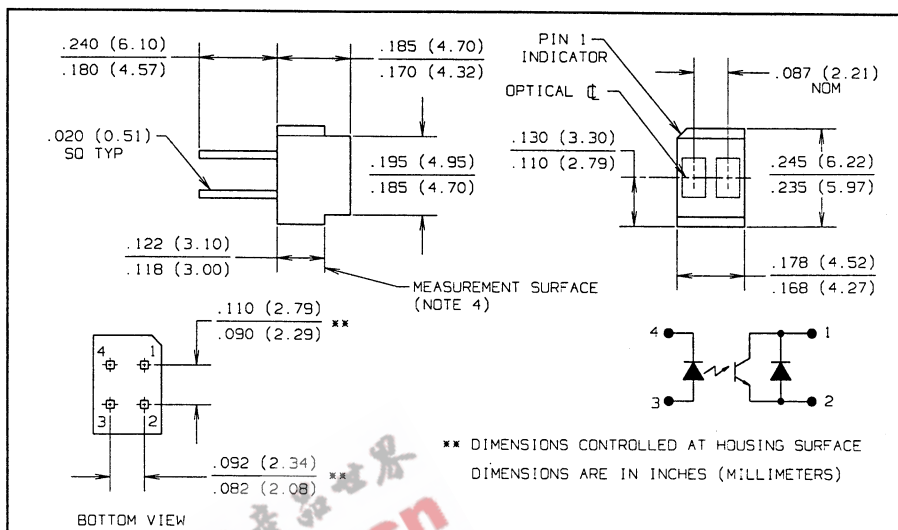
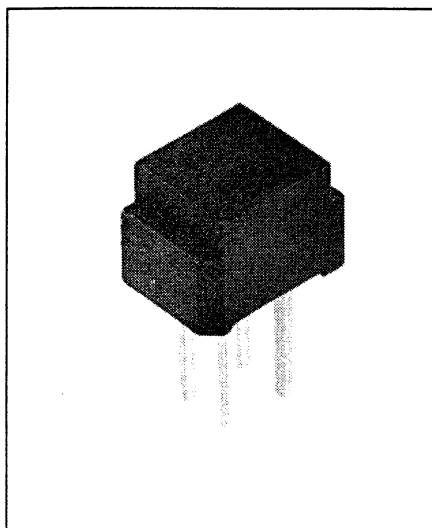


Reflective Object Sensors

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 ($T_A = 25^\circ\text{C}$ 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 ⁽¹⁾

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 ⁽²⁾

Output Phototransistor

Collector-Emitter Voltage	30 V
Emitter Reverse Current	10 mA
Collector DC Current	25 mA
Power Dissipation	100 mW ⁽³⁾

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 $I_{C(OFF)}$ is measured with no reflective surface in the optical path.

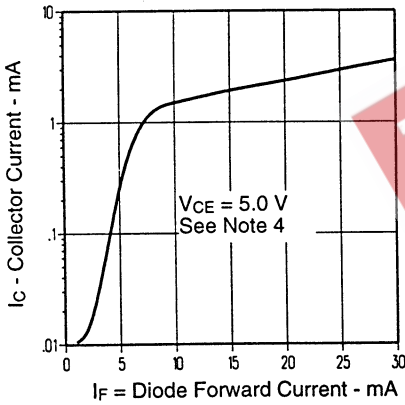
Types OPB608A, OPB608B, OPB608C

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

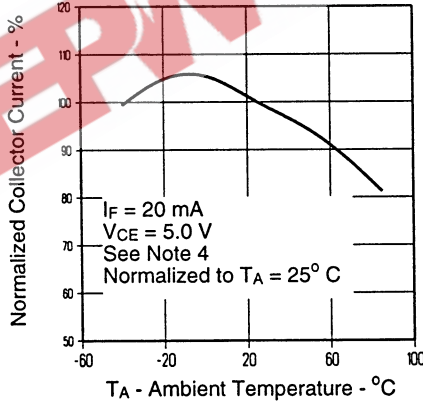
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS	
Input Diode						
V_F	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$	
I_R	Reverse Current		100	μA	$V_R = 2.0\text{ V}$	
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 100\ \mu\text{A}$	
I_{ECO}	Emitter Reverse Current		100	μA	$V_{EC} = 0.4\text{ V}$	
I_{CEO}	Collector Dark Current		100	nA	$V_{CE} = 5.0\text{ V}, I_F = 0, E_e = \leq 0.10\ \mu\text{W}/\text{cm}^2$	
Combined						
$I_{C(ON)}$	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

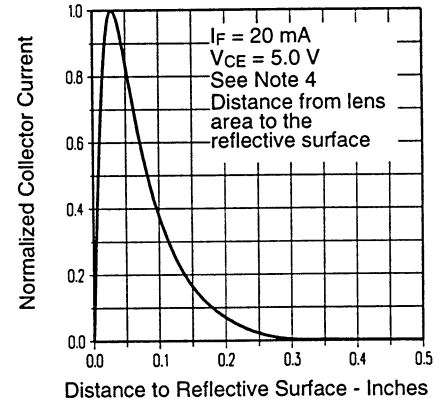
Collector Current vs Diode Forward Current



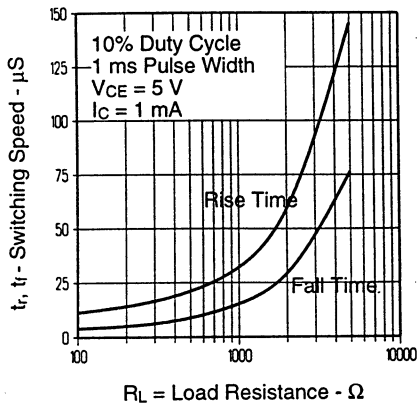
Normalized Collector Current vs Ambient Temperature



Normalized Collector Current vs Object Distance



Rise and Fall vs Load Resistance



Test Condition

