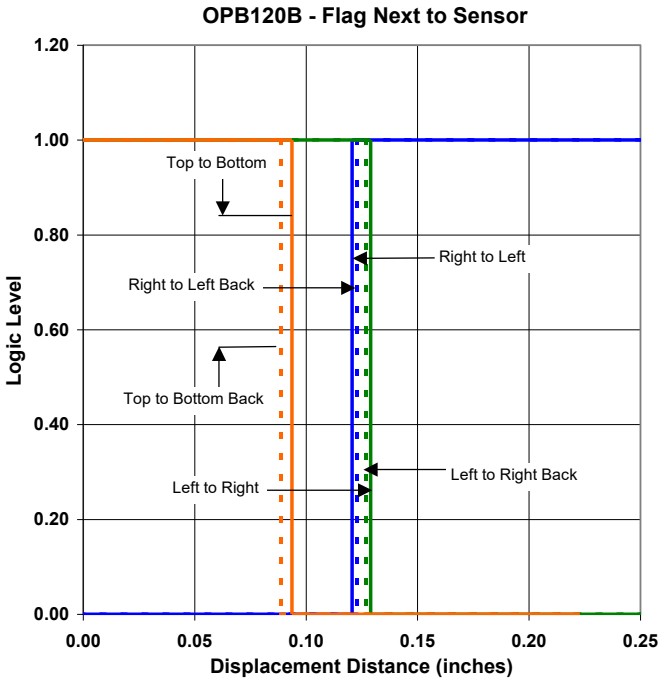

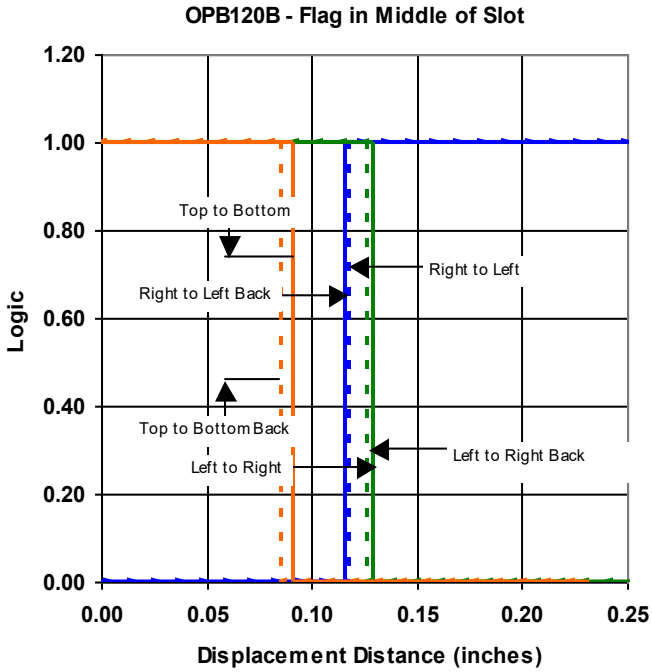

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