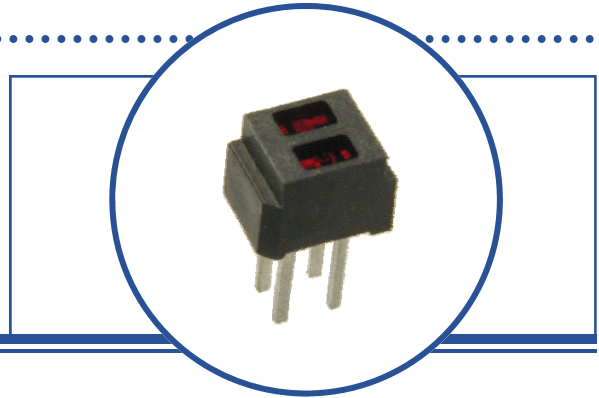


**Reflective Object Sensor**  
**OPB606A, OPB606B, OPB606C**  
**OPB607A, OPB607B, OPB607C**



**Features:**

- Choice of phototransistor (OPB606) or photodarlington (OPB607) output
- Unfocused for sensing diffuse surface
- Low cost plastic housing
- Filtered (OPB606, OPB607)



**Description:**

**OPB606** consists of an infrared Light Emitting Diode (LED) and an NPN silicon phototransistor which are mounted "side-by-side" on parallel axes in a black opaque plastic housing.

The **OPB607** consists of an infrared Light Emitting Diode (LED) and an NPN silicon photodarlington which are mounted "side-by-side" on parallel axes in a black plastic housing.

The emitting diode and phototransistor of both the **OPB606** and **OPB607** are encapsulated in a filtering epoxy that reduces ambient light noise. On both models, the phototransistors respond to radiation from the emitter only when a reflective object passes within the field of view.

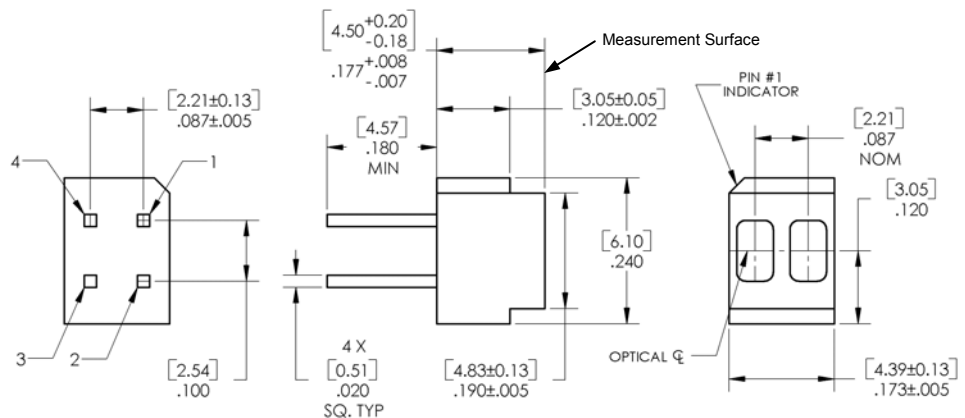
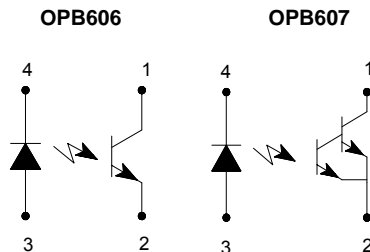
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

**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	Typical Reflection Distance Inch (mm)	Lead Length / Spacing
OPB606A	935 nm	Transistor	0.050" (1.27mm)	0.180" [4.6 mm] / 0.240" [6.1 mm]
OPB606B				
OPB606C				
OPB607A		Darlington		
OPB607B				
OPB607C				

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



**RoHS**

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

DIMENSIONS ARE IN: [ MILLIMETERS ]  
[ INCHES ]

**CONTAINS POLYSULFONE**

To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK's molded plastics.

**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 (1.6 mm) from the case for 5 sec. with soldering iron] <sup>(1)</sup>	260° C

**Input Diode**

Forward DC Current	50 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)	3 A
Reverse DC Voltage	2 V
Power Dissipation <sup>(2)</sup>	75 mW

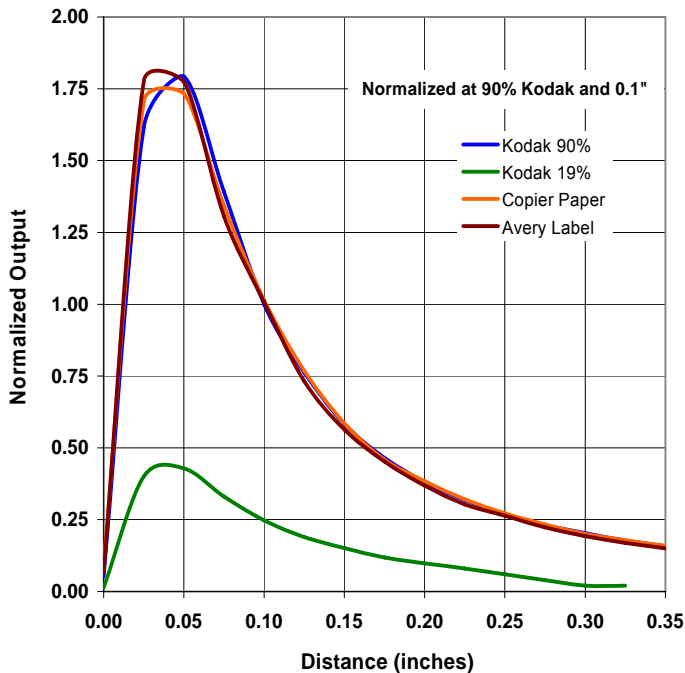
**Output Phototransistor (OPB606) / Output Photodarlington (OPB607)**

