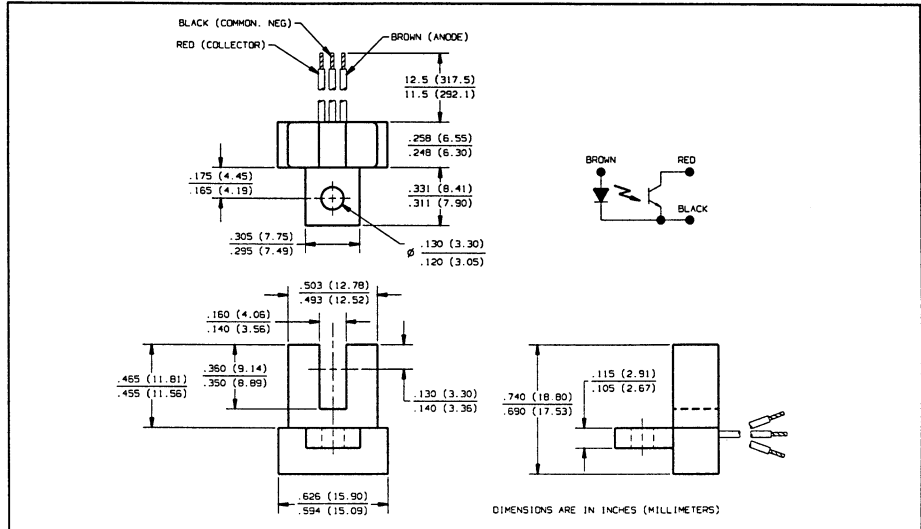
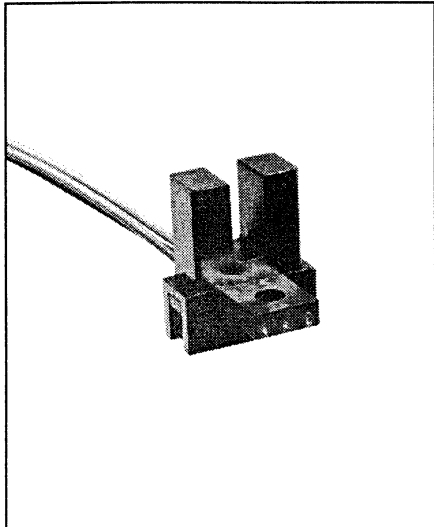


# Slotted Optical Switch Type OPB857



## Features

- Non-contact switching
- Three lead wires for electrical connection
- Sealed plastic housing
- Fast switching speed

## Description

The OPB857 consists of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite sides of a 0.15" (3.81 mm) wide slot. Phototransistor switching takes place whenever an opaque object passes through the slot. The low cost plastic housing reduces possible interference from ambient light and provides dirt and dust protection. 11.5" (292.1 mm) minimum length lead wires ease assembly where PC board mounting is not practical.

The OPB857 uses an OP140 or OP240 LED and OP550 family sensor.

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

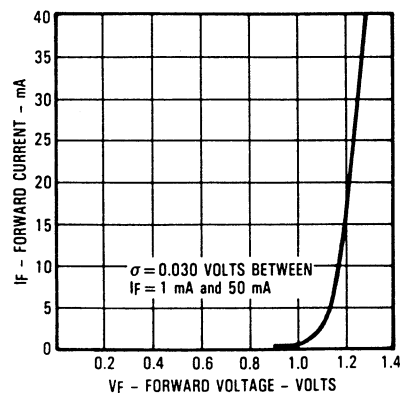
Storage and Operating Temperature Range	-40° C to +80° C
<b>Input Diode</b>	
Reverse Voltage	2 V
Continuous Forward Current	50 mA
Peak Forward Current (1 $\mu$ s pulse width, 300 pps)	3 A
Power Dissipation	100 mW <sup>(2)</sup>
<b>Phototransistor</b>	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 mW <sup>(2)</sup>

### Notes:

- (1) Maximum storage and operating temperature are limited by the temperature rating of the lead wires.
- (2) Derate linearly 1.82 mW/°C above 25° C.
- (3) Plastic housing is soluble in chlorinated hydrocarbons and ketones. Methanol or isopropanol are recommended as cleaning agents.

## Typical Performance Curves

Forward Current  
vs Forward Voltage Input Diode



# Type OPB857

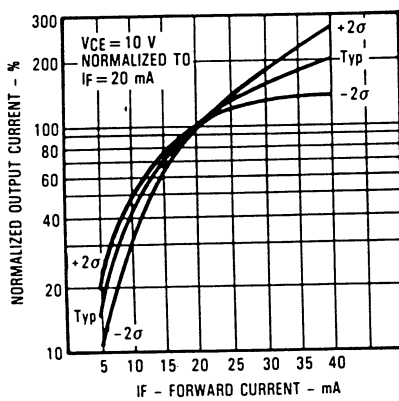
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>					
$V_F$	Forward Voltage		1.7	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	$I_C = 1\text{ mA}$
$V_{(BR)ECO}$	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		0.40	V	$I_C = 1.50\text{ mA}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	1.50		mA	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$

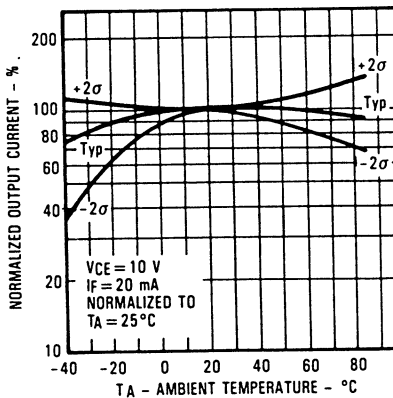
SLOTTED OPTICAL SWITCHES

## Typical Performance Curves

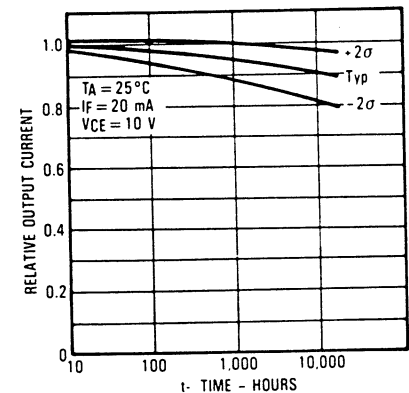
**Normalized Output Current vs Forward Current**



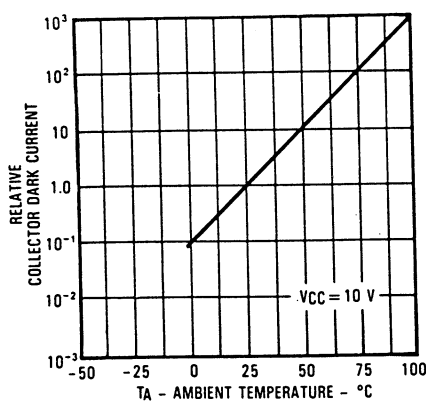
**Normalized Output Current vs Ambient Temperature**



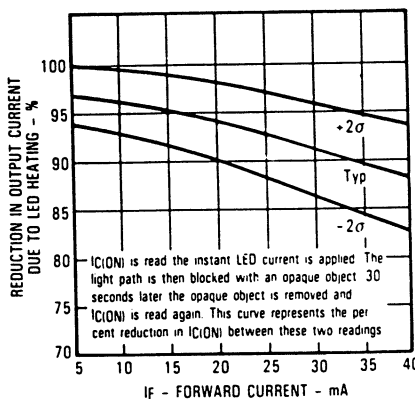
**Relative Output Current vs Time**



**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**

