

# Reflective Object Sensor

OPB700Z, OPB700ALZ

OPB701Z, OPB701ALZ



## Features:

- Low profile to facilitate stacking
- Low cost plastic housing
- Choice of phototransistor or photodarlington output
- #26 AWG lead wire in 4" (101 mm), or 18" (457 mm) lengths

## Description:

**OPB700Z** and **OPB700ALZ** sensors consist of an infrared emitting diode and a NPN silicon phototransistor, mounted side-by-side on converging optical axes in a black plastic housing.

**OPB701Z** and **OPB701ALZ** sensors consist of an infrared emitting diode and a NPN silicon photodarlington, mounted side-by-side on converging optical axes in a black plastic housing.

The interconnect wires for these devices are UL approved #26 AWG, with Teflon insulation, stripped and tinned. The **OPB700Z** and **OPB701Z** have 4" (101 mm) wire length while the **OPB700ALZ** and **OPB701ALZ** have 18" (457 mm) wire length.

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

## Applications:

- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Ordering Information				
Part Number	LED Peak Wavelength	Sensor	Reflection Distance Inch (mm)	Lead Length / Spacing
OPB700Z	890 nm	Transistor	0.200" (5.08 mm)	4" / 26 AWG Wire
OPB700ALZ				18" / 26 AWG Wire
OPB701Z		Darlington		4" / 26 AWG Wire
OPB701ALZ				18" / 26 AWG Wire



RoHS

## General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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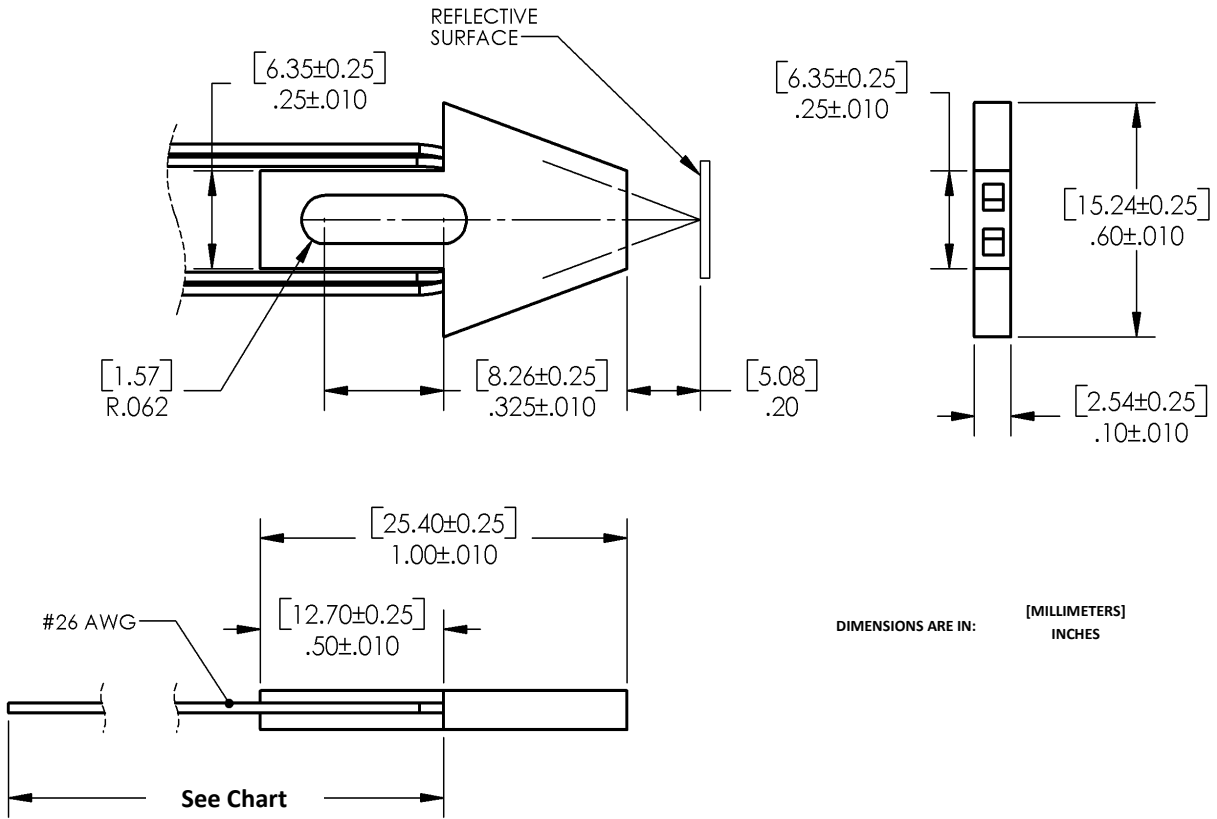
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OPB700Z, OPB700ALZ

