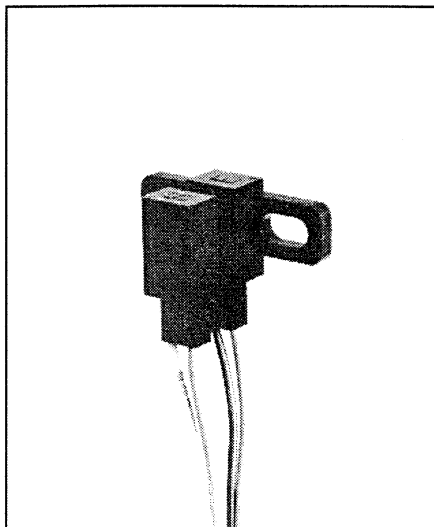


# Slotted Optical Switches

## Types OPB830W, OPB840W Series



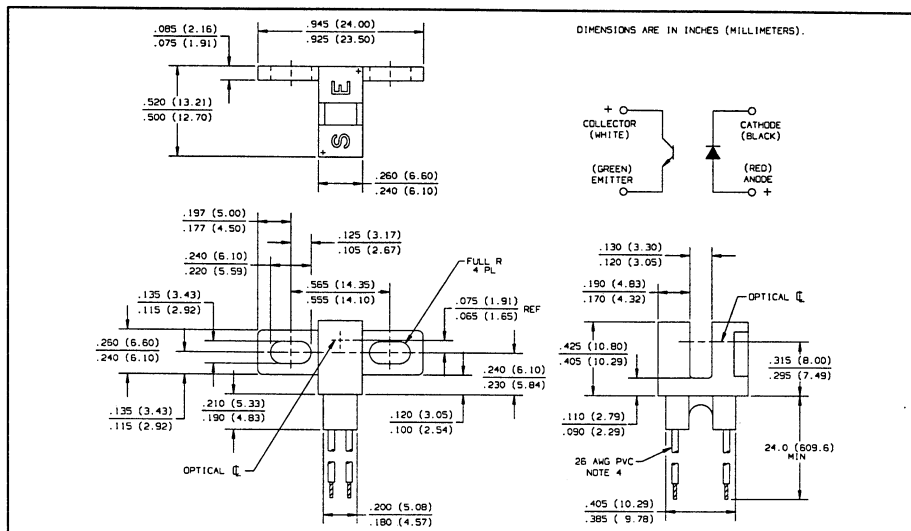
### Features

- 0.125" (3.18 mm) wide slot
- Choice of aperture
- Choice of opaque or IR transmissive shell material
- Side mount configuration
- 24", 26AWG wire leads

### 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) discrete shell material and (3) 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 (TA = 25° C unless otherwise noted)

Storage and Operating Temperature Range ..... -40° C to +80° C<sup>(1)</sup>  
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] ..... 240° C<sup>(2)</sup>

#### Input Diode

Forward DC Current ..... 50 mA  
Peak Forward Current (1 μs 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 1.82 mW/° C above 25° C. (Maximum storage and operating temperature, limited by the temperature rating of the lead wires)
- (2) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (3) All parameters tested using pulse technique.
- (4) The OPB830W/OPB840W wire terminations are 24" of 7 strand, 26 AWG, UL 1429 insulated wire on each terminal. The devices incorporate a wire strain relief at the housing surface. The insulation colors and functions are:

Red - RED Anode                      White - Phototransistor Collector  
Black - Ired Cathode                Green - Phototransistor Emitter

- Other wire and/or colors are available. Contact your local representative or call the factory.  
(5) Methanol or isopropanol are recommended cleaning agents. Plastic housing may be soluble in chlorinated hydrocarbons and ketones.

# Types OPB830W, OPB840W 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>					
$V_{(BR)CEO}$	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	$V_{CE} = 10 \text{ V}$
<b>Coupled</b>					
$V_{CE(SAT)}$	Saturation Voltage: Parameter A	OPB830W/OPB840W	0.4	V	$I_C = 400 \mu\text{A}, I_F = 20 \text{ mA}$
	Parameter B	OPB831W/OPB841W	0.4	V	$I_C = 800 \mu\text{A}, I_F = 10 \text{ mA}$
	Parameter C	OPB832W/OPB842W	0.6	V	$I_C = 1800 \mu\text{A}, I_F = 20 \text{ mA}$
$I_{C(ON)}$	On-State Collector Current: Parameter A	OPB830W/OPB840W	500	$\mu\text{A}$	$V_{CE} = 10 \text{ V}, I_F = 20 \text{ mA}$
	Parameter B	OPB831W/OPB841W	1000	$\mu\text{A}$	$V_{CE} = 5 \text{ V}, I_F = 10 \text{ mA}$
	Parameter C	OPB832W/OPB842W	1800	$\mu\text{A}$	$V_{CE} = 0.6 \text{ V}, I_F = 20 \text{ mA}$

