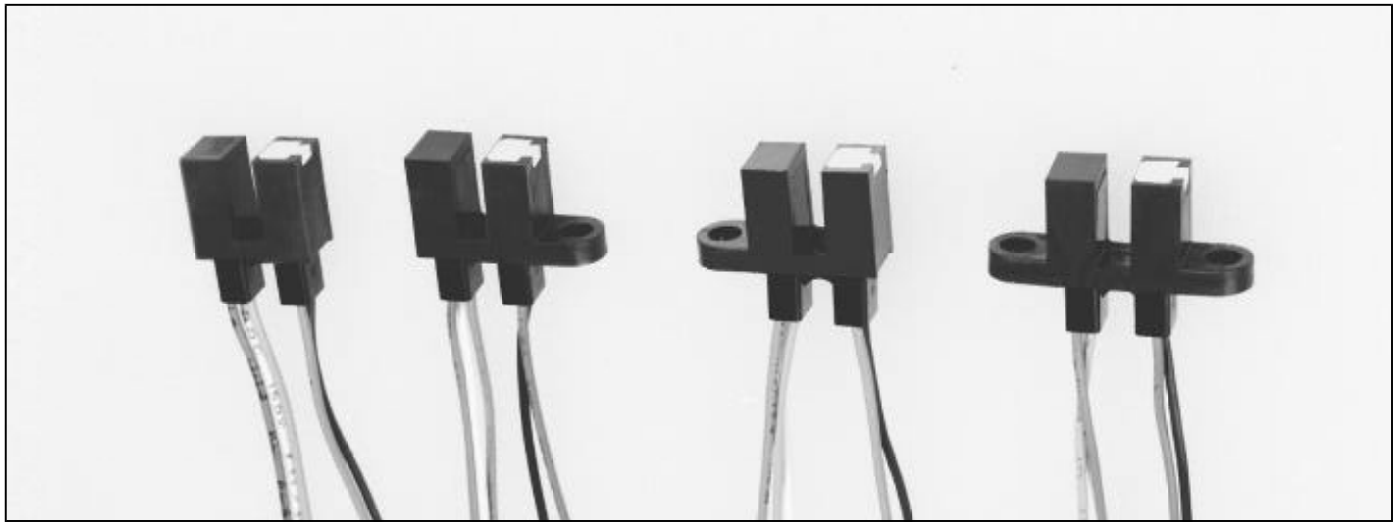
**Product Bulletin OPB980**
**February 1998**

# Photologic™ Slotted Optical Switches
## Types OPB980, OPB990 Series



### Features

- Choice of mounting configuration
- Choice of aperture
- Choice of output configuration
- Choice of opaque or IR transmissive shell material
- Data rates to 250 kBaud
- 24” min 26AWG wire leads

### Description

The OPB980 and OPB990 series of Photologic™ Photo Integrated Circuit Switches provide optimum flexibility for the design engineer. Building from a standard housing with a .125” wide slot, the user can specify (1) type and polarity of TTL output, (2) discrete shell material, (3) aperture width, and (4) choice of mounting configuration.

The electrical output can be satisfied as either TTL totem pole or TTL open collector. Either may be supplied with inverter or buffer output polarity. All have added stability of a built-in hysteresis amplifier.

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

| | |
|---|---|
| Supply Voltage, $V_{CC}$ (Not to exceed 3 sec.) | 10V |
| Storage Temperature Range | -40° C to +80° C |
| Operating Temperature Range | -40° C to +70° C |
| Input Diode Power Dissipation | 100mW(1) |
| Output Photologic™ Power Dissipation | 200mW(2) |
| Total Device Power Dissipation | 300mW(3) |
| Voltage at Output Lead (Open Collector Output) | 35V |
| Diode Forward D.C. Current | 40mA |
| Diode Reverse D.C. Voltage | 2V |

**Notes:**
(1) Derate linearly 2.22mW/° C above 25° C.
(2) Derate linearly 4.44mW/° C above 25° C.
(3) Derate linearly 6.66mW/° C above 25° C.
(4) The OPB980/OPB990 series of switches are terminated with 24 inches of 7 strand 26 AWG, UL 1429 insulated wire on each terminal. Insulation colors and functions are:

| | |
|---|---|
| RED - IRED Anode | WHITE - $V_{CC}$ |
| BLACK - IRED Cathode | BLUE - Ouput |
| | GREEN - Ground |

Other wire lenghts and/or colors in addition to customer selected connectors are available. Contact your local representative or call the factory.
(5) Normal application would be with light source blocked, simulated by $I_F$ = 0mA..
(6) All parameters tested using pulse techniques.

### Housing

All housings are an opaque grade of injection-molded plastic to minimize the assembly’s sensitivity to ambient radiation, both visible and near-infrared. Discrete shells (exposed on the parallel faces inside the device throat) are either IR transmissive plastic for applications where aperture contamination may occur or opaque plastic for maximum protection against ambient light.

