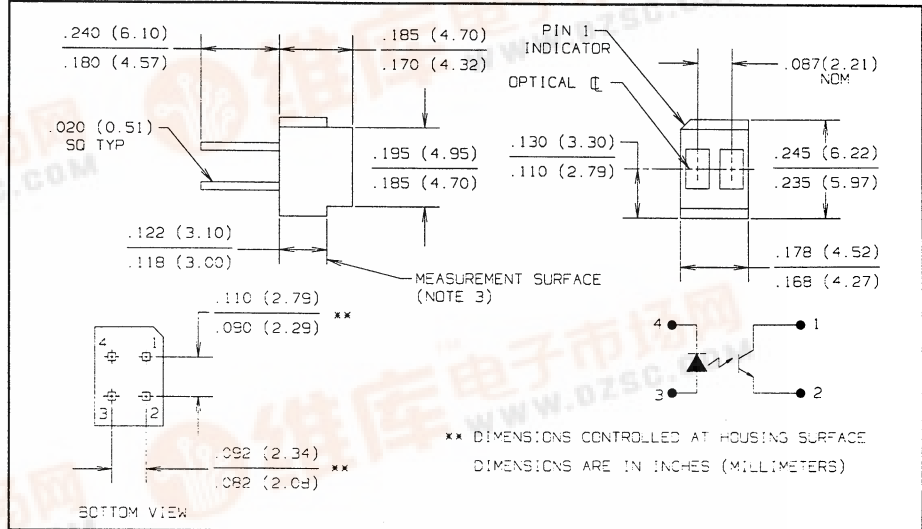
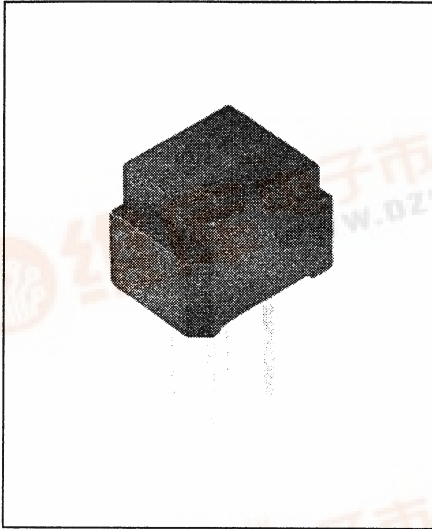


Product Bulletin OPB606
June 1996

Reflective Object Sensors

Types OPB606A, OPB606B, OPB606C



Features

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

Description

The OPB606 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 reduce ambient light noise. The phototransistor 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° 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-Collector Voltage	5.0 V
Collector DC Current	25 mA
Power Dissipation	75 mW ⁽²⁾

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering.
- (2) Derate linearly 1.25 mW/° 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 - 2 σ limit.
- (7) All parameters tested using pulse techniques.



Types OPB606A, OPB606B, OPB606C

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	$I_C = 100\ \mu\text{A}$,
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$,
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	OPB606A OPB606B OPB606C	500 350 200	μA μA μA	$V_{CE} = 5.0\text{ V}$, $I_F = 20\text{ mA}$, $d = 0.110\text{ in. (2.79 mm)}$ (3)(4)
$I_{C(OFF)}$	Off-State Collector Current		200	nA	$V_{CE} = 5.0\text{ V}$, $I_F = 20\text{ mA}$, (5)
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	$I_F = 20\text{ mA}$, $I_C = 100\ \mu\text{A}$, $d = 0.110\text{ in. (2.79 mm)}$ (3)(4)

Typical Performance Curves

