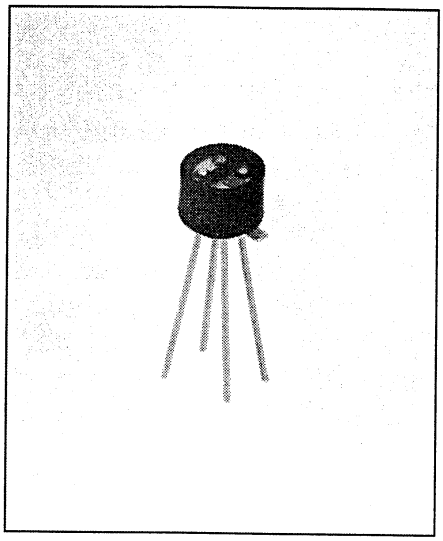
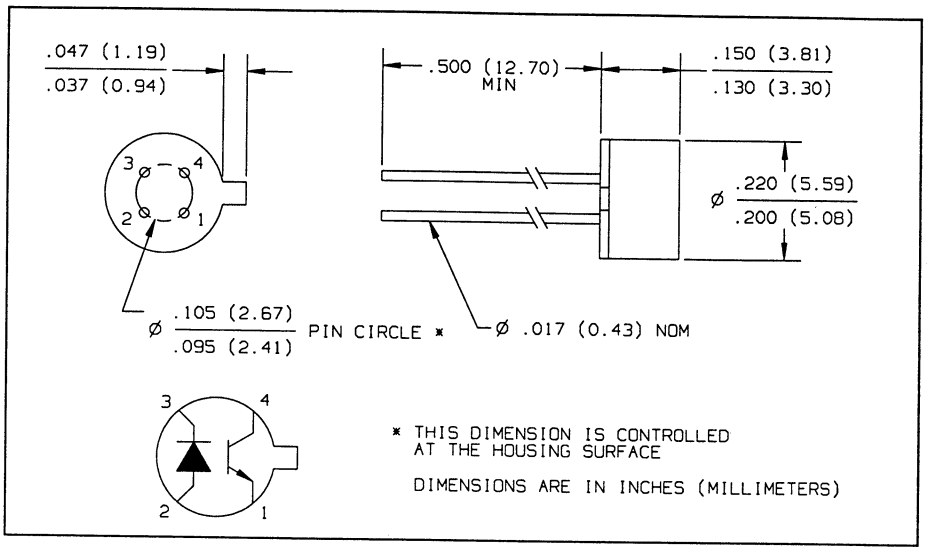
Reflective Object Sensors
Types OPB730, OPB730F





Features

- Photodarlington output
- Unfocused for sensing diffuse surface
- Mounted on standard TO-72 header
- Available in clear encapsulating epoxy (OPB730) or filtered (OPB730F) to reduce the effect of visible or fluorescent light.

Description

The OPB730 and OPB730F each consist of a gallium arsenide infrared emitting diode and an NPN silicon photodarlington. 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. An internal barrier prevents light from reaching the detector directly.

Absolute Maximum Ratings (T_A = 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 (1.6mm) 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, 300pps)	3.0 A
Reverse DC Voltage	3.0 V
Power Dissipation	75 mW(2)

Output Photosensor

Collector-Emitter Voltage	15 V
Emitter-Collector Voltage	5.0 V
Collector DC Current	25 mA
Power Dissipation	150 mW(3)

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 OPB730. Reference: Eastman Kodak, Catalog #1257795.
(5) Crosstalk (I_{CX}) 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 OPB730, OPB730F

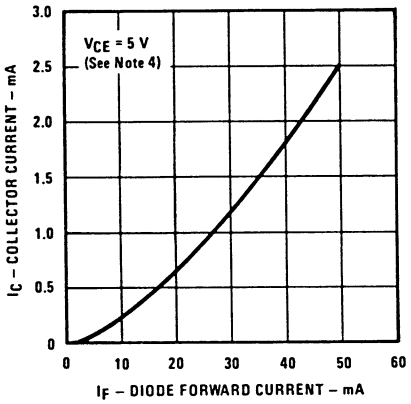
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.50	V	I_F = 50 mA
I_R	Reverse Current		100	µA	V_R = 3.0 V
Output Photodarlington					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	15		V	I_C = 1.00 mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	I_E = 100 µA
I_{CEO}	Collector Dark Current		250	nA	V_{CE} = 5 V, I_F = 0, $E_e \leq 0.1$ µW/cm^2
Combined					
$I_{C(ON)}$	On-State Collector Current	1.0		mA	V_{CE} = 5 V, I_F = 50 mA, d = 0.250 in. (6.35 mm)(4)
I_{CX}	Crosstalk		500	nA	V_{CE} = 5 V, I_F = 50 mA, No Reflecting Surface(5)

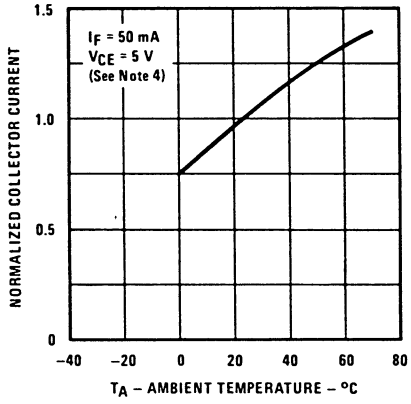
REFLECTIVE OBJECT SENSORS

Typical Performance Curves

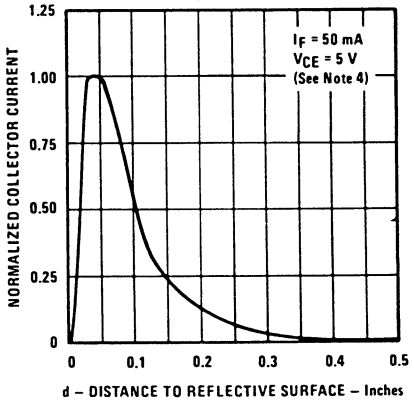
Collector Current vs. Diode Forward Current



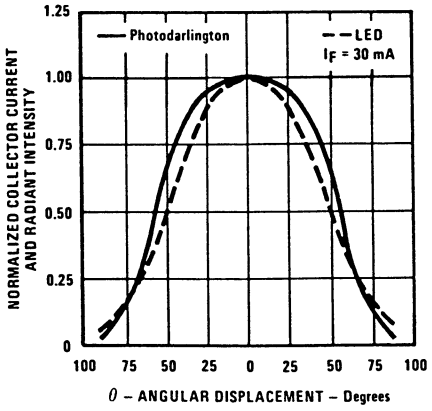
Normalized Collector Current vs. Ambient Temperature



Normalized Collector Current vs. Object Distance



LED and Photodarlington Angular Displacement



Test Condition