

# Slotted Optical Switch



## 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 a 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

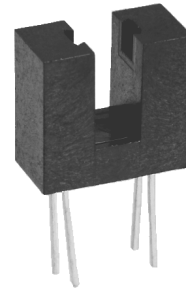
### Ordering Information

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.



### Absolute Maximum Ratings:

(T<sub>A</sub> = 25°C unless otherwise noted)

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

### Input IRLED

Forward DC Current	50 mA
Peak Forward Current (1µs pulse, 300pps)	1.0A
Reverse DC Voltage	2.0V
Power Dissipation	75 mW

### Output Phototransistor

Collector-Emitter Voltage	30V
Emitter-Collector Voltage	5V
Collector DC Current	30 mA
Power Dissipation	100 mW

### 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.

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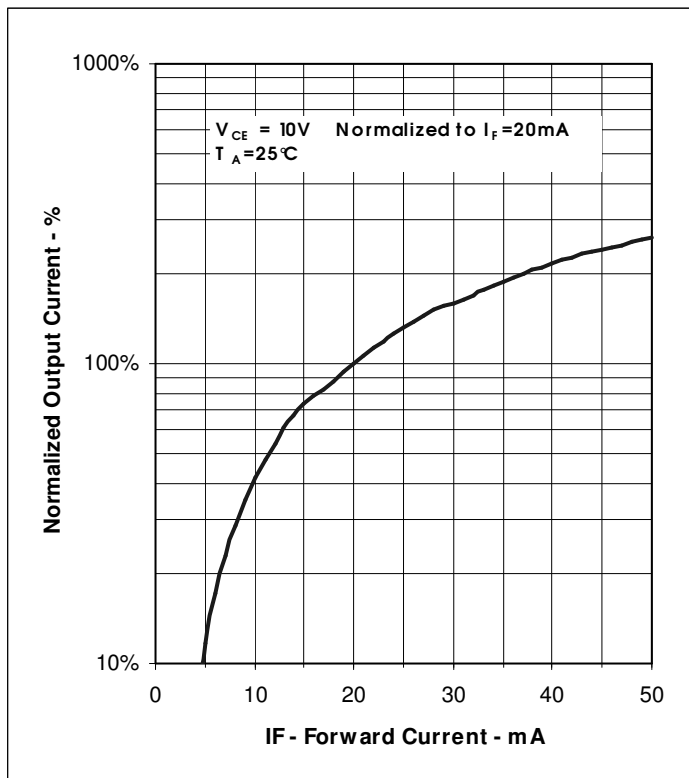
# OPB804 Technical Data



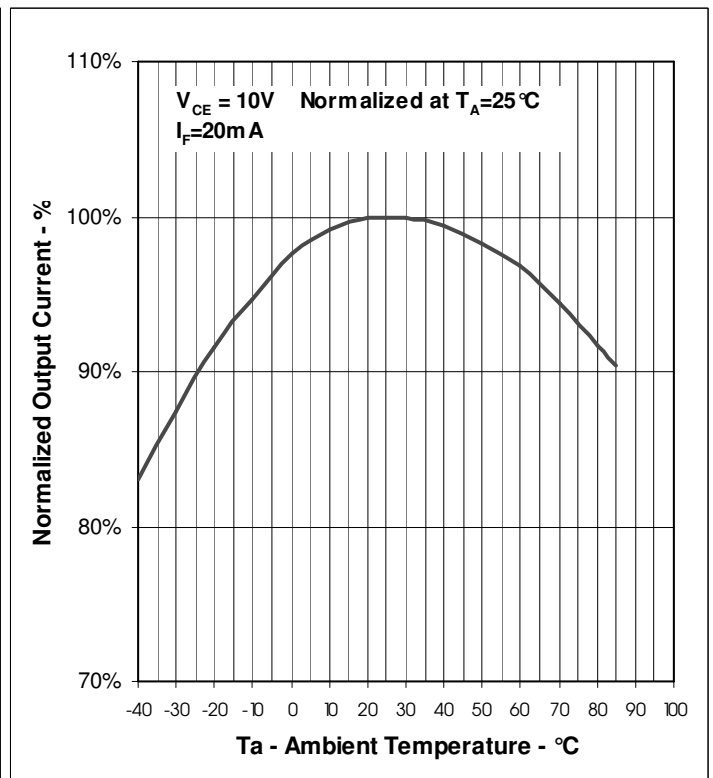
## Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITION
<b>Input Diode</b> (See OP140 for additional information, reference only)						
V <sub>F</sub>	Forward Voltage	-	1.25	1.70	V	I <sub>F</sub> = 20mA
I <sub>R</sub>	Reverse Current	-	-	100	μA	V <sub>R</sub> = 2.0V
<b>Output Phototransistor</b> (See OP550 for additional information, reference only)						
V <sub>(BR) CEO</sub>	Collector-Emitter Breakdown Voltage	30	-	-	V	I <sub>C</sub> = 1.0 mA, E <sub>E</sub> = 0mw/cm <sup>2</sup>
V <sub>(BR) ECO</sub>	Emitter-Collector Breakdown Voltage	5.0	-	-	V	I <sub>E</sub> = 100μA, E <sub>E</sub> = 0mw/cm <sup>2</sup>
I <sub>CEO</sub>	Collector-Emitter Dark Current	-	-	100	nA	V <sub>CE</sub> = 10V, I <sub>F</sub> = 0, E <sub>E</sub> = 0mw/cm <sup>2</sup>
<b>Coupled</b>						
V <sub>CE(SAT)</sub>	Collector-Emitter Saturation Voltage:	-	-	0.40	V	I <sub>C</sub> = 250μA, I <sub>F</sub> = 20mA
I <sub>C(ON)</sub>	On-State Collector Current:	0.50	5.00	-	mA	V <sub>CE</sub> = 10.0V, I <sub>F</sub> = 20mA

