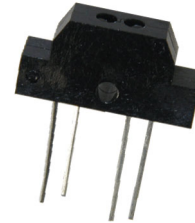


Reflective Object Sensor

OPB702, OPB702D, OPB702R, OPB702RR



Features:

- Focused for maximum sensitivity
- Choice of phototransistor, photodarlington or base-emitter resistor
- Low cost plastic housing

Description:

The **OPB702** series consists of an infrared Light Emitting Diode (LED) or red Visible Light Emitting Diode (VLED) and the choice of a NPN silicon phototransistor (**OPB702**), a photodarlington (**OPB702D**) or a base-emitter resistor for low light suppression (**OPB702R, OPB702RR**).

On each sensor, the LED and the phototransistor, photodarlington or base-emitter resistor are mounted side-by-side on converging optical axes in a black plastic housing. The **OPB702** uses type OP505 sensor, the **OPB702D** uses an OP535 sensor and the **OPB702R, OPR702RR** uses an OP705 sensor.

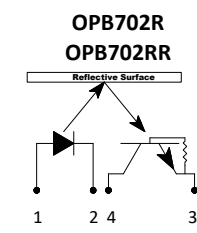
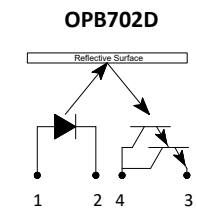
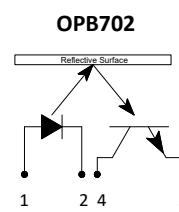
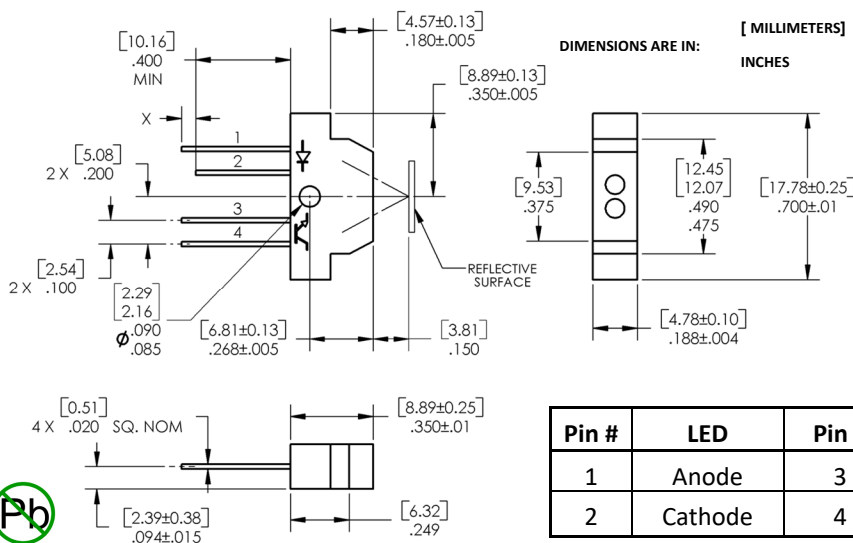
Custom electrical, wire, cabling and connectors are available. Contact your local representative or OPTEK for more information.

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
OPB702	935 nm	Transistor	0.150" (3.81mm)	0.400" / 0.100"
OPB702D	890 nm	Darlington		
OPB702R		Transistor and Rbe		
OPB702RR	640 nm	Transistor and Rbe		



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.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

Reflective Object Sensor

OPB702, OPB702D, OPB702R, OPB702RR



Electrical Specifications

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

Storage & Operating Temperature Range	-40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] ⁽²⁾	260° C
Input Diode	
Peak Forward Current	50 mA
Reverse Voltage	2 V
Power Dissipation] ⁽¹⁾	100 mW
Output Photosensor	
Collector-Emitter Voltage OPB702, OPB702R OPB702D, OPB702RR	30 V 15 V
Emitter-Collector Voltage	5 V
Power Dissipation] ⁽¹⁾	100 mW

