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 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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Reflective Object Sensor

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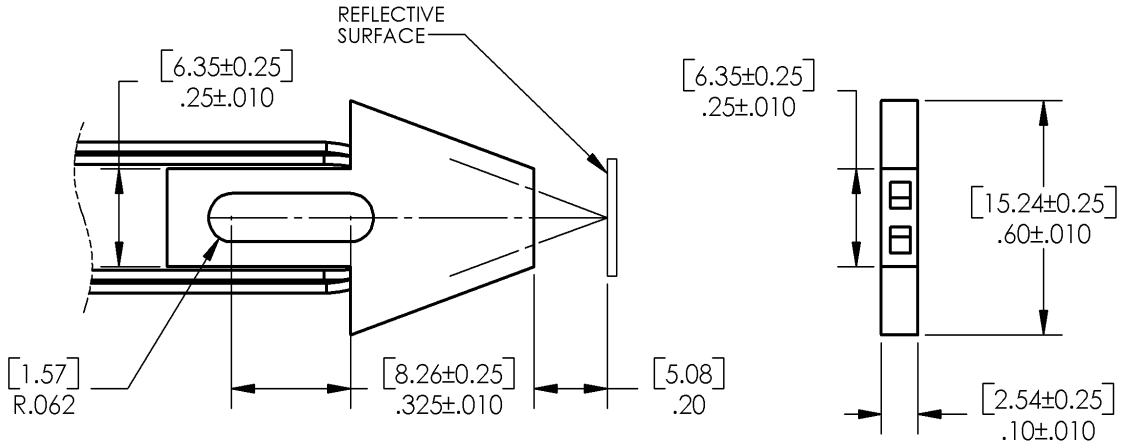
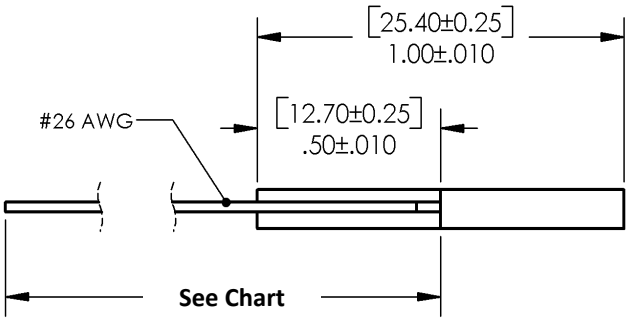
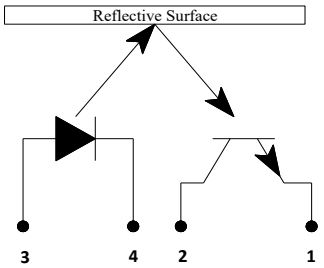
OPB701Z, OPB701ALZ

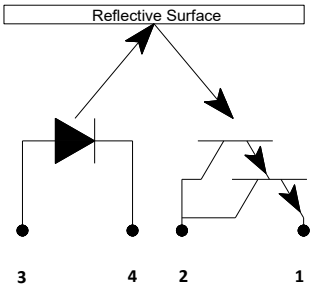
OPB700Z, OPB701Z





DIMENSIONS ARE IN: [MILLIMETERS] INCHES





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

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° 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
Input Diode	
Continuous Forward Current	100 mA
Reverse Voltage	2 V
Power Dissipation(1)	80 mW
Output Phototransistor	
Collector-Emitter Voltage OPB700Z, OPB700ALZ OPB70Z1, OPB701ALZ	 24 V 15 V
Emitter-Collector Voltage	5 V
Power Dissipation(1)	50 mW

Notes:

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

Electrical Characteristics (T_A = 25° C unless otherwise noted)

