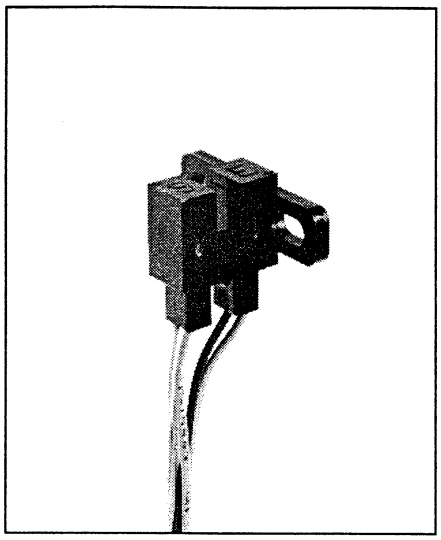
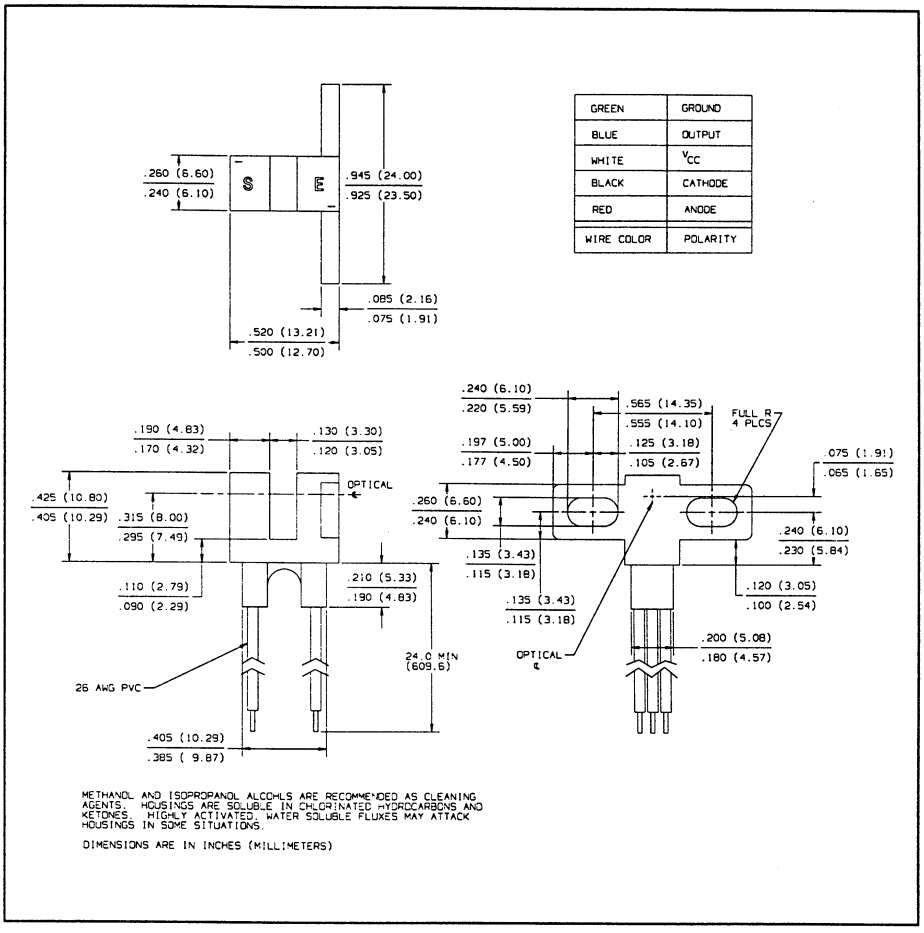
Photologic® Slotted Optical Switches
Types OPB930W, OPB940W Series





Features

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

Description

The OPB930W and OPB940W 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, and (3) aperture width. Available with PC board mountable leads as OPB930L/OPB940L series.

The electrical output can be specified 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.)	10 V
Storage Temperature Range	-40° C to +80° C
Operating Temperature Range	-40° C to +70° C
Input Diode Power Dissipation	100 mW(1)
Output Photologic™ Power Dissipation	200 mW(2)
Total Device Power Dissipation	300 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 2.22 mW/° C above 25° C.
(2) Derate linearly 4.44 mW/° C above 25° C.
(3) Derate linearly 6.66 mW/° C above 25° C.
(4) The OPB930W/OPB940W 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 = 0 mA.
(6) All parameters tested using pulse technique.

Types OPB930W, OPB940W 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 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 Invetted 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 Invetted 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 Invetted 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 mA I_F = 15 mA
	Inverted Totem-Pole Output	2.4			V	V_{CC} = 4.75 V, I_{OH} = -800 mA 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 V, T_A = 25° C
$I_F(+)/I_F(-)$	Hysteresis		2.0			V_{CC} = 5 V
I_{OS}	Short Circuit Output Current: Buffered Totem-Pole Output	-30		-100	mA	V_{CC} = 5.25 V, I_F = 15 mA Output = GND
	Inverted Totem-Pole Output	-30		-100	mA	V_{CC} = 5.25 V, I_F = 0 mA 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 15 mA R_L = 8 TTL Loads (Totem-Pole) R_L = 360 Ω (Open-Collector)
t_{PLH}, t_{PHL}	Propagation Delay Low-High & High-Low		5.0		µs	

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 Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396

PART NUMBER GUIDE

OPB 9 X X X X X

Optek Assembly

Photologic®
Photo Integrated Circuit
Sensor Family

Discrete Shell Material
Designation

3 - Side Mount IR Transmissive
Plastic Discrete Shell

4 - Side Mount Opaque
Plastic Discrete Shell

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

Aperture Width In Front
of Emitter
5 = 0.050"

Mounting Configurations

L - Solder Leads Termination
W - Wire Termination

Electrical Specification Variations

0 - Buffered Totem-Pole Output

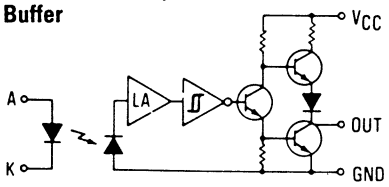
1 - Buffered Open-Collector Output

2 - Inverted Totem-Pole Output

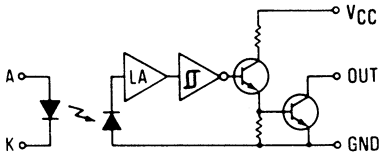
3 - Inverted Open-Collector Output

Schematics

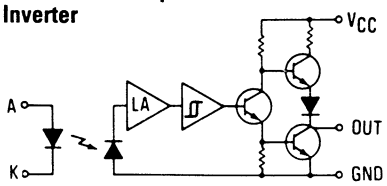
OPB930, OPB940
(Totem-Pole Output)
Buffer



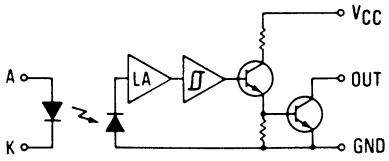
OPB931, OPB941
(Open-Collector Output)
Buffer



OPB932, OPB942
(Totem-Pole Output)
Inverter



OPB933, OPB943
(Open-Collector Output)
Inverter



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