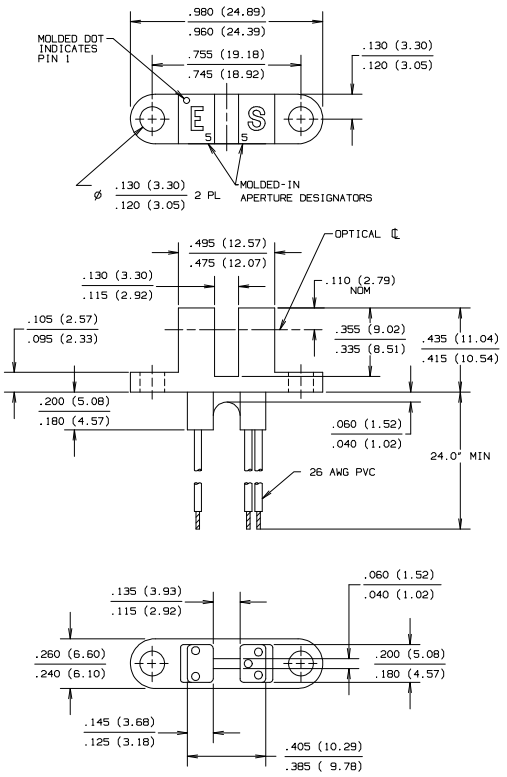
Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.
Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396

# Types OPB980, OPB990 Series

**Electrical Characteristics** ($T_A$ = -40° C to +70° C unless otherwise noted).

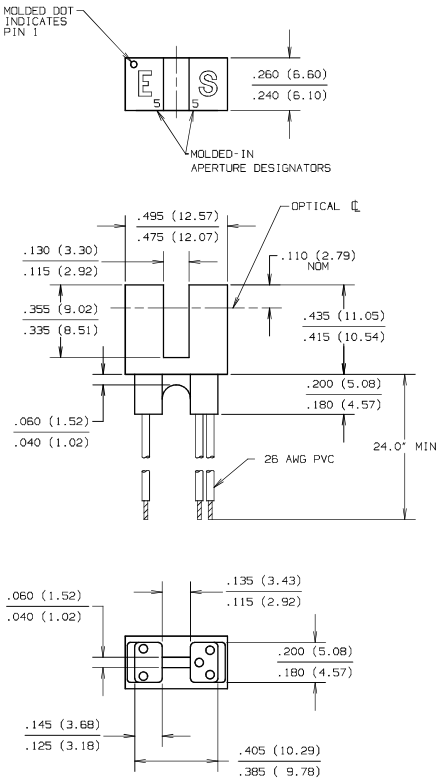
| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|---|---|---|---|---|---|---|
| **Input Diode** | | | | | | |
| $V_F$ | Forward Voltage | | | 1.7 | V | $I_F$ = 20 mA, $T_A$ = 25° C |
| $I_R$ | Reverse Current | | | 100 | µA | $V_R$ = 2.0 V, $T_A$ = 25° C |
| **Output Photologic® Sensor** | | | | | | |
| $V_{CC}$ | Operating D.C. Supply Voltage | 4.75 | | 5.25 | V | |
| $I_{CCL}$ | Low Level Supply Current:<br>Buffered Totem-Pole Output<br>Buffered Open-Collector Output | | | 15 | mA | $V_{CC}$ = 5.25 V, $I_F$ = 0 mA(5) |
| | Inverted Totem-Pole Output<br>Inverted Open-Collector Output | | | 15 | mA | $V_{CC}$ = 5.25 V, $I_F$ = 15 mA |
| $I_{CCH}$ | High Level Supply Current:<br>Buffered Totem-Pole Output<br>Buffered Open-Collector Output | | | 15 | mA | $V_{CC}$ = 5.25 V, $I_F$ = 15 mA |
| | Inverted Totem-Pole Output<br>Inverted Open-Collector Output | | | 15 | mA | $V_{CC}$ = 5.25 V, $I_F$ = 0 mA(5) |
| $V_{OL}$ | Low Level Output Voltage:<br>Buffered Totem-Pole Output<br>Buffered Open-Collector Output | | | 0.4 | V | $V_{CC}$ = 4.75 V, $I_{OL}$ = 12.8 mA<br>$I_F$ = 0 mA(5) |
| | Inverted Totem-Pole Output<br>Inverted Open-Collector Output | | | 0.4 | V | $V_{CC}$ = 4.75 V, $I_{OL}$ = 12.8 mA<br>$I_F$ = 15 mA |
| $V_{OH}$ | High Level Output Voltage:<br>Buffered Totem-Pole Output | 2.4 | | | V | $V_{CC}$ = 4.75 V, $I_{OH}$ = -800 µA<br>$I_F$ = 15 mA |
| | Inverted Totem-Pole Output | 2.4 | | | V | $V_{CC}$ = 4.75 V, $I_{OH}$ = -800 µA<br>$I_F$ = 0 mA(5) |
| $I_{OH}$ | High Level Output Current:<br>Buffered Open-Collector Output | | | 100 | µA | $V_{CC}$ = 4.75 V, $V_{OH}$ = 30 V,<br>$I_F$ = 15 mA, $T_A$ = 25° C |
| | Inverted Open-Collector Output | | | 100 | µA | $V_{CC}$ = 4.75 V, $V_{OH}$ = 30 V,<br>$I_F$ = 0 mA, $T_A$ = 25° C |
| $I_F(+)$ | LED Positive-Going Threshold Current | | | 15 | mA | $V_{CC}$ = 5.0 V, $T_A$ = 25° C |
| $I_F(+)/I_F(-)$ | Hysteresis | | 2.0 | | | $V_{CC}$ = 5.0 V |
| $I_{OS}$ | Short Circuit Ouput Current:<br>Buffered Totem-Pole Ouput<br>"11" Series | -15 | | -60 | mA | $V_{CC}$ = 5.25 V, $I_F$ = 15 mA<br>Ouput = GND |
| | Inverted Totem-Pole Ouput<br>"11" Series | -30 | | -60 | mA | $V_{CC}$ = 5.25, $I_F$ = 0 mA<br>Output = GND |

