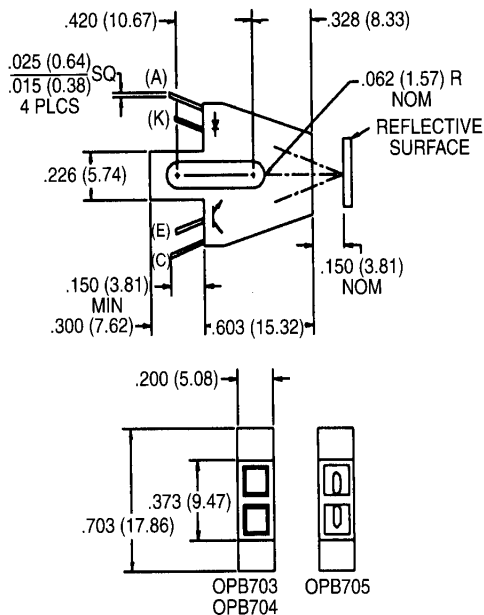


**OPB703/OPB704/OPB705**

**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

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A = 25^\circ\text{C}$ 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>
<b>INPUT DIODE</b>	
Continuous Forward Current .....	50 mA
Reverse Voltage .....	5.0 Volts
Power Dissipation .....	100 mW <sup>(1)</sup>
<b>OUTPUT TRANSISTOR</b>	
Collector-Emitter Voltage .....	30 Volts
Emitter-Collector Voltage .....	5.0 Volts
Collector Current .....	25 mA
Power Dissipation .....	100 mW <sup>(1)</sup>

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ 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	$I_E = 100\ \mu\text{A}, E_e = 0$
Collector-Emitter Breakdown	$BV_{CEO}$	30	—	V	$I_C = 100\ \mu\text{A}, E_e = 0$
Collector-Emitter Leakage	$I_{CEO}$	—	100	nA	$V_{CE} = 10.0\text{ V}, E_e = 0$
<b>COUPLED</b>					
On-State Collector Current					
OPB703	$I_{C(O\text{N})}$	200		$\mu\text{A}$	$I_F = 40\text{ mA}, V_{CE} = 5\text{ V}, D = .150''$ <sup>(5,6)</sup>
OPB704	$I_{C(O\text{N})}$	200		$\mu\text{A}$	$I_F = 40\text{ mA}, V_{CE} = 5\text{ V}, D = .150''$ <sup>(5,6)</sup>
OPB705	$I_{C(O\text{N})}$	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>

<b>NOTES</b>
1. Derate power dissipation linearly 1.67 mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or Isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron tip 1/16" (1.6 mm) from housing.
5. D is the distance from the assembly face to the reflective surface.
6. Measured using Eastman Kodak neutral test card with 90% diffused reflecting surface.
7. Cross talk is the photocurrent measured with current to the input diode and no reflective surface.



## REFLECTIVE OBJECT SENSOR

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