

# 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

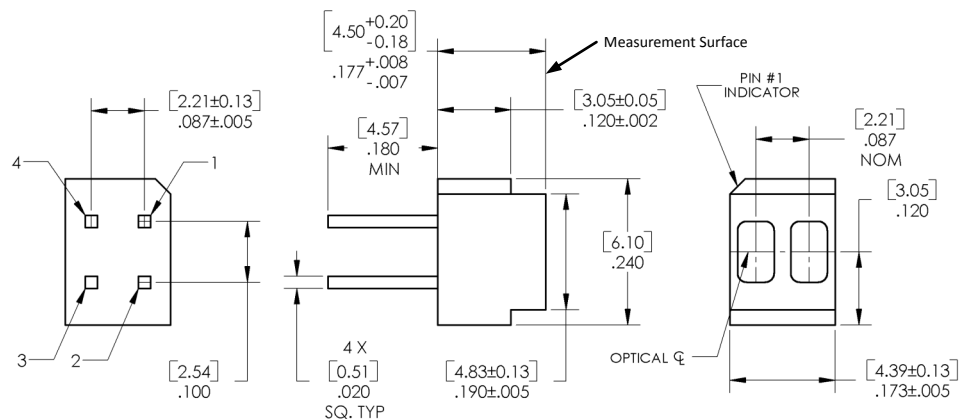
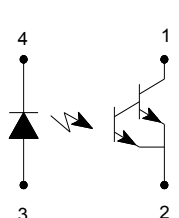
Ordering Information				
Part Number	LED Peak Wavelength	Sensor	Typical Reflection Distance Inch (mm)	Lead Length
OPB606A	935 nm	Transistor	0.050" (1.27mm)	0.18" (Min)
OPB606B				
OPB606C				
OPB607A		Darlington		
OPB607B				
OPB607C				

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

### OPB606



### OPB607



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.

## 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.

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www.optekinc.com | www.ttelectronics.com

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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
<b>Input Diode</b>	
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
<b>Output Phototransistor (OPB606) / Output Photodarlington (OPB607)</b>	
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

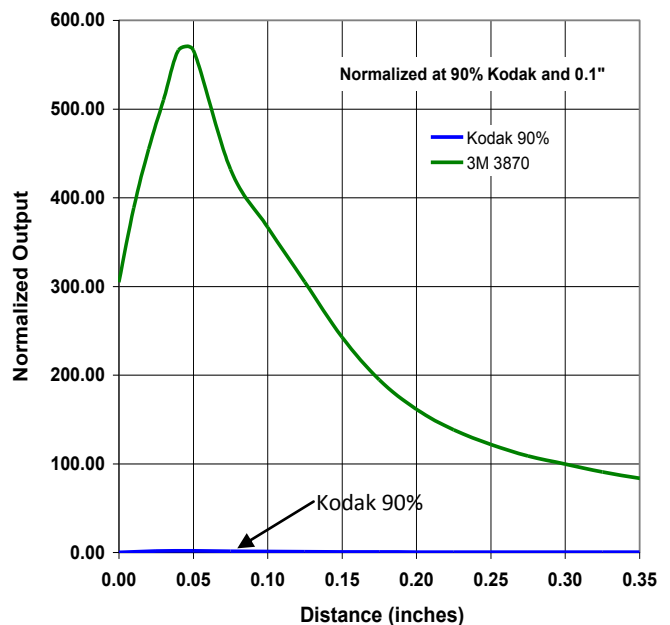
Notes:

- (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
<b>Input Diode</b> (See OP165 for additional information)						
$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$
<b>Output Phototransistor</b> (see OP268 for additional information—for reference only)						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	$I_C = 100\ \mu\text{A}$
	OPB606	15	-	-	V	
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector Dark Current	-	-	100	nA	$V_{CE} = 5\text{ V}, I_F = 0$
	OPB606	-	-	250	nA	
<b>Combined</b> (see OP508 or OP509 for additional information—for reference only)						
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	-	-	0.4	V	$I_F = 20\text{ mA}, I_C = 100\ \mu\text{A}, d = 0.053'' (1.45\text{ mm})^{(1)(2)}$ $I_F = 20\text{ mA}, I_C = 2\text{ mA}, d = 0.053'' (1.45\text{ mm})^{(1)(2)}$
	OPB606	-	-	1.1		
$I_{C(ON)}$	On-State Collector Current	500	-	-	$\mu\text{A}$	$I_F = 20\text{ mA}, V_{CE} = 5\text{ V}, d = 0.053'' (1.45\text{ mm})^{(1)(2)}$
	OPB606A	350	-	-	$\mu\text{A}$	
	OPB606B	200	-	-	$\mu\text{A}$	
	OPB606C	25	-	-	mA	
	OPB607A	17	-	-	mA	
	OPB607B	10	-	-	mA	
$I_{C(OFF)}$	Off-State Collector Current	-	-	200	nA	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}^{(3)}$
	OPB606	-	-	10	$\mu\text{A}$	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}^{(3)}$

**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.



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