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode (see OP265 or OP165 for Infrared LED & OVLAS6CB8 for Red LED for additional information)						
V_F	Forward Voltage (Infrared LED) Red (VLED)	-	-	1.7 2.4	V	$I_F = 20\text{ mA}$ $I_F = 40\text{ mA}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2\text{ V}$
Output Phototransistor (see OP505 for Phototransistor, OP705 for Rbe-Phototransistor, OP535 for Photodarlington)						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage OPB702 OPB702D OPB702R, OPB702RR	30 15 30	- - -	- - -	V	$I_C = 100\ \mu\text{A}, I_F = 0, E_E = 0$ $I_C = 1\text{ mA}, I_F = 0, E_E = 0$ $I_C = 1\text{ mA}, I_F = 0, E_E = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage OPB702 OPB702D	5 5	- -	- -	V V	$I_E = 100\ \mu\text{A}, I_F = 0, E_E = 0$ $I_E = 100\ \mu\text{A}, I_F = 0, E_E = 0$
I_{ECO}	Emitter-Reverse Current OPB702R, OPB702RR	-	-	100	μA	$V_{CE} = 0.4\text{ V}, I_F = 0, E_E = 0$
I_{CEO}	Collector Dark Current OPB702 OPB702D OPB702R, OPB702RR	- - -	- - -	100 250 100	nA nA nA	$V_{CE} = 10\text{ V}, I_F = 0, E_E = 0$ $V_{CE} = 10\text{ V}, I_F = 0, E_E = 0$ $V_{CE} = 10\text{ V}, I_F = 0, E_E = 0$
Combined						
$V_{CE(SAT)}^{(3)(4)}$	Collector-Emitter Saturation Voltage OPB702 OPB702D OPB702R, OPB702RR	- - -	- - -	0.4 1.1 0.4	V V V	$I_F = 40\text{ mA}, I_C = 250\ \mu\text{A}, d = .15'' (3.81\text{ mm})$ $I_F = 40\text{ mA}, I_C = 400\ \mu\text{A}, d = .15'' (3.81\text{ mm})$ $I_F = 40\text{ mA}, I_C = 250\ \mu\text{A}, d = .15'' (3.81\text{ mm})$
$I_{C(ON)}^{(3)(4)}$	On-State Collector Current OPB702 OPB702D OPB702R OPB702RR	0.1 3.2 0.4 0.2	- - - -	1.0 65.0 6.0 3.5	mA	$I_F = 40\text{ mA}, V_{CE} = 5\text{ V}, d = .15'' (3.81\text{ mm})$

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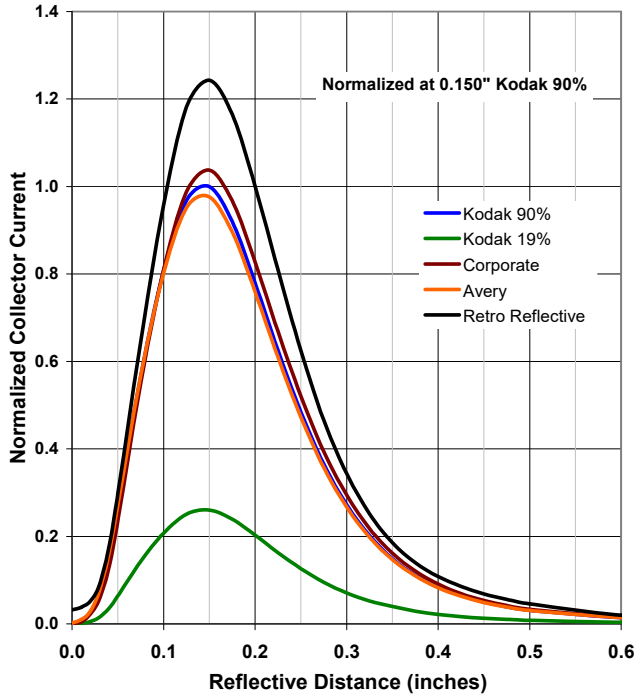
Reflective Object Sensor