SLOTTED  
OPTICAL  
SWITCHES

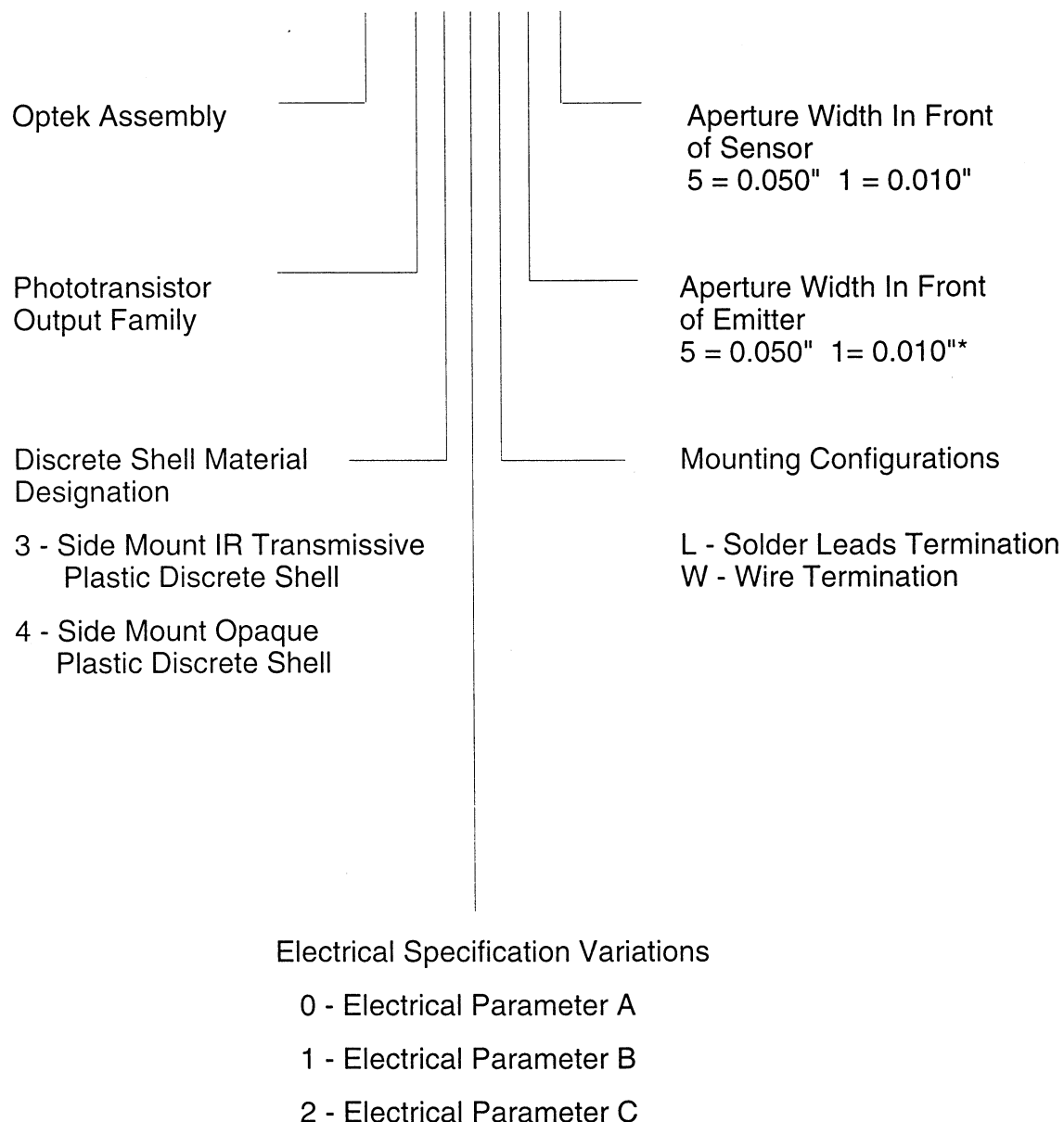
Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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# Types OPB830W, OPB840W Series

## PART NUMBER GUIDE

OPB 8 X X X X X

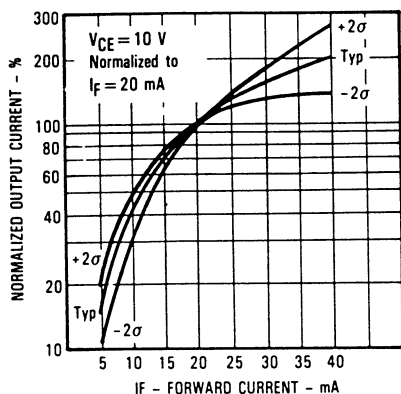


\*Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.

