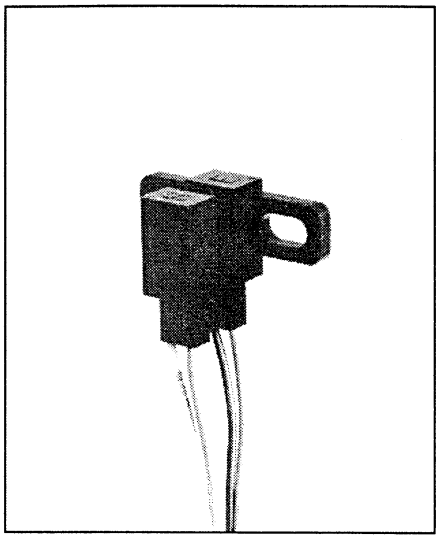
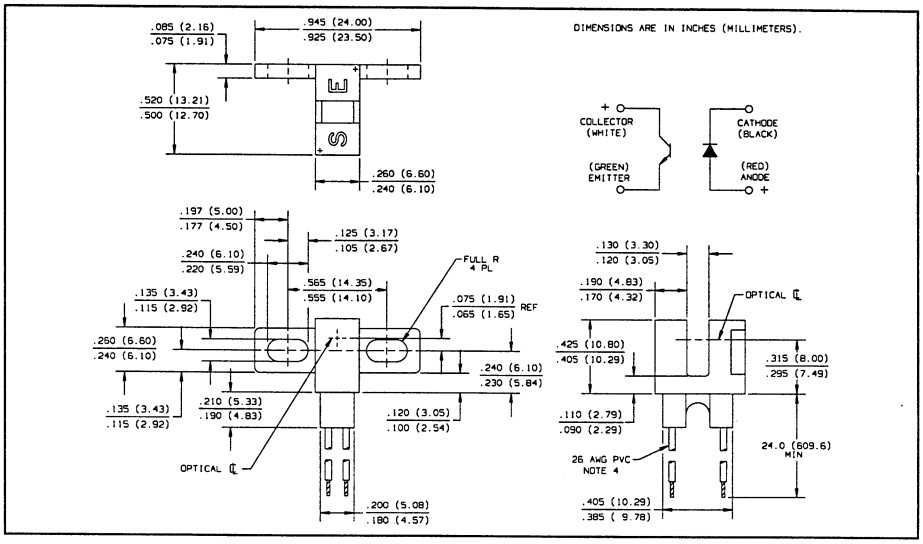
Slotted Optical Switches
Types OPB830W, OPB840W Series





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 (T_A = 25° C unless otherwise noted)

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

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(1)

Output Phototransistor

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

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, UL1061 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° C unless otherwise noted)

SYMBOL	PARAMETER		MIN	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage			1.7	V	I_F = 20 mA
I_R	Reverse Current			100	µA	V_R = 2 V
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		30		V	I_C = 1 mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage		5.0		V	I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current			100	nA	V_{CE} = 10 V
Coupled						
$V_{CE(SAT)}$	Saturation Voltage: Parameter A	OPB830W/OPB840W		0.4	V	I_C = 400 µA, I_F = 20 mA
	Parameter B	OPB831W/OPB841W		0.4	V	I_C = 800 µA, I_F = 10 mA
	Parameter C	OPB832W/OPB842W		0.6	V	I_C = 1800 µA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current: Parameter A	OPB830W/OPB840W	500		µA	V_{CE} = 10 V, I_F = 20 mA
	Parameter B	OPB831W/OPB841W	1000		µA	V_{CE} = 5 V, I_F = 10 mA
	Parameter C	OPB832W/OPB842W	1800		µA	V_{CE} = 0.6 V, I_F = 20 mA

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PART NUMBER GUIDE

OPB 8 X X X X X

Optek Assembly

Phototransistor Output Family

Discrete Shell Material Designation

3 - Side Mount IR Transmissive Plastic Discrete Shell

4 - Side Mount Opaque Plastic Discrete Shell

Aperture Width In Front of Sensor
5 = 0.050" 1 = 0.010"