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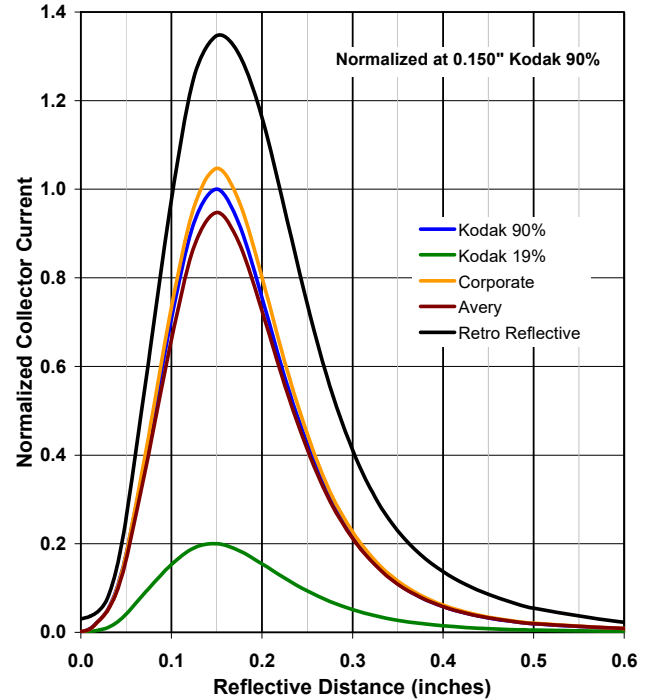


Performance

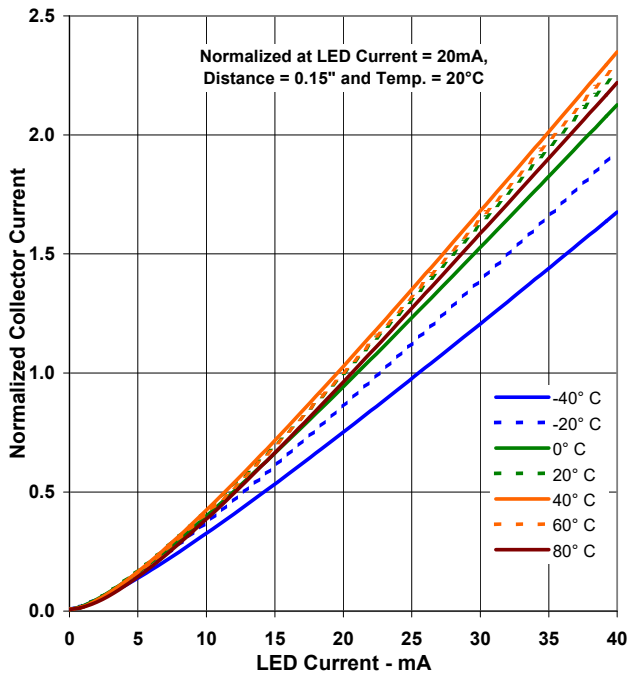
OPB702 - Collector Current vs. Distance



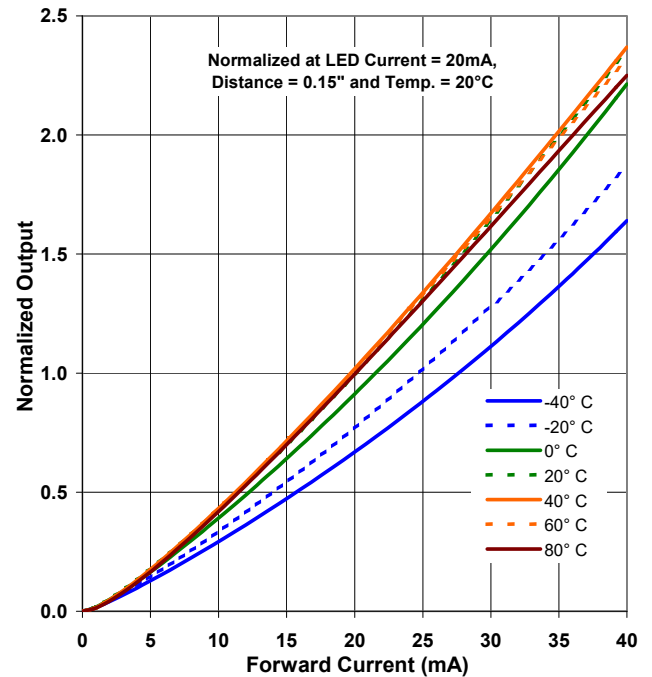
OPB702D - Collector Current vs Distance



OPB702 - Collector Current vs LED Current vs Temperature



OPB702D - Collector Current vs LED Current vs Temperature



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