# Types OPB980, OPB990 Series



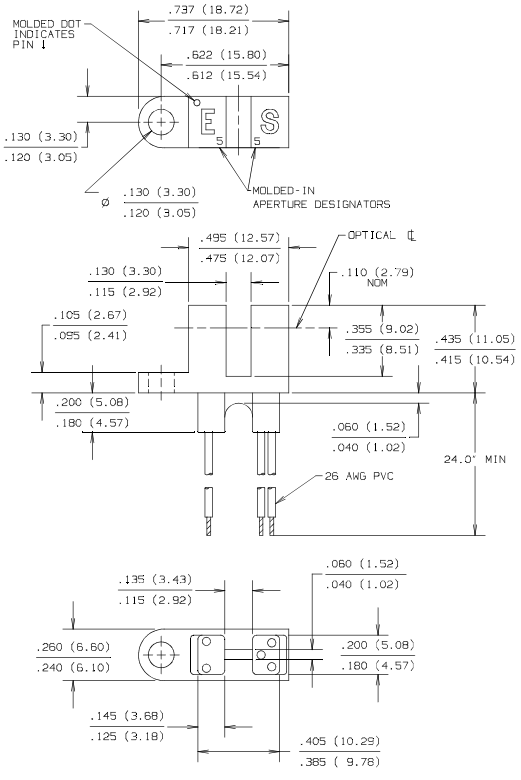

DIMENSIONS ARE IN INCHES (MILLIMETERS)

## Package N



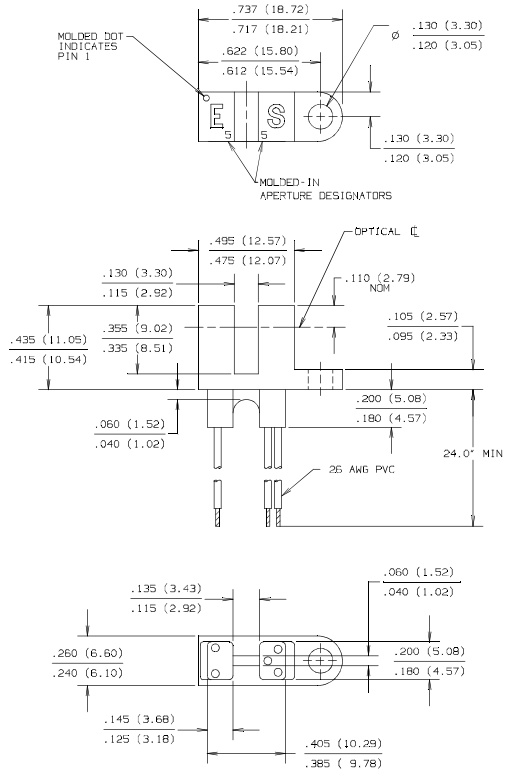

DIMENSIONS ARE IN INCHES (MILLIMETERS)

## Package L




DIMENSIONS ARE IN INCHES (MILLIMETERS)

## Package P




DIMENSIONS ARE IN INCHES (MILLIMETERS)

# PART NUMBER GUIDE

OPB 9 X X X X X

Optek Assembly

Photologic™
Photo Integrated Circuit
Sensor Family

Discrete Shell Material
Designation

8 - Base Mount IR Transmissive
Plastic Discrete Shell
With Wire Termination

9 - Base Mount Opaque
Plastic Discrete Shell
With Wire Termination

Aperture Width In Front
of Sensor
5 = 0.050" 1= 0.010"

Aperture Width In Front
of Emitter
5 = 0.050" 1= 0.010"

Mounting Configurations

T - Both Mounting Tabs
N - No Mounting Tabs
L - Single Mounting Tab
Emitter Side
P - Single Mounting Tab
Photologic™ Side

Electrical Specification Variations

0 - Buffered Totem-Pole Output

1 - Buffered Open-Collector Output

2 - Inverted Totem-Pole Output

3 - Inverted Open-Collector Output

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