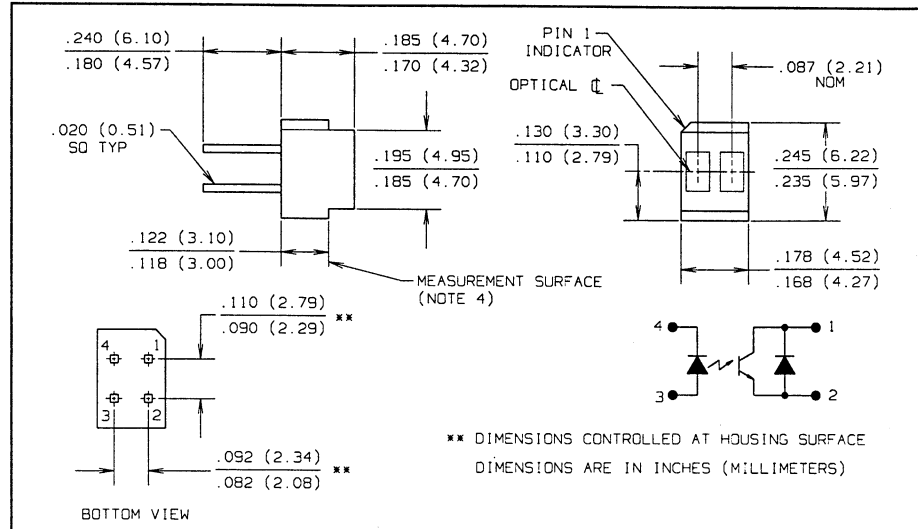
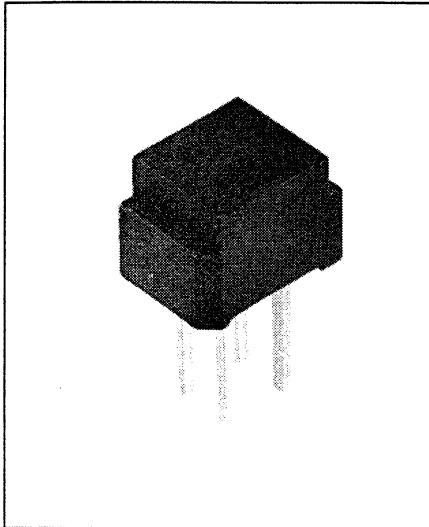


# Reflective Object Sensors

## Types OPB608A, OPB608B, OPB608C



### Features

- Phototransistor output
- Unfocused for sensing diffuse surface
- Low cost plastic housing
- Enhanced signal to noise ratio
- Reduced ambient light sensitivity

### Description

The OPB608 consists of an infrared emitting diode and an NPN silicon phototransistor mounted "side-by-side" on parallel axes in a black opaque plastic housing. Both the emitting diode and phototransistor are encapsulated in a filtering epoxy to further reduce ambient light noise. The phototransistor responds to radiation from the emitter only when a reflective object passes within its field of view.

The phototransistor has enhanced low current roll off to improve the contrast ratio and immunity to background irradiance.

### Absolute Maximum Ratings (T<sub>A</sub> = 25° C unless otherwise noted)

Storage and Operating Temperature . . . . . -40° C to +85° C  
 Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]. . . . . 240° C<sup>(1)</sup>

#### Input Diode

Forward DC Current . . . . . 50 mA  
 Peak Forward Current (1 μs pulse width, 300 pps) . . . . . 3.0 A  
 Reverse DC Voltage . . . . . 2.0 V  
 Power Dissipation . . . . . 75 mW<sup>(2)</sup>

#### Output Phototransistor

Collector-Emitter Voltage . . . . . 30 V  
 Emitter Reverse Current . . . . . 10 mA  
 Collector DC Current . . . . . 25 mA  
 Power Dissipation . . . . . 100 mW<sup>(3)</sup>

#### Notes:

- (1) RMA flux is recommended. Max 20 grams force may be applied to the leads when soldering. Duration can be extended to 10 sec. max when flow soldering.
- (2) Derate linearly 1.25 mW/° C above 25° C.
- (3) Derate linearly 1.67 mW/° C above 25° C.
- (4) d is the distance from the assembly measurement surface to the reflective surface.
- (5) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface.
- (6) Off state collector current I<sub>C(OFF)</sub> is measured with no reflective surface in the optical path.

