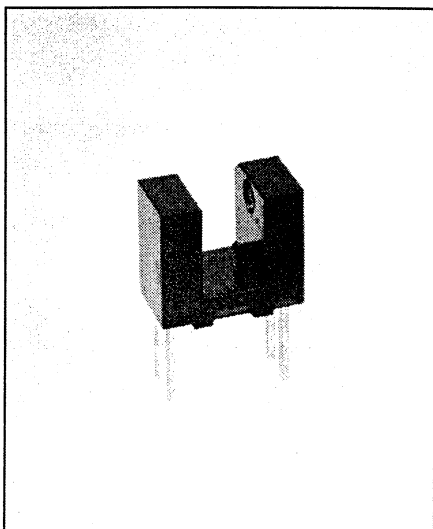


# Slotted Optical Switch Type OPB610



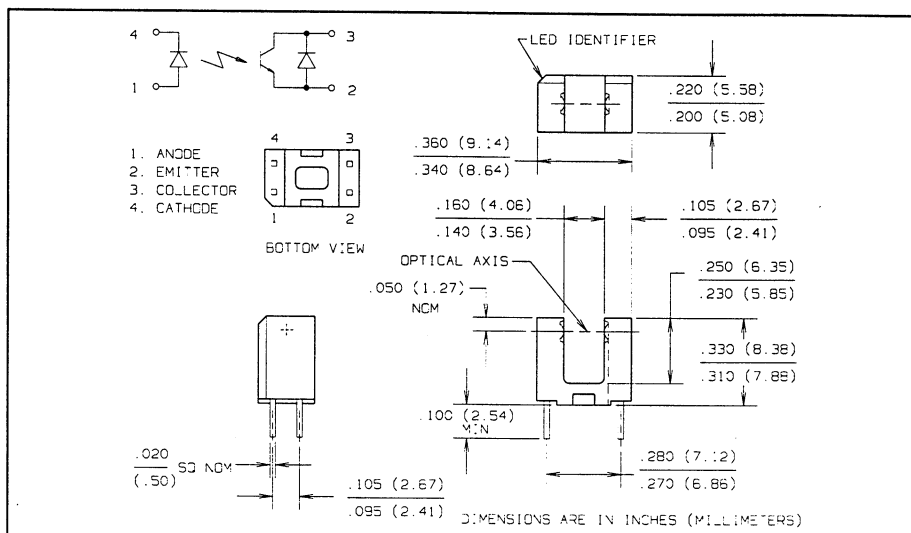
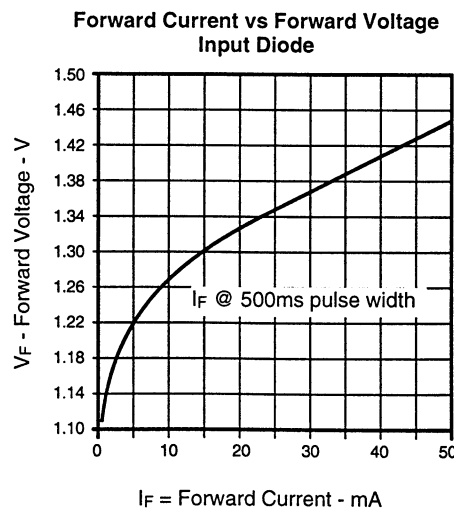
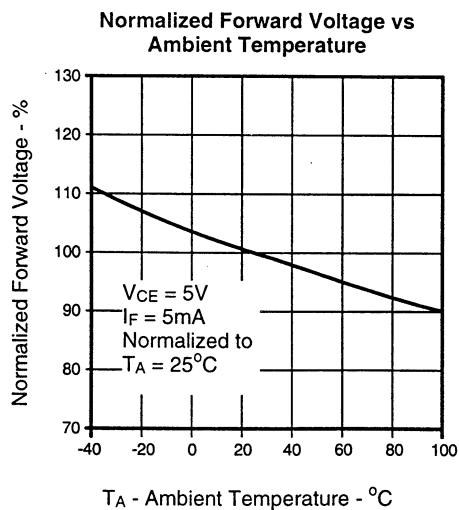
## Features

- Non-contact switching
- Printed circuit board mounting
- 0.275" Lead centers
- 0.150" Gap
- Enhanced signal to noise ratio

## Description

The OPB610 slotted optical switch consists of an infrared emitting diode and an NPN silicon phototransistor with an enhanced low current roll-off to improve contrast ratio and immunity to background irradiance.

## Typical Performance Curves



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

Storage and Operating Temperature .....  $-40^\circ\text{C}$  to  $+100^\circ\text{C}$   
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec with soldering iron] .....  $260^\circ\text{C}^{(1)}$

### Input Diode

Forward DC Current ..... 50 mA  
Peak Forward Current (1  $\mu\text{s}$  pulse width, 300 pps) ..... 3.0 A  
Reverse DC Voltage ..... 3.0 V  
Power Dissipation .....  $100\text{ mW}^{(2)}$

### Output Phototransistor

Collector-Emitter Voltage ..... 30 V  
Emitter Reverse Current ..... 10 mA  
Collector DC Current ..... 30 mA  
Power Dissipation .....  $200\text{ mW}^{(3)}$

### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. Max. 20 grams force may be applied to leads when soldering.
- (2) Derate linearly  $1.33\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (3) Derate linearly  $2.0\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .

# Types OPB610

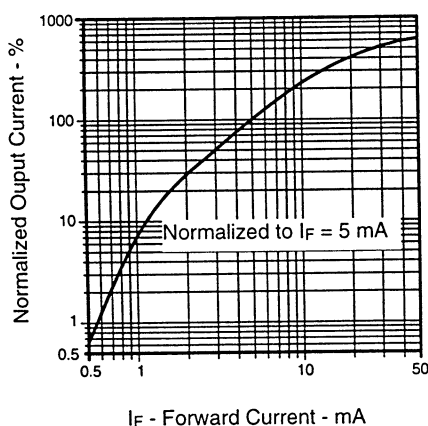
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| SYMBOL                        | PARAMETER                           | MIN | MAX  | UNITS         | TEST CONDITIONS                                      |
|-------------------------------|-------------------------------------|-----|------|---------------|------------------------------------------------------|
| <b>Input Diode</b>            |                                     |     |      |               |                                                      |
| $V_F$                         | Forward Voltage                     |     | 1.60 | V             | $I_F = 10\text{ mA}$                                 |
| $I_R$                         | Reverse Current                     |     | 100  | $\mu\text{A}$ | $V_R = 3.0\text{ V}$                                 |
| <b>Output Phototransistor</b> |                                     |     |      |               |                                                      |
| $V_{(BR)CEO}$                 | Collector-Emitter Breakdown Voltage | 30  |      | V             | $I_C = 100\text{ }\mu\text{A}$                       |
| $I_{ECO}$                     | Emitter Reverse Current             |     | 100  | $\mu\text{A}$ | $V_{EC} = 0.4\text{ V}$                              |
| $I_{CEO}$                     | Collector-Emitter Dark Current      |     | 100  | nA            | $V_{CE} = 5\text{ V}$                                |
| <b>Coupled</b>                |                                     |     |      |               |                                                      |
| $V_{SAT}$                     | Saturation Voltage                  |     | 0.40 | V             | $I_F = 5\text{ mA}$ , $I_C = 100\text{ }\mu\text{A}$ |
| $I_{C(ON)}$                   | On-State Collector Current          | 1.0 |      | mA            | $I_F = 5\text{ mA}$ , $V_{CE} = 5\text{ V}$          |

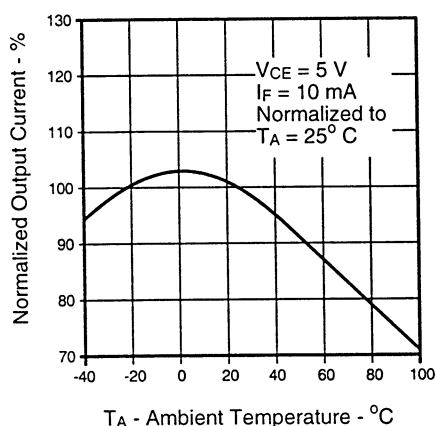
SLOTTED  
OPTICAL  
SWITCHES

## Typical Performance Curves

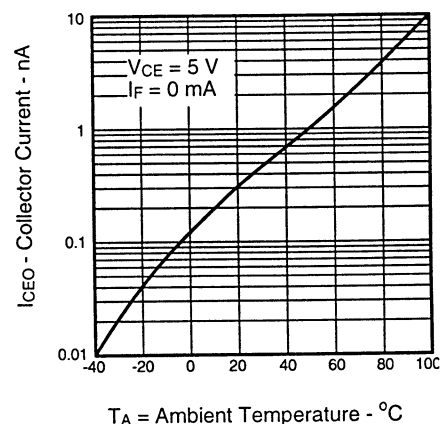
Normalized Output Current vs Forward Current



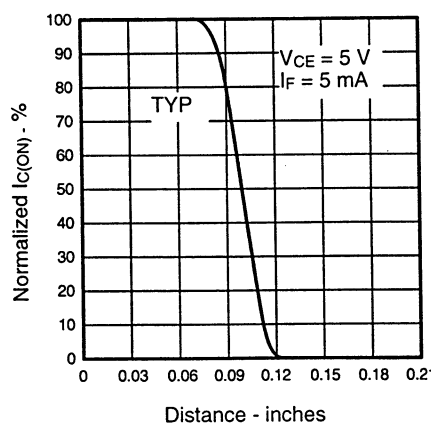
Normalized Output Current vs Ambient Temperature



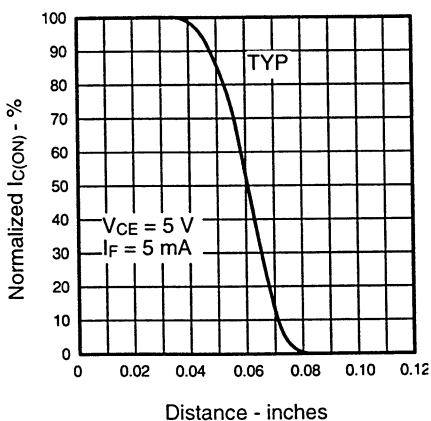
Collector Dark Current vs Ambient Temperature



Normalized  $I_{C(ON)}$  vs Distance (X Axis Blocked)



Normalized  $I_{C(ON)}$  vs Distance (Y Axis Blocked)



Switching Speed vs Load