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

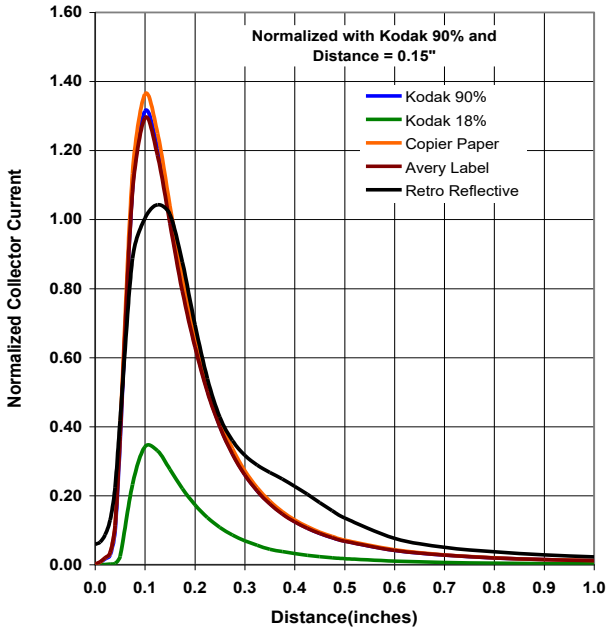
Electrical Characteristics (T_A = 25° C unless otherwise noted)						
SYMBOL	**PARAMETER**	**MIN**	**TYP**	**MAX**	**UNITS**	**TEST CONDITIONS**
Coupled Parameters OPB700Z, OPB700ALZ (Phototransistor)						
$I_{C(ON)}$	Collector current	0.10	-	2.50	mA	V_{CE} = 5.0 V(1), I_F = 40 mA
$V_{CE(SAT)}$	Saturation Voltage	-	-	0.40	V	I_C = 10 µA, I_F = 40 mA
I_{CX}	Leakage Current	-	-	2.00	µA	V_{CE} = 5.0V , I_F = 40 mA, NO Reflective Surface
Coupled Parameters OPB701Z, OPB701ALZ (Photodarlington)						
$I_{C(ON)}$	Collector current	2.50	-	43.00	mA	V_{CE} = 5.0 V(1), I_F = 40 mA
$V_{CE(SAT)}$	Saturation Voltage	-	-	1.10	V	I_C = 1.0 mA, I_F = 40 mA
I_{CX}	Leakage Current	-	-	20.0	µA	V_{CE} = 5.0 V, I_F = 40 mA, NO Reflective Surface

Notes:

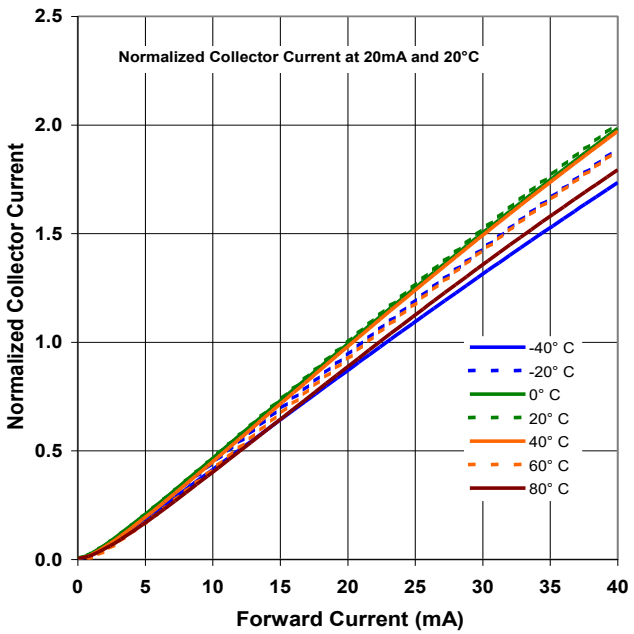
(1) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog # E 152 7795.

