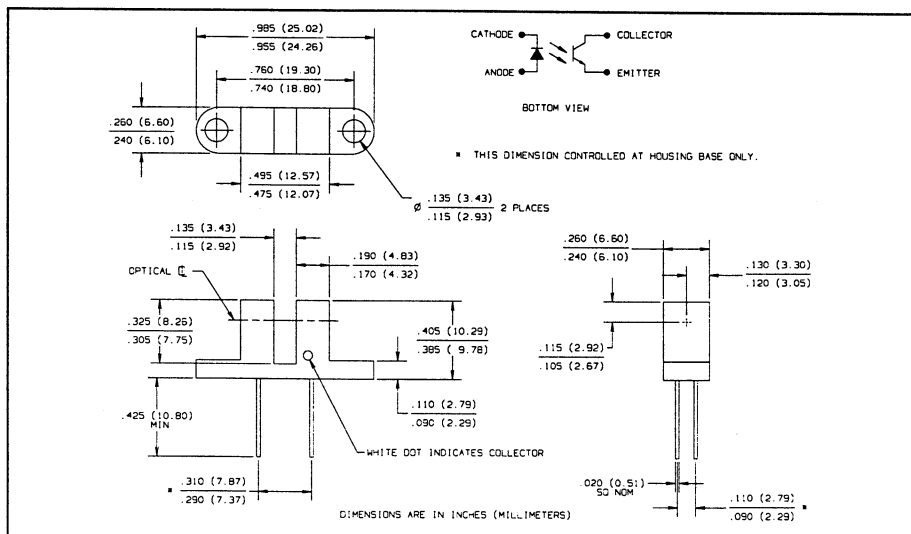
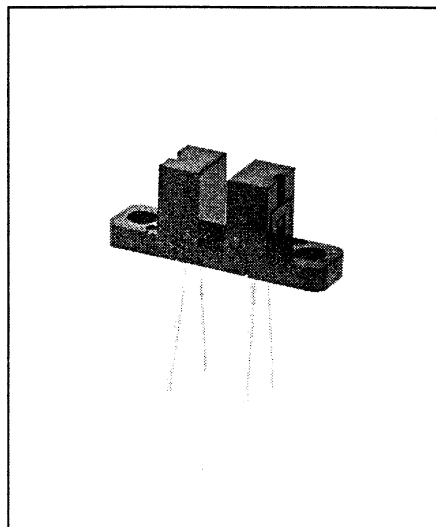


# Slotted Optical Switches

## Types OPB827A, OPB827B, OPB827C, OPB827D



### Features

- Printed circuit board mounting
- 0.125" wide slot
- 0.300" lead spacing
- Inexpensive plastic housing

### Description

The OPB827 series consists of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite sides of a 0.125" wide slot. The OPB827A has an IR transmissive housing. The OPB827B has an IR transmissive housing with an 0.010" aperture over the phototransistor. The OPB827C has an opaque housing with a molded 0.060" aperture located in front of the phototransistor. The OPB827D has an opaque housing with a molded 0.010" aperture located over the phototransistor. The apertures provide for improved resolution. Phototransistor switching takes place whenever an opaque object passes through the slot.

Other configurations available:

OPB828 = 0.220" lead spacing

OPB829 = 24", 26 AWG wire leads

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

Storage and Operating Temperature Range . . . . .  $-40^\circ\text{C}$  to  $+85^\circ\text{C}$   
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]. . . . .  $240^\circ\text{C}^{(2)}$

#### Input Diode

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

#### Output Phototransistor

Collector-Emitter Voltage . . . . . 30 V  
Emitter-Collector Voltage . . . . . 5.0 V  
Collector DC Current . . . . . 30 mA  
Power Dissipation . . . . . 100 mW<sup>(1)</sup>

#### Notes:

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

Descriptions		
Type	Housing	Phototransistor Aperture
OPB827A	IR Transmissive	None
OPB827B	IR Transmissive	0.010"
OPB827C	Opaque	0.060"
OPB827D	Opaque	0.010"

