Reflective Object Sensor

OPB706A, OPB706B, OPB706C
OPB707A, OPB707C
Obsolete (OPB707B)



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.

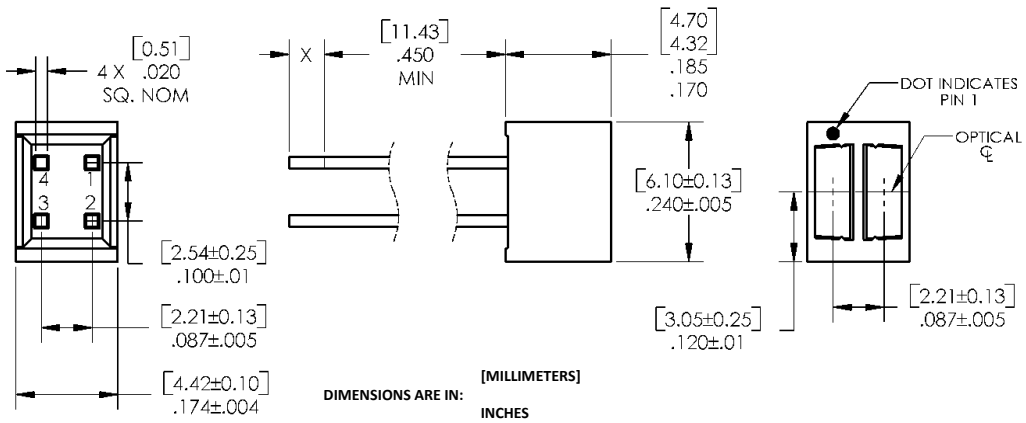
On both **OPB706** and **OPB707**, the LED and Phototransistor / Photodarlington are molded using dark infrared transmissive plastic to reduce ambient light noise. The Phototransistor / Photodarlington responds to light from the emitter when a reflective object passes within its field of view of the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

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

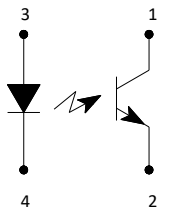
Applications:

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

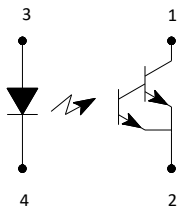
Part Number	LED Peak Wavelength	Sensor	Reflection Distance	Lead Length / Spacing
OPB706A	935 nm	Transistor	0.050" (1.27mm)	0.45" / 0.087", 0.100"
OPB706B				
OPB706C				
OPB707A		Darlington		
OPB707B Obsolete				
OPB707C				



OPB706



OPB707



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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Electrical Specifications

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage and 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 (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.

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Electrical Specifications

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

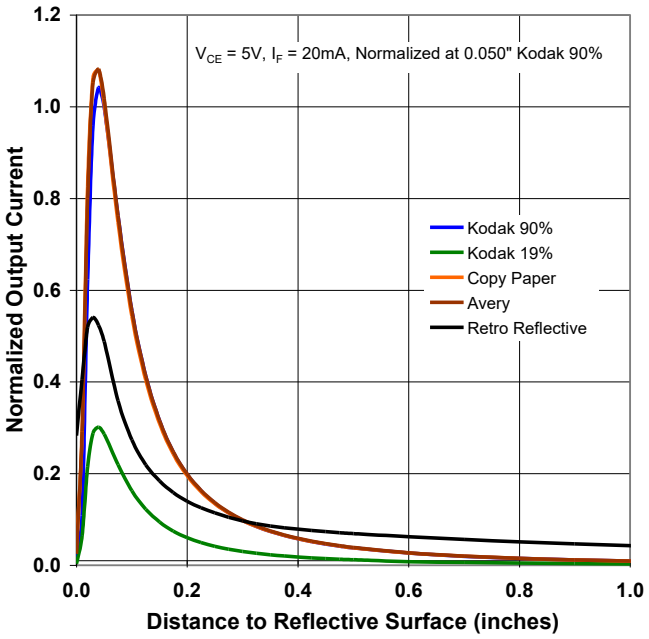
Notes:
(1) Crosstalk (I_{CX}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
(2) The distance from the assembly face to the reflective surface is "d".
(3) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance 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 Ω limit.
(5) All parameters tested using pulse techniques.

