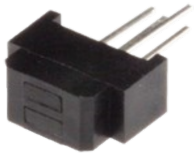
Reflective Object Sensor

OPB711, OPB712

Features:

- Choice of phototransistor or photodarlington output
- Unfocused for sensing diffuse surface
- Low-cost plastic housing
- Choice of filter or unfiltered



Description:

OPB711 consists of an infrared emitting diode and an NPN silicon phototransistor, mounted "side-by-side" on parallel axes in a black opaque plastic housing. The **OPB712** consists of an infrared emitting diode and an NPN silicon photodarlington, mounted "side-by-side" on parallel axes in a black plastic housing.

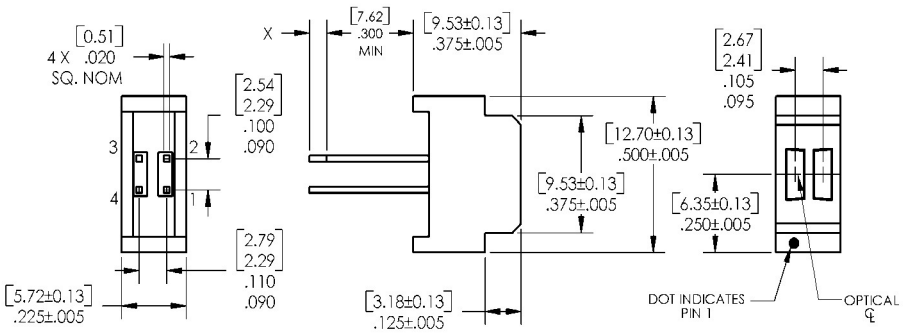
OPB711's, emitting diode and phototransistor are encapsulated in a filtering epoxy to reduce ambient light noise. Its phototransistor responds to radiation from the emitter only when a reflective object passes within its field of view.

OPB712's emitting diode and photodarlington are encapsulated in a filtering epoxy to reduce ambient light noise. Its photodarlington responds to radiation from the emitter only when a reflective object passes within its field of view.

Applications:

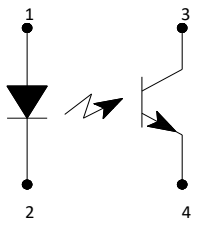
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Part Number	LED Peak Wavelength	Sensor	Reflection Distance Inch (mm)	Lead Length / Spacing
OPB711	890 nm	Transistor	0.080" (2.03mm)	0.30" / 0.095" & 0.100" "X" = 0.06" (1.5 mm)
OPB712		Darlington		

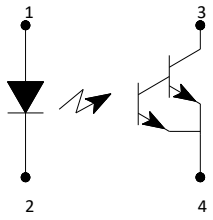


DIMENSIONS ARE IN: [MILLIMETERS] INCHES

OPB711



OPB712



Pin #	LED	Pin #	Transistor
1	Anode	3	Collector
2	Cathode	4	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 & 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 (See OP268 for additional information—for reference only)	
Forward DC Current	50 mA
Peak Forward Current (1 µs pulse width, 300 pps)	3 A
Reverse DC Voltage	2 V
Power Dissipation[2]	80 mW
Output Phototransistor (OPB711), **Output Photodarlington** (OPB712)	
Collector-Emitter Voltage OPB711 OPB712	 24 V 15 V
Emitter-Collector Voltage	5 V
Collector DC Current OPB711 OPB712	 25 mA 125 mA
Power Dissipation OPB711[2] OPB712[3]	 80 mW 125 mW

Notes:

(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.

(2) Derate linearly 1.33 mW/cm^2 above 25° C.

(3) Derate linearly 2.08 mW/^{o}C above 25^o 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 OP168F 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 (OPB711—See OP508F for additional information) **Output Photodarlington** (OPB712—See OP538F for additional information)						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage OPB711 OPB712	 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 OPB711 OPB712	 - -	 - -	 100 250	nA	V_{CE} = 10 V, I_F = 0, E_E = ≤ 0.1 µW/cm^2
Combined						
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage[1][2] OPB711 OPB712	 - -	 - -	 .4 1.1	V	I_F = 20 mA, I_C = 50 µA, d = 0.080" (2.03 mm)
$I_{C(ON)}$	On-State Collector Current[1][2] OPB711 OPB712	 .35 20	 - -	 4.5 50	 mA mA	I_F = 20 mA, V_{CE} = 5 V, d = 0.080" (2.03 mm)
I_{CX}	Crosstalk OPB711[3] OPB712[4]	 - -	 - -	 100 25	 nA µA	V_{CE} = 5 V, I_F = 20 mA (no reflecting surface)

Notes:

(1) On OPB711, D is the distance from the assembly measurement surface to the reflective surface. On OPB712, D is the distance from the assembly face 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) Crosstalk (Icx) is the collector current measured with the indicated current in the input diode and with no reflective surface.

(4) All parameters were tested using pulse techniques.

