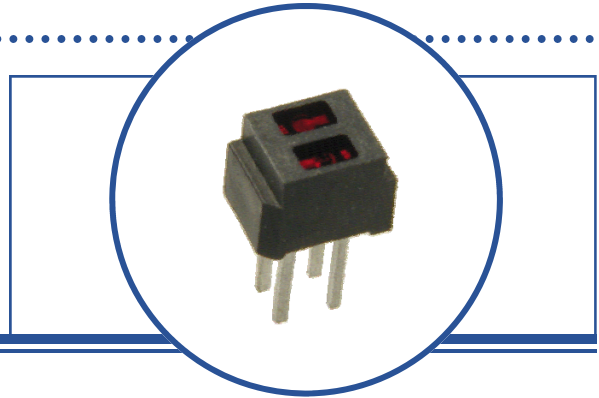


Reflective Object Sensor
OPB606A, OPB606B, OPB606C
OPB607A, OPB607B, OPB607C



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.

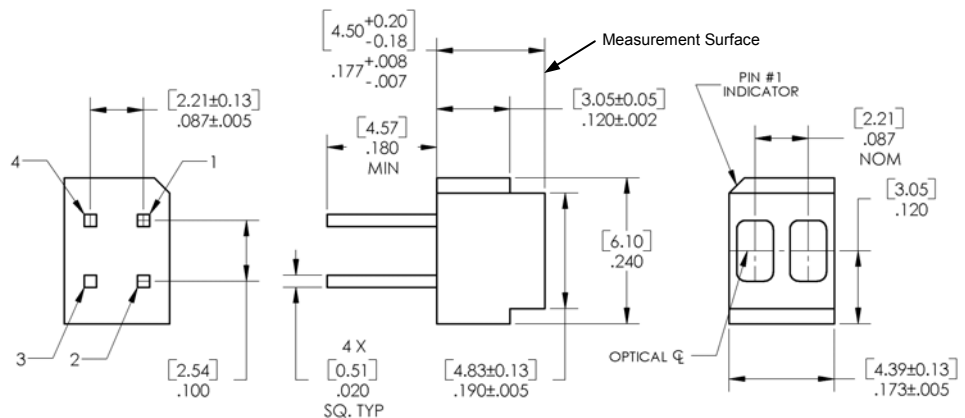
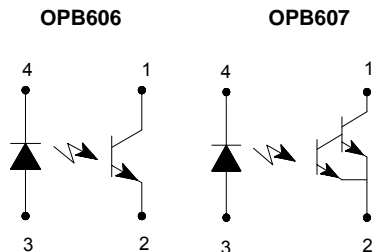
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

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.

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



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] ⁽¹⁾ | 260° C |

Input Diode

| | |
|-------------------------------------------------------------|-------|
| Forward DC Current | 50 mA |
| Peak Forward Current (1 μs pulse width, 300 pps) | 3 A |
| Reverse DC Voltage | 2 V |
| Power Dissipation ⁽²⁾ | 75 mW |

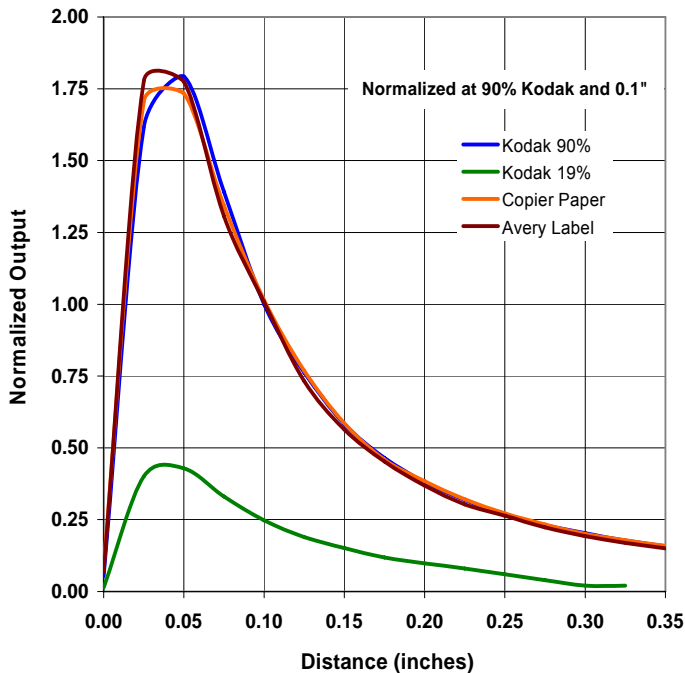
Output Phototransistor (OPB606) / Output Photodarlington (OPB607)

| | |
|-------------------------------------------------------------------------------------|-----------------|
| 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 ⁽²⁾ | 75 mW |

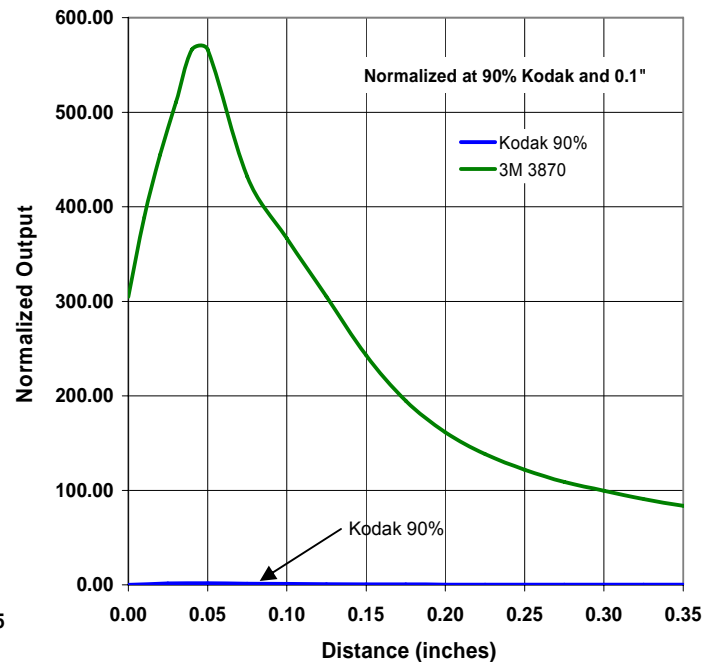
Notes:

- (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 |
|--------|-----------|-----|-----|-----|-------|-----------------|
|--------|-----------|-----|-----|-----|-------|-----------------|

Input Diode (See OP165 for additional information)

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

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

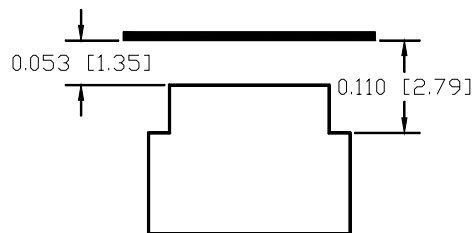
| | | | | | | |
|---------------|---------------------------------------------------------|----------|--------|------------|----------|--------------------------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage OPB606 OPB607 | 30 15 | - - | - - | V V | $I_C = 100\ \mu\text{A}$ |
| $V_{(BR)ECO}$ | 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 | - - - - - - | - - - - - - | μA μA μA 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 μA | $V_{CE} = 5\text{ V}, I_F = 20\text{ mA}^{(3)}$ $V_{CE} = 5\text{ V}, I_F = 20\text{ mA}^{(3)}$ |

Notes:

- "d" is the distance from the assembly measurement surface to the reflective surface.
- Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog # E 152 7795.
- 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.
- All parameters tested using pulse techniques.



Test Distance

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