## Features:

- Inexpensive opaque plastic housing
- Choice of transistor (OPB852) or photodarlington (OPB853) output
- 0.125 " ( 3.18 mm ) slot width
- 0.290 " ( 7.37 mm ) lead spacing
- Apertured for high resolution


## Description:



Slotted optical switches in the OPB852, and OPB853 series consist of an infrared emitting diode and a NPN silicon phototransistor or photodarlington, mounted on opposite sides of a 0.125 " ( 3.175 mm ) wide slot. The OPB852A, OPB852B and OPB852C have phototransistor output, while the OPB853A, OPB853B and OPB853C have photodarlington output.

On each of these devices, the emitter has a molded-in aperture of 0.050 " $\times 0.050$ " ( $1.270 \mathrm{~mm} \times 1.270 \mathrm{~mm}$ ) and the phototransistor (OPB852) or photodarlington (OPB853) has a molded-in aperture of 0.010 " $\times 0.050$ " ( $0.254 \mathrm{~mm} \times$ 1.270 mm ).

Phototransistor or photodarlington switching occurs when an opaque object passes through the slot.
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

## Applications:

- Non-contact interruptive object sensing
- Assembly line automation
- Machine automation


[^0]
## Slotted Optical Switch <br> OPB852A1, OPB852A2, OPB852A3 <br> OPB853A1, OPB853A2, OPB853A3

Absolute Maximum Ratings $\left(\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}\right.$ unless otherwise noted $)$

| Storage \& Operating Temperature Range | $-40^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| :--- | ---: |
| Lead Soldering Temperature $[1 / 16$ inch $(1.6 \mathrm{~mm})$ from the case for 5 sec. with soldering iron] | $260^{\circ} \mathrm{C}^{(1)}$ |
| Input Diode | Forward DC Current 40 mA <br> Peak Forward Current (1 $\mu \mathrm{s}$ pulse width, 300 pps$)$ 3 A <br> Reverse DC Voltage 2 V <br> Power Dissipation $100 \mathrm{~mW} \mathrm{~W}^{(2)}$ <br> Output Phototransistor  <br> Collector-Emitter Voltage 30 V <br> Emitter-Collector Voltage 5 V <br> Power Dissipation $100 \mathrm{~mW} \mathrm{~W}^{(2)}$ |$>.$

Electrical Characteristics $\left(\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}\right.$ unless otherwise noted)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Input Diode (see OP140 for additional information-OPB852A_, OP245 for additional information-OPB853A) |  |  |  |  |  |  |
| $\mathrm{V}_{\mathrm{F}}$ | Forward Voltage | - | - | 1.7 | V | $\mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA}$ |
| $\mathrm{I}_{\mathrm{R}}$ | Reverse Current | - | - | 100 | $\mu \mathrm{A}$ | $\mathrm{V}_{\mathrm{R}}=2 \mathrm{~V}$ |

Output Phototransistor (see OP550 for additional information-OPB852A_, OP565 for additional information-OPB853A)

| $\mathrm{V}_{\text {(BR)CEO }}$ | Collector-Emitter Breakdown Voltage OPB852A1, OPB852A2, OPB852A3 OPB853A1, OPB853A2, OPB853A3 | $\begin{aligned} & 30 \\ & 15 \end{aligned}$ | - |  | $\begin{aligned} & \mathrm{V} \\ & \mathrm{~V} \end{aligned}$ | $\begin{aligned} & \mathrm{I}_{\mathrm{C}}=1 \mathrm{~mA} \\ & \mathrm{I}_{\mathrm{C}}=1 \mathrm{~mA} \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{V}_{\text {(BR) }}$ ECO | Emitter-Collector Breakdown Voltage | 5 | - | - | V | $\mathrm{I}_{\mathrm{E}}=100 \mu \mathrm{~A}$ |
| $\mathrm{I}_{\text {ceo }}$ | Collector-Emitter Dark Current | - | - | 100 | nA | $\mathrm{V}_{C E}=10 \mathrm{~V}$ |

## Combined

| $\mathrm{V}_{\text {CE(SAT) }}$ | Saturation Voltage <br> OPB852A1, OPB852A2 <br> OPB852A3 <br> OPB853A1, OPB853A2, OPB853A3 |  |  | $\begin{aligned} & 0.4 \\ & 0.4 \\ & 1.0 \end{aligned}$ | $\begin{aligned} & V \\ & V \\ & V \end{aligned}$ | $\begin{aligned} & \mathrm{I}_{\mathrm{C}}=500 \mu \mathrm{~A}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA} \\ & \mathrm{I}_{\mathrm{C}}=1.8 \mathrm{~mA}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA} \\ & \mathrm{I}_{\mathrm{C}}=1.8 \mathrm{~mA}, \mathrm{I}_{\mathrm{F}}=10 \mathrm{~mA} \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{I}_{\text {( } \mathrm{ON})}$ | On-State Collector Current OPB852A1 <br> OPB852A2 <br> OPB852A3 <br> OPB853A1 <br> OPB853A2 <br> OPB853A3 | $\begin{array}{r} 1.0 \\ 2.0 \\ 4.0 \\ 2.5 \\ 5.0 \\ 10.0 \end{array}$ | - <br> - <br> - | - <br> - <br> - <br> - | mA <br> mA <br> mA <br> mA <br> mA <br> mA | $\begin{aligned} & \mathrm{V}_{\mathrm{CE}}=5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA} \\ & \mathrm{~V}_{\mathrm{CE}}=5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA} \\ & \mathrm{~V}_{\mathrm{CE}}=5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA} \\ & \mathrm{~V}_{\mathrm{CE}}=1.5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=5 \mathrm{~mA} \\ & \mathrm{~V}_{\mathrm{CE}}=1.5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=5 \mathrm{~mA} \\ & \mathrm{~V}_{\mathrm{CE}}=1.5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=5 \mathrm{~mA} \end{aligned}$ |

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(2) Derate linearly $1.67 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$ above $25^{\circ} \mathrm{C}$.
(3) Methanol and isopropanol are recommended as cleaning agents. Housings are soluble in chlorinated hydrocarbons and ketones. Highly activated, water soluble fluxes may attack housings in some situations.
(4) All parameters tested using pulse technique.

[^1]


[^0]:    RoHS
    OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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