**Normalized Output Current vs. Forward Current**



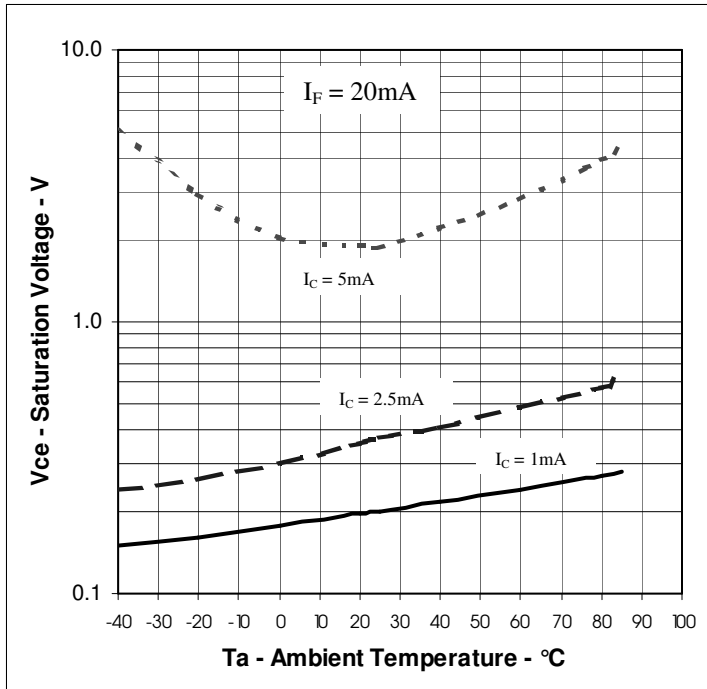
**Normalized Output Current vs. Ambient Temperature**



