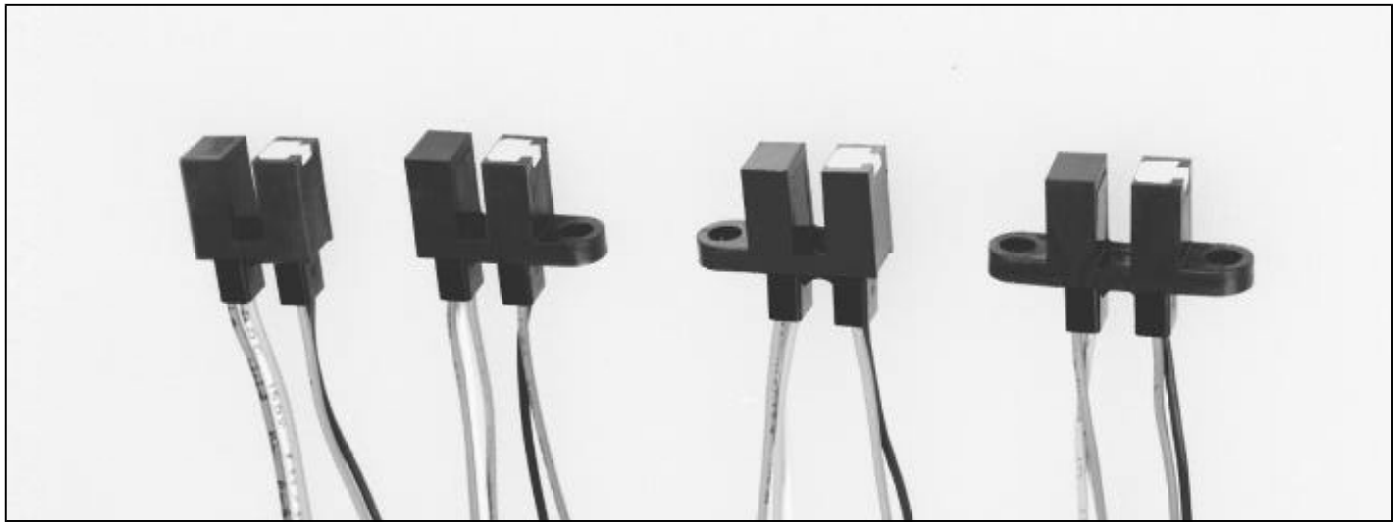
Photologic™ Slotted Optical Switches
Types OPB980, OPB990 Series



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.

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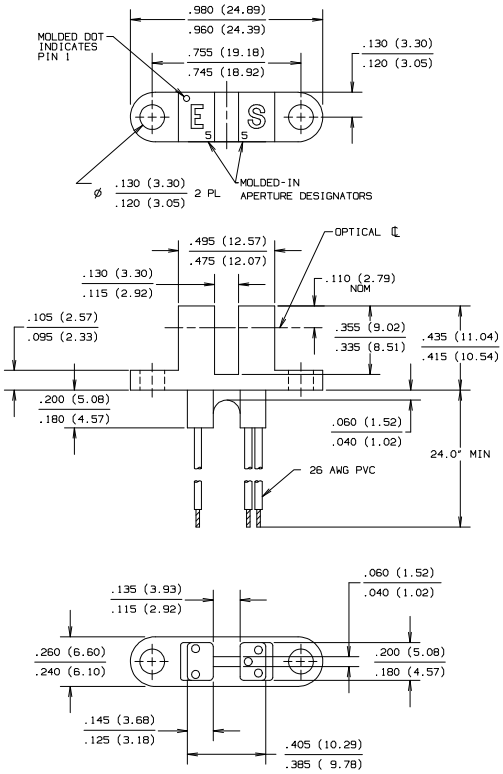
Types OPB980, OPB990 Series

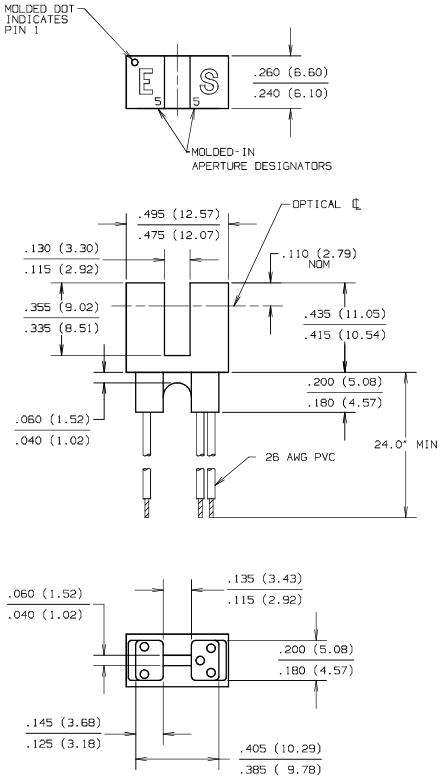
Electrical Characteristics (T_A = -40° C to +70° C unless otherwise noted).

