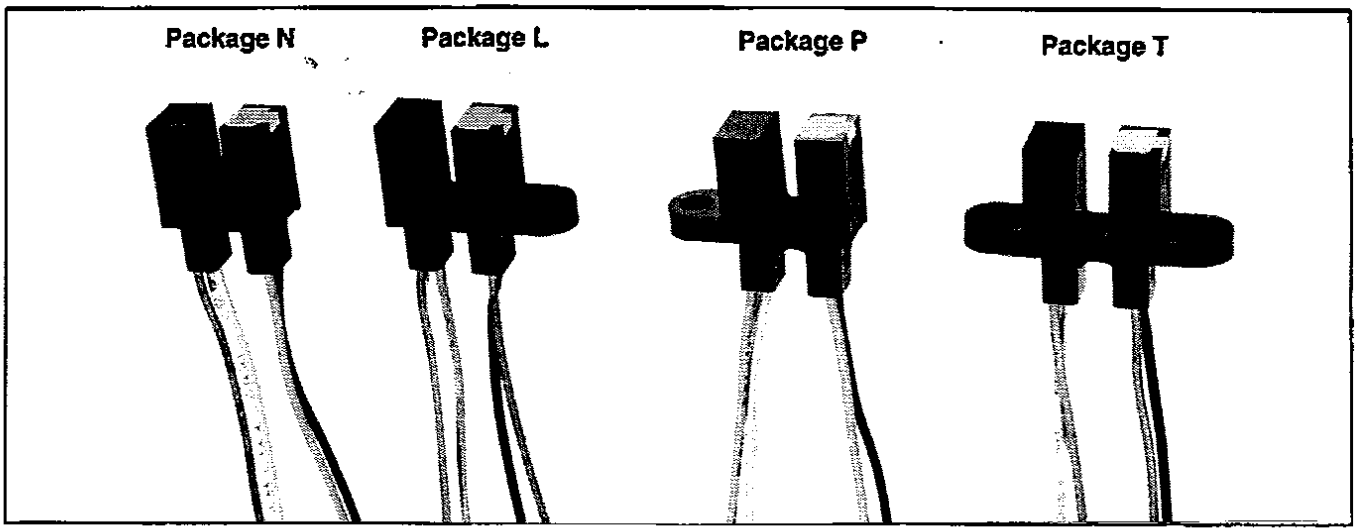
Photologic® Slotted Optical Switches
Types OPB480, OPB490 Series



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
- Low power consumption

Description

The OPB480 and OPB490 series of Photologic® Photo Integrated Circuit Switches provide optimum flexibility for the design engineer. Building from a standard housing with a 0.125" (3.18 mm) 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. These devices exhibit stable performance over supply voltages ranging from 4.5 V to 16.0 V and may be specified as buffered or inverted with 10 kW pull-up or open collector output. All are TTL/LSTTL compatible and can drive up to 10 TTL loads.

Replaces/Upgrades

OPB980, OPB990 series

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

Supply Voltage, V_{CC} (Not to exceed 3 sec.)	18 V
Storage Temperature Range	-40° C to +80° C
Operating Temperature Range	-40° C to +80° C
Input Diode Power Dissipation	100 mW(1)
Output Photologic® Power Dissipation	90 mW(2)
Total Device Power Dissipation	190 mW(3)
Voltage at Output Lead (Open Collector Output)	35 V
Diode Forward D.C. Current	40 mA
Diode Reverse D.C. Voltage	2 V

Notes:

(1) Derate linearly 1.82 mW/° C above 25° C.
(2) Derate linearly 1.64 mW/° C above 25° C.
(3) Derate linearly 3.45 mW/° 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 - Output
	GREEN - Ground

Other wire lengths 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.

