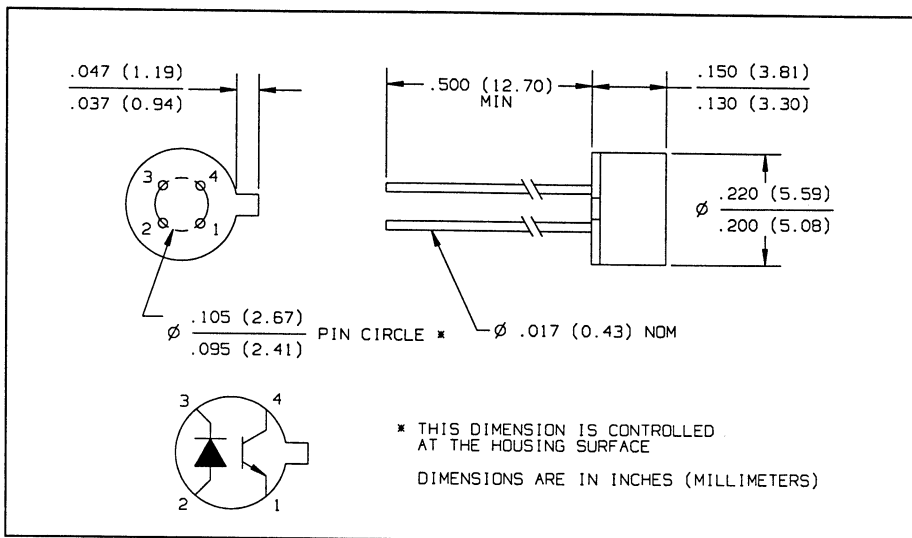
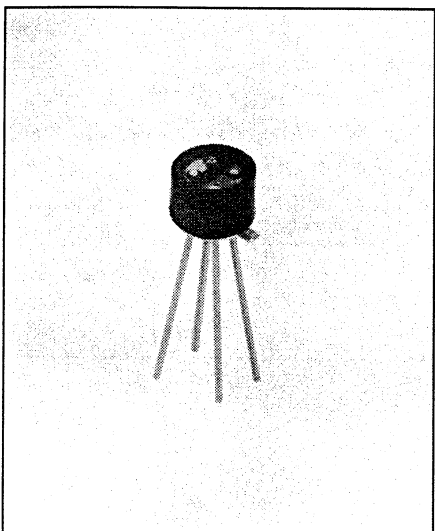


# Reflective Object Sensors

## Types OPB710, OPB710F



### Features

- Phototransistor output
- Unfocused for sensing diffuse surface
- Mounted on standard TO-72 header
- Available in clear encapsulating epoxy (OPB710) or filtered (OPB710F) to reduce the effect of visible or fluorescent light.

### Description

The OPB710 and OPB710F each consist of a gallium arsenide infrared emitting diode and an NPN silicon phototransistor. The emitting diode and detector are mounted side by side on parallel axes on a standard TO-72 header. A black plastic sleeve is attached and filled with encapsulating epoxy to cover the emitter and detector. The "F" version has a filtering material added to the epoxy to reduce the effect of ambient light. The package contains an internal barrier which prevents diode emissions from reaching the sensor directly.

### Absolute Maximum Ratings (TA = 25° C unless otherwise noted)

Storage Temperature	-20° C to +85° C
Operating Temperature Range	0° C to +70° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]	240° C <sup>(1)</sup>

### Input Diode

Forward DC Current	50 mA
Peak Forward Current (1 $\mu$ s pulse width, 300 pps)	3.0 A
Reverse DC Voltage	3.0 V
Power Dissipation	75 mW <sup>(2)</sup>

### Output Photosensor

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5.0 V
Collector DC Current	25 mA
Power Dissipation	150 mW <sup>(3)</sup>

### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (2) Derate Linearly 1.67 mW/° C above 25° C.
- (3) Derate Linearly 3.33 mW/° C above 25° C.
- (4) Measured using an Eastman Kodak neutral white test card having 90% diffuse reflectance located 0.250 inch (6.35 mm) from the face of the OPB710. Reference: Eastman Kodak, Catalog #1257795.
- (5) Crosstalk (Icx) is the collector current measured with the indicated current on the input diode and with no reflecting surface. Ambient light is excluded with a black box.

# Types OPB710, OPB710F

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

REFLECTIVE OBJECT SENSORS

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>					
$V_F$	Forward Voltage		1.50	V	$I_F = 50\text{ mA}$
$I_R$	Reverse Current		100	$\mu\text{A}$	$V_R = 3.0\text{ V}$
<b>Output Phototransistor</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 1.00\text{ mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector Dark Current		100	nA	$V_{CE} = 5\text{ V}, I_F = 0, E_e \leq 0.1\ \mu\text{W}/\text{cm}^2$
<b>Combined</b>					
$I_{C(ON)}$	On-State Collector Current	150		$\mu\text{A}$	$V_{CE} = 5\text{ V}, I_F = 50\text{ mA}, d = 0.250\text{ in. (6.35 mm)}$ <sup>(4)</sup>
$I_{CX}$	Crosstalk		100	nA	$V_{CE} = 5\text{ V}, I_F = 50\text{ mA},$ No Reflecting Surface <sup>(5)</sup>

## Typical Performance Curves