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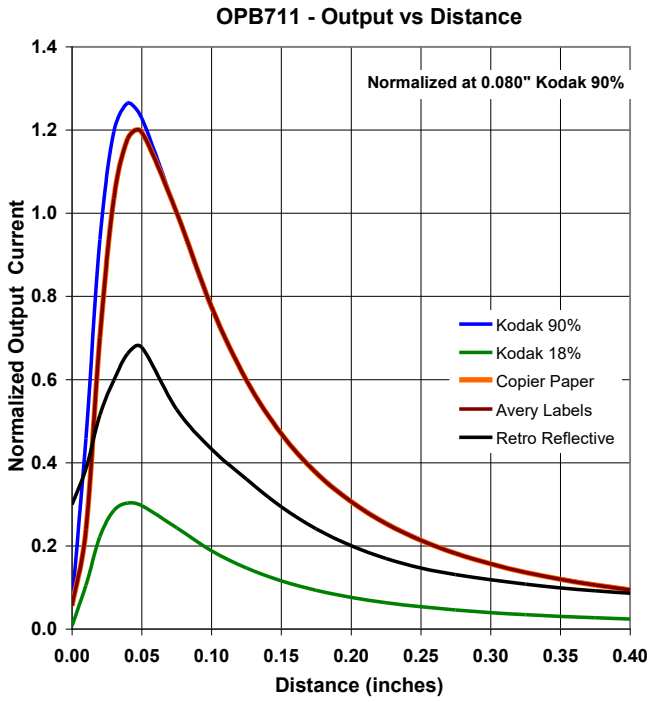

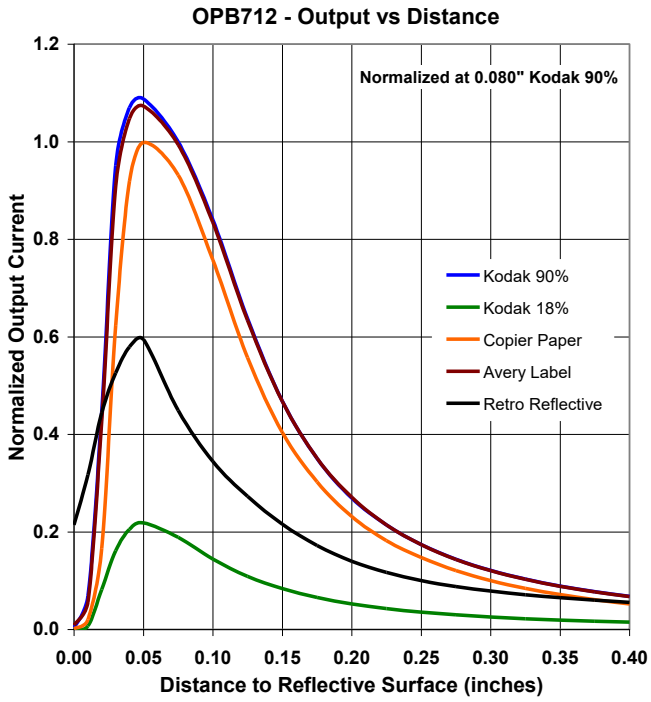

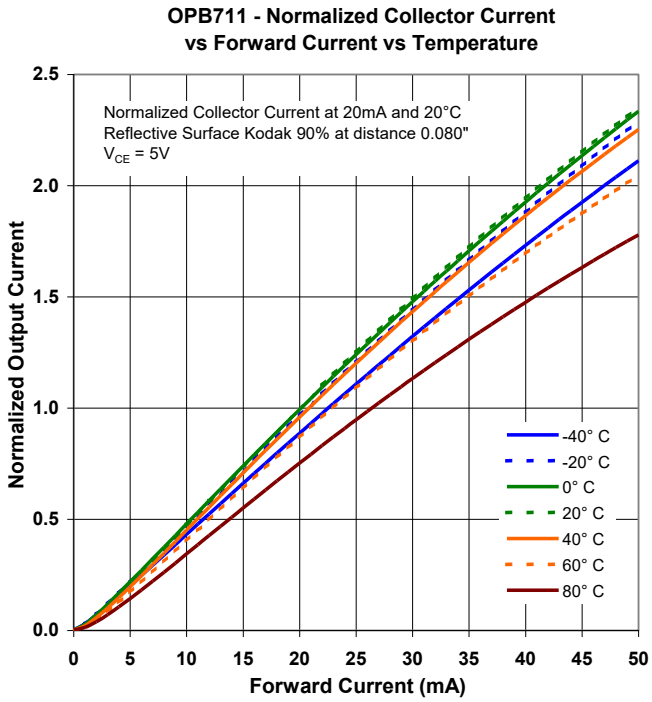

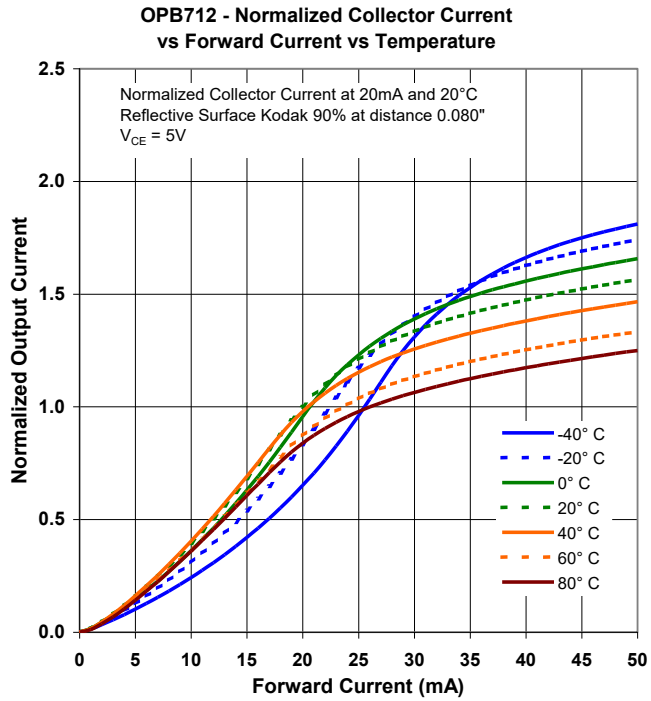

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