# Types OPB608A, OPB608B, OPB608C

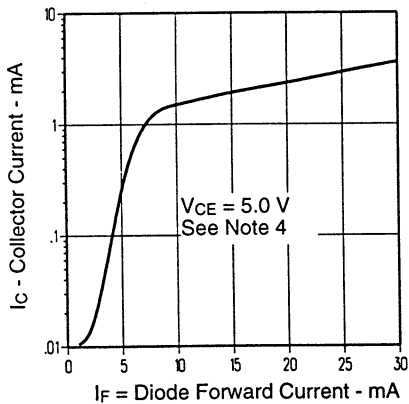
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

REFLECTIVE OBJECT SENSORS

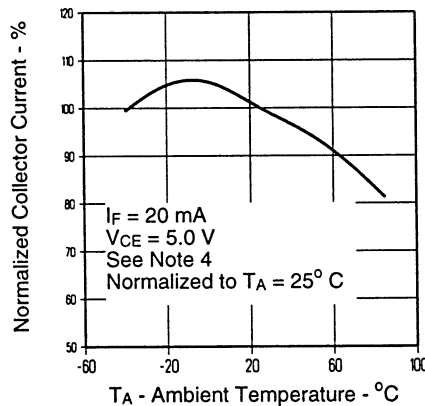
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>					
$V_F$	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current		100	$\mu\text{A}$	$V_R = 2.0\text{ V}$
<b>Output Phototransistor</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 100\ \mu\text{A}$
$I_{ECO}$	Emitter Reverse Current		100	$\mu\text{A}$	$V_{EC} = 0.4\text{ V}$
$I_{CEO}$	Collector Dark Current		100	nA	$V_{CE} = 5.0\text{ V}, I_F = 0, E_e = \leq 0.10\ \mu\text{W}/\text{cm}^2$
<b>Combined</b>					
$I_{C(ON)}$	On-State Collector Current	OPB608A OPB608B OPB608C	2.0 1.0 0.5	4.0 mA mA mA	$V_{CE} = 5.0\text{ V}, I_F = 20\text{ mA}, d = 0.110\text{ in. (2.79 mm)}^{(4)(5)}$
$I_{C(OFF)}$	Off-State Collector Current			100	nA $V_{CE} = 5.0\text{ V}, I_F = 20\text{ mA}^{(6)}$

## Typical Performance Curves

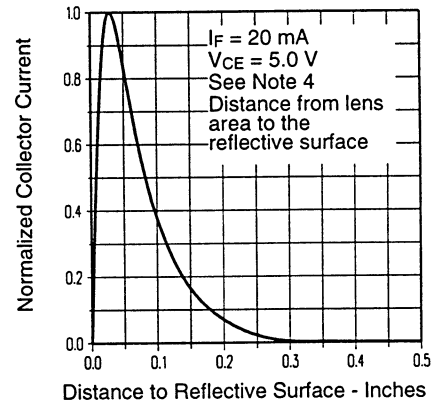
Collector Current vs Diode Forward Current



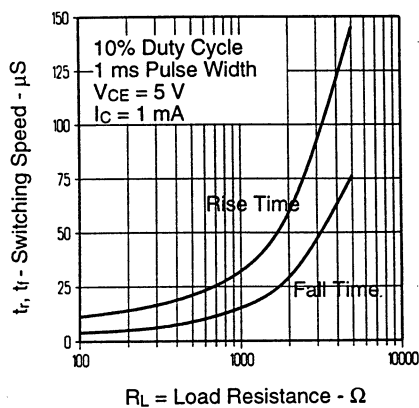
Normalized Collector Current vs Ambient Temperature



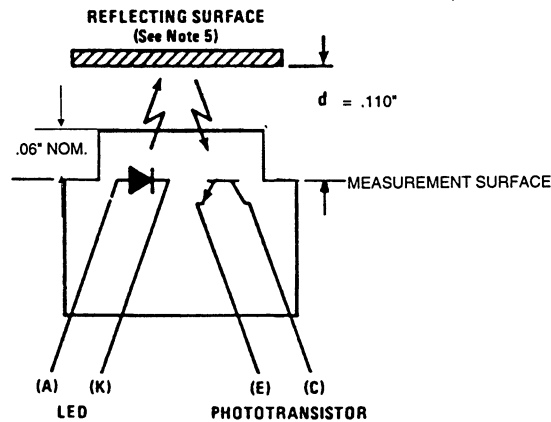
Normalized Collector Current vs Object Distance



Rise and Fall vs Load Resistance



## Test Condition



Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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