# Types OPB827A, OPB827B, OPB827C, OPB827D

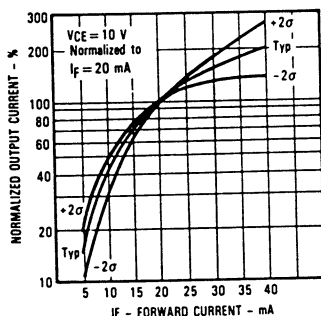
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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	$I_E = 100\text{ }\mu\text{A}$
$I_{CEO}$	Collector-Emitter Dark Current		100	nA	$V_{CE} = 10\text{ V}, I_F = 0, E_e = 0$
<b>Coupled</b>					
$V_{CE(SAT)}$	Saturation Voltage		0.6	V	$I_C = 1800\text{ }\mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	1800		$\mu\text{A}$	$V_{CE} = 0.6\text{ V}, I_F = 20\text{ mA}$

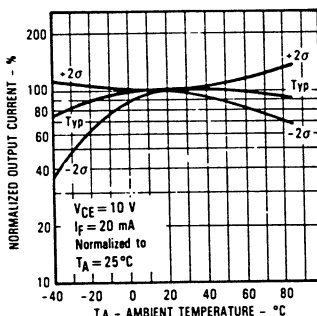
SLOTTED,  
OPTICAL  
SWITCHES

## Typical Performance Curves

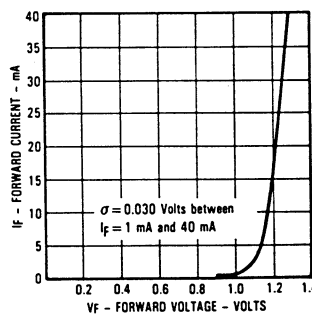
Normalized Output Current  
vs Forward Current



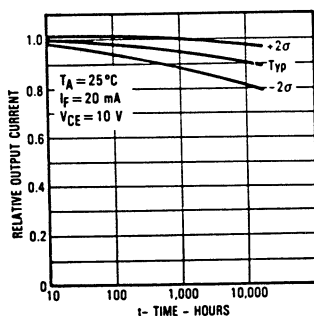
Normalized Output Current  
vs Ambient Temperature



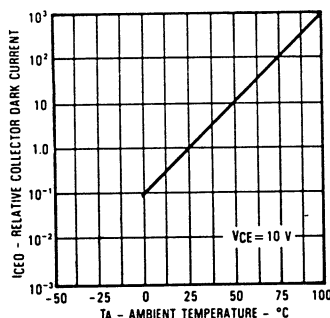
Forward Current  
vs Forward Voltage Input Diode



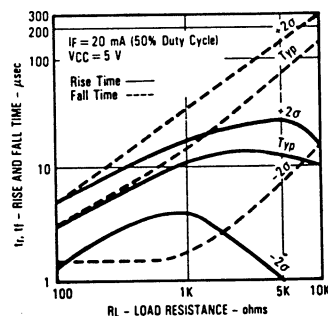
Relative Output Current  
vs Time



Collector Dark Current  
vs Ambient Temperature

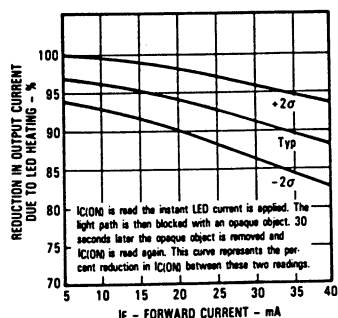


Rise and Fall Time  
vs Load Resistance

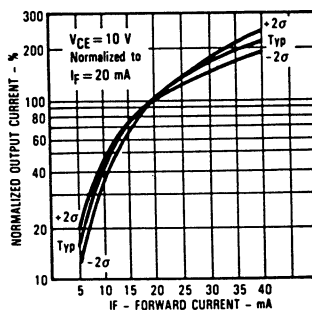


## All Part Numbers Ending in "B and "D"

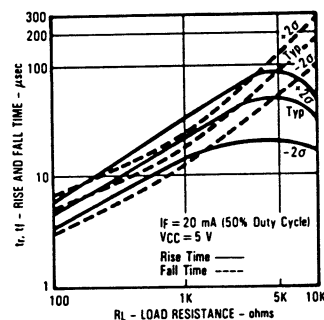
Reduction in Output Current Due to  
LED Heating vs Forward Current



Normalized Output Current  
vs Input Current



Rise and Fall Time  
vs Load Resistance



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

Optek Technology, Inc. 1215 W. Crosby Road

Carrollton, Texas 75006

(972)323-2200

Fax (972)323-2396