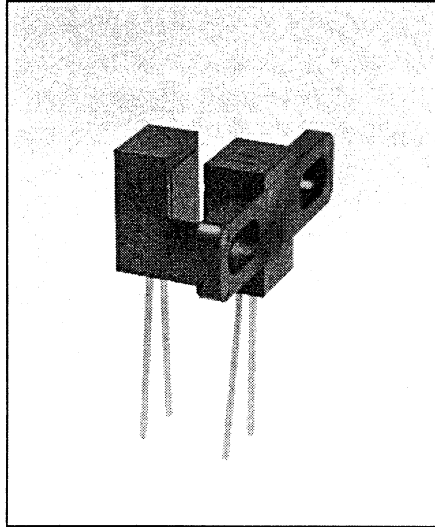


# Slotted Optical Switches

## Types OPB830L, OPB840L Series



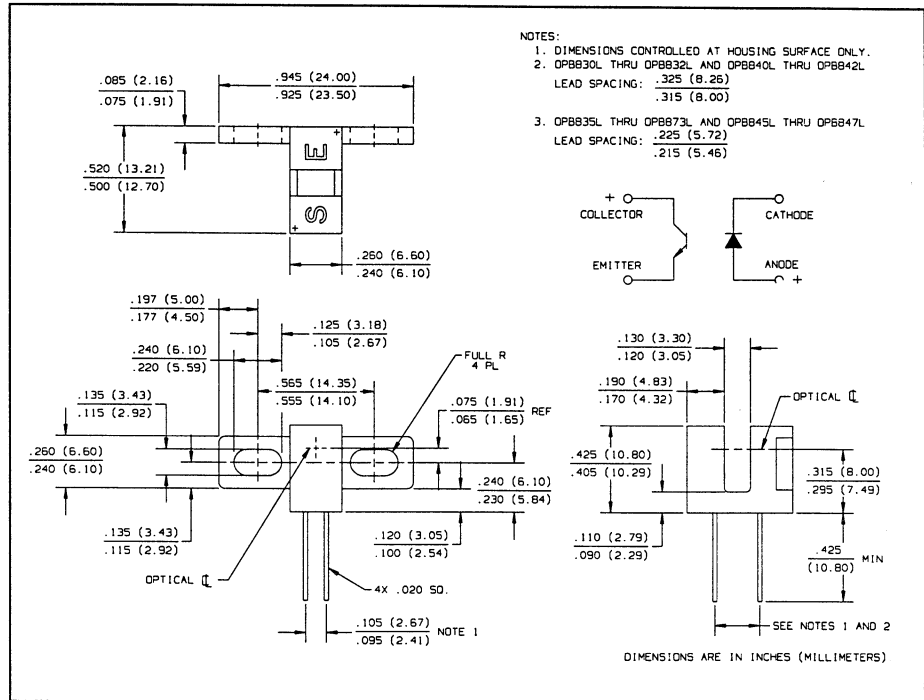
### Features

- 0.125" (3.18 mm) wide slot
- Choice of aperture
- Choice of opaque or IR transmissive shell material
- Side mounting configuration
- Choice of lead spacing

### Description

This series of slotted switches provides the design engineer with the flexibility of a custom device from a standard product line. Building from a standard housing with a .125" (3.18 mm) wide slot, the user can specify (1) electrical output parameters, (2) choice of lead spacing, (3) discrete shell material and (4) aperture width.

All housings are an opaque grade of injection-molded plastic to minimize the assembly's sensitivity to ambient radiation, both visible and near-infrared. Discrete shells (exposed only on the parallel faces inside the device throat) are either IR transmissive plastic for applications where aperture contamination may occur or opaque plastic with aperture openings for maximum protection against ambient light.



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

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

### Input Diode

Forward DC Current ..... 50 mA  
Peak Forward Current (1  $\mu\text{s}$  pulse width, 300 pps) ..... 3.0 A  
Reverse DC Voltage ..... 2.0V  
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) Lead spacing is .220" or .320". Leads are 0.20" sq and .425" long (min).
- (5) Methanol or isopropanol are recommended cleaning agents. Plastic housing may be soluble in chlorinated hydrocarbons and ketones.

