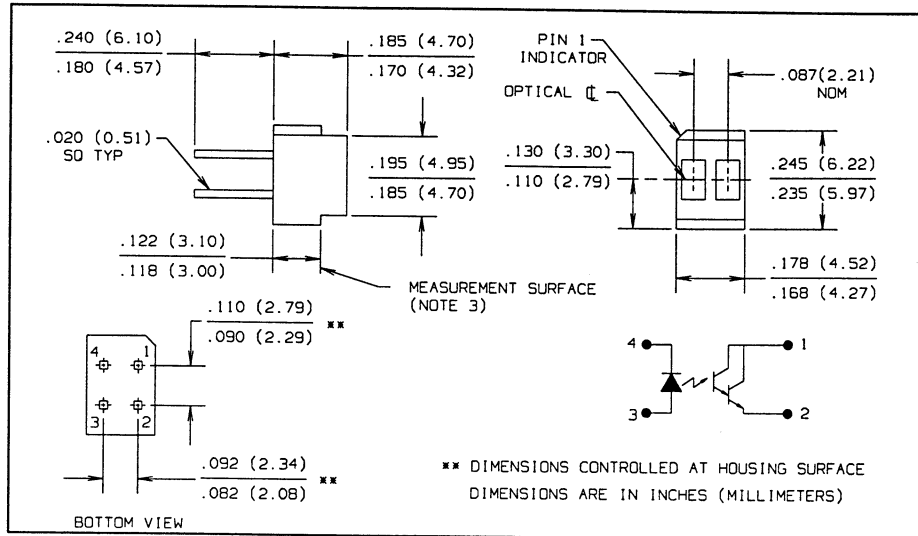
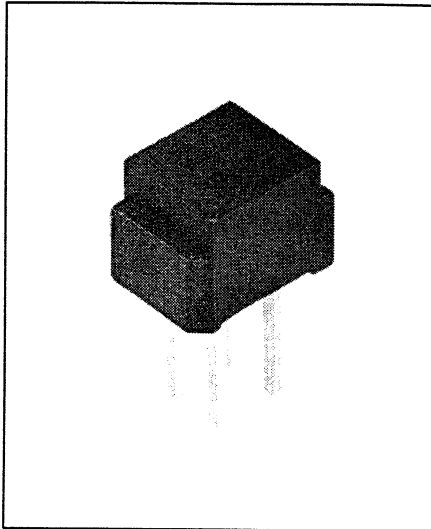


Reflective Object Sensors

Types OPB607A, OPB607B, OPB607C



Features

- Photodarlington output
- Unfocused for sensing diffuse surface
- Low cost plastic housing

Description

The OPB607 consists of an infrared emitting diode and an NPN silicon photodarlington mounted "side-by-side" on parallel axes in a gray opaque plastic housing. Both the emitting diode and photodarlington are encapsulated in a filtering epoxy to reduce ambient light noise. The photodarlington responds to radiation from the emitter only when a reflective object passes within its field of view.

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 $75\text{ mW}^{(2)}$

Output Photodarlington

Collector-Emitter Voltage 15 V
 Emitter-Collector Voltage 5.0 V
 Collector DC Current 125 mA
 Power Dissipation $75\text{ mW}^{(2)}$

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering.
- (2) Derate linearly $1.25\text{ mW}/^\circ\text{C}$ above 25°C .
- (3) d is the distance from the assembly measurement surface to the reflective surface.
- (4) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface.
- (5) Off state collector current $I_{C(OFF)}$ is measured with no reflective surface in the optical path.
- (6) Lower curve is a calculated worst case and not the conventional - 2σ limit.
- (7) All parameters measured using pulse techniques.

