

Reflective Object Sensor

OPB706A, OPB706B, OPB706C

OPB707A, OPB707B, OPB707C



Features:

- Choice of Phototransistor (OPB706) or Photodarlington (OPB707) output
- Unfocused for sensing diffuse surface
- Low cost plastic housing
- Designed for use with PCBoards or connectors

Description:

The **OPB706** consists of an infrared Light Emitting Diode (LED) and an NPN silicon Phototransistor mounted “side-by-side” on parallel axes in a black plastic housing. The **OPB707** consists of an infrared LED and an NPN silicon Photodarlington mounted “side-by-side” on parallel axes in a black plastic housing.

On both **OPB706** and **OPB707**, the LED and Phototransistor / Photodarlington are molded using dark infrared transmissive plastic to reduce ambient light noise. The Phototransistor / Photodarlington responds to light from the emitter when a reflective object passes within its field of view of the device.

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

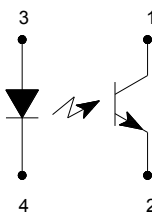
Applications:

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

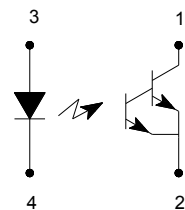
| Part Number | LED Peak Wavelength | Sensor | Reflection Distance | Lead Length / Spacing |
|-------------|---------------------|------------|---------------------|---------------------------|
| OPB706A | 935 nm | Transistor | 0.050" (1.27mm) | 0.45" / 0.087", 0.100" |
| OPB706B | | | | |
| OPB706C | | | | |
| OPB707A | | Darlington | | |
| OPB707B | | | | |
| OPB707C | | | | |



OPB706



OPB707



[MILLIMETERS]
DIMENSIONS ARE IN:
INCHES

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



RoHS

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 and 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] ⁽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 (OPB706) Output Photodarlington (OPB707) | |
| Collector-Emitter Voltage OPB706 OPB707 | 24 V 15 V |
| Emitter-Collector Voltage | 5 V |
| Collector DC Current OPB706 OPB707 | 25 mA 125 mA |
| Power Dissipation OPB706 ⁽²⁾ OPB707 ⁽³⁾ | 75 mW 100 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.
- (3) Derate linearly 1.67 mW/°C above 25 ° C.

Reflective Object Sensor

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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 OP165W 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 OP505W for additional information) Photodarlington (see OP535 for additional information) | | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | 24 | - | - | V | $I_C = 100\ \mu\text{A}$ |
| | OPB706 OPB707 | 15 | - | - | | |
| $V_{(BR)ECO}$ | Emitter-Collector Breakdown Voltage | 5 | - | - | V | $I_E = 100\ \mu\text{A}$ |
| I_{CEO} | Collector Dark Current | - | - | 100 | nA | $V_{CE} = 5\text{ V}, I_F = 0, E_E \leq 0.1\ \mu\text{W}/\text{cm}^2$ |
| | OPB706 OPB707 | - | - | 250 | | |
| Combined | | | | | | |
| I_{CX} | Crosstalk | - | - | 200 | nA | $I_F = 20\text{ mA}, V_{CE} = 5\text{ V}, \text{No reflecting surface}^{(1)}$ |
| | OPB706 OPB707 | - | - | 10 | μA | |
| $I_{C(ON)}$ | On-State Collector Current | 500 | - | - | μA | $I_F = 20\text{ mA}, V_{CE} = 5\text{ V}, d = 0.05'' (1.27\text{ mm})^{(2)(3)}$ |
| | OPB706A | 500 | - | - | | |
| | OPB706B | 350 | - | - | | |
| | OPB706C | 250 | - | - | mA | |
| | OPB707A | 25 | - | - | | |
| | OPB707B | 17 | - | - | | |
| OPB707C | 10 | - | - | | | |
| $V_{CE(SAT)}$ | Collector-Emitter Saturation Voltage | 0.4 | - | - | V | $I_F = 20\text{ mA}, d = 0.05'' (1.27\text{ mm})^{(2)(3)}$ $I_{C(ON)} = 100\ \mu\text{A}$ $I_{C(ON)} = 2\text{ mA}$ |
| | OPB706 | 0.4 | - | - | | |
| | OPB707 | 1.1 | - | - | | |

Notes:

- (1) Crosstalk (I_{CX}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
- (2) The distance from the assembly face to the reflective surface is "d".
- (3) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog #E 152 7795.
- (4) Lower curve is a calculated worst case condition rather than the conventional $-2\ \Omega$ limit.
- (5) All parameters tested using pulse techniques.

