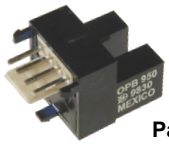
Photologic® Dual Channel Encoder

OPB950Z, OPB951



Package 1

Package 2

RoHS

Features:

- Dual channel outputs for Quadrature Output
- Open collector inverter outputs
- 0.010” (0.254 mm) sensor apertures for high resolution
- Snap mount
- OPB950 5±.0.5 Volt Vcc, OPB951 4.75 to 16 Volt Vcc

Description:

Each OPB950, series devices consists of an infrared Light Emitting Diode (LED) and a monolithic integrated circuit which incorporates two independent photodiodes, linear amplifiers, Schmitt trigger circuits and output transistors. The device is offered in two versions (see page 2 for package drawings). The OPB950 features a dual open-collector output that is compatible with TTL/LSTTL and can drive up to 8 TTL loads. The OPB951 brings out the anode of the LED for custom power applications.

Applications include linear and rotary encoders with high resolution provided by internal 0.010” (0.254 mm) apertures located in front of each Photologic® sensor on 0.040” (1.02 mm) center line spacing.

Custom electrical, wire, cabling and connectors are available. Contact your local representative or OPTEK for more information.

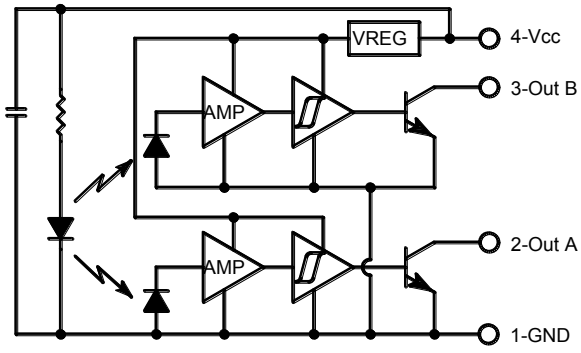
Applications:

- Mechanical switch replacement
- Speed and direction indication
- Mechanical limit indication
- Rotary encoders
- Edge sensing
- Sliding Door Automotive and Liftgate applications

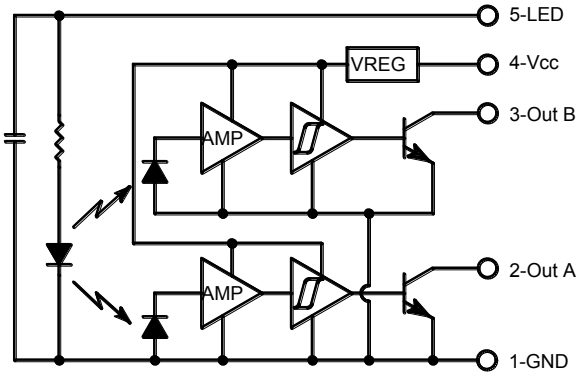
Ordering Information

Part Number	Package	LED Peak Wavelength	Sensor	Slot Width / Depth	Aperture Emitter/ Sensor	Lead Length/ Connector
OPB950Z	1	890 nm	Dual TTL	0.200" / 0.350”	0.05” / 0.01"	Molex 5102
OPB951	2		Dual TTL			

OPB950Z



OPB951



TT Electronics | Optek Technology, Inc.
1645 Wallace Drive, Ste. 130, Carrollton, TX USA 75006 |Ph: +1 972 323 2200
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Electrical Specifications

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

Storage & Operating Temperature Range	-40°C to +85° C

Input Diode

Forward DC Current	50 mA
Reverse DC Voltage	2.0 V
Power Dissipation[1]	100 mW

Output Photologic®

Supply Voltage, V_{CC}	OPB950Z / OPB951	5.5 V / 16 V
Voltage at Output		16 V
Power Dissipation[2]		200 mW
Sinking Output Current		40 mA