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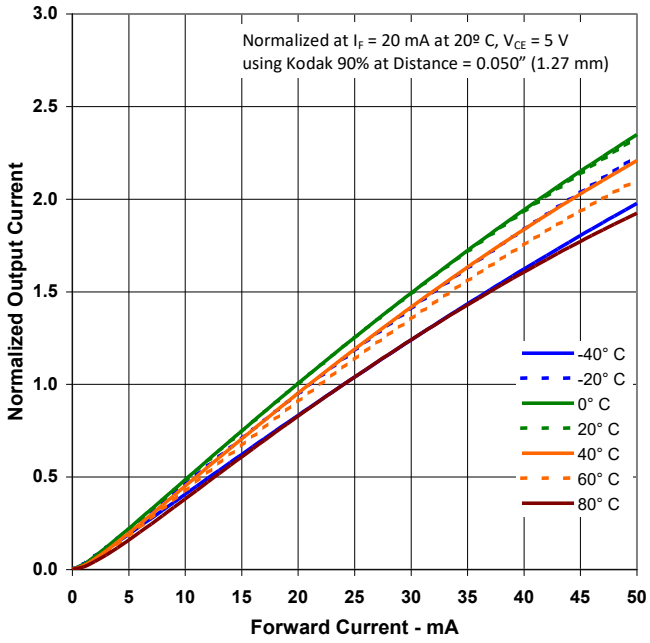
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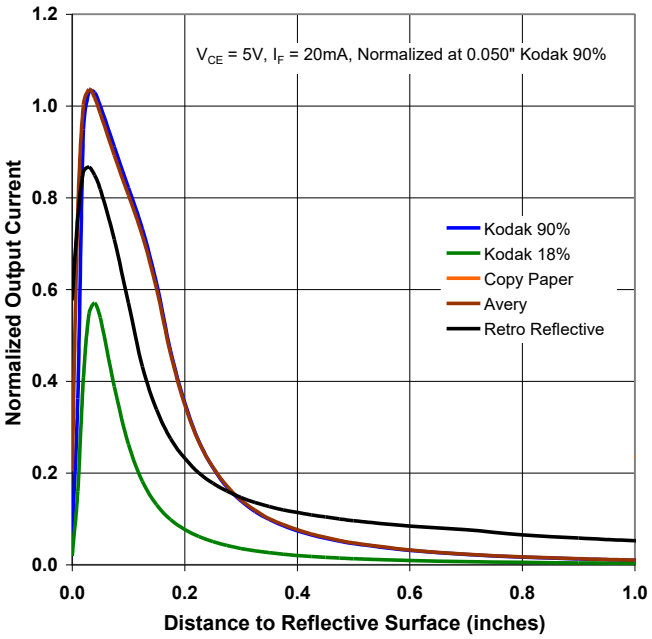
OPB706 - Normalized Collector Current vs. Object Distance



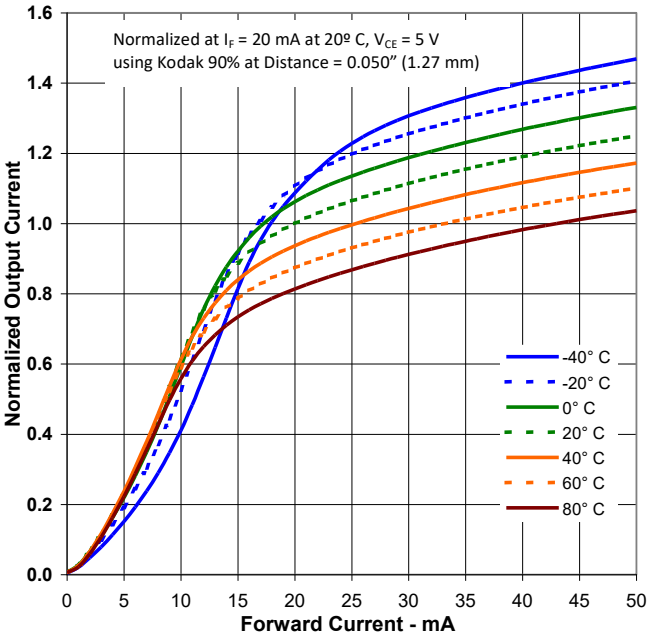
OPB706 - Output Current vs Forward Current vs Temperature



OPB707 - Normalized Collector Current vs. Object Distance



OPB707 - Output Current vs Forward Current vs Temperature



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