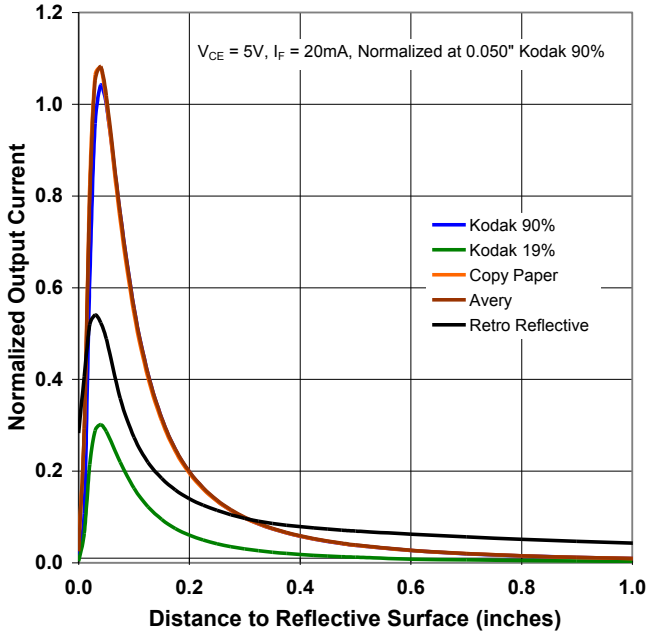
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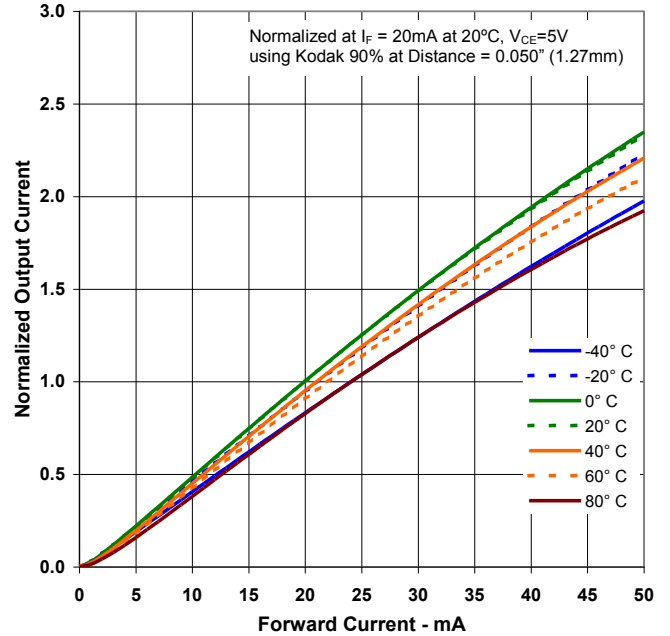
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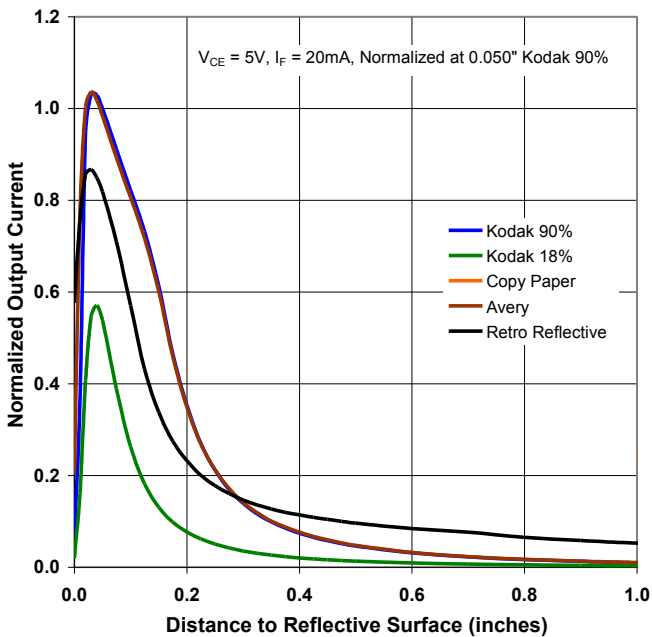
OPB706 - Normalized Collector Current vs. Object Distance



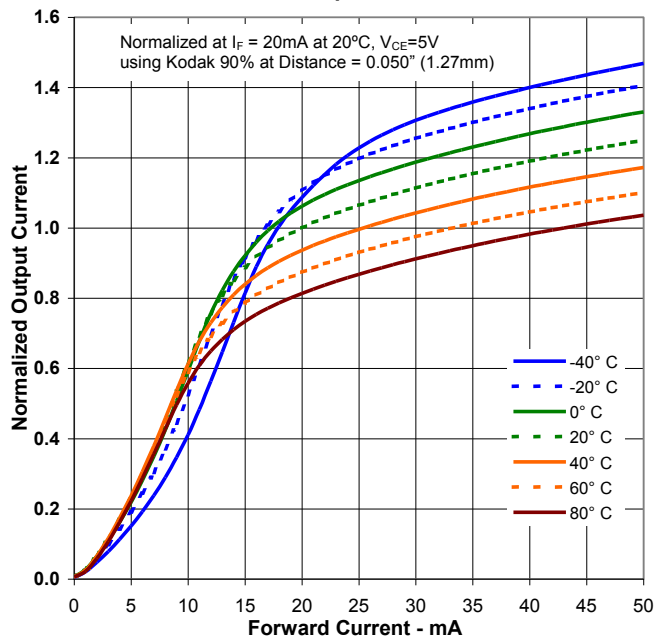
OPB706 - Output Current vs Forward Current vs Temperature



OPB707 - Normalized Collector Current vs. Object Distance



OPB707 - Output Current vs Forward Current vs Temperature



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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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