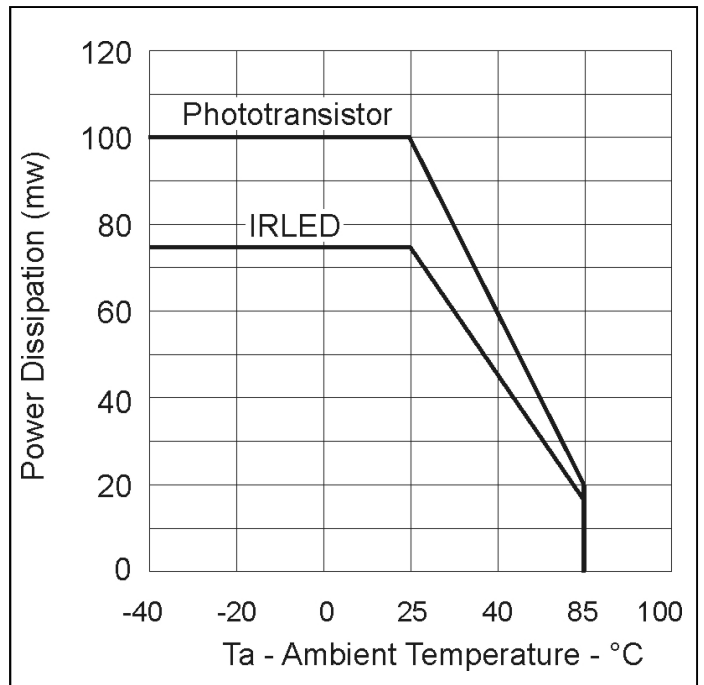
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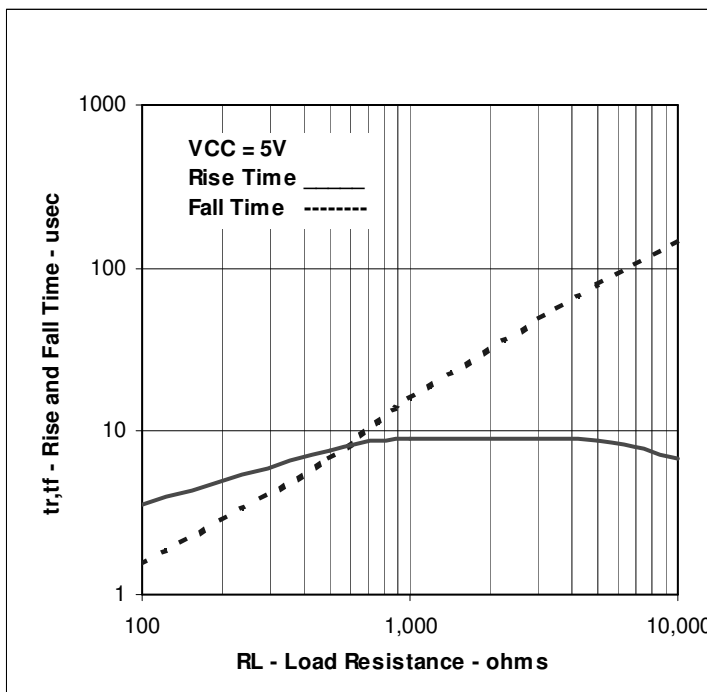
**Saturation Voltage Vce(sat) vs. Ambient Temperature**



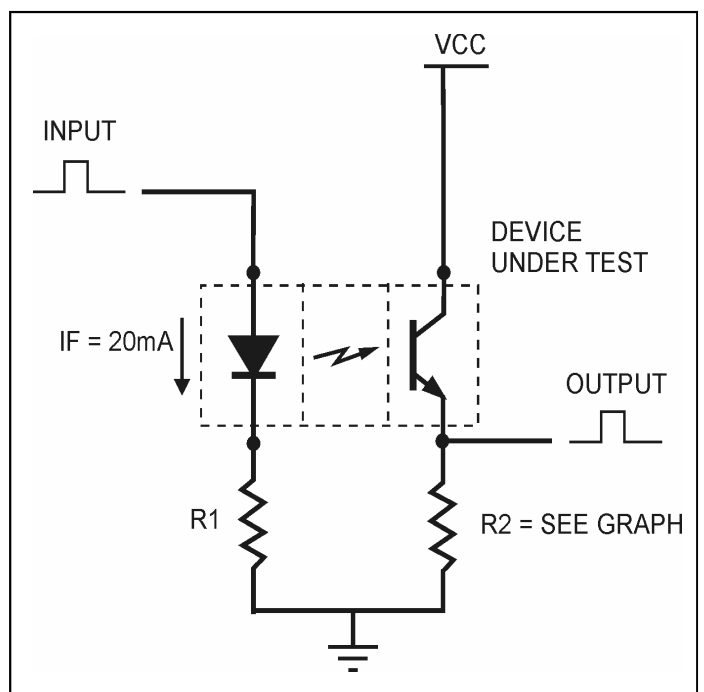
**Power Dissipation Derating Curves vs. Ambient Temperature**



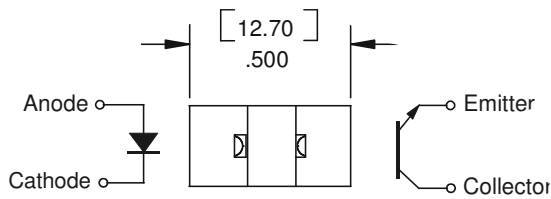
**Typical Rise and Fall Time vs. Load Resistance**