Types OPB607A, OPB607B, OPB607C

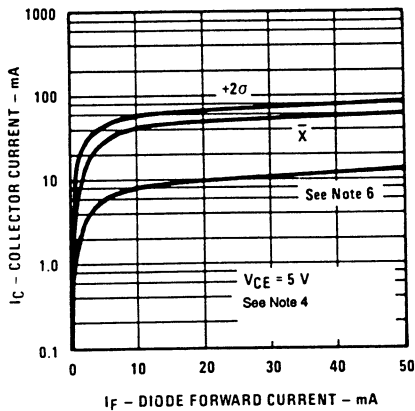
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

REFLECTIVE OBJECT SENSORS

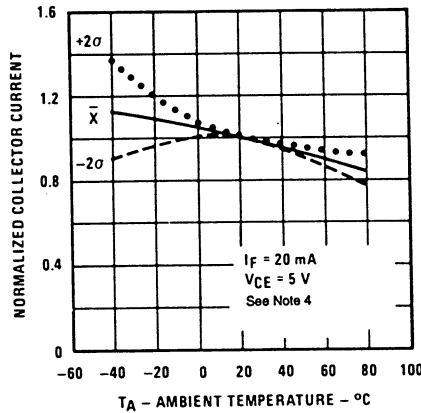
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$
I_R	Reverse Current		100	μA	$V_R = 2.0\text{ V}$
Output Photodarlington					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	15		V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$
I_{CEO}	Collector Dark Current		250	nA	$V_{CE} = 5.0\text{ V}$
Combined					
$I_{C(ON)}$	On-State Collector Current	OPB607A OPB607B OPB607C	25 17 10	mA mA mA	$V_{CE} = 5.0\text{ V}, I_F = 20\text{ mA}, d = 0.110\text{ in. (2.79 mm)}$ ⁽³⁾⁽⁴⁾
$I_{C(OFF)}$	Off-State Collector Current		10	μA	$V_{CE} = 5.0\text{ V}, I_F = 20\text{ mA}$ ⁽⁵⁾
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		1.10	V	$I_F = 20\text{ mA}, I_C = 2\text{ mA}, d = 0.110\text{ in. (2.79 mm)}$ ⁽³⁾⁽⁴⁾

Typical Performance Curves

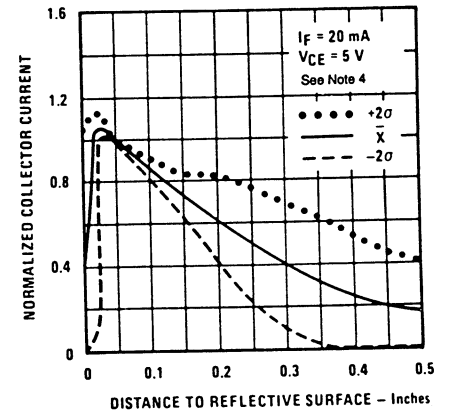
Collector Current vs. Diode Forward Current



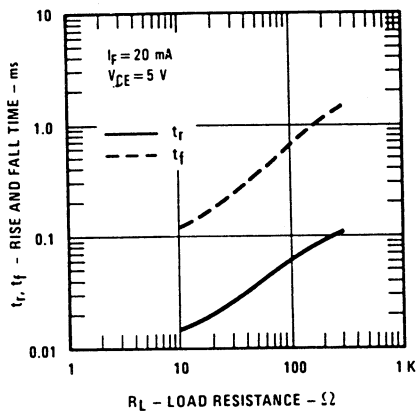
Normalized Collector Current vs. Ambient Temperature



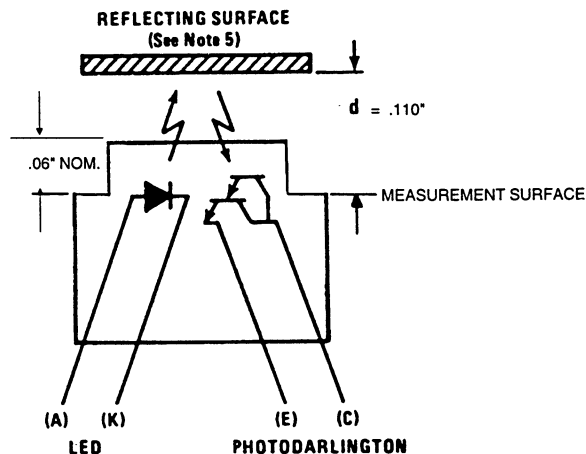
Normalized Collector Current vs. Object Distance



Rise and Fall Time 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.

Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396