# Reflective Object Sensor

## OPB606A, OPB606B, OPB606C
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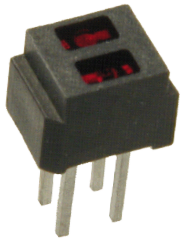


### Features:

- 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.

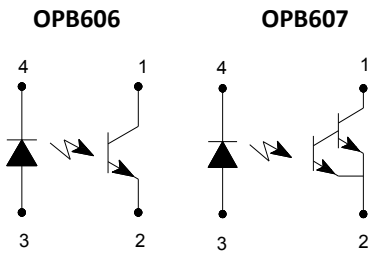
### Applications:

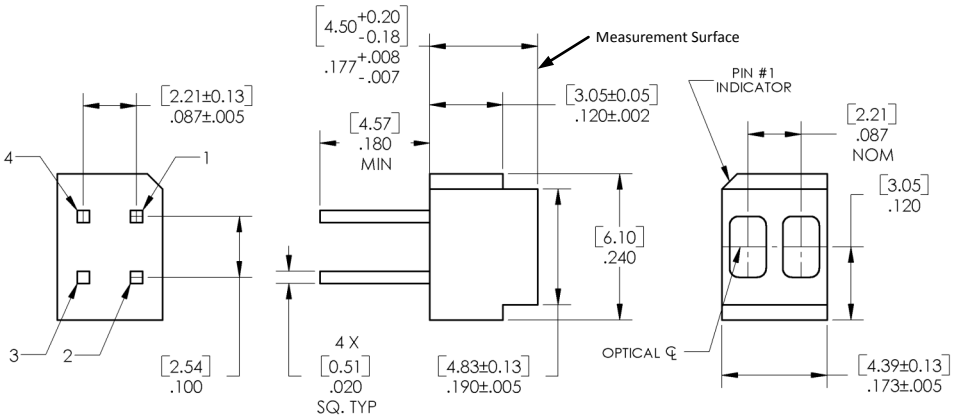
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

**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 |




RoHS

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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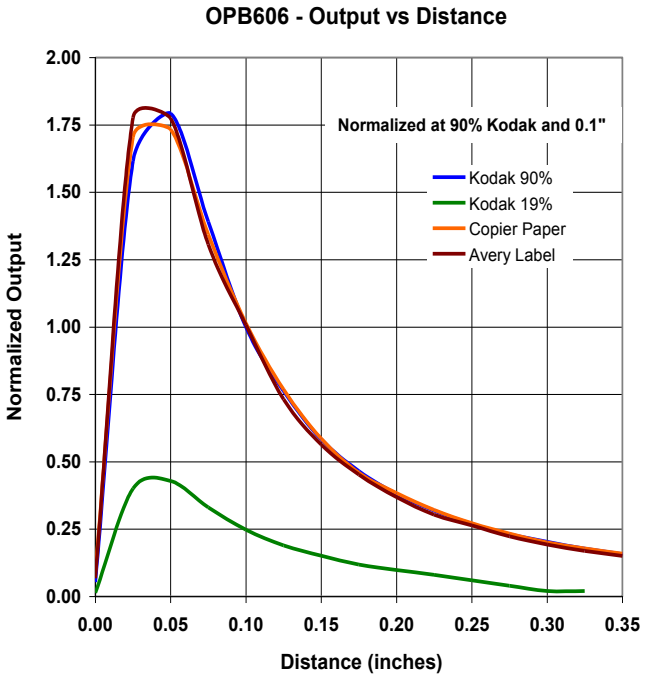
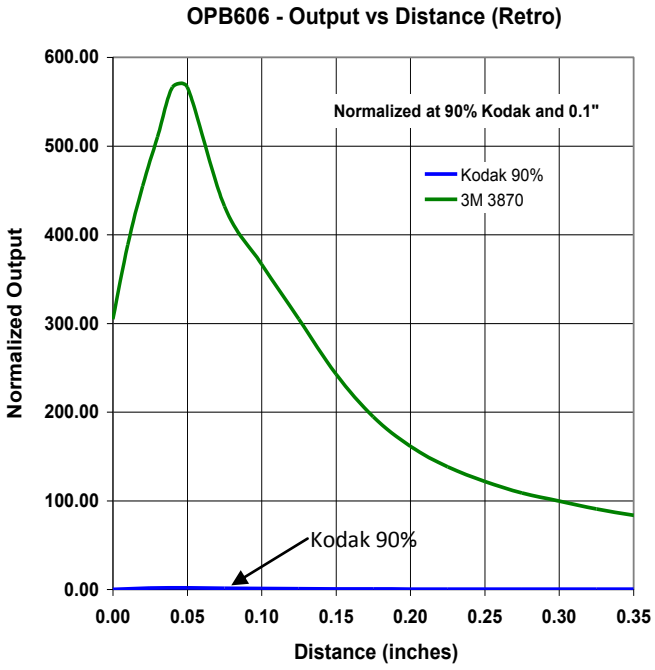
| **Absolute Maximum Ratings** ($T_A$ = 25° C unless otherwise noted) | |
|---|---|
| Storage & Operating Temperature Range | -40° C to +85° C |
| Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron](1) | 260° C |
| **Input Diode** | |
| Forward DC Current | 50 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<br>OPB606A, OPB606B, OPB606C<br>OPB607A, OPB607B, OPB607C | <br>30 V<br>15 V |
| Emitter-Collector Voltage | 5 V |
| Collector DC Current<br>OPB606A, OPB606B, OPB606C<br>OPB607A, OPB607B, OPB607C | <br>25 mA<br>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.





