## Slotted Optical Switch

## OPB806

## $\tau_{T}$ Electronics

## Features:

- Non-contact switching
- Base or side mounting
- $0.125^{\prime \prime}(3.175 \mathrm{~mm})$ slot width



## Description:

The OPB806 slotted optical switch consists of an infrared emitting diode (LED) and a NPN silicon phototransistor, mounted on opposite sides of a $0.125^{\prime \prime}(3.175 \mathrm{~mm})$ wide slot.

The OPB806 has two sets of mounting tabs allowing Base or Side mounting of the device. The LED and phototransistor leads project from each side of the housing on 0.050 " ( 1.27 mm ) centers.

Phototransistor switching takes place whenever an opaque object passes through the slot.

## Applications:



- Non-contact interruptive object sensing

RoHS

- Assembly line automation
- Machine automation
- Equipment security
- Machine safety

| Part Number | LED Peak <br> Wavelength | Sensor | Slot Width / <br> Depth | Aperture | Lead <br> Length |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OPB806 | 935 nm | Transistor | $0.125^{\prime \prime} / 0.375^{\prime \prime}$ | None | $0.500{ }^{\prime \prime}$ |



| Pin \# | Description |
| :---: | :---: |
| 1 | Anode |
| 2 | Cathode |
| 3 | Collector |
| 4 | Emitter |



## Electrical Specifications

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

| Storage \& Operating Temperature Range | $-40^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$ |
| :--- | ---: |
| Lead Soldering Temperature $\left[1 / 16\right.$ inch $(1.6 \mathrm{~mm})$ from the case for 5 sec . with soldering iron ${ }^{(1)}$ | $260^{\circ} \mathrm{C}$ |

Input Diode

| Continuous Forward Current | 50 mA |
| :--- | :---: |
| Peak Forward Current (1 $\mu$ s pulse width, 300 pps$)$ | 3 A |
| Reverse Voltage | 2 V |
| Power Dissipation ${ }^{(2)}$ | 100 mW |

Output Phototransistor

| Collector-Emitter Voltage | 30 V |
| :--- | :---: |
| Emitter-Collector Voltage | 5 V |
| Power Dissipation ${ }^{(2)}$ | 100 mW |

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

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |

Input Diode (See OP165 for additional information)

| $\mathrm{V}_{\mathrm{F}}$ | 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 OP505 for additional information)

| $\mathrm{V}_{\text {(BR)CEO }}$ | Collector-Emitter Breakdown Voltage | 30 | - | - | V | $\mathrm{I}_{\mathrm{C}}=100 \mu \mathrm{~A}$ |
| :---: | :--- | :---: | :---: | :---: | :---: | :--- |
| $\mathrm{~V}_{\text {(BR)ECO }}$ | Emitter-Collector Breakdown Voltage | 5 | - | - | V | $\mathrm{I}_{\mathrm{E}}=100 \mu \mathrm{~A}$ |
| $\mathrm{I}_{\text {CEO }}$ | Collector-Emitter Dark Current | - | - | 100 | nA | $\mathrm{V}_{\mathrm{CE}}=10 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=0, \mathrm{E}_{\mathrm{E}}=0$ |

Combined

| $\mathrm{V}_{\mathrm{CE}(\text { SAT })}$ | Collector-Emitter Saturation Voltage | - | - | 0.5 | V | $\mathrm{I}_{\mathrm{C}}=200 \mu \mathrm{~A}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA}$ |
| :---: | :--- | :---: | :---: | :---: | :---: | :--- |
| $\mathrm{I}_{\mathrm{C}(\mathrm{ON})}$ | On-State Collector Current | 0.4 | - | - | mA | $\mathrm{V}_{\mathrm{CE}}=0.5 \mathrm{~V}, \mathrm{I}_{\mathrm{F}}=20 \mathrm{~mA}$ |

## 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 or isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.
(4) All parameters were tested using pulse technique.

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Output Current vs Forward Current vs Temperature