**Test Schematic**

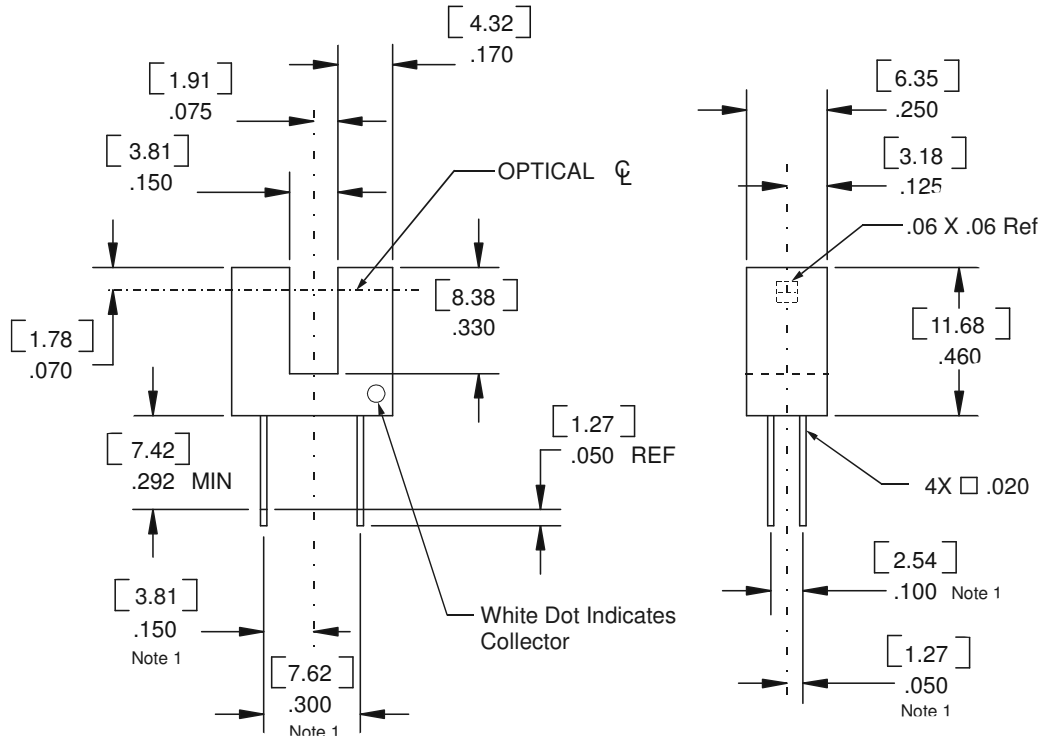


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**Notes:**

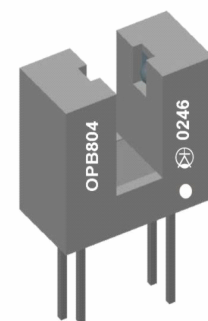
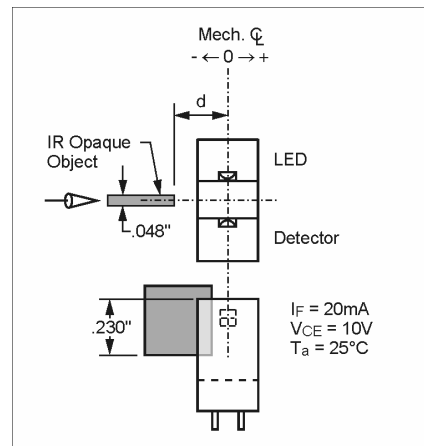
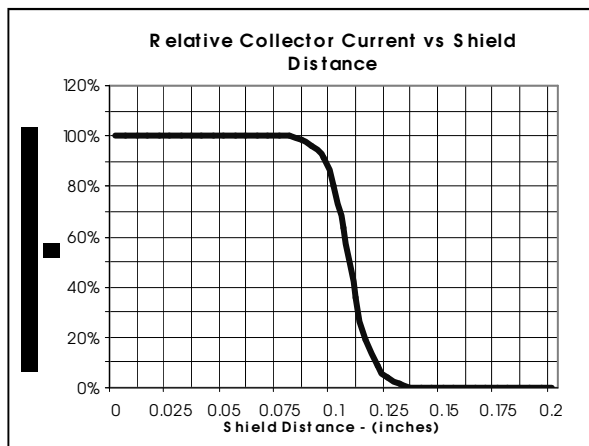
1. Dimension controlled at housing surface.
2. Dimensions are inches [mm].
3. Tolerances  $\pm .010$  [0,25]



**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**



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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## Driver Circuits for LED & Phototransistor

