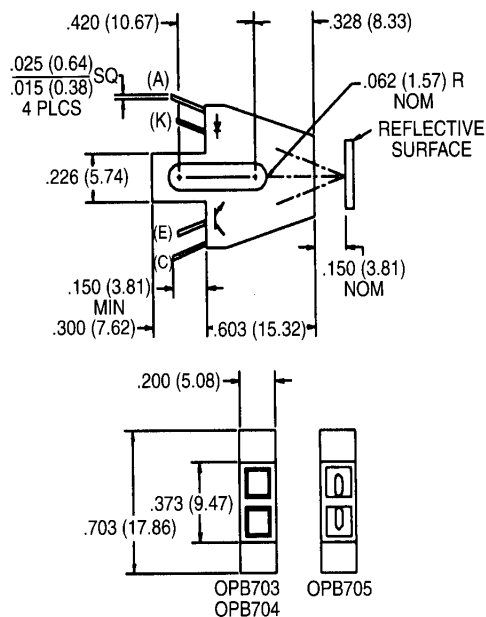


PACKAGE DIMENSIONS



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

PARAMETER	SYMBOL	MIN.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE					
Forward Voltage	V_F	—	1.70	V	$I_F = 40\text{ mA}$
Reverse Leakage Current	I_R	—	100	μA	$V_R = 2.0\text{ V}$
OUTPUT TRANSISTOR					
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	$V_{CE} = 10.0\text{ V}$, $E_e = 0$
COUPLED					
On-State Collector Current					
OPB703	$I_{C(ON)}$	200		μA	$I_F = 40\text{ mA}$, $V_{CE} = 5\text{ V}$, $D = .150''$ ^(5,6)
OPB704	$I_{C(ON)}$	200		μA	$I_F = 40\text{ mA}$, $V_{CE} = 5\text{ V}$, $D = .150''$ ^(5,6)
OPB705	$I_{C(ON)}$	100		μA	$I_F = 40\text{ mA}$, $V_{CE} = 5\text{ V}$, $D = .150''$ ^(5,6)
Crosstalk	I_{CX}	—	20	μA	$I_F = 40\text{ mA}$, $V_{CE} = 5\text{ V}$ ⁽⁷⁾

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

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.