

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:

OPB700 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.

OPB701 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 **OPB700** and **OPB701** 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" (5.08mm)	4" / 26 AWG Wire
OPB700ALZ				18" / 26 AWG Wire
OPB701Z		Darlington		4" / 26 AWG Wire
OPB701ALZ				18" / 26 AWG Wire



RoHS

General Note

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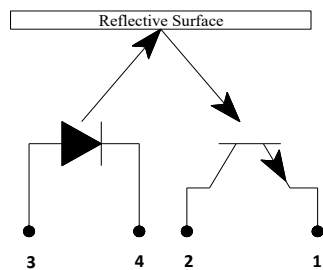
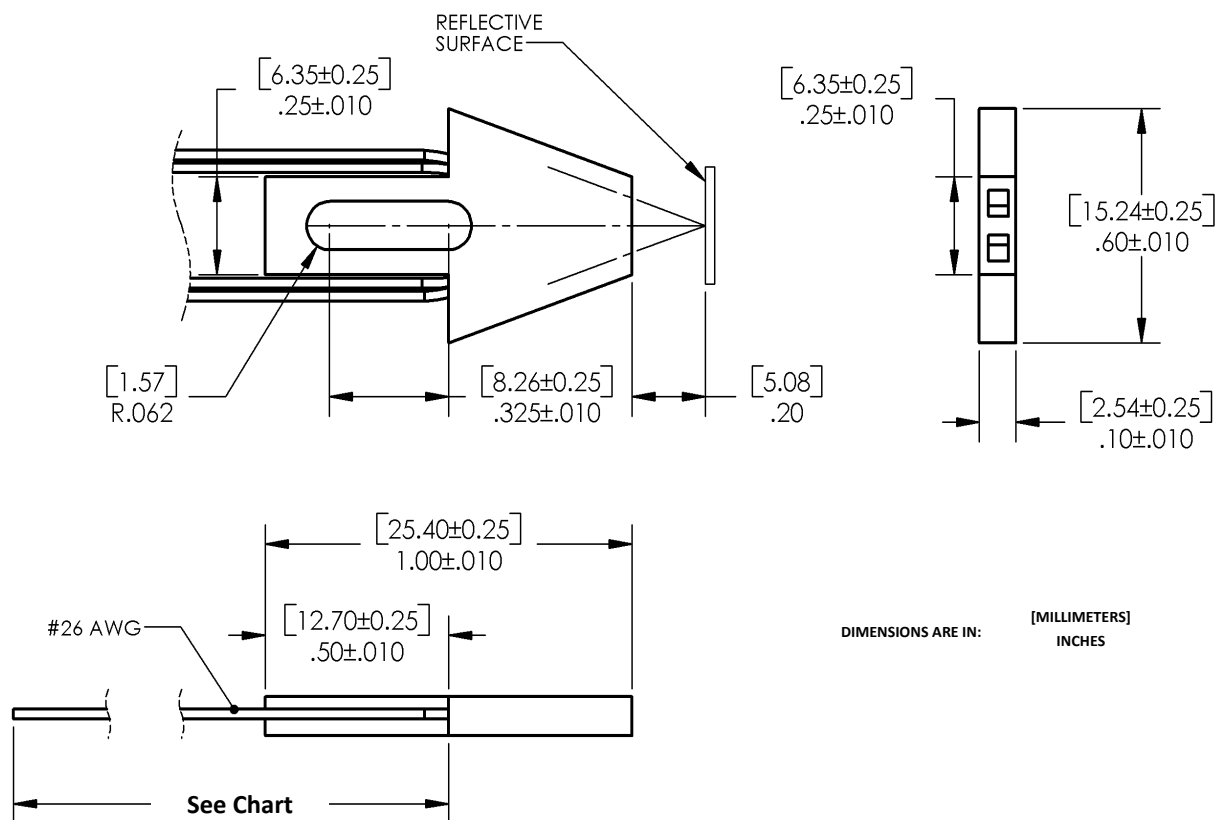
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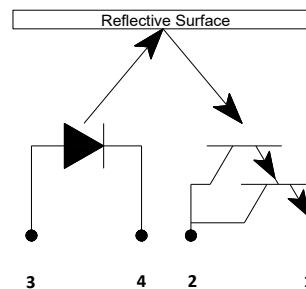
OPB701Z, OPB701ALZ