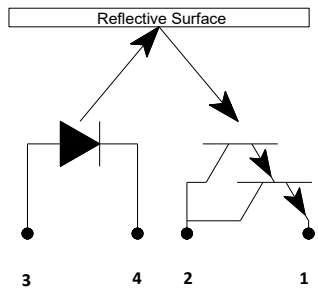
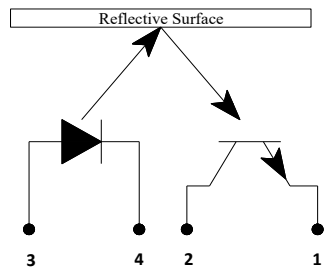
OPB701Z, OPB701ALZ



## OPB700Z, OPB701Z



DIMENSIONS ARE IN: [MILLIMETERS] INCHES



Part Number	Wire Length
OPB700Z	4" Min
OPB700ALZ	18" Min
OPB701Z	4" Min
OPB701ALZ	18" Min

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

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## Electrical Specifications

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	-40° C to + 125° C
Operating Temperature Range	-40° C to + 100° C
Lead Soldering Temperature	260° C
<b>Input Diode</b>	
Continuous Forward Current	100 mA
Reverse Voltage	2 V
Power Dissipation <sup>(1)</sup>	80 mW
<b>Output Phototransistor</b>	
Collector-Emitter Voltage OPB700Z, OPB700ALZ OPB701Z, OPB701ALZ	24 V 15 V
Emitter-Collector Voltage	5 V
Power Dissipation <sup>(1)</sup>	50 mW

Notes:

- (1) Derate linearly 1.07 mW/° C above 25° C.

### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>						
$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 50\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$
<b>Output Phototransistor</b>						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage OPB700Z, OPB700ALZ OPB701Z, OPB701ALZ	25 15	- -	- -	V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector Dark Current OPB700Z, OPB700ALZ OPB701Z, OPB701ALZ	- -	- -	100 250	nA	$V_{CE} = 10\text{ V}, I_F = 0, E_E = \leq 0.1\ \mu\text{W}/\text{cm}^2$

Notes:

- (1) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog # E 152 7795.

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## Electrical Specifications

Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

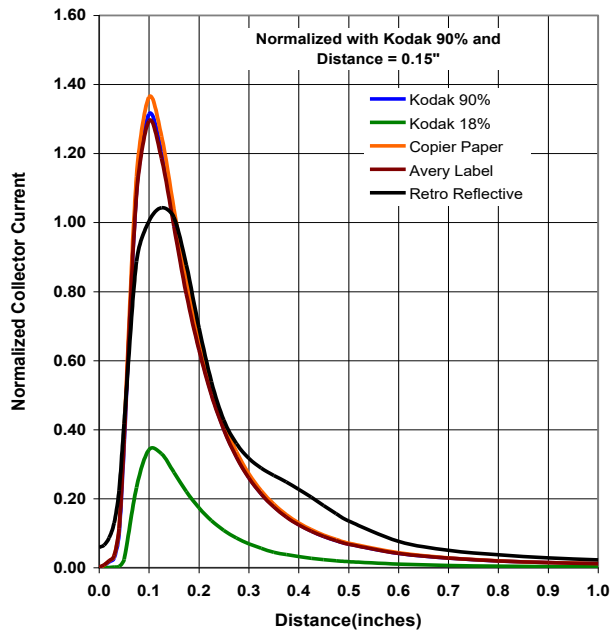
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Coupled Parameters OPB700Z, OPB700ALZ (Phototransistor)</b>						
$I_{C(ON)}$	Collector current	0.10	-	2.50	mA	$V_{CE} = 5.0\text{ V}^{(1)}$ , $I_F = 40\text{ mA}$
$V_{CE(SAT)}$	Saturation Voltage	-	-	0.40	V	$I_C = 10\text{ }\mu\text{A}$ , $I_F = 40\text{ mA}$
$I_{CX}$	Leakage Current	-	-	2.00	$\mu\text{A}$	$V_{CE} = 5.0\text{ V}$ , $I_F = 40\text{ mA}$ , NO Reflective Surface
<b>Coupled Parameters OPB701Z, OPB701ALZ (Photodarlington)</b>						
$I_{C(ON)}$	Collector current	2.50	-	43.00	mA	$V_{CE} = 5.0\text{ V}^{(1)}$ , $I_F = 40\text{ mA}$
$V_{CE(SAT)}$	Saturation Voltage	-	-	1.10	V	$I_C = 1.0\text{ mA}$ , $I_F = 40\text{ mA}$
$I_{CX}$	Leakage Current	-	-	20.0	$\mu\text{A}$	$V_{CE} = 5.0\text{ V}$ , $I_F = 40\text{ mA}$ , NO Reflective Surface

Notes:

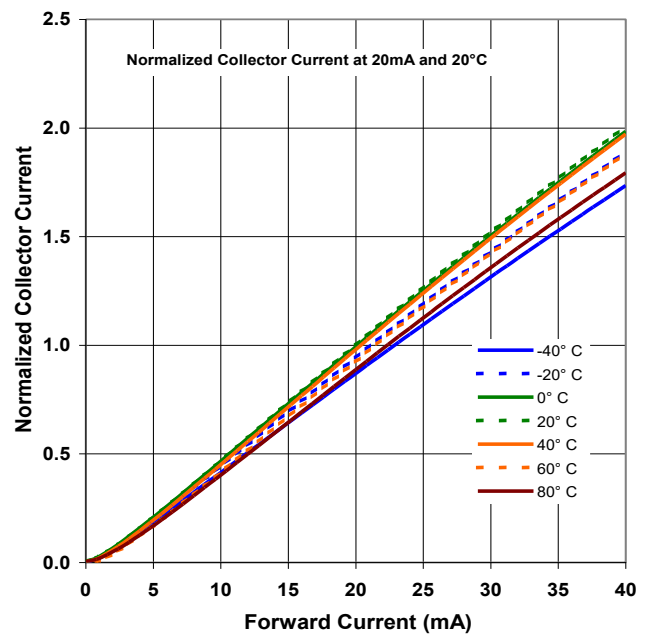
- Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog # E 152 7795.

