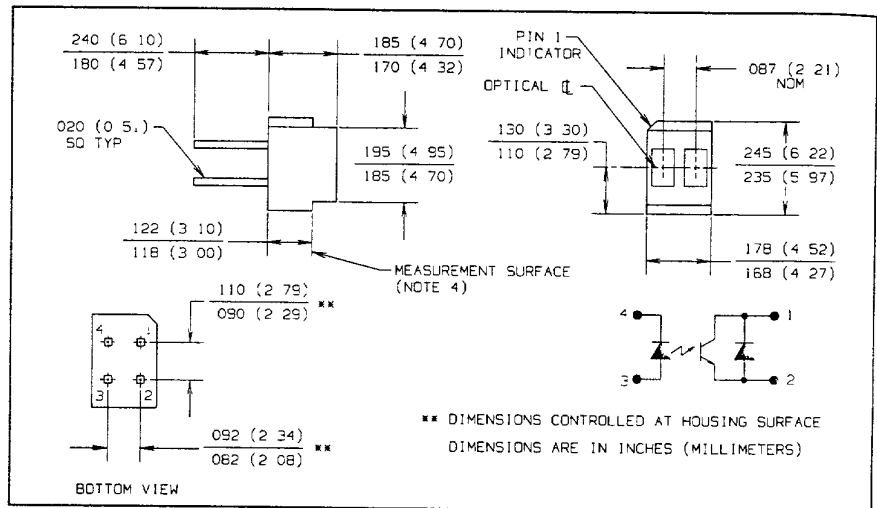
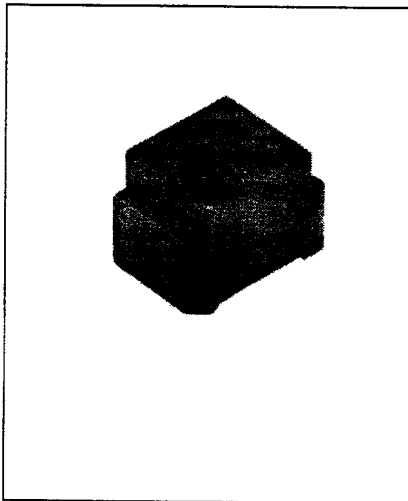


139-830



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 $+85^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] $240^\circ\text{C}^{(1)}$

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/ $^\circ\text{C}$ above 25°C .
- (3) Derate linearly 1.67 mW/ $^\circ\text{C}$ 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

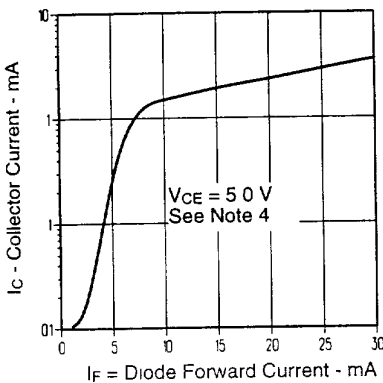
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

REFLECTIVE OBJECT SENSORS

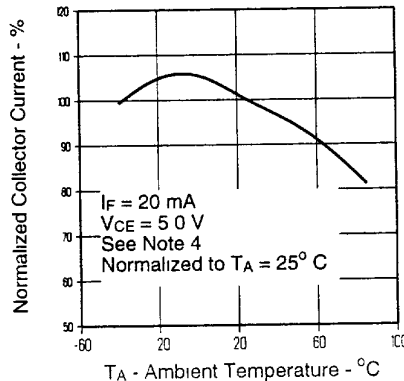
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS	
Input Diode						
V_F	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$	
I_R	Reverse Current		100	μA	$V_R = 2.0\text{ V}$	
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 100\ \mu\text{A}$	
I_{ECO}	Emitter Reverse 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

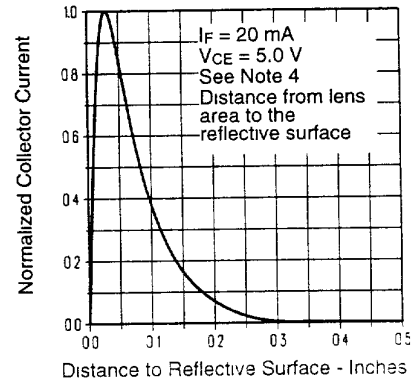
Collector Current vs Diode Forward Current



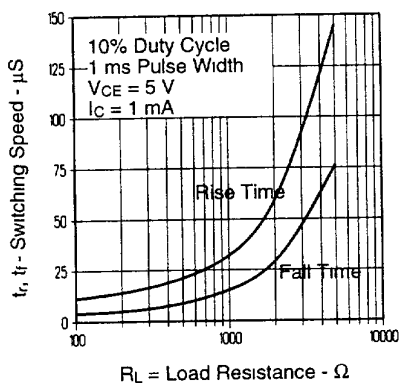
Normalized Collector Current vs Ambient Temperature



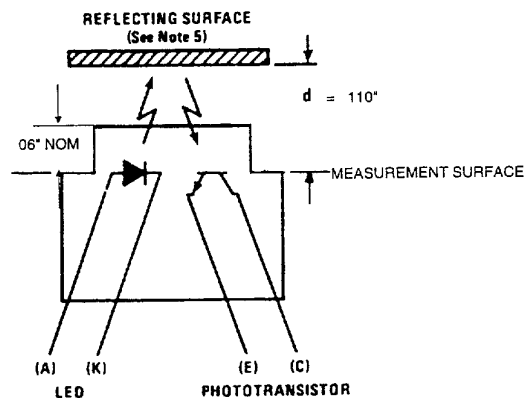
Normalized Collector Current vs Object Distance



Rise and Fall vs Load Resistance



Test Condition



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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