

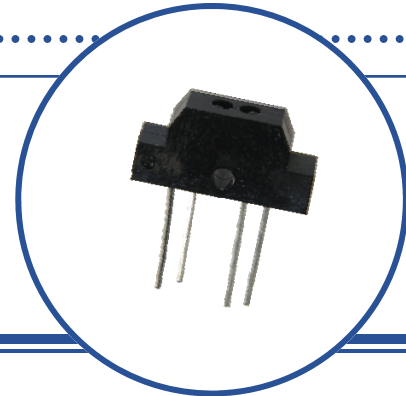
Reflective Object Sensor

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**).

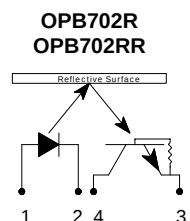
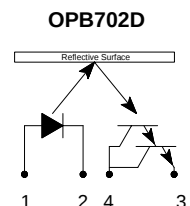
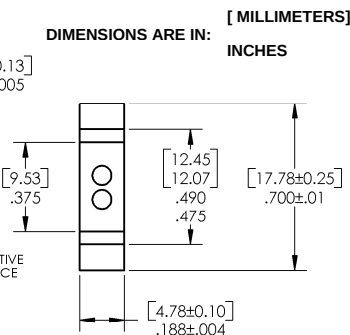
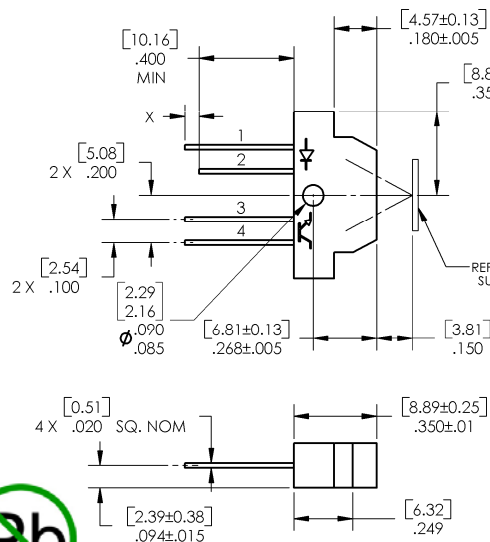
On each sensor, the LED and the phototransistor, photodarlington or base-emitter resistor are mounted side-by-side on converging optical axes in a black plastic housing. The **OPB702** uses type OP505 sensor, the **OPB702D** uses an OP535 sensor and the **OPB702R, OPR702RR** uses an OP705 sensor.

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



Pin #	LED	Pin #	LED
1	Anode	3	Emitter
2	Cathode	4	Collector



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 ($T_A=25^{\circ}\text{C}$ 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
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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	$V_{CE} = 10 \text{ V}, I_F = 0, E_E = 0$ $V_{CE} = 10 \text{ V}, I_F = 0, E_E = 0$ $V_{CE} = 10 \text{ V}, I_F = 0, E_E = 0$

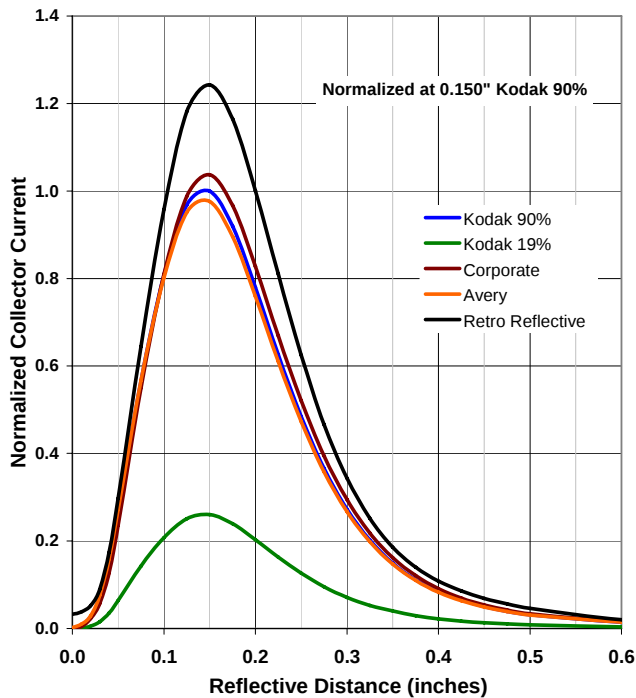
Combined

$V_{CE(SAT)}^{(3)}$	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	$I_F = 40 \text{ mA}, V_{CE} = 5 \text{ V}, d = .15" (3.81 \text{ mm})$

