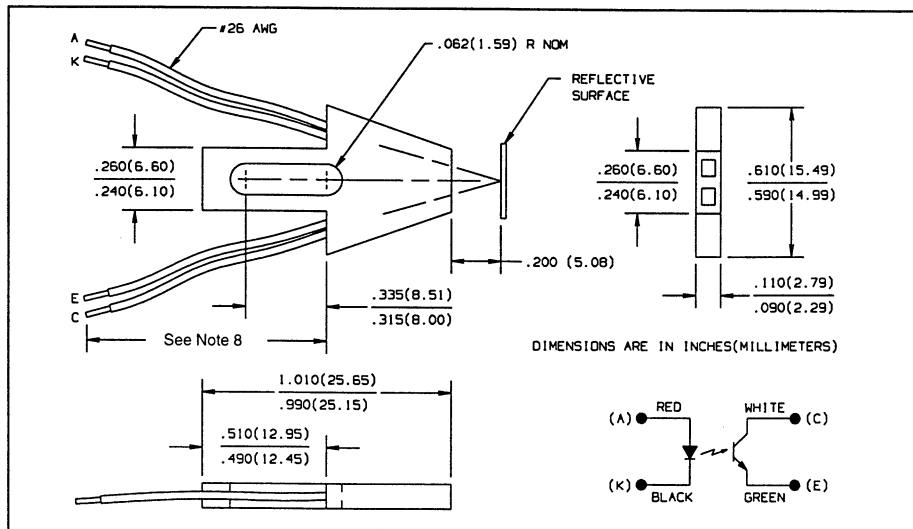
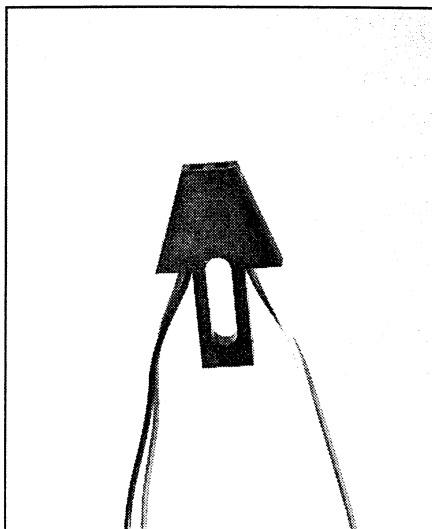


Reflective Object Sensor

Types OPB700, OPB700AL



Features

- Phototransistor output
- Low profile to facilitate stacking
- Low cost plastic housing
- 4.0 inch minimum length lead wire (OPB700)
- 18.0 inch minimum length lead wire (OPB700AL)

Description

The OPB700 series sensor consists of an infrared emitting diode and an NPN silicon phototransistor, mounted "side-by-side" on converging optical axes, in a black plastic housing. The phototransistor responds to radiation from the emitter only when a reflective object passes within its field of view.

Leads are #26 AWG, teflon insulation, 4.0" minimum length (OPB700) or 18.0" minimum length (OPB700AL), stripped and tinned.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	.....	-40°C to $+125^\circ\text{C}$
Operating Temperature Range	.....	-40°C to $+100^\circ\text{C}$

Input Diode

Continuous Forward Current	.....	100 mA
Reverse Voltage	.....	2.0 V
Power Dissipation	.....	80 mW ⁽¹⁾

Output Phototransistor

Collector-Emitter Voltage	.....	25 V
Emitter-Collector Voltage	.....	5.0 V
Power Dissipation	.....	50 mW ⁽²⁾

Notes:

- (1) Derate linearly 1.07 mW/ $^\circ\text{C}$ above 25°C .
- (2) Derate linearly 0.67 mW/ $^\circ\text{C}$ above 25°C .
- (3) Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface. Reference: Eastman Kodak, Catalog #1257795.
- (4) Crosstalk (I_{cx}) is the collector current measured with the indicated current in the input diode and with no reflecting surface.
- (5) d is the distance from the assembly head to the reflective 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.
- (8) 4.0" (101.6 mm) min for OPB700, 18.0" (457.2 mm) min for OPB700AL.

Type OPB700, OPB700AL

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

REFLECTIVE OBJECT SENSORS

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.70	V	$I_F = 50\text{ mA}$
I_R	Reverse Current		100	μA	$V_R = 2.0\text{ V}$
Output Phototransistor					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	25		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	$V_{CE} = 10\text{ V}, I_F = 0, E_e = \leq 0.10\ \mu\text{W}/\text{cm}^2$
Combined					
$I_{C(ON)}$	On-State Collector Current	25		μA	$V_{CE} = 5\text{ V}, I_F = 40\text{ mA}, d = 0.200\text{ in. (5.08 mm)}$ ⁽³⁾⁽⁵⁾
I_{CX}	Crosstalk		2.0	μA	$V_{CE} = 5\text{ V}, I_F = 40\text{ mA}$ No Reflecting Surface ⁽⁴⁾
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.40	V	$I_F = 40\text{ mA}, I_C = 10\ \mu\text{A}, d = 0.200\text{ in. (5.08 mm)}$ ⁽³⁾⁽⁵⁾

Typical Performance Curves