Electrical Characteristics (T_A = 25°C and Vcc = +5 Volts unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input LED OPB951 (see op240 for additional information)						
V_F	Forward Voltage	-	-	1.80	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R= 2.0 V
λ_P	Wavelength at Peak Emission	-	890	-	nm	I_F = 10 mA
Output Photologic® Sensor (see OPL583 for additional information)						
SYMBOL	**PARAMETER**	**MIN**	**TYP**	**MAX**	**UNITS**	**TEST CONDITIONS**
V_{CC}	Operating Supply Voltage[4]	4.5	-	16	V	-
$E_{ET}^{(+)}/E_{ET}^{(-)}$	Hysteresis Ratio	1.1	1.5	2	-	-
MATCH	Channel Match $E_{ET}^{(+A)} / E_{ET}^{(+B)}$	0.67	1	1.5	-	-
I_{CCL}	Supply Current, Both Outputs Low (LED On, No Target)	-	8.5	12	mA	E_E = 0.5 mW/cm^2 (no load on output)
I_{CCH}	Supply Current, Both Outputs High (LED Off)	-	3.5	6	mA	E_E = 0 mW/cm^2 (no load on output)
I_{CCM}	Supply Current, Mixed Output States (one high, one low)	-	6	-	mA	E_E = 0 mW/cm^2 and 0.5 mW/cm^2
I_{oh}	High Level Output Current	-	1	30	µA	E_E = 0 mW/cm^2 , V_{OH} = 16 V
V_{OL}	Low Level Output Voltage	-	0.21	0.4	V	E_E = 0 mW/cm^2 , I_{OL} = 12.8 mA
T_{PHL} T_{PLH}	Propagation Delay Output High to Low Output Low to HIgh	-	2 10	-	µs µs	V_{CC} = 5 V, R_L = 360 Ω E_E = 0 or 0.5 mW/cm^2 , f = 10 kHz, D.C. = 50%
t_r t_f	Output Rise Time Output Fall Time	-	20 15	-	ns ns	-

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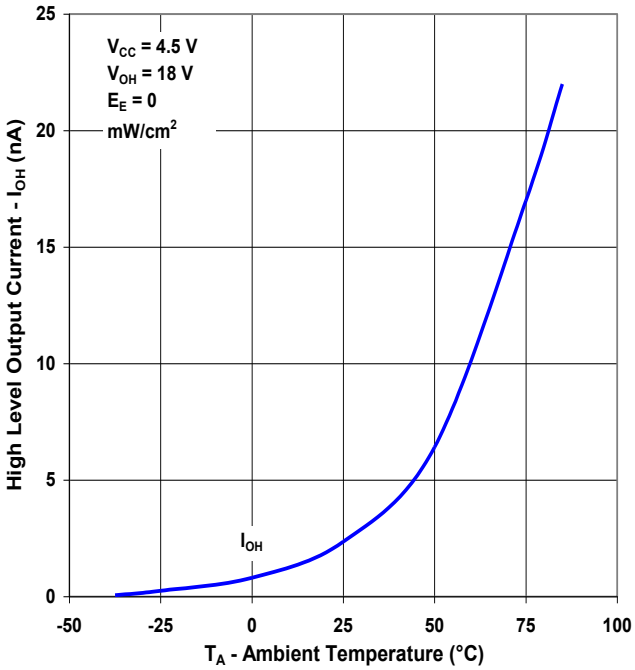
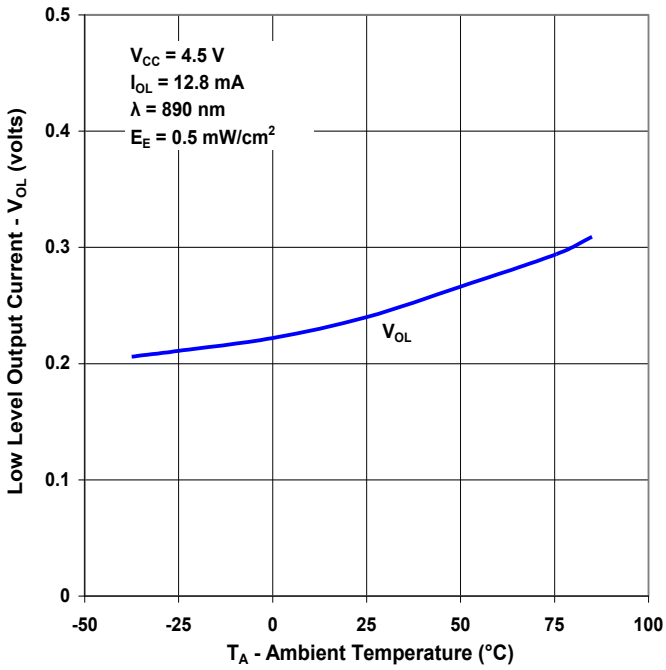
Performance

