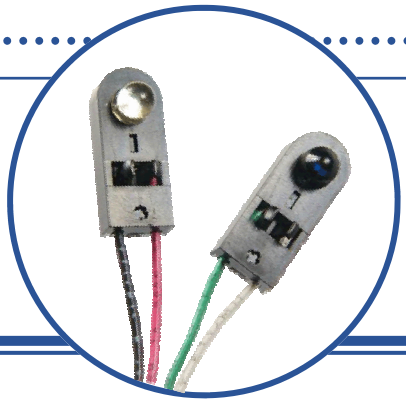
Optical Emitter and Sensor Pair
OPB100Z, OPB100EZ, OPB100SZ

TT electronics
OPTEK Technology



Features:

- 890 nm infrared LED emitter
- Silicon phototransistor sensor
- Snap-in mounting
- Variable sensing distance over 36” (91.4 cm)
- Low profile package
- 24” (61.0 cm) wire leads

Description:

The **OPB100** series consists of an infrared LED (**OPB100EZ**) and phototransistor (**OPB100SZ**) in separate plastic housings. The low cost, snap-in design requires no screws or other mounting hardware for ease of installation.

The emitter and sensor are not apertured, which allows separation distances in excess of 36” (91.4 cm) without concern for precise alignment. The front side clip allows mounting of the product to any 0.062” (1.57 mm) thick material.

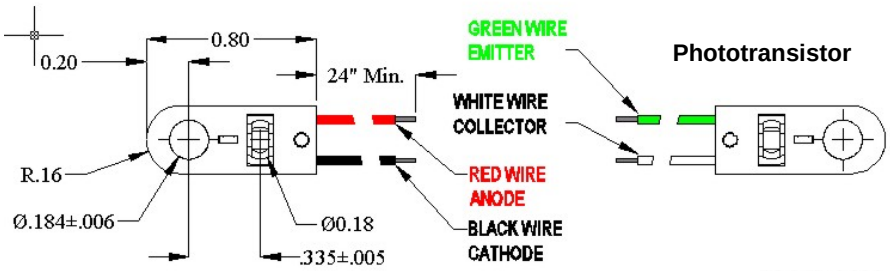
This product is designed for general switching and low-speed data communications applications.

Applications:

- Non-contact reflective object
- Non-contact interruptive sensing
- Assembly line automation
- Machine automation
- Machine safety

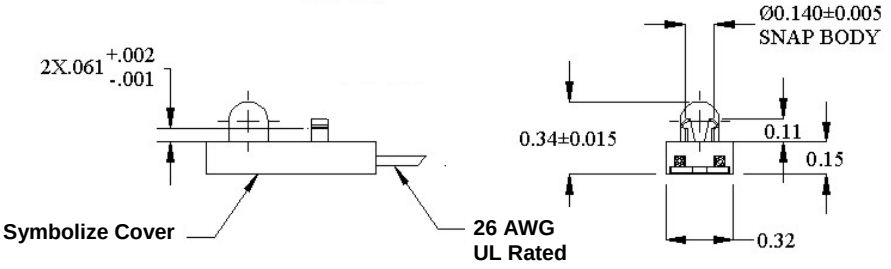
Ordering Information			
Part Number	**LED Peak Wavelength**	**Sensor**	**Lead Length / Spacing**
OPB100Z	880 nm	Transistor	24" / 26 AWG Wire
OPB100-EZ			
OPB100-SZ			

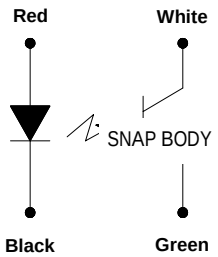
Emitter (LED)



Phototransistor

Color/Pin	Description
Red-1	Anode
Black-2	Cathode
White-3	Collector
Green-4	Emitter





RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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

Storage Temperature Range	-40° C to +85° C
Operating Temperature Range(1)	-40° C to +80° C

Input LED (OP298 for additional information)

Forward DC Current	100 mA
Peak Forward Current (1 µs pulse width, 300 pps)	1 A
Reverse DC Voltage	2 V
Power Dissipation(2)	142 mW

Output Phototransistor (OP598 for additional information)

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Collector DC Current	50 mA
Power Dissipation(3)	250 mW

