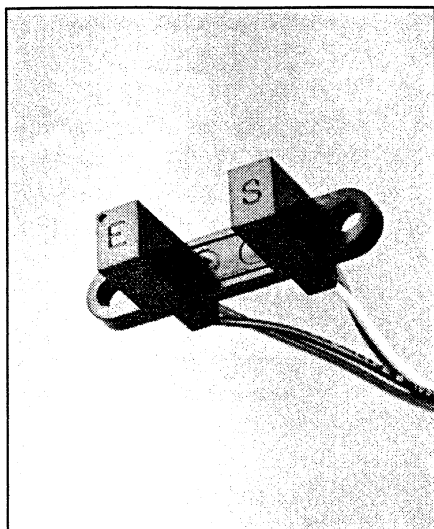


# Wide Gap Slotted Optical Switches

## Types OPB800W, OPB810W Series



### Features

- Choice of aperture size
- Choice of minimum photocurrent
- Choice of opaque or IR transmissive shells
- 24" min 26 AWG PVC lead wires

### Description

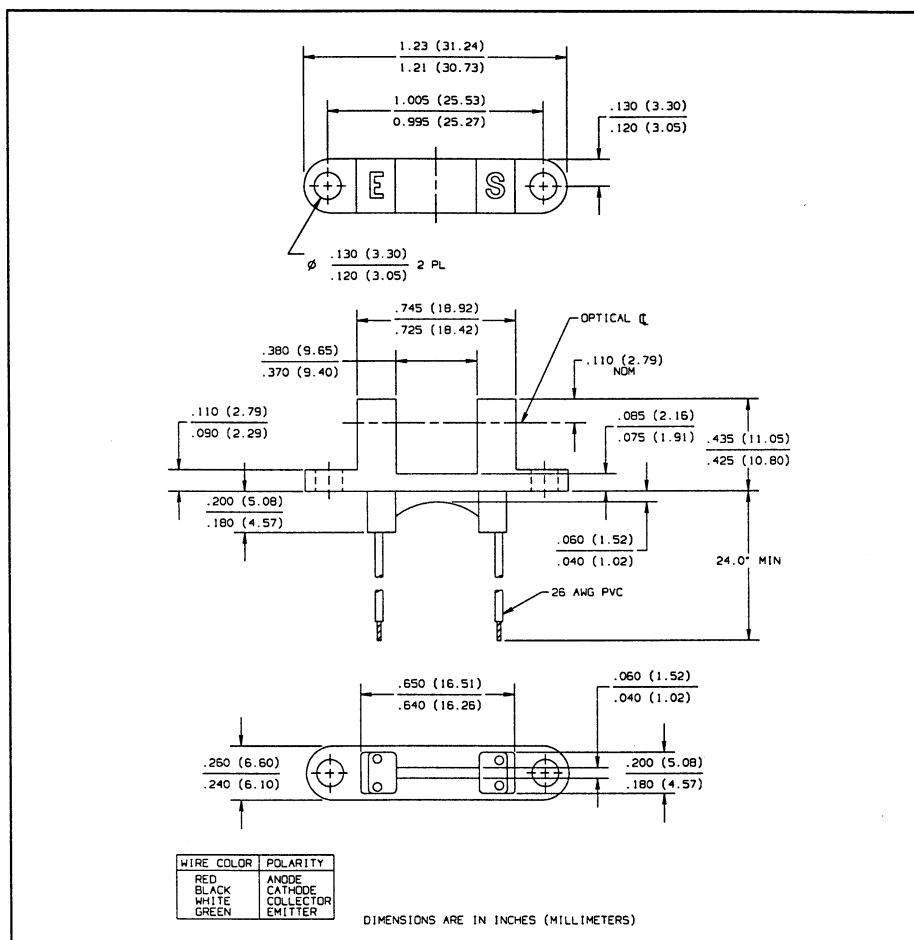
The OPB800W/OPB810W series of wide gap slotted switches provides the design engineer with the flexibility of a custom device from a standard product line. Building from a standard housing utilizing a .375" (9.53 mm) wide slot, the user can specify (1) electrical output parameters, (2) discrete shell material and (3) aperture width. Available with PC board mountable leads as OPB800L/OPB810L.

