

# Photologic® Reflective Object Sensor



OPB715Z, OPB716Z, OPB717Z, OPB718Z

## Features:

- Focused for maximum sensitivity
- .5" (12.700 mm) sensing distance
- Panel mount
- Choice of output configurations
- 18" (457.200 mm) minimum wire length



## Description:

The **OPB715Z** series reflective assembly consists of a GaAlAs LED and a Photologic® sensor enclosed in an IR transmissive housing. The sensor is characterized to detect paper at 0.5" (12.7 mm). The sensor has a wide operating distance range and is capable of detecting reflective objects at other distances. The reflective distance depends on the reflectance materials.

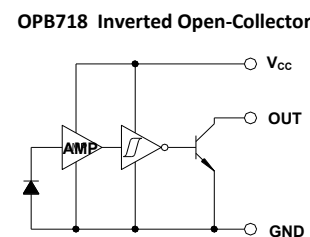
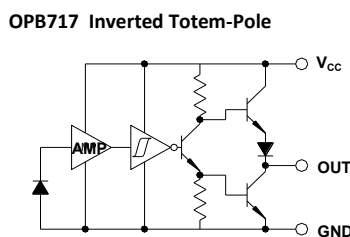
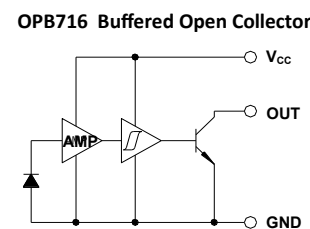
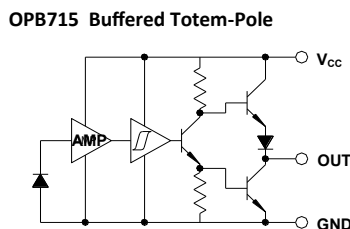
These devices are designed to replace conventional mechanical limit switches where long life and reliability are critical. The switches are designed to easily snap mount into a 0.036 inch (0.914 mm) 20 gage thick material with a rectangular opening of 0.315" x 0.472" (8.0 mm x 12.0 mm).

The sensor's panel-mount plastic housing shields stray light and is terminated with 18" (457 mm) UL approved 26 AWG wire leads. The LED is current limited internally for design convenience. Its output can be specified as either TTL Totem-Pole or TTL Open-Collector. Inverted output options are available for either output configuration.

## Applications:

- Focused for maximum sensitivity
- 0.5" (12.700 mm) sensing distance
- Panel mount
- Choice of output configurations
- 18" (457.200 mm) minimum wire length

| Part Number | LED Peak Wavelength | Sensor Photologic® | Reflection Distance Inch (mm) | Lead Length / Spacing |
|-------------|---------------------|--------------------|-------------------------------|-----------------------|
| OPB715Z     | 890 nm              | Totem-Pole         | 0.50"                         | 18" / 26 AWG Wire     |
| OPB716Z     |                     | Open-Collector     |                               |                       |
| OPB717Z     |                     | Inv-Totem-Pole     |                               |                       |
| OPB718Z     |                     | Inv-Open-Collector |                               |                       |



| Color-Pin # | Description     |
|-------------|-----------------|
| Orange      | V <sub>CC</sub> |
| White       | Output          |
| Violet      | 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.

OPTEK Technology, Inc.  
1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200  
www.optekinc.com | www.ttelectronics.com

## Electrical Specifications

| Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                  |
|---|------------------|
| Storage & Operating Temperature Range                                       | -40° C to +85° C |
| Supply Voltage, $V_{CC}$ (not to exceed 2 seconds)                          | 10 V             |
| Power Dissipation <sup>(1)</sup>  | 300 mW           |
| Output Voltage (Open-Collector only)  | 35 V             |

| Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted, see OPL560 series for additional electrical information) |   |                |     |      |               |   |
|--|---|----------------|-----|------|---------------|---|
| SYMBOL   | PARAMETER   | MIN            | TYP | MAX  | UNITS         | TEST CONDITIONS                                       |
| $V_{CC}$   | Operating Supply Voltage                                      | 4.75           | -   | 5.25 | V             | -   |
| $I_{CCL}$  | Low-Level Supply Current:                                     | -              | -   | 30   | mA            | $V_{CC} = 5.0\text{ V}$ , output open                 |
| $I_{CCH}$  | High-Level Supply Current                                     | -              | -   | 50   | mA            | $V_{CC} = 5.0\text{ V}$ , output open                 |
| $I_{OH}$   | High Level Output Current                                     | -              | -   | 100  | $\mu\text{A}$ | $V_{OH} = 30\text{ V}$ , $E_E = 1\text{ mW/cm}^2$     |
|  | OPB716<br>OPB718  | -              | -   | 100  | $\mu\text{A}$ | $V_{OH} = 30\text{ V}$ , $E_E = 0$                    |
| $I_{OS}$   | Short Circuit Output Current                                  | -              | -   | 100  | $\mu\text{A}$ | $V_{CC} = 5.0\text{ V}$ , $V_{CH} = 5\text{ V}$       |
|  | OPB715<br>OPB717  | -              | -   | 100  | $\mu\text{A}$ |   |
| $V_{OH}$   | High Level Output Voltage<br>OPB715, OPB717<br>OPB716, OPB718 | $V_{CC} - 2.1$ | -   | -    | V             | $I_{OH} = -1\ \mu\text{A}$ , $E_E = 1\text{ mW/cm}^2$ |
|  |   | $V_{CC} - 2.1$ | -   | -    | V             | $I_{OH} = -1\ \mu\text{A}$ , $E_E = 0$                |
| $V_{OL}$   | Low Level Output Voltage<br>OPB715, OPB717<br>OPB716, OPB718  | -              | -   | .4   | V             | $I_{OL} = 16\text{ mA}$ , $E_E = 0$                   |
|  |   | -              | -   | .4   | V             | $I_{OL} = 16\text{ mA}$ , $E_E = 1\text{ mW/cm}^2$    |

Notes:

- (1) Derate linearly at 5.0 mW / °C above 25° C.
- (2) Terminating wire is 7 strand, 26 AWG, UL 1429.
- (3) Tested at  $d = 0.55''$  (12.7 mm) from a 90% diffuse, white test surface. Reference: Eastman Kodak Catalog #E 152 7795.
- (4) No reflective surface.

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**Typical - Voltage vs Displacement**  
Kodak 90%



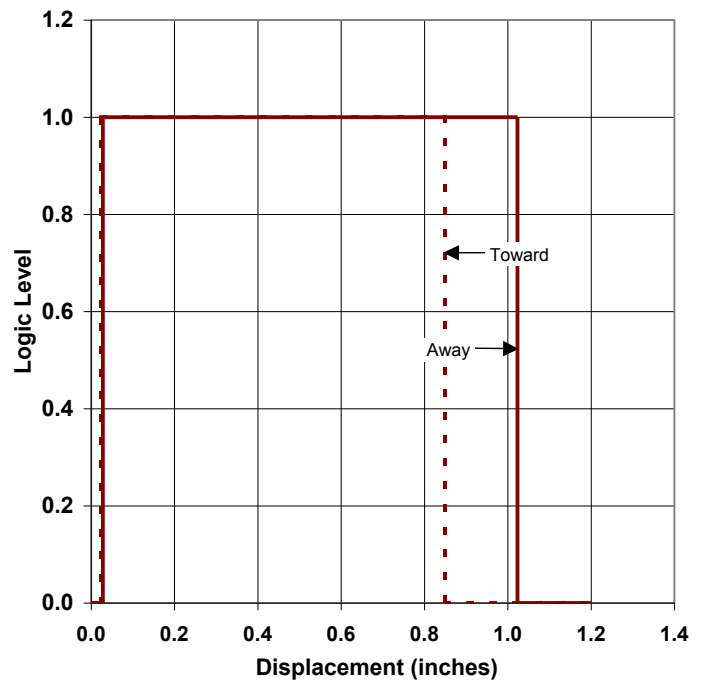
**Typical - Voltage vs Displacement**  
Kodak 19% & Retroreflective



**Typical - Voltage vs Displacement**  
Copy Paper



**Typical - Voltage vs Displacement**  
Avery Label 5160



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**Typical - Trigger Points vs Displacement  
From Both Sides**



**Typical - Trigger Points vs Displacement  
From Top & Bottom**



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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

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