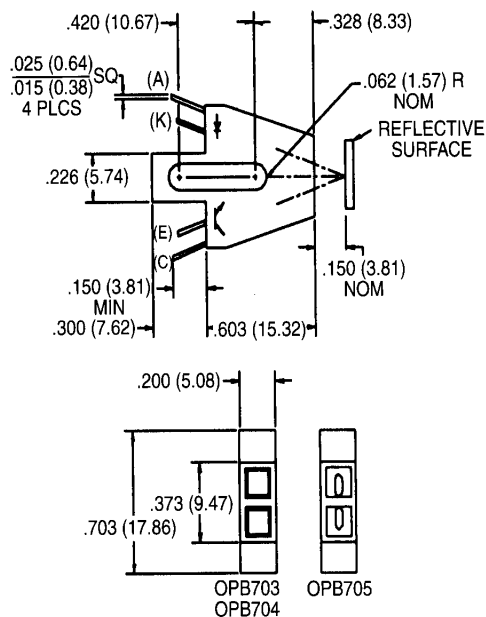


**PACKAGE DIMENSIONS**



(C) COLLECTOR  
(E) EMITTER  
(K) CATHODE  
(A) ANODE

ST2154

**DESCRIPTION**

The OPB703, OPB704, and OPB705 consist of an infrared emitting diode and an NPN silicon phototransistor mounted side by side on a converging optical axis in a black plastic housing. The phototransistor responds to radiation from the emitting diode only when a reflective object passes within its field of view. The area of the optimum response approximates a circle .200" in diameter.

**FEATURES**

- Phototransistor output.
- High Sensitivity.
- Low cost plastic housing.
- OPB703/OPB704, dust cover; lens.
- OPB705, offset lens.

**NOTES:**

1. CATHODE AND EMITTER LEADS ARE .050" NOM SHORTER THAN ANODE AND COLLECTOR LEADS.
2. DIMENSIONS ARE IN INCHES (mm).
3. TOLERANCE IS  $\pm .010$  (.25) UNLESS OTHERWISE SPECIFIED.

OPB703 - IR TRANSPARENT DUST COVER  
OPB704 - IR TRANSPARENT DUST COVER  
OPB705 - OFFSET LENS

**ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$  Unless Otherwise Specified)

Storage Temperature	–40°C to +85°C
Operating Temperature	–40°C to +85°C
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. <sup>(2,3,4)</sup>
Lead Temperature (Flow)	260°C for 10 sec. <sup>(2,3)</sup>

**INPUT DIODE**

Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	100 mW <sup>(1)</sup>

**OUTPUT TRANSISTOR**

Collector-Emitter Voltage	30 Volts
Emitter-Collector Voltage	5.0 Volts
Collector Current	25 mA
Power Dissipation	100 mW <sup>(1)</sup>

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  Unless Otherwise Specified)

PARAMETER	SYMBOL	MIN.	MAX.	UNITS	TEST CONDITIONS
<b>INPUT DIODE</b>					
Forward Voltage	$V_F$	—	1.70	V	$I_F = 40\text{ mA}$
Reverse Leakage Current	$I_R$	—	100	$\mu\text{A}$	$V_R = 2.0\text{ V}$
<b>OUTPUT TRANSISTOR</b>					
Emitter-Collector Breakdown	$BV_{ECO}$	5	—	V	$I_E = 100\text{ }\mu\text{A}$ , $E_e = 0$
Collector-Emitter Breakdown	$BV_{CEO}$	30	—	V	$I_C = 100\text{ }\mu\text{A}$ , $E_e = 0$
Collector-Emitter Leakage	$I_{CEO}$	—	100	nA	$V_{CE} = 10.0\text{ V}$ , $E_e = 0$
<b>COUPLED</b>					
On-State Collector Current					
OPB703	$I_{C(ON)}$	200		$\mu\text{A}$	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $D = .150''$ <sup>(5,6)</sup>
OPB704	$I_{C(ON)}$	200		$\mu\text{A}$	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $D = .150''$ <sup>(5,6)</sup>
OPB705	$I_{C(ON)}$	100		$\mu\text{A}$	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ , $D = .150''$ <sup>(5,6)</sup>
Crosstalk	$I_{CX}$	—	20	$\mu\text{A}$	$I_F = 40\text{ mA}$ , $V_{CE} = 5\text{ V}$ <sup>(7)</sup>

**NOTES**

- Derate power dissipation linearly 1.67 mW/°C above 25°C.
- RMA flux is recommended.
- Methanol or Isopropyl alcohols are recommended as cleaning agents.
- Soldering iron tip  $\frac{1}{16}''$  (1.6 mm) from housing.
- D is the distance from the assembly face to the reflective surface.
- Measured using Eastman Kodak neutral test card with 90% diffused reflecting surface.
- Cross talk is the photocurrent measured with current to the input diode and no reflective surface.



## REFLECTIVE OBJECT SENSOR

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