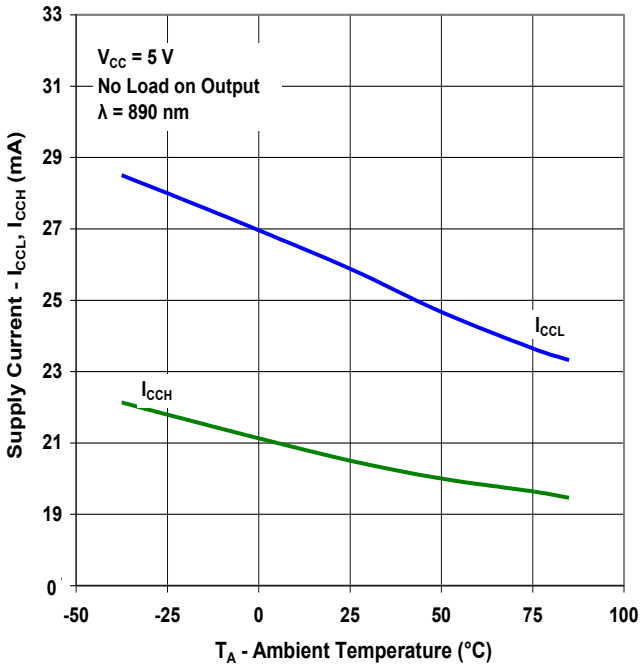
High Level Output vs Ambient Temperature



Low Level Output vs Ambient Temperature



Supply Current vs Ambient Temperature



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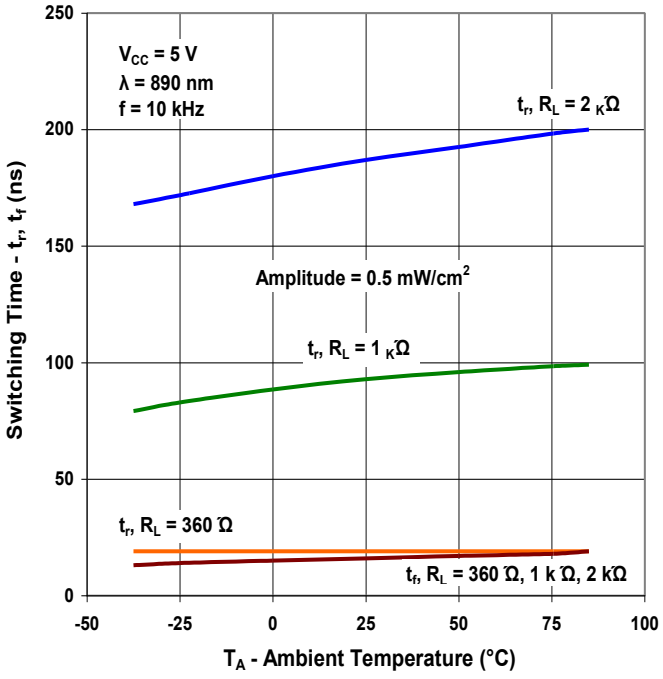
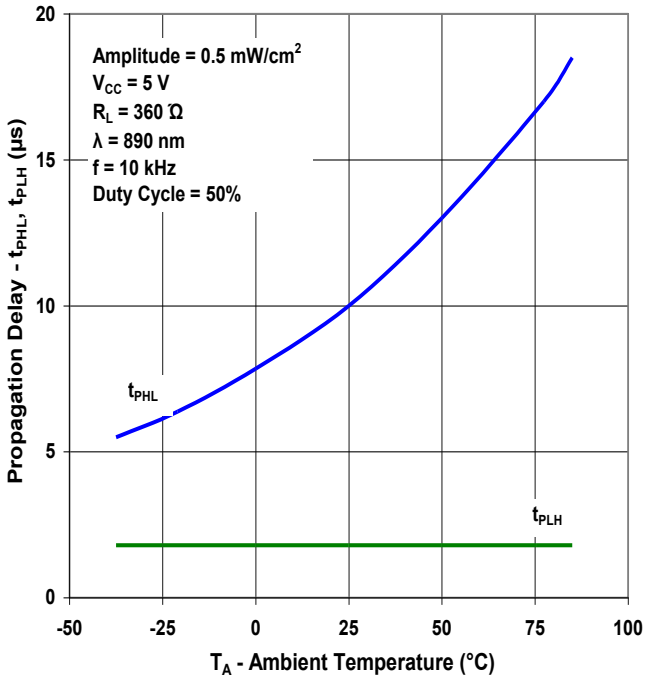
Performance