Collector-Emitter Voltage OPB606A, OPB606B, OPB606C OPB607A, OPB607B, OPB607C	30 V 15 V
Emitter-Collector Voltage	5 V
Collector DC Current OPB606A, OPB606B, OPB606C OPB607A, OPB607B, OPB607C	25 mA 125 mA
Power Dissipation <sup>(2)</sup>	75 mW

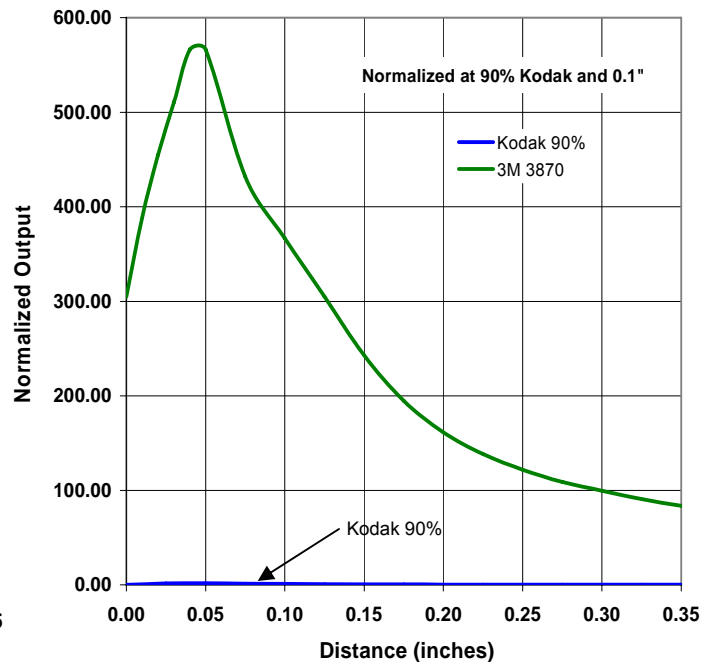
Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.25 mW/°C above 25° C.

**OPB606 - Output vs Distance**



**OPB606 - Output vs Distance (Retro)**



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**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 OP165 for additional information)

$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$

**Output Phototransistor** (see OP268 for additional information—for reference only)

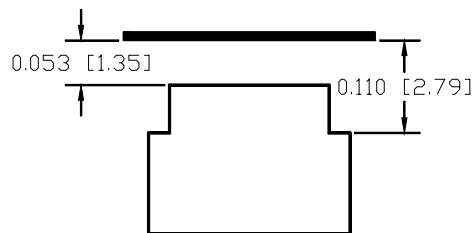
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage OPB606 OPB607	30 15	- -	- -	V V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector Dark Current OPB606 OPB607	- -	- -	100 250	nA nA	$V_{CE} = 5\text{ V}, I_F = 0$

**Combined** (see OP508 or OP509 for additional information—for reference only)

$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage OPB606 OPB607	- -	- -	0.4 1.1	v	$I_F = 20\text{ mA}, I_C = 100\ \mu\text{A}, d = 0.053'' (1.45\text{ mm})^{(1)(2)}$ $I_F = 20\text{ mA}, I_C = 2\text{ mA}, d = 0.053'' (1.45\text{ mm})^{(1)(2)}$
$I_{C(ON)}$	On-State Collector Current OPB606A OPB606B OPB606C OPB607A OPB607B OPB607C	500 350 200 25 17 10	- - - - - -	- - - - - -	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ mA mA mA	$I_F = 20\text{ mA}, V_{ce} = 5\text{ V}, d = 0.053'' (1.45\text{ mm})^{(1)(2)}$
$I_{C(OFF)}$	Off-State Collector Current OPB606 OPB607	- -	- -	200 10	nA $\mu\text{A}$	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}^{(3)}$ $V_{CE} = 5\text{ V}, I_F = 20\text{ mA}^{(3)}$

Notes:

- (1) "d" is the distance from the assembly measurement surface to the reflective surface.
- (2) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog # E 152 7795.
- (3) On OPB606, off-state collector current  $I_{C(OFF)}$  is measured with no reflective surface in the optical path. On OPB607, Crosstalk ( $I_{cx}$ ) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
- (4) All parameters tested using pulse techniques.



Test Distance

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