### Replaces

KT800W - KT810W series



For RoHS compliant devices add "Z" to the end of the part number: OPB800WZ



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

Storage and Operating Temperature Range .....  $-40^\circ\text{C}$  to  $+80^\circ\text{C}$

#### 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 1.82 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (2) All parameters tested using pulse technique
- (3) Wire terminations 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 functions and colors are:

RED - IRED Anode      WHITE - Phototransistor Collector  
 BLACK - IRED Cathode      GREEN - Phototransistor Emitter

Other wire lengths and/or colors differing from the standard series are available.

# Types OPB800W, OPB810W Series

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

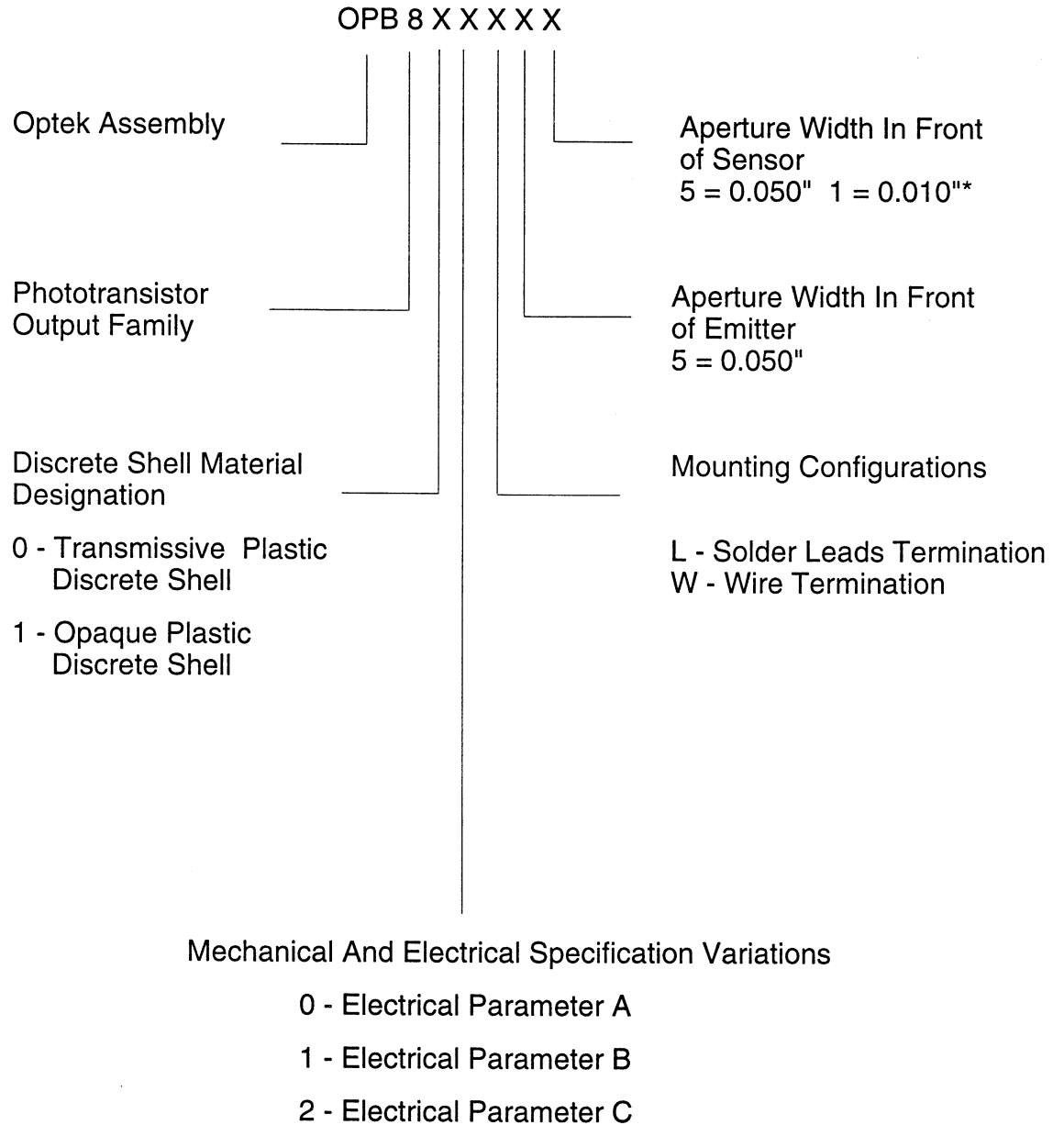
| SYMBOL                        | PARAMETER                            | MIN             | MAX  | UNITS         | TEST CONDITIONS                               |
|-------------------------------|--------------------------------------|-----------------|------|---------------|-----------------------------------------------|
| <b>Input Diode</b>            |                                      |                 |      |               |                                               |
| $V_F$                         | Forward Voltage                      |                 | 1.7  | V             | $I_F = 20 \text{ mA}$                         |
| $I_R$                         | Reverse Current                      |                 | 100  | $\mu\text{A}$ | $V_R = 2.0 \text{ V}$                         |
| <b>Output Phototransistor</b> |                                      |                 |      |               |                                               |
| $V_{(BR)CEO}$                 | Collector-Emitter Breakdown Voltage  | 30              |      | V             | $I_C = 1.0 \text{ mA}$                        |
| $V_{(BR)ECO}$                 | Emitter-Collector Breakdown Voltage  | 5.0             |      | V             | $I_E = 100 \mu\text{A}$                       |
| $I_{CEO}$                     | Collector Dark Current               |                 | 100  | nA            | $V_{CE} = 10 \text{ V}$                       |
| <b>Coupled</b>                |                                      |                 |      |               |                                               |
| $V_{CE(SAT)}$                 | Collector-Emitter Saturation Voltage |                 |      |               |                                               |
|                               | Parameter A                          | OPB800W/OPB810W | 0.4  | V             | $I_C = 250 \mu\text{A}, I_F = 20 \text{ mA}$  |
|                               | Parameter B                          | OPB801W/OPB811W | 0.4  | V             | $I_C = 500 \mu\text{A}, I_F = 10 \text{ mA}$  |
|                               | Parameter C                          | OPB802W/OPB812W | 0.6  | V             | $I_C = 1800 \mu\text{A}, I_F = 20 \text{ mA}$ |
| $I_{C(ON)}$                   | On-State Collector Current           |                 |      |               |                                               |
|                               | Parameter A                          | OPB800W/OPB810W | 500  | $\mu\text{A}$ | $V_{CE} = 10 \text{ V}, I_F = 20 \text{ mA}$  |
|                               | Parameter B                          | OPB801W/OPB811W | 1000 | $\mu\text{A}$ | $V_{CE} = 5 \text{ V}, I_F = 10 \text{ mA}$   |
|                               | Parameter C                          | OPB802W/OPB812W | 1800 | $\mu\text{A}$ | $V_{CE} = 0.6 \text{ V}, I_F = 20 \text{ mA}$ |

