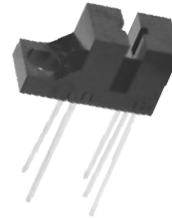


Photologic® Slotted Optical Switch

OPB120B

Obsolete (OPB120A, 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 **OPB120B** consists 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 **OPB120B** has an LED and Photologic® sensor mounted on opposite sides of a 0.080" (2.03 mm) wide gap of an opaque housing. The OPB120B has a molded 0.040" (1.016 mm) wide aperture 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 is a buffered Totem-Pole.

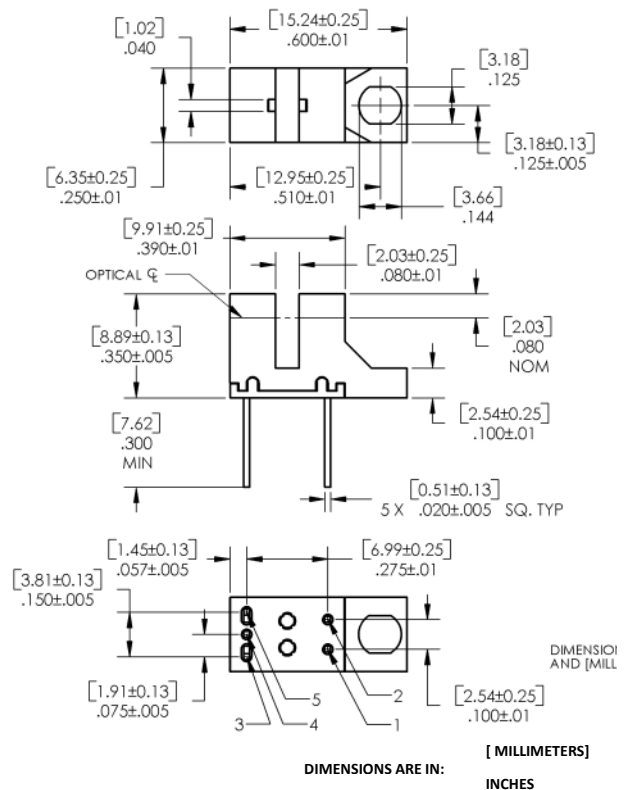
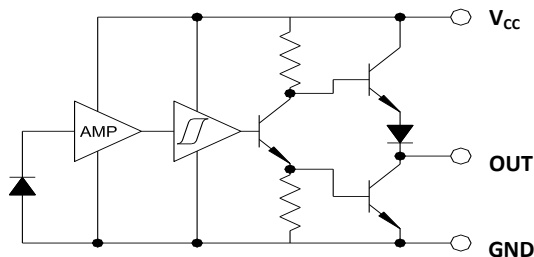
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

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

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

OPB120 Buffered Totem-Pole



| Pin # | Description |
|-------|-----------------|
| 1 | Cathode |
| 2 | Anode |
| 3 | V _{CC} |
| 4 | Output |
| 5 | Ground |



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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Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ 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 |

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 (OPB120B) only.
- (7) All parameters tested using pulse technique.

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OPB120B

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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 | - | - | 15 | mA | V _{CC} = 5.25 V, I _F = 0 mA ⁽¹⁾ |
| I _{CCH} | High Level Supply Current: Buffered Totem-Pole Output | - | - | 15 | mA | V _{CC} = 5.25 V, I _F = 20 mA |
| V _{OL} | Low Level Output Voltage: Buffered Totem-Pole Output | - | - | 0.4 | V | V _{CC} = 4.75 V, I _{OL} = 12.8 mA, I _F = 0 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 |
| 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 |

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 |
| 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 |
| t _{PLH} , t _{PHL} | Propagation Delay Low-High & High-Low | - | 5 | - | μs | R _L = 8 TTL Loads (Totem-Pole) |

Notes:

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

General Note

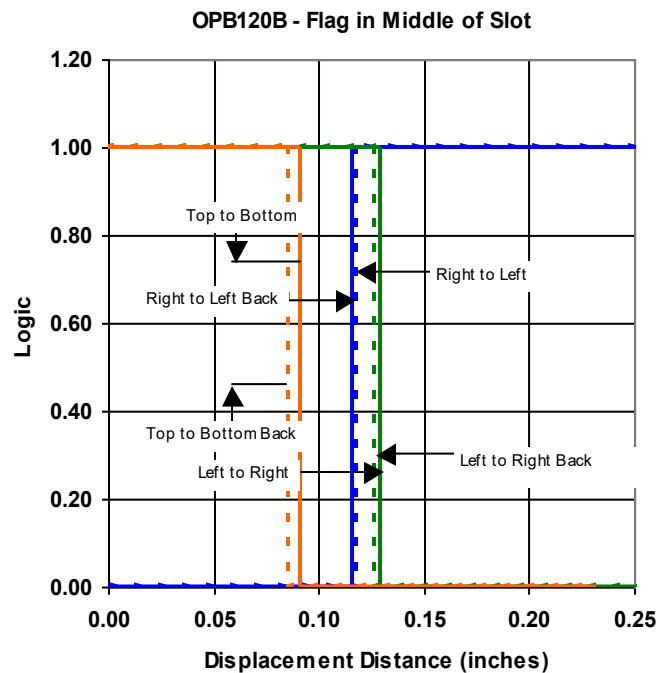
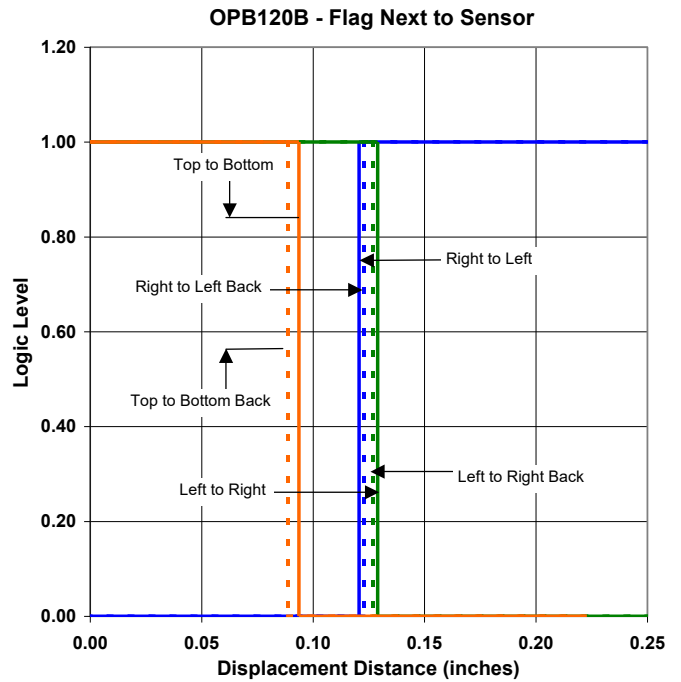
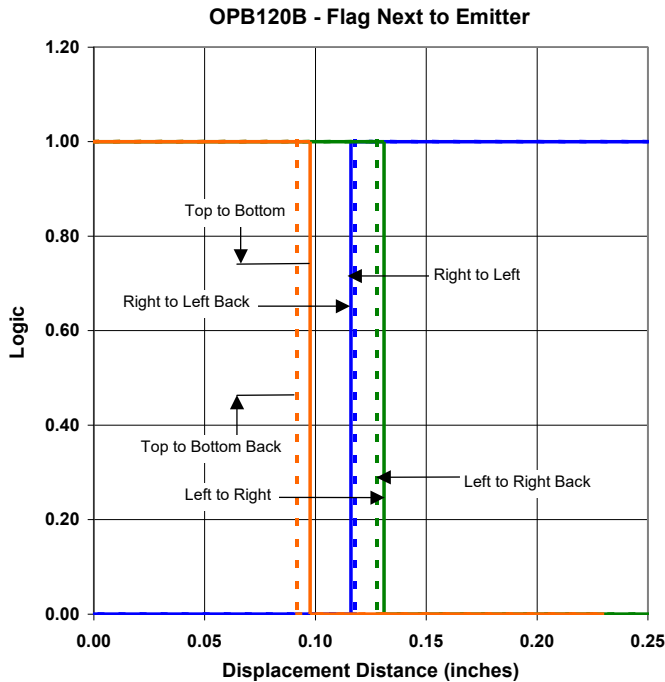
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