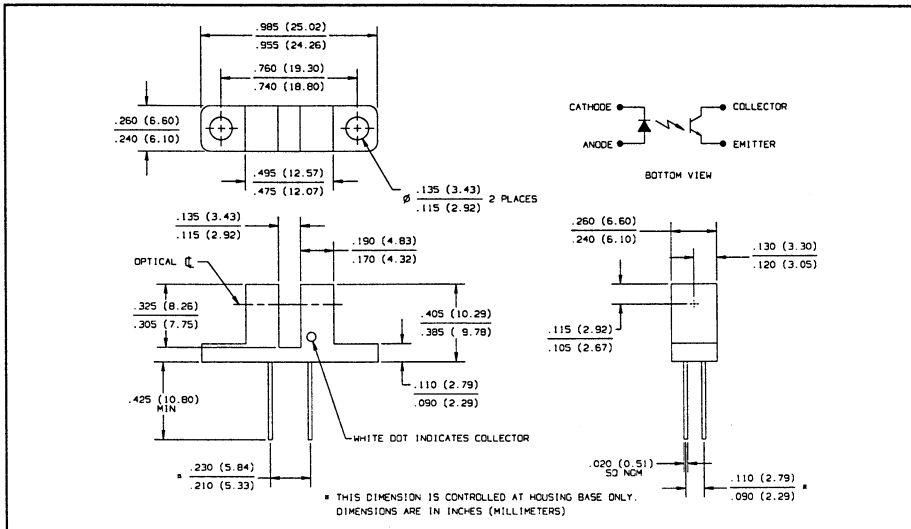
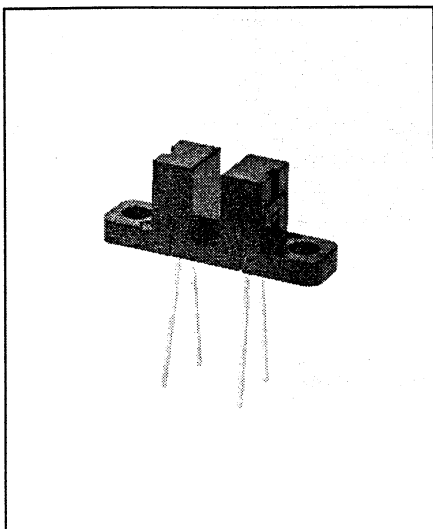


# Slotted Optical Switches

## Types OPB828A, OPB828B, OPB828C, OPB828D



### Features

- Printed circuit board mounting
- 0.125" (3.18 mm) wide slot
- 0.220" (5.59 mm) lead spacing
- Inexpensive plastic housing

### Description

The OPB828 series consists of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite sides of a 0.125" (3.18 mm) wide slot. The OPB828A has an IR transmissive housing. The OPB828B has an IR transmissive housing with an 0.010" (0.25 mm) aperture located in front of the phototransistor. The OPB828C has an opaque housing with a molded 0.060" (1.52 mm) aperture located in front of the phototransistor. The OPB828D has an opaque housing with a molded 0.010" (0.25 mm) aperture located in front of the phototransistor. Phototransistor switching takes place whenever an opaque object passes through the slot.

Other configurations available:

OPB827 = 0.300" lead spacing

OPB829 = 24" min. 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 . . . . .  $100\text{ mW}^{(1)}$

### Output Phototransistor

Collector-Emitter Voltage . . . . . 30 V  
 Emitter-Collector Voltage . . . . . 5.0 V  
 Collector DC Current . . . . . 30 mA  
 Power Dissipation . . . . .  $100\text{ mW}^{(1)}$

### Notes:

- (1) Derate Linearly  $1.67\text{ mW}/^\circ\text{C}$  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
OPB828A	IR Transmissive	None
OPB828B	IR Transmissive	0.010"
OPB828C	Opaque	0.060"
OPB828D	Opaque	0.010"