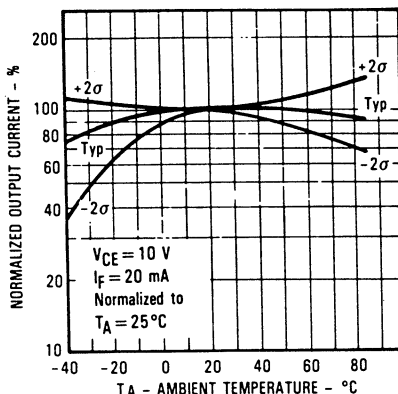
# Types OPB830W, OPB840W Series

## Typical Performance Curves

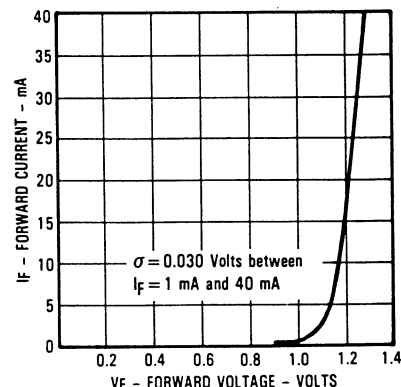
**Normalized Output Current vs Forward Current**



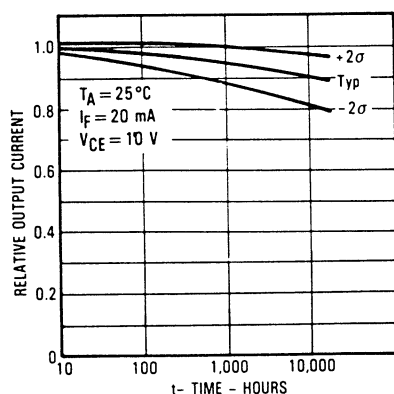
**Normalized Output Current vs Ambient Temperature**



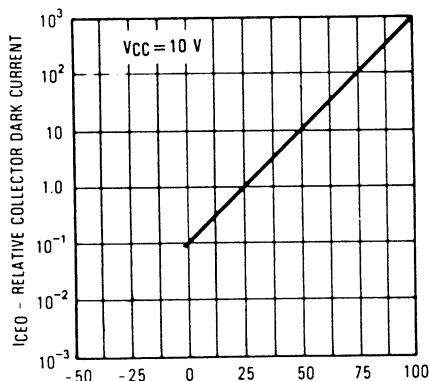
**Forward Current vs Forward Voltage Input Diode**



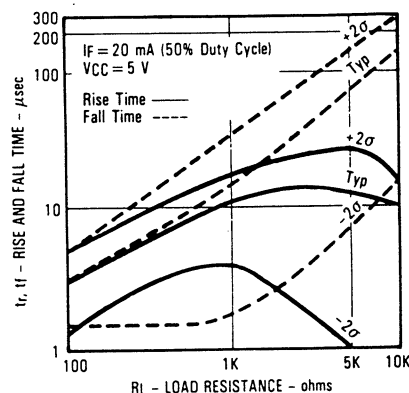
**Relative Output Current vs Time**



**Collector Dark Current vs Ambient Temperature**

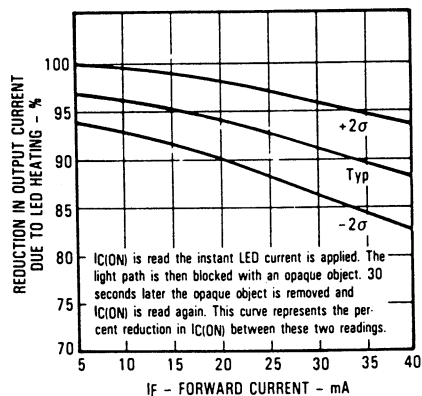


**Rise and Fall Time vs Load Resistance**

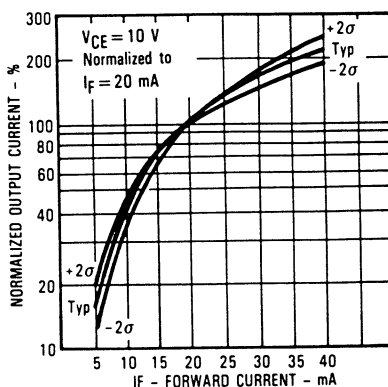


All Part Numbers Ending in "1"

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



**Normalized Output Current vs Input Current**



**Rise and Fall Time vs Load Resistance**