Types OPB480, OPB490 "11" Series

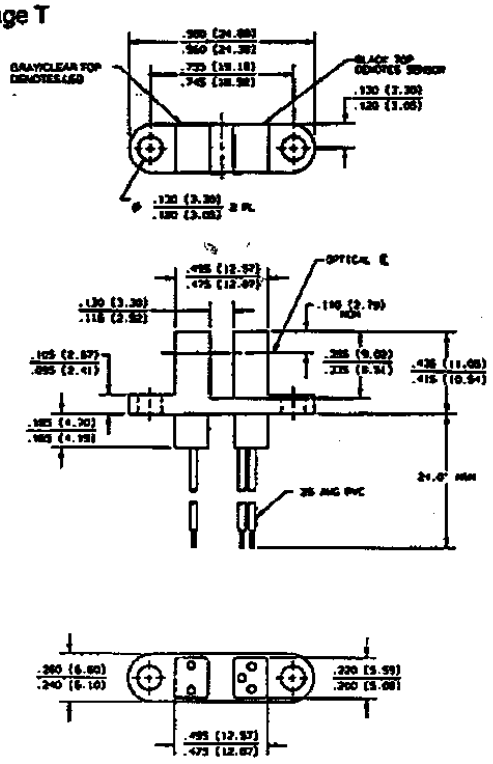
OPTEK

Electrical Characteristics (T_A = -40° C to +80° 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 V, T_A = 25° C
Output Photologic® Sensor						
V_{CC}	Operating D.C. Supply Voltage	4.5		16.0	V	
I_{CCL}	Low Level Supply Current: Buffered with 10 k pull-up Buffered Open-Collector Output			7.5	mA	V_{CC} = 16 V, I_F = 0 mA(5)
	Inverted with 10 k pull-up Inverted Open-Collector Output			7.5	mA	V_{CC} = 16 V, I_F = 12 mA
I_{CCH}	High Level Supply Current: Buffered with 10 k pull-up Buffered Open-Collector Output			7.5	mA	V_{CC} = 16 V, I_F = 12 mA
	Inverted with 10 k pull-up Inverted Open-Collector Output			7.5	mA	V_{CC} = 16 V, I_F = 0 mA(5)
V_{OL}	Low Level Output Voltage: Buffered with 10 k pull-up Buffered Open-Collector Output			0.4	V	V_{CC} = 4.5 V, I_{OL} = 16 mA I_F = 0 mA(5)
	Inverted with 10 k pull-up Inverted Open-Collector Output			0.4	V	V_{CC} = 4.5 V, I_{OL} = 16 mA I_F = 12 mA
V_{OH}	High Level Output Voltage: Buffered with 10 k pull-up	V_{CC}-1.5			V	V_{CC} = 4.5 V to 16 V, I_{OH} = -800 µA I_F = 12 mA
	Inverted with 10 k pull-up	V_{CC}-1.5			V	V_{CC} = 4.5 V to 16 V, I_{OH} = -800 µA I_F = 0 mA(5)
I_{OH}	High Level Output Current: Buffered Open-Collector Output			10	µA	V_{CC} = 16 V, V_{OH} = 30 V, I_F = 12 mA, T_A = 25° C
	Inverted Open-Collector Output			10	µA	V_{CC} = 16 V, V_{OH} = 30 V, I_F = 0 mA, T_A = 25° C
$I_{F(+)}$	LED Positive-Going Threshold Current			12	mA	V_{CC} = 5 V, T_A = 25° C
$I_{F(+)}/I_{F(-)}$	Hysteresis		1.2			V_{CC} = 5 V
t_r, t_f	Output Rise Time, Output Fall Time		50		ns	V_{CC} = 5 V, T_A = 25° C I_F = 0 or 12 mA
t_{PLH}, t_{PHL}	Propagation Delay Low-High & High-Low		3.0		µs	R_L = 300 Ω to 5 V C_L = 50 pF

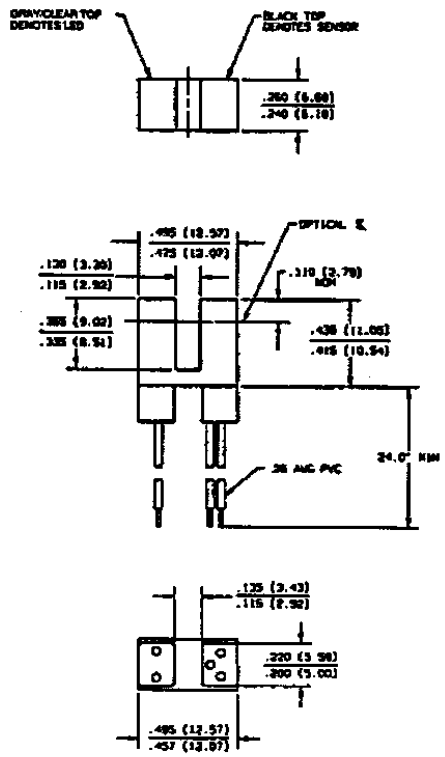
Types OPB480, OPB490 Series

Package T



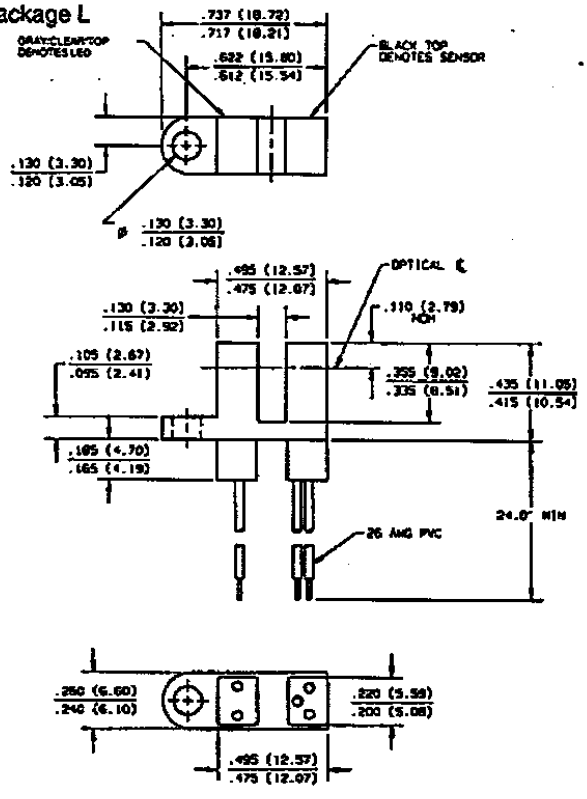
DIMENSIONS ARE IN INCHES (MILLIMETERS)