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: Buffered Totem-Pole Output Buffered Open-Collector Output			15	mA	V_{CC} = 5.25 V, I_F = 0 mA(5)
	Inverted Totem-Pole Output Inverted Open-Collector Output			15	mA	V_{CC} = 5.25 V, I_F = 15 mA
I_{CCH}	High Level Supply Current: Buffered Totem-Pole Output Buffered Open-Collector Output			15	mA	V_{CC} = 5.25 V, I_F = 15 mA
	Inverted Totem-Pole Output Inverted Open-Collector Output			15	mA	V_{CC} = 5.25 V, I_F = 0 mA(5)
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(5)
	Inverted Totem-Pole Output Inverted Open-Collector Output			0.4	V	V_{CC} = 4.75 V, I_{OL} = 12.8 mA I_F = 15 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 = 15 mA
	Inverted Totem-Pole Output	2.4			V	V_{CC} = 4.75 V, I_{OH} = -800 µA I_F = 0 mA(5)
I_{OH}	High Level Output Current: Buffered Open-Collector Output			100	µA	V_{CC} = 4.75 V, V_{OH} = 30 V, I_F = 15 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} = 5.0 V, T_A = 25° C
$I_F(+)/I_F(-)$	Hysteresis		2.0			V_{CC} = 5.0 V
I_{OS}	Short Circuit Ouput Current: Buffered Totem-Pole Ouput "11" Series	-15		-60	mA	V_{CC} = 5.25 V, I_F = 15 mA Ouput = GND
	Inverted Totem-Pole Ouput "11" Series	-30		-60	mA	V_{CC} = 5.25, I_F = 0 mA Output = GND



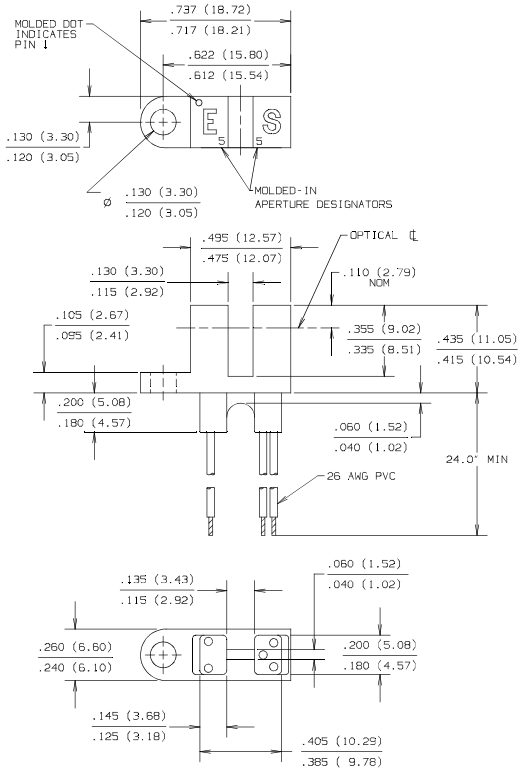
DIMENSIONS ARE IN INCHES (MILLIMETERS)

Package N



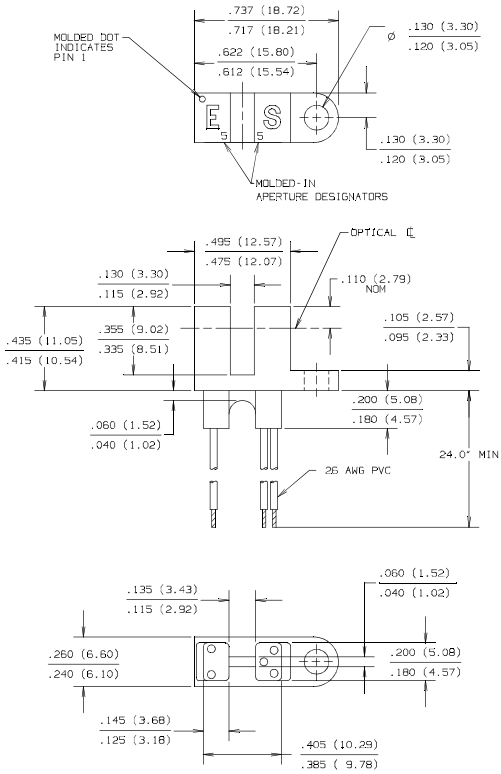
DIMENSIONS ARE IN INCHES (MILLIMETERS)

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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