Electrical Characteristics (T_A = 25°C unless otherwise noted — for reference only)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode (See OP298 for additional information — for reference only)						
V_F	Forward Voltage	-	-	1.7	V	I_F = 20 mA
I_R	Reverse Current	-	-	15	µA	V_R= 10 V
q_{HP}	Emission Angle at Half Power Points	-	25	-	Degree	I_F = 20 mA
E_E (APT)	Aperture Radiant Incidence	2.4	-	-	mW/cm^2	I_F = 100 mA Distance = 1.43” (3.63 cm) Aperture = 0.25” (6.35 mm)
Output Phototransistor (See OP598 for additional information — for reference only)						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	I_C = 1 mA, E_E = 0mw/cm^2 (no light)
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_C = 100 µA, E_E = 0mw/cm^2 (no light)
I_{CEO}	Collector Dark Current	-	-	100	nA	V_{CE} = 10V, I_F = 0, E_E = 0 mw/cm^2 (no light)
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	-	-	0.4	V	I_C = 400 µA, E_E = 1.7 mw/cm^2
$I_{C(ON)}$	On-State Collector Current	5	-	-	mA	V_{CE} = 5 V, E_E = 1.7 mw/cm^2

Notes:

1. Derate linearly 3.33mW/°C above 25°C.
2. All parameters measured using pulse technique.
3. Derate linearly 1.43mW/°C above 25°C.

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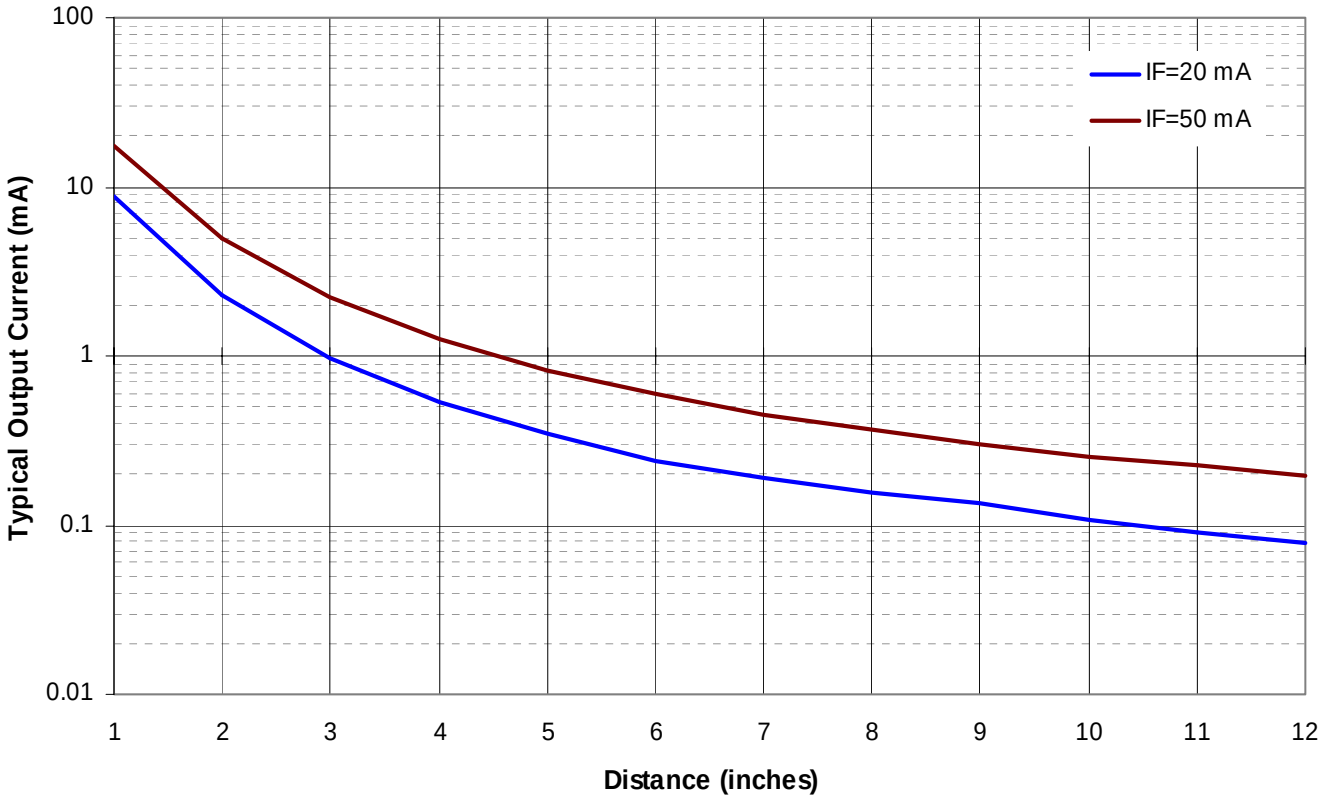
Output Current vs. Distance



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