# Types OPB828A, OPB828B, OPB828C, OPB828D

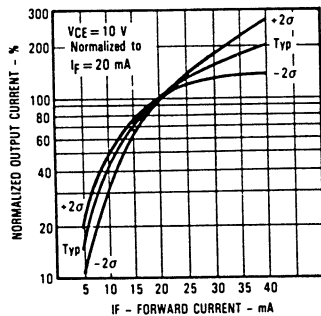
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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>					
$V_{CE(SAT)}$	Saturation Voltage		0.6	V	$I_C = 1800\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	1800		$\mu\text{A}$	$V_{CE} = 0.6\text{ V}, I_F = 20\text{ mA}$

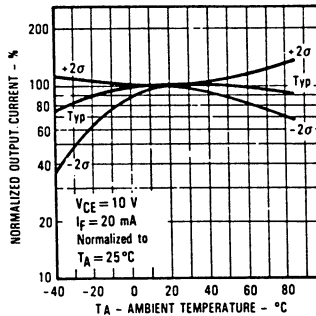
SLOTTED OPTICAL SWITCHES

## Typical Performance Curves

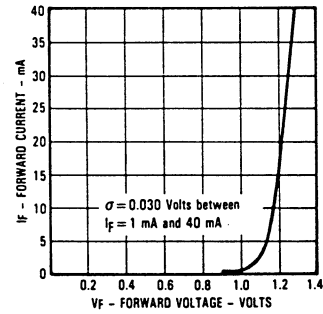
**Normalized Output Current vs Forward Current**



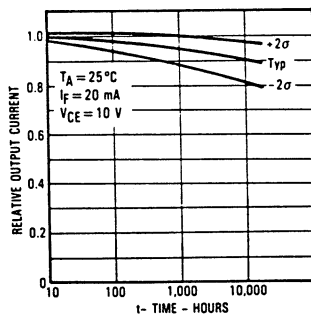
**Normalized Output Current vs Ambient Temperature**



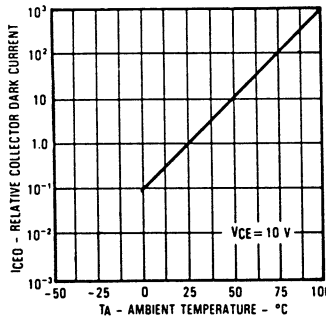
**Forward Current vs Forward Voltage Input Diode**



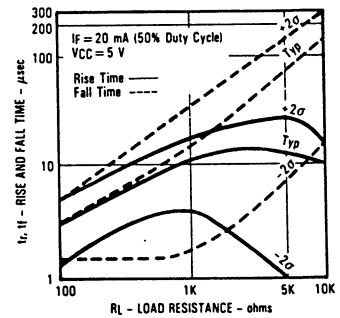
**Relative Output Current vs Time**



**Collector Dark Current vs Ambient Temperature**

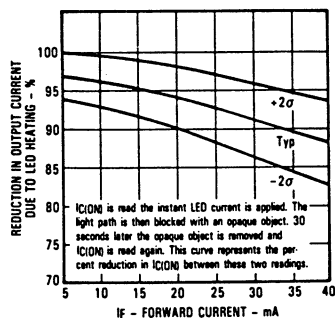


**Rise and Fall Time vs Load Resistance**

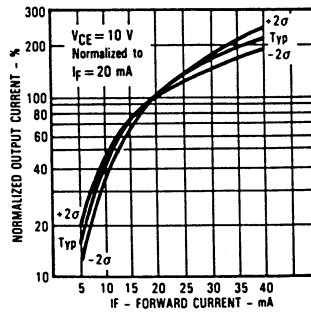


## All Part Numbers Ending in "B and "D"

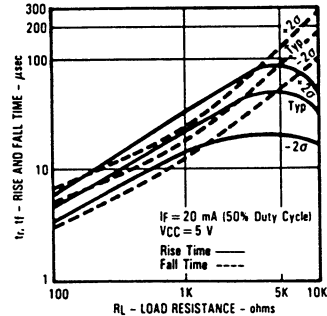
**Reduction in Output Current Due to LED Heating vs Forward Current**



**Normalized Output Current vs Input Current**



**Rise and Fall Time vs Load Resistance**



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Datasheets for electronic components.