OPB700Z, OPB701Z



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



OPB701			
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 $+125^\circ\text{C}$
Operating Temperature Range	-40°C to $+100^\circ\text{C}$
Lead Soldering Temperature	260°C
Input Diode	
Continuous Forward Current	100 mA
Reverse Voltage	2 V
Power Dissipation ⁽¹⁾	80 mW
Output Phototransistor	
Collector-Emitter Voltage OPB700Z, OPB700ALZ OPB701Z, OPB701ALZ	24 V 15 V
Emitter-Collector Voltage	5 V
Power Dissipation ⁽¹⁾	50 mW

Notes:

(1) Derate linearly 1.07 mW/ $^\circ\text{C}$ above 25°C .

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

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

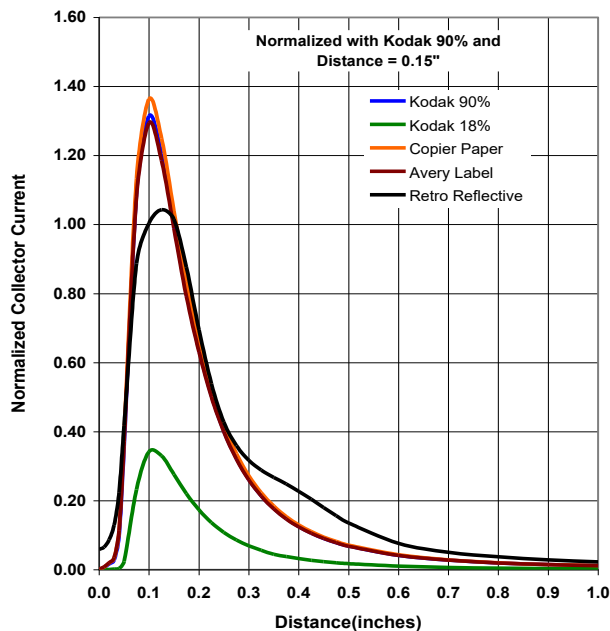
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Coupled Parameters OPB700Z, OPB700ALZ (Phototransistor)						
$I_{C(ON)}$	Collector current	0.10	-	2.50	mA	$V_{CE} = 5.0\text{ V}^{(1)}$, $I_F = 40\text{ mA}$
$V_{CE(SAT)}$	Saturation Voltage	-	-	0.40	V	$I_C = 10\text{ }\mu\text{A}$, $I_F = 40\text{ mA}$
I_{CX}	Leakage Current	-	-	2.00	μA	$V_{CE} = 5.0\text{ V}$, $I_F = 40\text{ mA}$, NO Reflective Surface
Coupled Parameters OPB701Z, OPB701ALZ (Photodarlington)						
$I_{C(ON)}$	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	μA	$V_{CE} = 5.0\text{ V}$, $I_F = 40\text{ mA}$, NO Reflective Surface

Notes:

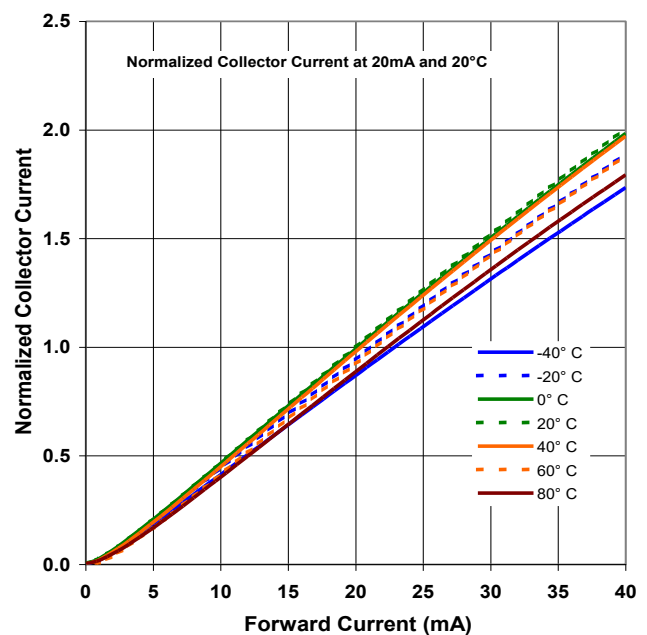
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Performance