Package N



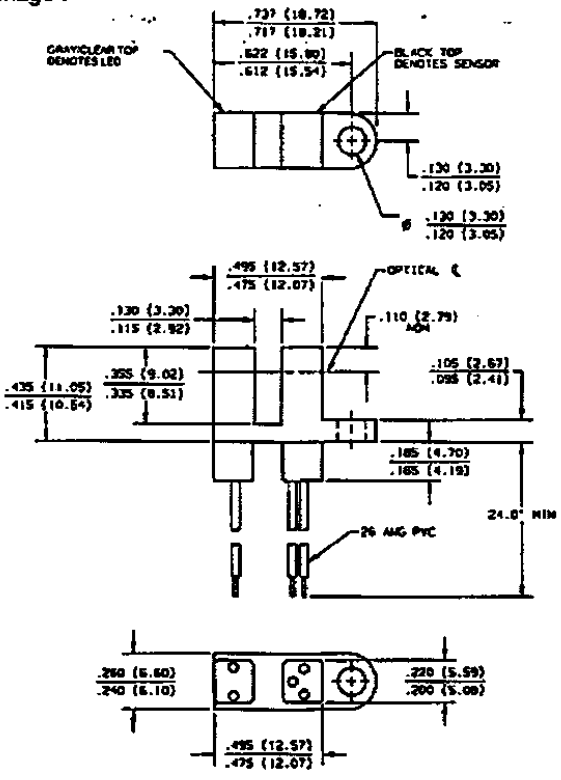
DIMENSIONS ARE IN INCHES (MILLIMETERS)

Package L



DIMENSIONS ARE IN INCHES (MILLIMETERS)

Package P



DIMENSIONS ARE IN INCHES (MILLIMETERS)

PART NUMBER GUIDE

OPB 4 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
1= 0.010"

Aperture Width In Front
of Emitter
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 with 10 k pull-up

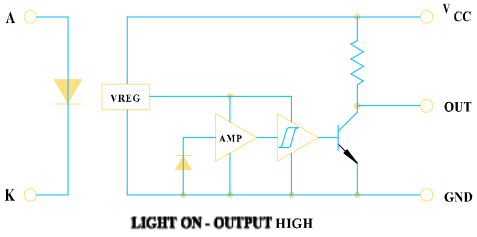
1 - Buffered Open-Collector Output

2 - Inverted with 10 k pull-up

3 - Inverted Open-Collector Output

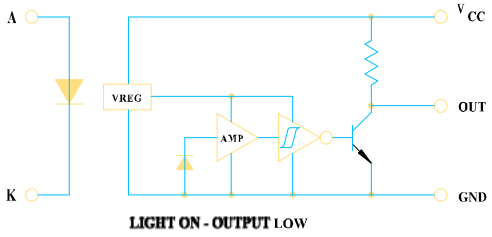
Schematic

OPB480/490 **BUFFER WITH PULL-UP** RESISTOR



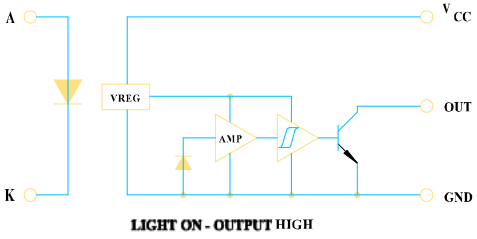
LIGHT ON - OUTPUT HIGH

OPB482/492 **INVERTER WITH PULL-UP** RESISTOR



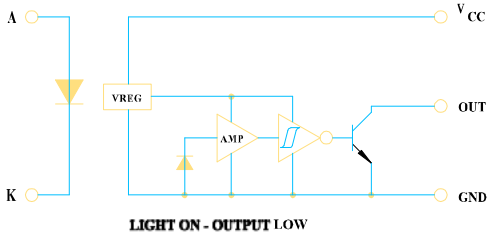
LIGHT ON - OUTPUT LOW

OPB481/491 **BUFFER/OPEN** COLLECTOR



LIGHT ON - OUTPUT HIGH

OPB483/493 **INVERTER/OPEN** COLLECTOR



LIGHT ON - OUTPUT LOW

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