# Types OPB830L, OPB840L Series

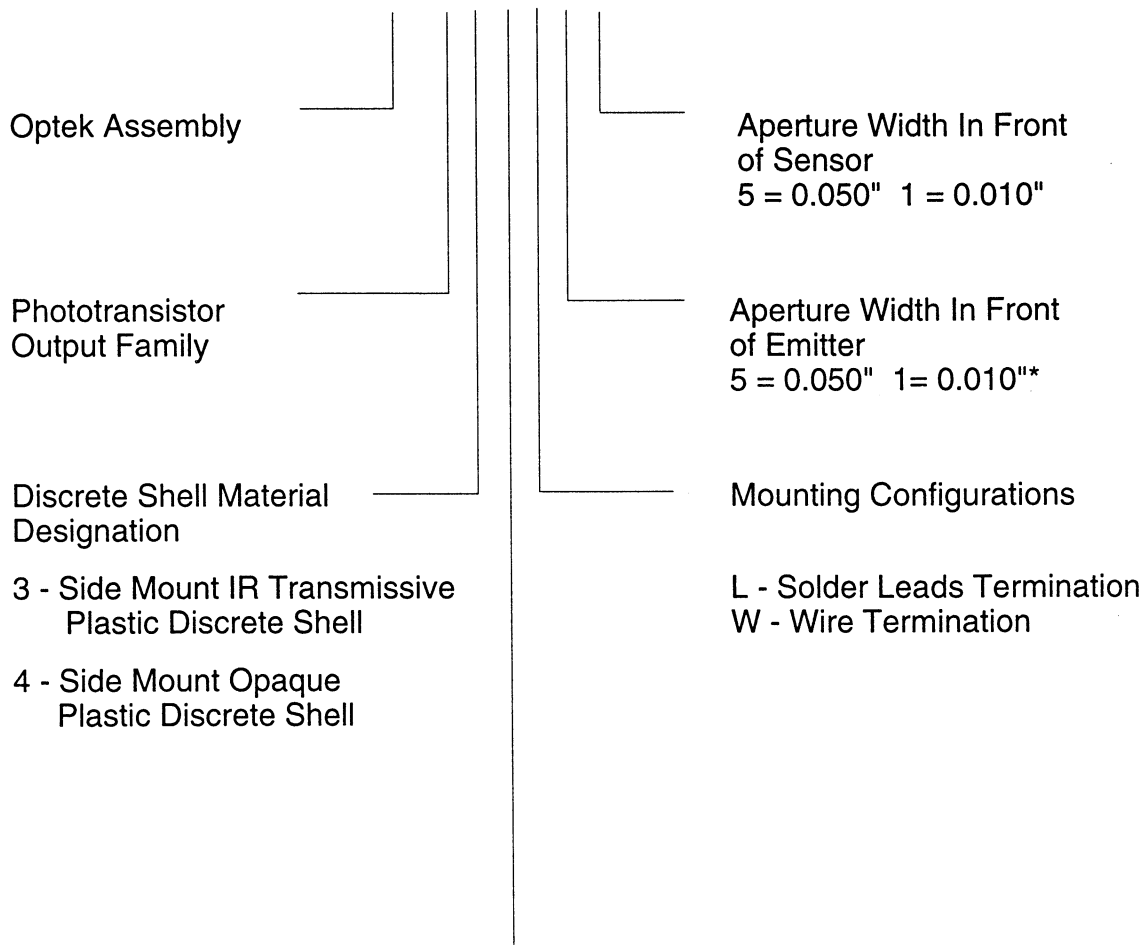
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

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>						
$V_{(BR)ECO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 1\text{ mA}$	
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\text{ mA}$	
$I_{CEO}$	Collector-Emitter Dark Current		100	nA	$V_{CE} = 10\text{ V}$	
<b>Coupled</b>						
$V_{CE(SAT)}$	Saturation Voltage Parameter A	OPB830L/OPB840L OPB835L/OPB845L		0.4	V	$I_C = 400\ \mu\text{A}, I_F = 20\text{ mA}$
	Parameter B	OPB831L/OPB841L OPB836L/OPB846L		0.4	V	$I_C = 800\ \mu\text{A}, I_F = 10\text{ mA}$
	Parameter C	OPB832L/OPB842L OPB837L/OPB847L		0.6	V	$I_C = 1800\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current Parameter A	OPB830L/OPB840L OPB835L/OPB845L	500		$\mu\text{A}$	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$
	Parameter B	OPB831L/OPB841L OPB836L/OPB846L	1000		$\mu\text{A}$	$V_{CE} = 5\text{ V}, I_F = 10\text{ mA}$
	Parameter C	OPB832L/OPB842L OPB837L/OPB847L	1800		$\mu\text{A}$	$V_{CE} = 0.6\text{ V}, I_F = 20\text{ mA}$

SLOTTED  
OPTICAL  
SWITCHES

## PART NUMBER GUIDE

OPB 8 X X X X X



### Electrical Specification Variations

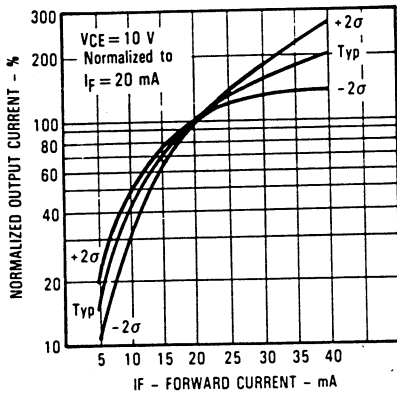
- 0 - Electrical Parameter A, 0.320" Lead Spacing
- 1 - Electrical Parameter B, 0.320" Lead Spacing
- 2 - Electrical Parameter C, 0.320" Lead Spacing
- 5 - Electrical Parameter A, 0.220" Lead Spacing
- 6 - Electrical Parameter B, 0.220" Lead Spacing
- 7 - Electrical Parameter C, 0.220" Lead Spacing

\*Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.