SLOTTED  
OPTICAL  
SWITCHES

## Housing

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.

## PART NUMBER GUIDE

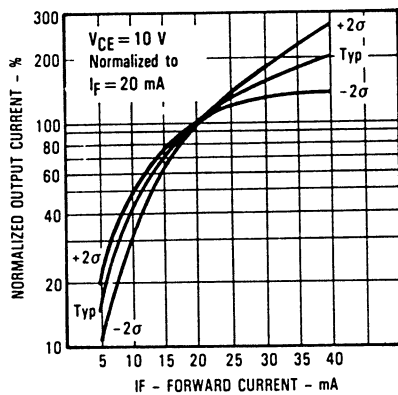


\*Assemblies with 0.010" apertures are currently available with electrical parameter "A" only.

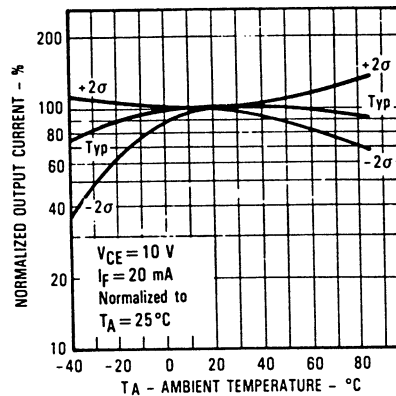
# Types OPB800W, OPB810W Series

## Typical Performance Curves

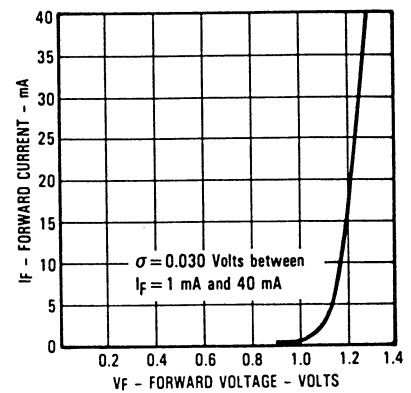
### Normalized Output Current vs Forward Current



