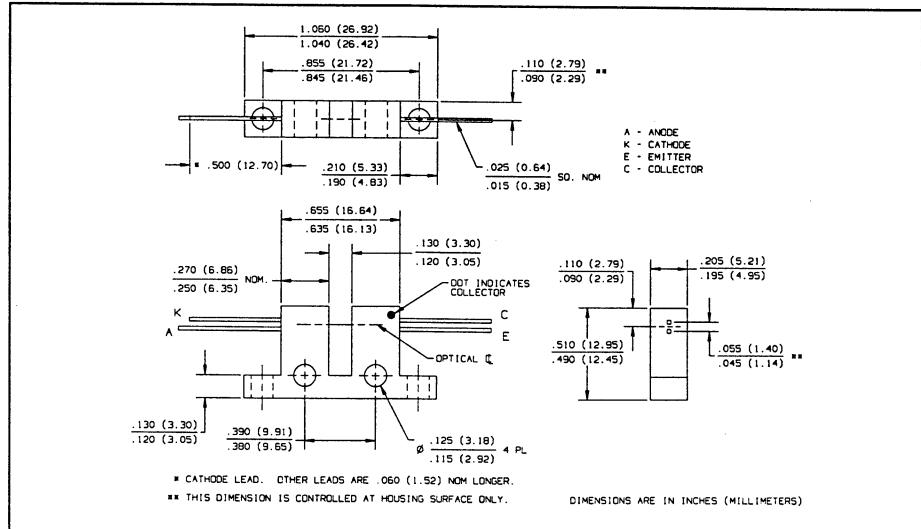
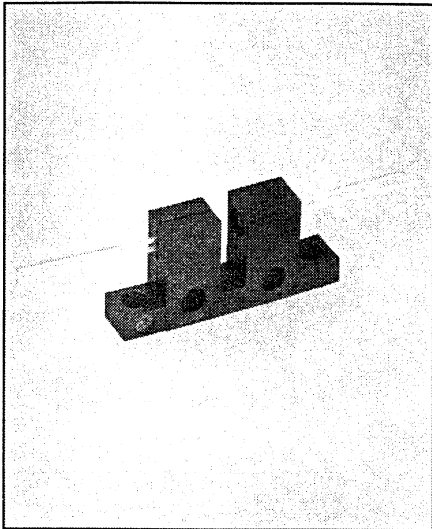


# Slotted Optical Switch Type OPB806



## Features

- Non-contact switching
- Base or side mounting
- 0.125" (3.18 mm) wide slot
- Fast switching speed

## Description

The OPB806 consists of an infrared emitting diode and an NPN silicon phototransistor mounted in a low cost plastic housing on opposite sides of a 0.125" (3.18 mm) wide slot. Phototransistor switching takes place whenever an opaque object passes through the slot.

## Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage and Operating Temperature .....  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$   
 Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] .....  $240^\circ\text{C}^{(1)}$

## Input Diode

Continuous Forward Current ..... 50 mA  
 Peak Forward Current (1  $\mu\text{s}$  pulse width, 300 pps) ..... 3.0 A  
 Reverse Voltage ..... 2.0 V  
 Power Dissipation ..... 100 mW<sup>(2)</sup>

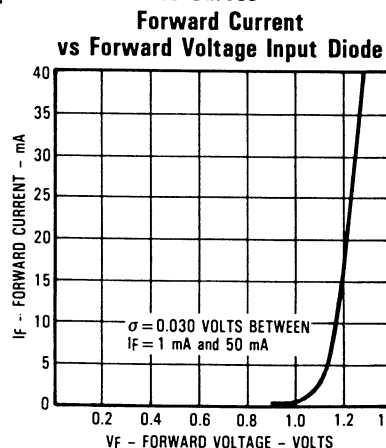
## Output Phototransistor

Collector-Emitter Voltage ..... 30 V  
 Emitter-Collector Voltage ..... 5.0 V  
 Power Dissipation ..... 100 mW<sup>(2)</sup>

## Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering.
- (2) Derate linearly 1.67 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (3) Methanol or isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.
- (4) All parameters tested using pulse technique.