Performance

OPB700 - Normalized Collector Current vs Distance



OPB700 - Normalized Collector Current vs Forward Current vs Temperature



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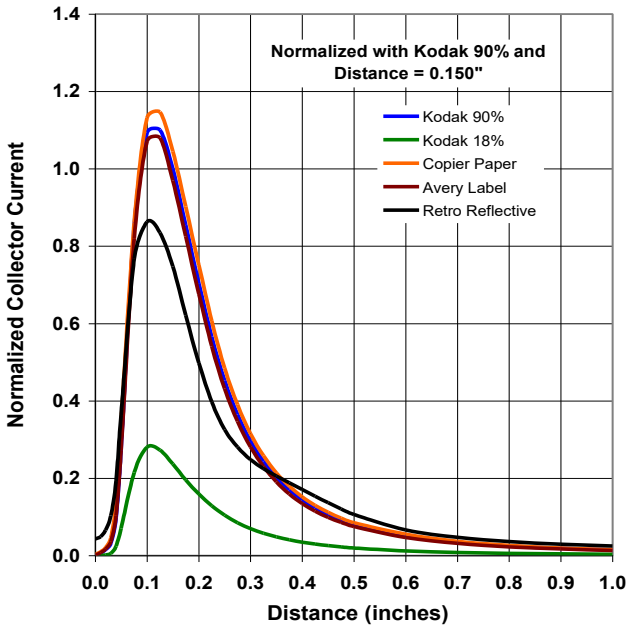
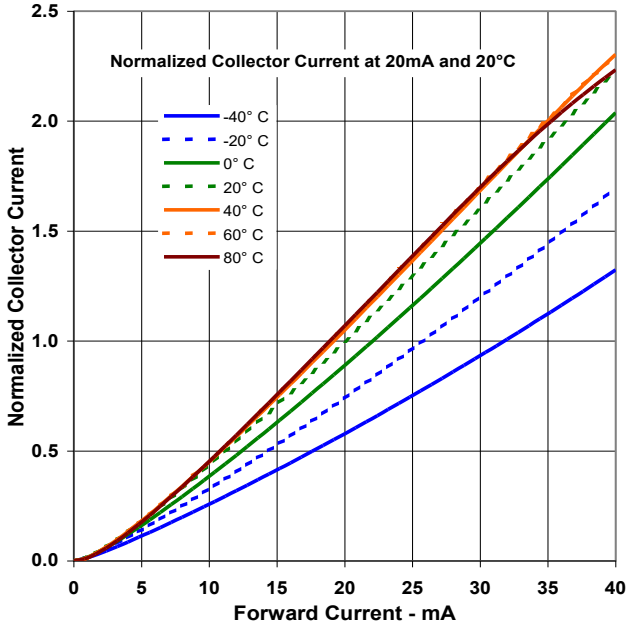
Performance

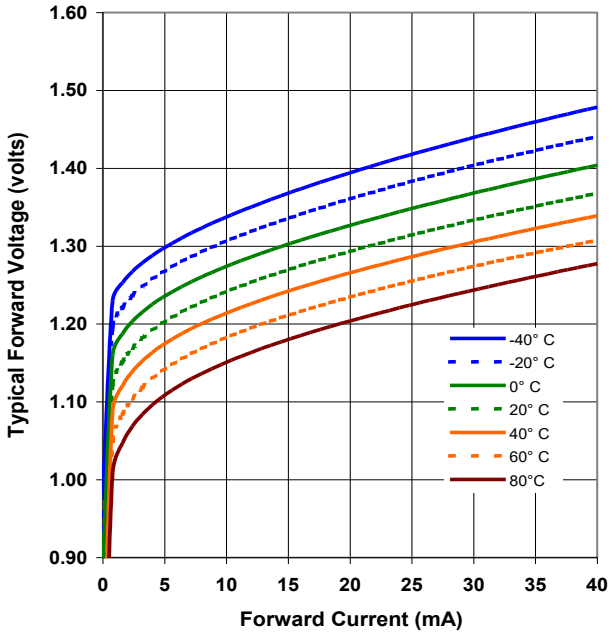
OPB701 - Normalized Collector Current vs Distance



OPB701 - Normalized Collector Current vs Forward Current vs Temperature



LED—Forward Voltage vs Forward Current vs Temperature



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