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# Reflective Object Sensor

## OPB606A, OPB606B, OPB606C
## OPB607A, OPB607B, OPB607C

| Electrical Characteristics ($T_A$ = 25° 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 mA |
| $I_R$ | Reverse Current | - | - | 100 | µA | $V_R$ = 2 V |
| **Output Phototransistor** (see OP268 for additional information—for reference only) | | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage<br>OPB606<br>OPB607 | <br>30<br>15 | <br>-<br>- | <br>-<br>- | <br>V<br>V | $I_C$ = 100 µA |
| $V_{(BR)ECO}$ | Emitter-Collector Breakdown Voltage | 5 | - | - | V | $I_E$ = 100 µA |
| $I_{CEO}$ | Collector Dark Current<br>OPB606<br>OPB607 | <br>-<br>- | <br>-<br>- | <br>100<br>250 | <br>nA<br>nA | $V_{CE}$ = 5 V, $I_F$ = 0 |
| **Combined** (see OP508 or OP509 for additional information—for reference only) | | | | | | |
| $V_{CE(SAT)}$ | Collector-Emitter Saturation Voltage<br><br>OPB606<br>OPB607 | <br><br>-<br>- | <br><br>-<br>- | <br><br>0.4<br>1.1 | <br><br>V | $I_F$ = 20 mA, $I_C$ = 100 µA, d = 0.053" (1.45 mm)[1][2]<br>$I_F$ = 20 mA, $I_C$ = 2 mA, d = 0.053" (1.45 mm)[1][2] |
| $I_{C(ON)}$ | On-State Collector Current<br>OPB606A<br>OPB606B<br>OPB606C<br>OPB607A<br>OPB607B<br>OPB607C | <br>500<br>350<br>200<br>25<br>17<br>10 | <br>-<br>-<br>-<br>-<br>-<br>- | <br>-<br>-<br>-<br>-<br>-<br>- | <br>µA<br>µA<br>µA<br>mA<br>mA<br>mA | $I_F$ = 20 mA, $V_{ce}$ = 5 V, d = 0.053" (1.45 mm)[1][2] |
| $I_{C(OFF)}$ | Off-State Collector Current<br>OPB606<br>OPB607 | <br>-<br>- | <br>-<br>- | <br>200<br>10 | <br>nA<br>µA | $V_{CE}$ = 5 V, $I_F$ = 20 mA[3]<br>$V_{CE}$ = 5 V, $I_F$ = 20 mA [3] |

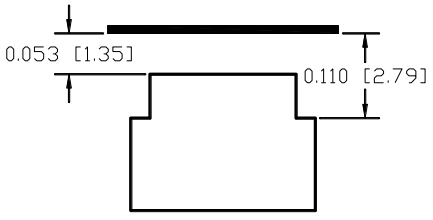
Notes:

(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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