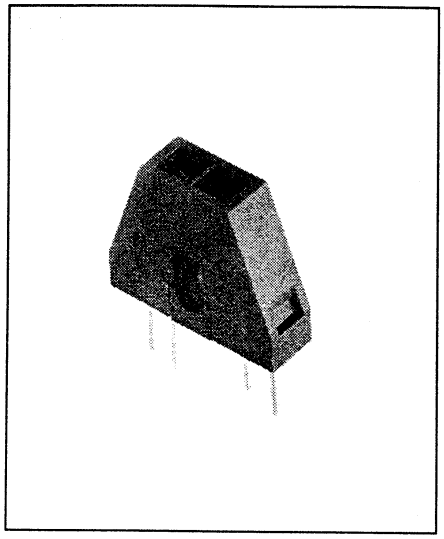
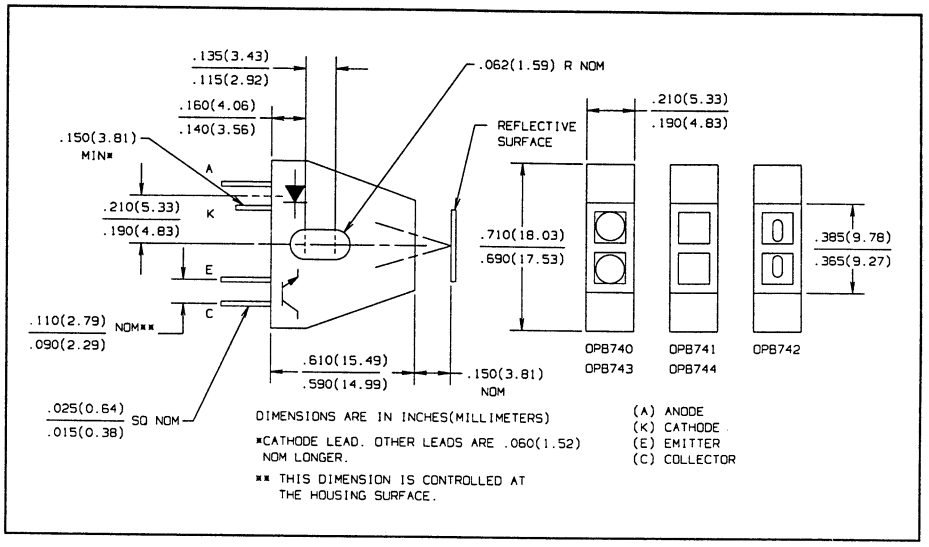
Reflective Object Sensors
Types OPB740, OPB741, OPB742, OPB743, OPB744





Features

- Focused for maximum sensitivity
- Phototransistor output
- PC board mounting

Description

The OPB740 through OPB744 reflective object sensors each consist of an infrared emitting diode and an NPN silicon phototransistor mounted side by side on converging optical axes in a black plastic housing. Various options include choice of no windows, blue polysulfone windows for dust protection or opaque windows with offset openings for improved resolution. Available with wires as OPB740W/OPB744W series.

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° C unless otherwise noted)

Storage and Operating Temperature Range ..... -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

Continuous Forward Current ..... 40 mA
Reverse Voltage ..... 2.0 V
Power Dissipation ..... 100 mW(2)

Output Phototransistor

Collector-Emitter Voltage ..... 30 V
Emitter-Collector Voltage ..... 5.0 V
Power Dissipation ..... 100 mW(2)

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) d is distance from the assembly face to the reflective surface.
(4) Reflective surface is Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog #1257795.
(5) Lower curve is based on calculated worst case condition rather than the conventional -2σ limit.
(6) Crosstalk is the photocurrent measured with current to the input diode & no reflecting surface.
(7) All parameters tested using pulse technique.

	DESCRIPTION
OPB740	No windows
OPB741	Blue windows
OPB742	Offset windows
OPB743	No windows
OPB744	Blue windows

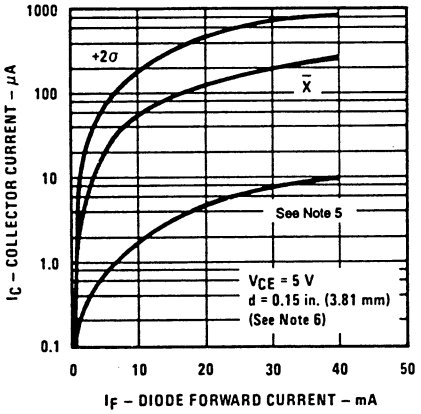
Types OPB740, OPB741, OPB742, OPB743, OPB744

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

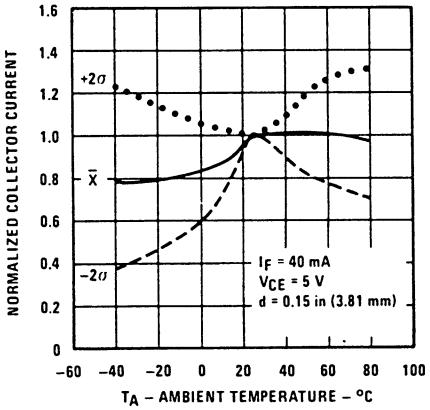
SYMBOL	PARAMETER		MIN	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage			1.70	V	I_F = 40 mA
I_R	Reverse Current			100	µA	V_R = 2.0 V
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		30		V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage		5.0		V	I_E = 100 µA
I_{CEO}	Collector Dark Current			100	nA	V_{CE} = 10 V, I_F = 0, E_e = 0
Combined						
$I_{C(ON)}$[3][4]	On-State Collector Current	OPB740/OPB741	50		µA	V_{CE} = 5 V, I_F = 40 mA, d = 0.15"
		OPB742	10		µA	V_{CE} = 5 V, I_F = 40 mA, d = 0.15"
		OPB743/OPB744	200		µA	V_{CE} = 5 V, I_F = 40 mA, d = 0.15"
I_{CX}[6]	Crosstalk	OPB740/OPB741		10	µA	V_{CE} = 5 V, I_F = 40 mA
		OPB742		100	nA	V_{CE} = 5 V, I_F = 40 mA
		OPB743/OPB744		20	µA	V_{CE} = 5 V, I_F = 40 mA

Typical Performance Curves

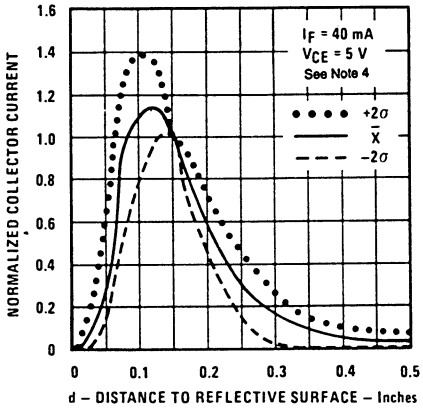
Collector Current vs. Diode Forward Current



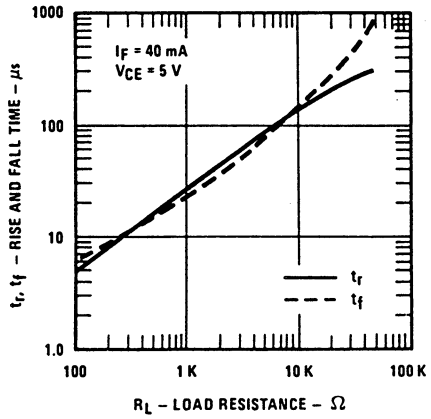
Normalized Collector Current vs. Ambient Temperature



Normalized Collector Current vs. Object Distance



Rise and Fall Time vs. Load Resistance



Test Condition