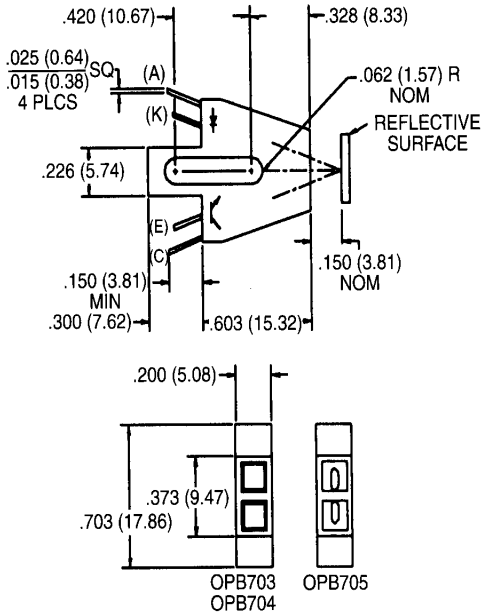
FAIRCHILD
SEMICONDUCTOR™

REFLECTIVE OBJECT SENSORS

OPB703/OPB704/OPB705

PACKAGE DIMENSIONS



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

ST2154

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

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

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.

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ABSOLUTE MAXIMUM RATINGS (T_A = 25°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. [2,3,4]
Lead Temperature (Flow)	260°C for 10 sec. [2,3]
INPUT DIODE	
Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	100 mW[1]
OUTPUT TRANSISTOR	
Collector-Emitter Voltage	30 Volts
Emitter-Collector Voltage	5.0 Volts
Collector Current	25 mA
Power Dissipation	100 mW[1]

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless Otherwise Specified)

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

NOTES

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.*

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.