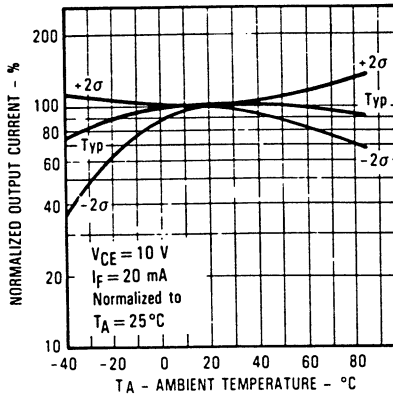
# Types OPB830L, OPB840L Series

## Typical Performance Curves

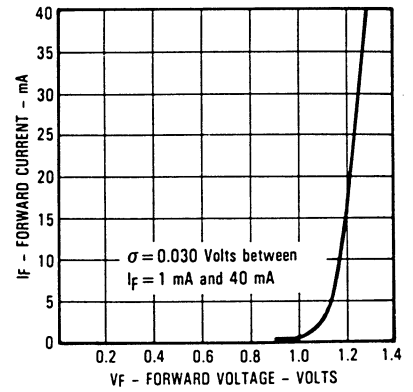
### Normalized Output Current vs Forward Current



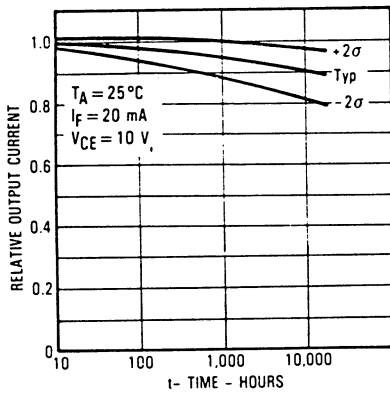
### Normalized Output Current vs Ambient Temperature



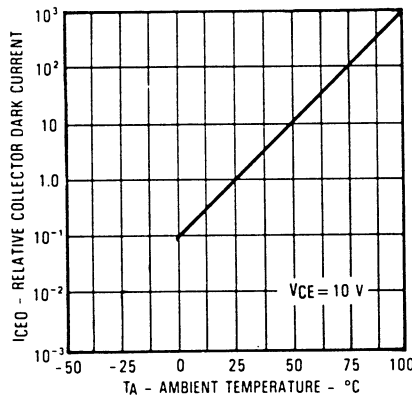
### Forward Current vs Forward Voltage Input Diode



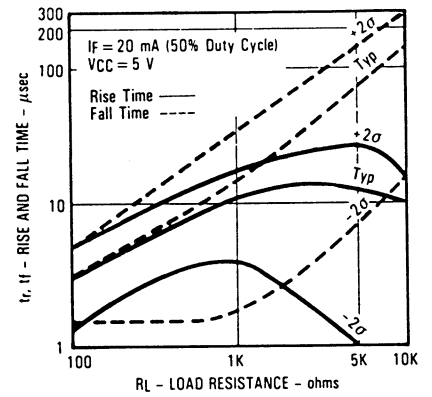
### Relative Output Current vs Time



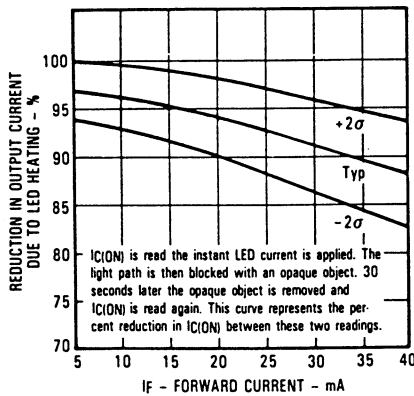
### Collector Dark Current vs Ambient Temperature



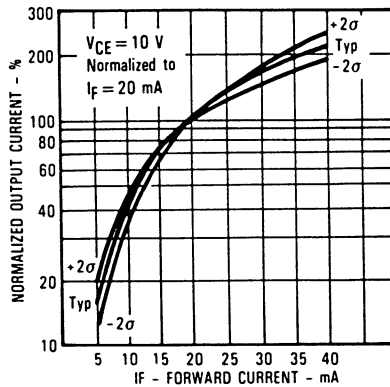
### Rise and Fall Time vs Load Resistance



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



### Normalized Output Current vs Input Current



### Rise and Fall Time vs Load Resistance