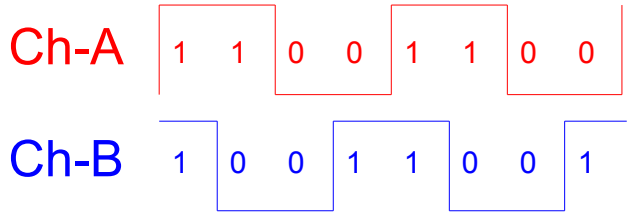
Rise and Fall Time vs Ambient Temperature vs Output Load



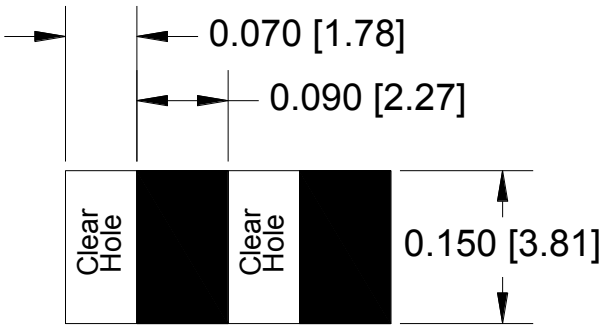
Propagation Delay vs Ambient Temperature



Sensor Output(s)



Ideal Target Size & Spacing For Linear or Circular Targets



Dimensions are in inches [millimeters]

Please consult OPTEK for target design and sensor location relative to the target.

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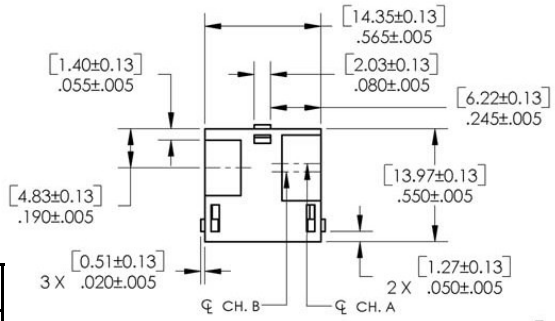
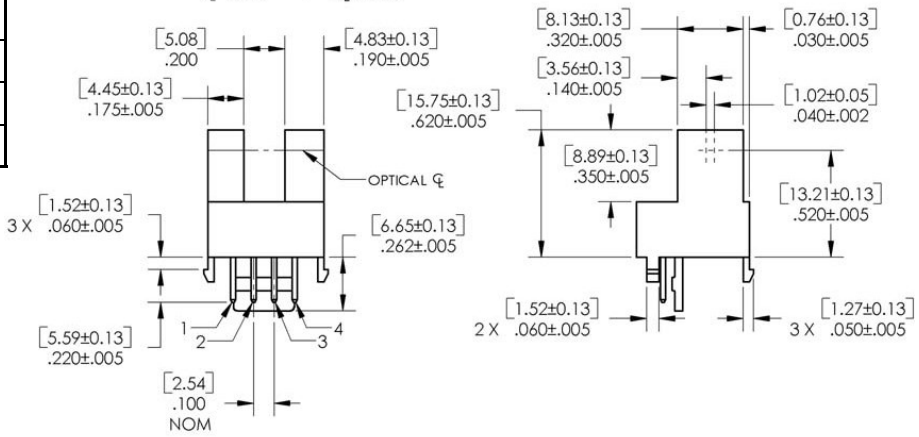
Packaging

Package 1 - OPB950Z



Mates with Molex 22-01-1042
and terminal # 08-70-0069

Pin #	Description
1	Ground
2	Output-A
3	Output-B
4	V_{CC}



Package 2 - OPB951

Pin #	Description
1	Output-A
2	Output-B
3	V_{CC}
4	Ground
5	LED Anode

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