OPB700 - Normalized Collector Current vs Distance



OPB700 - Normalized Collector Current vs Forward Current vs Temperature



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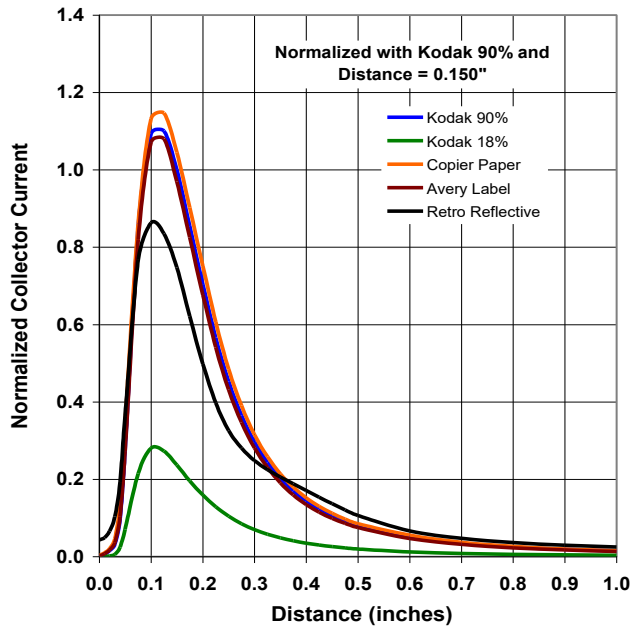
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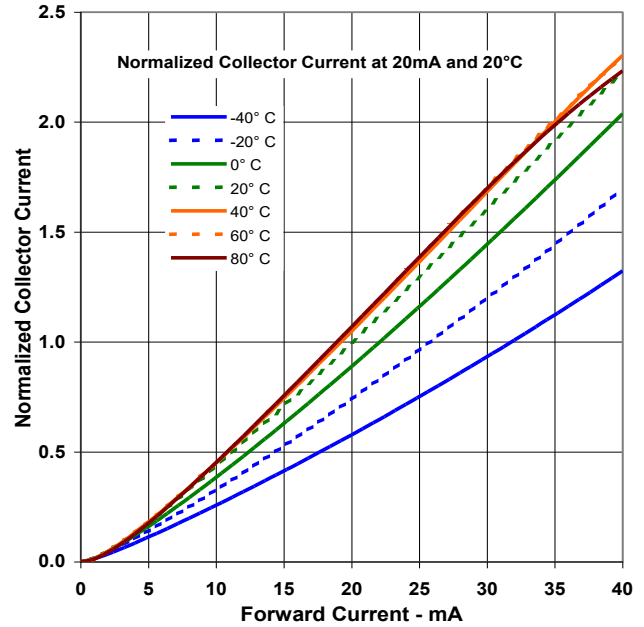


Performance

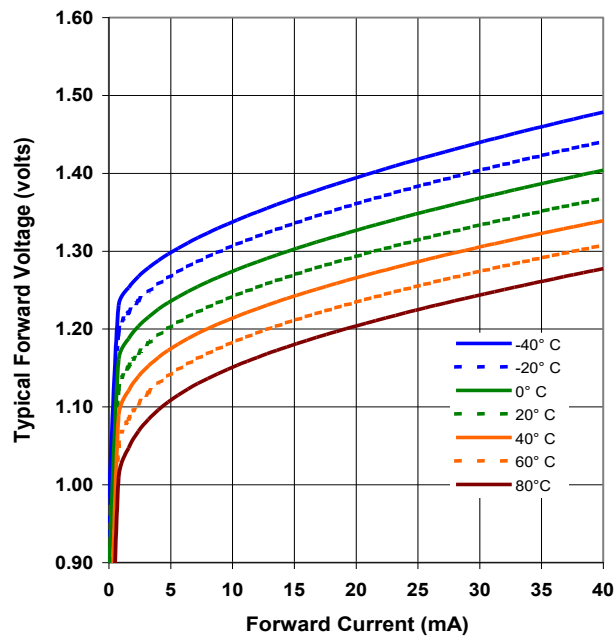
OPB701 - Normalized Collector Current vs Distance



OPB701 - Normalized Collector Current vs Forward Current vs Temperature



LED—Forward Voltage vs Forward Current vs Temperature



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