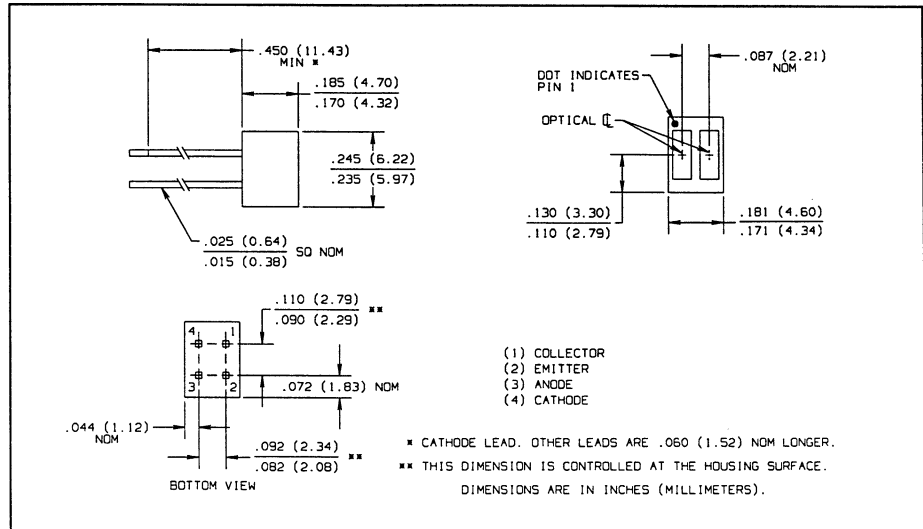
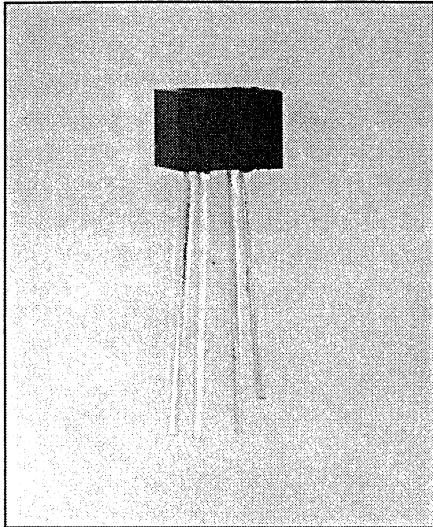


Reflective Object Sensors

Types OPB706A, OPB706B, OPB706C



Features

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

Description

The OPB706 consists of an infrared emitting diode and an NPN silicon phototransistor mounted "side-by-side" on parallel axes in a black plastic housing. Both the emitting diode and phototransistor are molded out of black infrared transmissive plastic 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 $+85^\circ\text{C}$
 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 Phototransistor

Collector-Emitter Voltage 30 V
 Emitter-Collector Voltage 5.0 V
 Collector DC Current 25 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 face to the reflective surface.
- (4) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog #1257795.
- (5) Crosstalk (I_{cx}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
- (6) Lower curve is based on a calculated worst case condition rather than the conventional -2σ limit.
- (7) All parameters tested using pulse technique.

Types OPB706A, OPB706B, OPB706C

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	$V_{CE} = 5\text{ V}, I_F = 0, E_e \leq 0.1\ \mu\text{W}/\text{cm}^2$
Combined					
$I_{C(ON)}$	On-State Collector Current	OPB706A OPB706B OPB706C	500 350 200	μA μA μA	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}, d = 0.050\text{ in. (1.27 mm)}$ ⁽³⁾⁽⁴⁾
I_{CX}	Crosstalk		200	nA	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$ ⁽⁵⁾
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	$I_F = 20\text{ mA}, I_C = 100\ \mu\text{A}, d = 0.050\text{ in. (1.27 mm)}$ ⁽³⁾⁽⁴⁾

Typical Performance Curves

