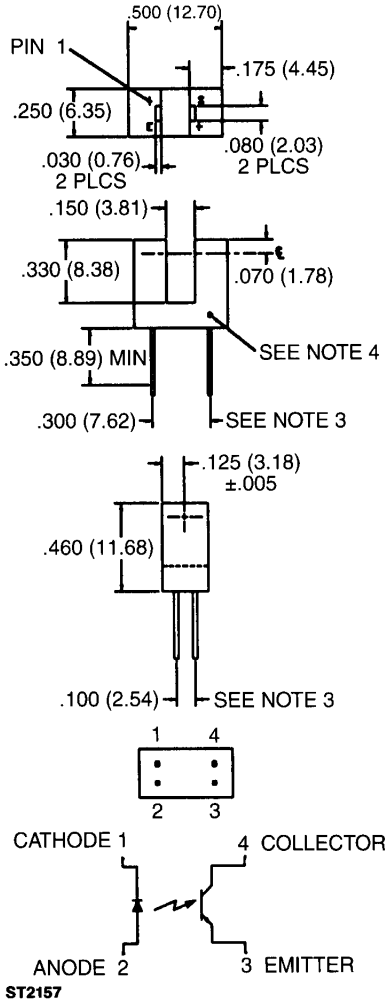
FAIRCHILD
SEMICONDUCTOR™

SLOTTED OPTICAL SWITCH

OPB804

PACKAGE DIMENSIONS



ST2157

NOTES:
1. DIMENSIONS ARE IN INCHES (mm.)
2. TOLERANCE IS ±.010 (0.25) UNLESS OTHERWISE SPECIFIED.
3. THIS DIMENSION IS CONTROLLED AT THE HOUSING SURFACE.
4. WHITE DOT ADJACENT TO COLLECTOR LEAD.

DESCRIPTION

The OPB804 is an optical slotted switch that consists of an infrared emitting diode facing and NPN phototransistor across a .150" (3.81 mm) gap. Phototransistor switching takes place when an opaque object breaks the light path.

FEATURES

- .150" wide gap.
- .300" lead spacing.
- Printed circuit board mounting.
- Non contact switching.
- 2mm aperture width.

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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 ..... 75 mW[1]

OUTPUT TRANSISTOR
Collector-Emitter Voltage ..... 30 Volts
Emitter-Collector Voltage ..... 5.0 Volts
Power Dissipation ..... 75 mW[1]

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless Otherwise Specified)
(All measurements made under pulse conditions.)

PARAMETER	SYMBOL	MIN.	TYPE.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward voltage	V_F	—		1.70	V	I_F = 20 mA
Reverse Leakage Current	I_R	—		100	μA	V_R = 5.0 V
OUTPUT TRANSISTOR						
Collector-Emitter Breakdown	BV_{ECO}	30		—	V	I_C = 100 μA, Ee = 0
Collector-Emitter Breakdown	BV_{CEO}	5		—	V	I_E = 100 μA, Ee = 0
Collector-Emitter Leakage	I_{CEO}	—		100	nA	V_{CE} = 10.0 V, Ee = 0
COUPLED						
On-State Collector Current						
OPB706A	$I_{C(ON)}$	500		—	μA	I_F = 20 mA, V_{CC} = 5.0 V, D = .050" [5,7]
OPB706B	$I_{C(ON)}$	350		—	μA	I_F = 20 mA, V_{CC} = 5.0 V, D = .050" [5,7]
OPB706C	$I_{C(ON)}$	200		—	μA	I_F = 20 mA, V_{CC} = 5.0 V, D = .050" [5,7]
Crosstalk	I_{CX}	—	200	—	nA	I_F = 20 mA, V_{CC} = 5.0 V, Ee = 0[6]
Saturation Voltage	$V_{CE(SAT)}$	—		0.40	V	I_F = 40 mA, I_C = 100μA, D = .050"[5,7]

NOTES

1. *Derate power dissipation linearly 1.25 mW/°C above 25°C.*
2. *RMA flux is recommended.*
3. *Soldering iron tip 1/16" (1.6 mm) minimum from housing.*
4. *As long as leads are not under any stress or spring tension.*
5. *D is the distance from the sensor face to the reflective surface.*
6. *Crosstalk (I_{CX}) is the collector current measured with the indicated current on the input diode and with no reflective surface.*
7. *Measured using Eastman Kodak neutral white test card with 90% diffused reflectance as a reflecting 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.