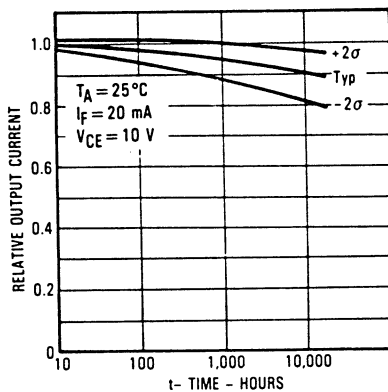
### Normalized Output Current vs Ambient Temperature



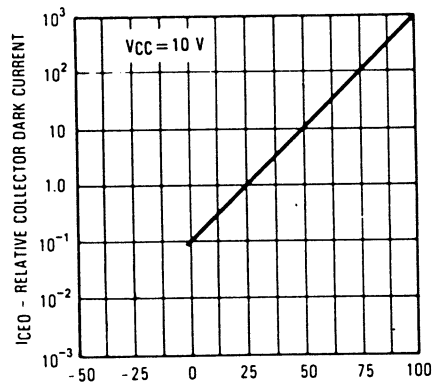
### Forward Current vs Forward Voltage Input Diode



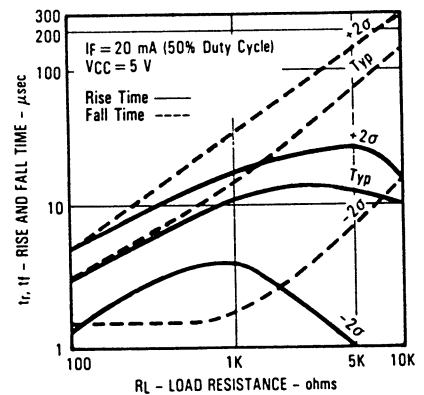
### Relative Output Current vs Time



### Collector Dark Current vs Ambient Temperature



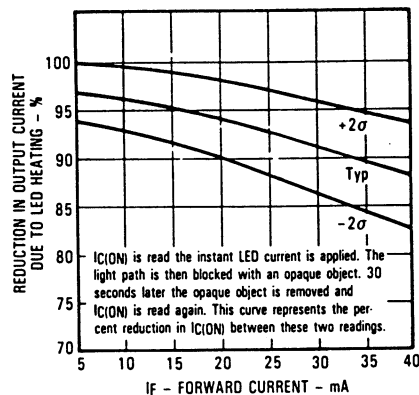
### Rise and Fall Time vs Load Resistance



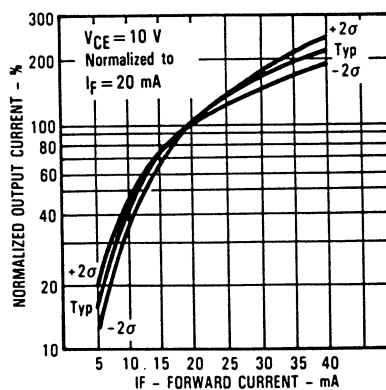
SLOTTED  
OPTICAL  
SWITCHES

All Part Numbers Ending in "1"

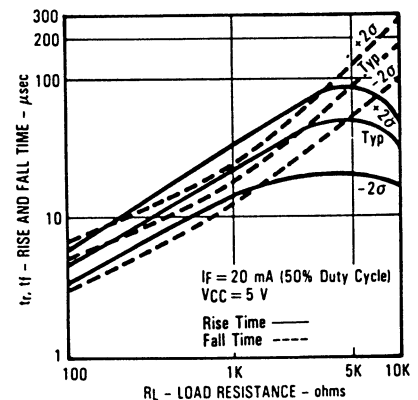
### Reduction in Output Current Due to LED Heating vs Forward Current



### Normalized Output Current vs Input Current



### Rise and Fall Time vs Load Resistance



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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