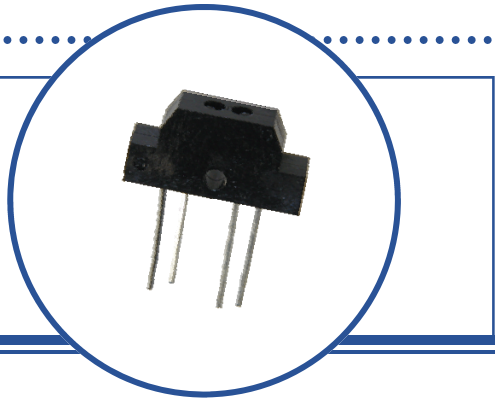
Reflective Object Sensor
OPB702, OPB702D, OPB702R, OPB702RR

TT electronics
OPTEK Technology

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.

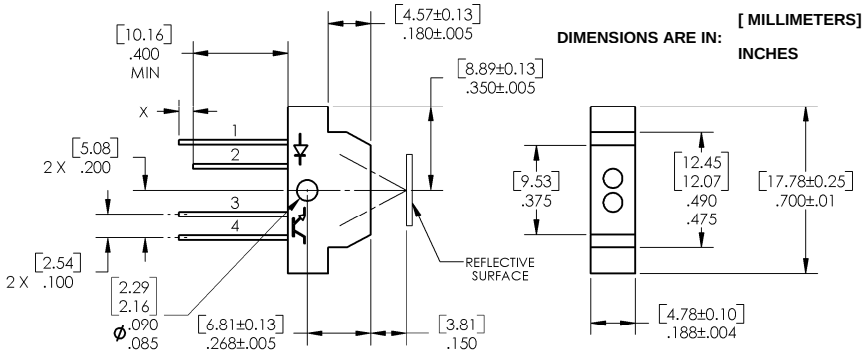
Custom electrical, wire, cabling and connectors are available. Contact your local representative or OPTEK for more information.

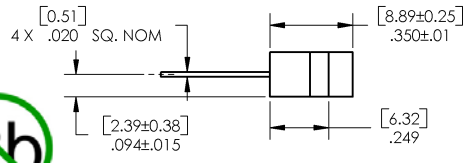
Applications:

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

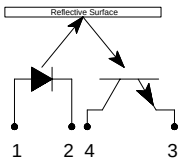
Ordering Information

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		

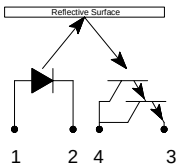




OPB702

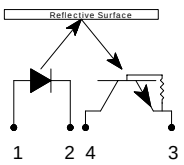


OPB702D



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

OPB702R
OPB702RR



RoHS

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

Absolute Maximum Ratings (T_A=25°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°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 mA I_F = 40 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2 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 µA, I_F = 0, E_e = 0 I_C = 1 mA, I_F = 0, E_e = 0 I_C = 1 mA, I_F = 0, E_e = 0
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage OPB702 OPB702D	 5 5	 - -	 - -	 V V	 I_E = 100 µA, I_F = 0, E_E = 0 I_E = 100 µA, I_F = 0, E_E = 0
I_{ECO}	Emitter-Reverse Current OPB702R, OPB702RR	 -	 -	 100	 µA	 V_{CE} = 0.4 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 V, I_F = 0, E_E = 0 V_{CE} = 10 V, I_F = 0, E_E = 0 V_{CE} = 10 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 mA, I_C = 250 µA, d = .15” (3.81 mm) I_F = 40 mA, I_C = 400 µA, d = .15” (3.81 mm) I_F = 40 mA, I_C = 250 µA, d = .15” (3.81 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 mA, V_{CE} = 5 V, d = .15” (3.81 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:

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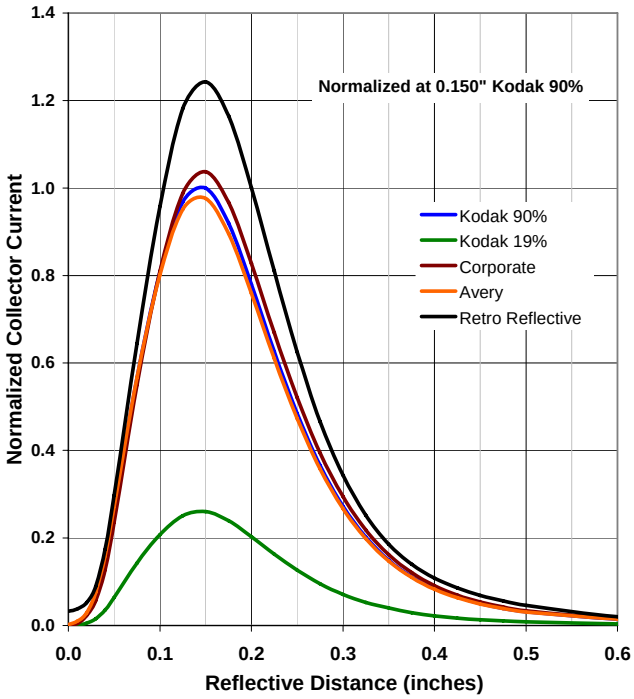
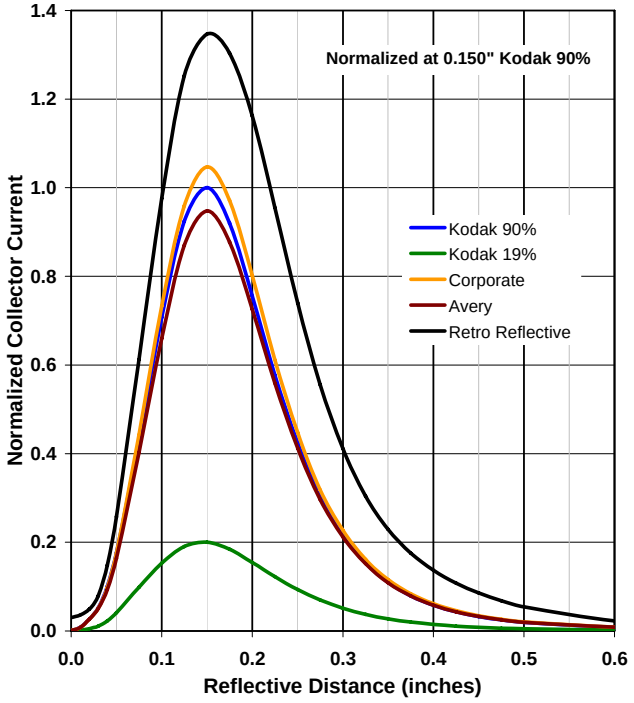
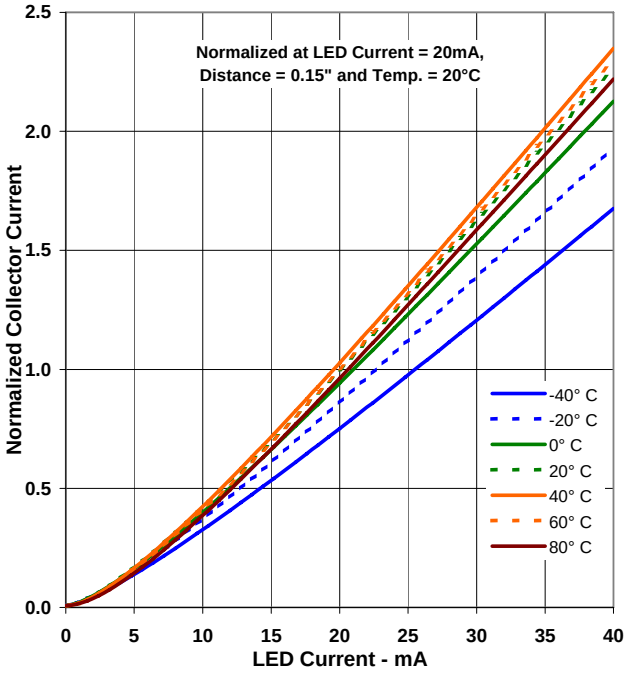
OPB702 - Collector Current vs. Distance



OPB702D - Collector Current vs Distance



OPB702 - Collector Current vs LED Current vs Temperature



OPB702D - Collector Current vs LED Current vs Temperature