## Performance

OPB700 - Normalized Collector Current vs Distance



OPB700 - Normalized Collector Current vs Forward Current vs Temperature



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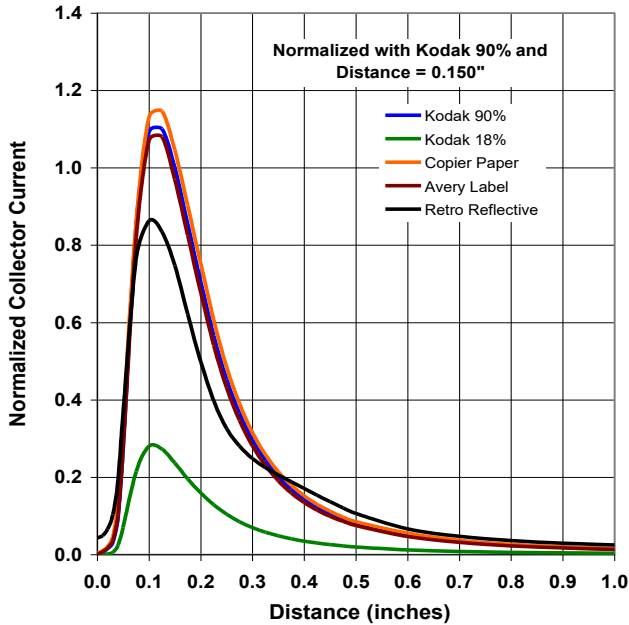
OPB700Z, OPB700ALZ

OPB701Z, OPB701ALZ

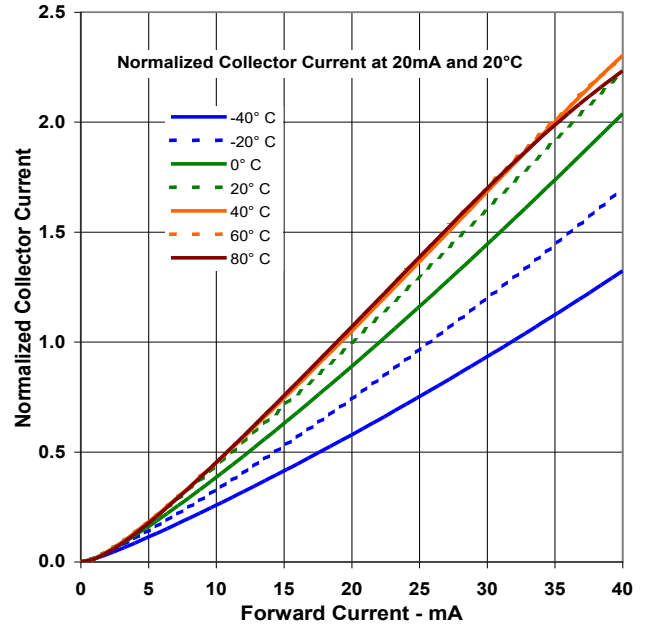


## Performance

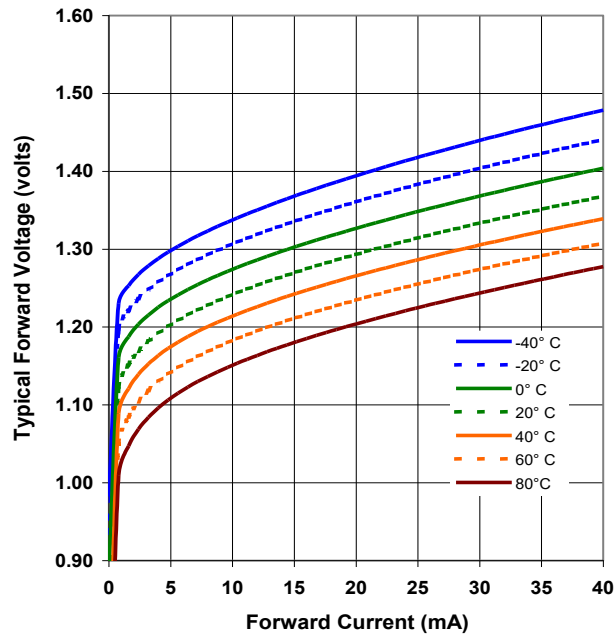
OPB701 - Normalized Collector Current vs Distance



OPB701 - Normalized Collector Current vs Forward Current vs Temperature



LED—Forward Voltage vs Forward Current vs Temperature



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