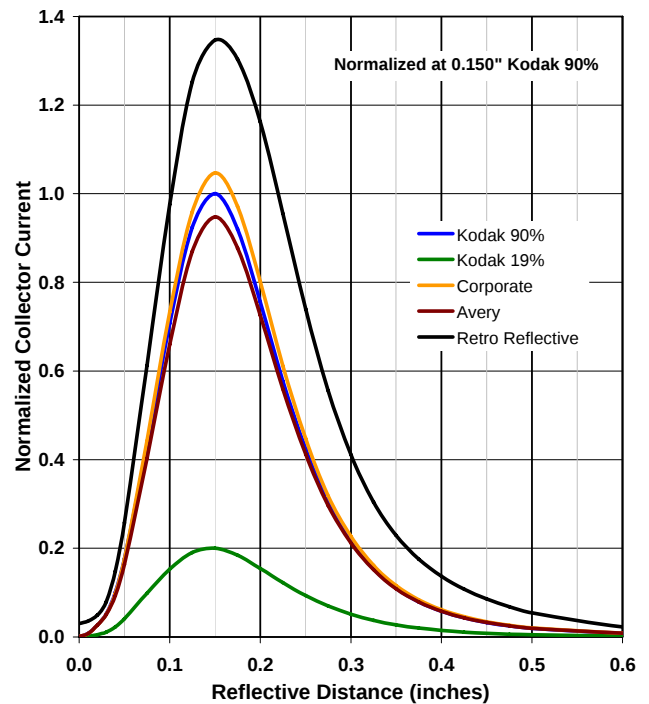
Notes:

- (1) Derate linearly 1.67 mW/°C above 25 ° C.
- (2) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (3) d is the distance from the assembly face to the reflective surface.
- (4) Measured using Eastman Kodak gray card. The white side of the card is used as a 90% diffuse reflectance surface. Reference: OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

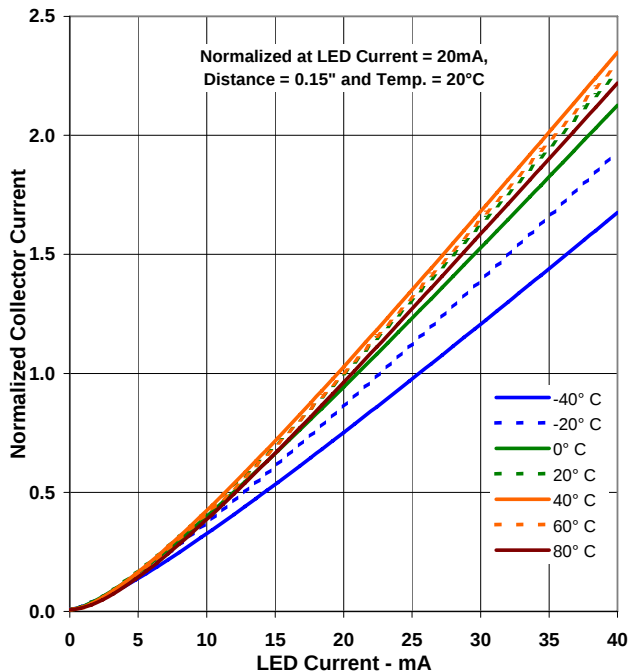
OPB702 - Collector Current vs. Distance



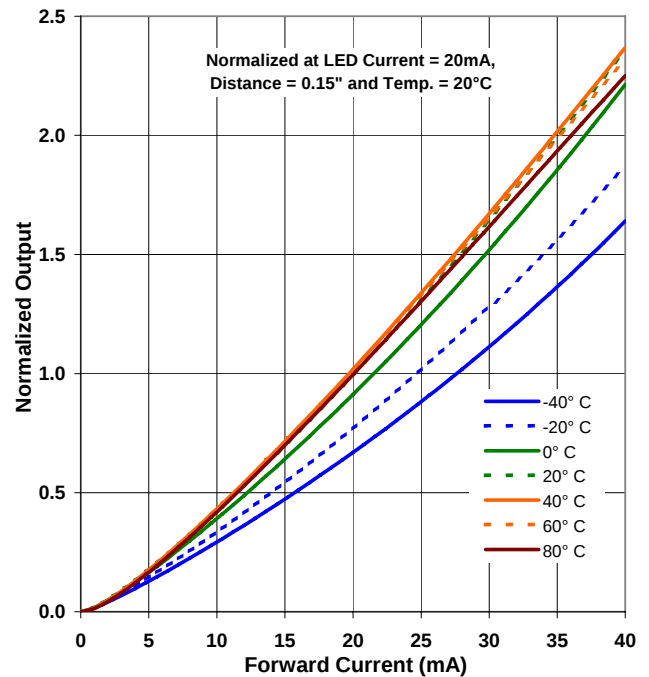
OPB702D - Collector Current vs Distance



OPB702 - Collector Current
vs LED Current vs Temperature



OPB702D - Collector Current
vs LED Current vs Temperature



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