OPB804

Features

- Non-contact switching
- Housing opaque material
- Printed circuit board mount
- 0.155" (3.94 mm) Width Gap
- 0.330" (8.38 mm) Depth Slot

Description

The OPB804 contains an IRLED and phototransistor paired in a plastic housing.

The housing is an opaque grade of injection molded plastic which minimizes the assembly’s sensitivity to visible and near-infrared radiation. The wide open aperture makes it versatile for general applications.

The output switches when an opaque object to IR (700nm to 1100nm) is inserted into the gap, between the emitter and sensor, and interrupts the light beam.

Applications

- Non-contact object sensing
- Assembly line automation
- Machine automation
- Equipment Security
- Machine safety

Absolute Maximum Ratings:

Storage Temperature Range: -40°C to +100°C
Operating Temperature Range: -40°C to +85°C
Lead Soldering Temperature (1): 240°C for 5 Seconds

Input IRLED

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward DC Current</td>
<td>50 mA</td>
</tr>
<tr>
<td>Peak Forward Current (1µs pulse, 300pps)</td>
<td>1.0A</td>
</tr>
<tr>
<td>Reverse DC Voltage</td>
<td>2.0V</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>75 mW</td>
</tr>
</tbody>
</table>

Output Phototransistor

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector-Emitter Voltage</td>
<td>30V</td>
</tr>
<tr>
<td>Emitter-Collector Voltage</td>
<td>5V</td>
</tr>
<tr>
<td>Collector DC Current</td>
<td>30 mA</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>100 mW</td>
</tr>
</tbody>
</table>

Ordering Information

OPB804 Slotted Switch

Customization:
Contact OPTEK for value added and next level assembly services on this sensor.
Contact OPTEK for special electrical screening on this sensor.

Maximum Rating Notes:

1. With soldering iron 1/16 inch (1.6mm) from the case. Duration can be extended to 10 seconds max. when flow soldering. RMA flux is recommended.
2. All parameters measured using pulse technique.
OPB804 Technical Data

Electrical Characteristics (T_A = 25°C unless otherwise noted)

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>PARAMETER</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
<th>UNITS</th>
<th>TEST CONDITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_F</td>
<td>Forward Voltage</td>
<td>-</td>
<td>1.25</td>
<td>1.70</td>
<td>V</td>
<td>I_F = 20mA</td>
</tr>
<tr>
<td>I_R</td>
<td>Reverse Current</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>µA</td>
<td>V_R = 2.0V</td>
</tr>
</tbody>
</table>

Output Phototransistor (See OP550 for additional information, reference only)

| V_(BR)CEO | Collector-Emitter Breakdown Voltage | 30   | -   | -   | V     | I_C = 1.0 mA, E_E = 0mw/cm² |
| V_(BRE)CEO| Emitter-Collector Breakdown Voltage  | 5.0  | -   | -   | V     | I_E = 100µA, E_E = 0mw/cm² |
| I_CEO    | Collector-Emitter Dark Current      | -    | -   | 100 | nA    | V_CE = 10V, I_F = 0, E_E =0mw/cm² |

Coupled

| V_CE(SAT) | Collector-Emitter Saturation Voltage | -    | -   | 0.40 | V     | I_C = 250µA, I_F = 20mA |
| I_C(ON)   | On-State Collector Current           | 0.50 | 5.00| -    | mA    | V_CE = 10.0V, I_F = 20mA |

Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.
OPB804 Technical Data

Saturation Voltage $V_{ce(sat)}$ vs. Ambient Temperature

Power Dissipation Derating Curves vs. Ambient Temperature

Typical Rise and Fall Time vs. Load Resistance

Test Schematic

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OPB804 Technical Data

Notes:
1. Dimension controlled at housing surface.
2. Dimensions are inches [mm].
3. Tolerances ± .010" [0.25]

PRECAUTIONS:
Methanol and isopropanol alcohols are recommended as cleaning reagents. Spray or wipe do not immerse. Exposure of the plastic body to chlorinated hydrocarbons and keytones such as thread lock and instant adhesives will degrade the plastic body. Highly activated, water soluble fluxes may also attack housings in some situations. It is recommended a sample be tested.

Mechanical Object Position vs. Relative Collector Current

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Driver Circuits for LED & Phototransistor

\[ R_D = \frac{V_{CC} - V_{CE}}{I_D} \]

\[ R_L = \frac{V_{CC} - V_{LED}}{I_L} \]

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