## Typical Performance Curves



# Type OPB806

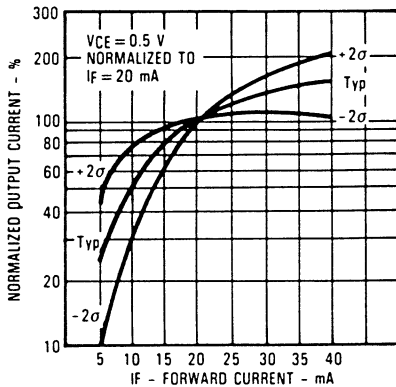
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>					
$V_F$	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current		100	$\mu\text{A}$	$V_R = 2\text{ V}$
<b>Output Phototransistor</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector-Emitter Dark Current		100	nA	$V_{CE} = 10\text{ V}, I_F = 0, E_e = 0$
<b>Coupled</b>					
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.50	V	$I_C = 200\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	0.40		mA	$V_{CE} = 0.5\text{ V}, I_F = 20\text{ mA}$

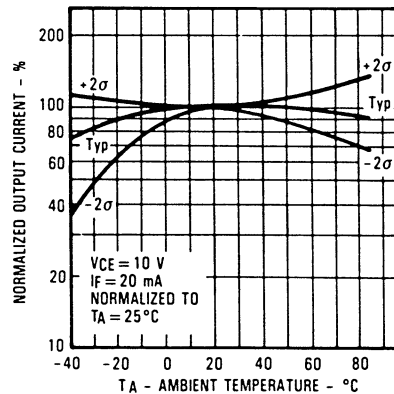
SLOTTED OPTICAL SWITCHES

## Typical Performance Curves

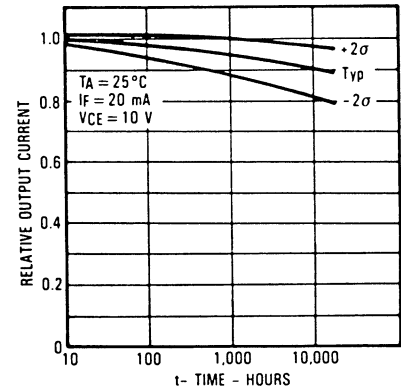
**Normalized Output Current vs Forward Current**



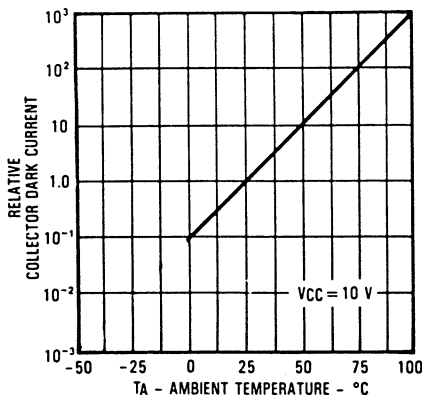
**Normalized Output Current vs Ambient Temperature**



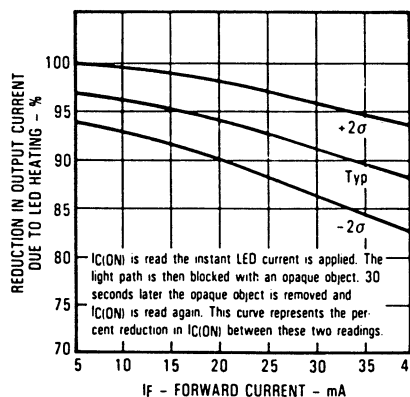
**Relative Output Current vs Time**



**Relative Collector Dark Current vs Ambient Temperature**



**Reduction in Output Current Due to LED Heating vs Forward Current**



**Rise and Fall Time vs Load Resistance**