Aperture Width In Front of Emitter
5 = 0.050" 1= 0.010"*

Mounting Configurations

L - Solder Leads Termination
W - Wire Termination

Electrical Specification Variations

0 - Electrical Parameter A

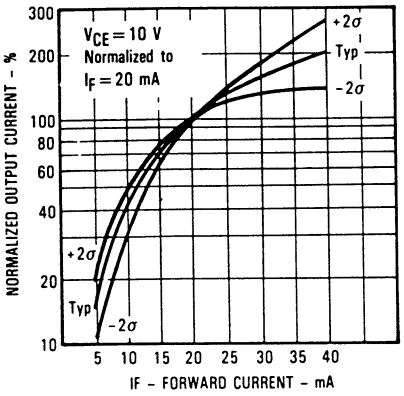
1 - Electrical Parameter B

2 - Electrical Parameter C

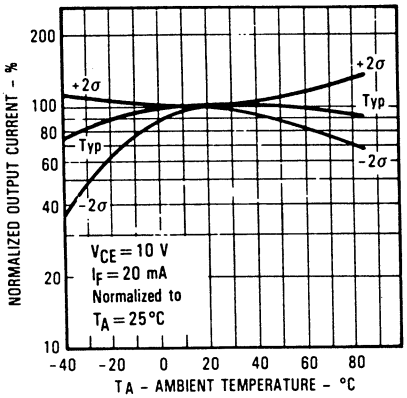
*Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.

Typical Performance Curves

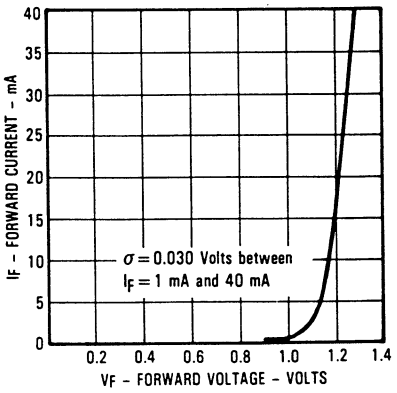
Normalized Output Current vs Forward Current



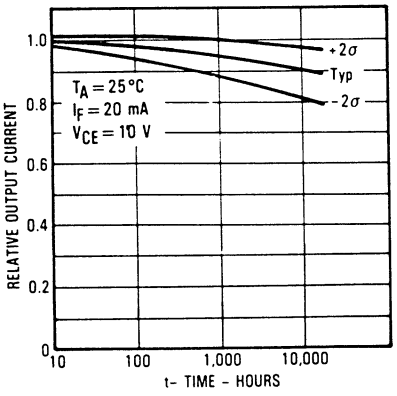
Normalized Output Current vs Ambient Temperature



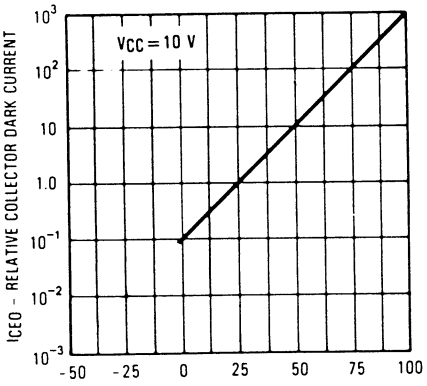
Forward Current vs Forward Voltage Input Diode



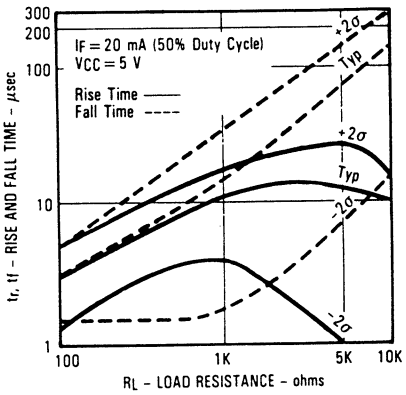
Relative Output Current vs Time



Collector Dark Current vs Ambient Temperature

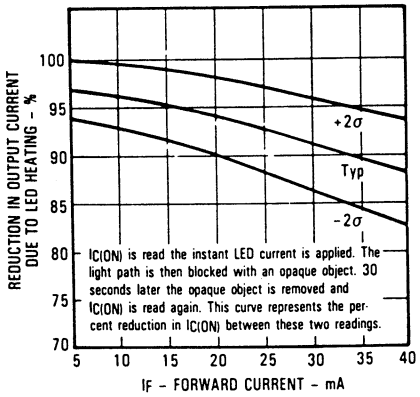


Rise and Fall Time vs Load Resistance

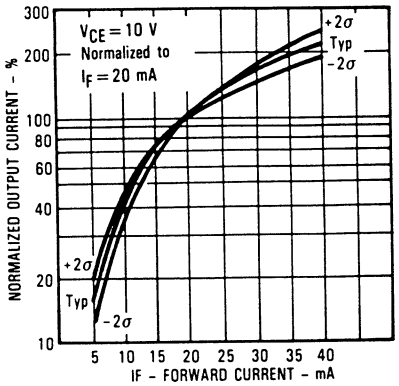


All Part Numbers Ending in "1"

Reduction in Output Current Due to LED Heating vs Forward Current



Normalized Output Current vs Input Current



Rise and Fall Time vs Load Resistance