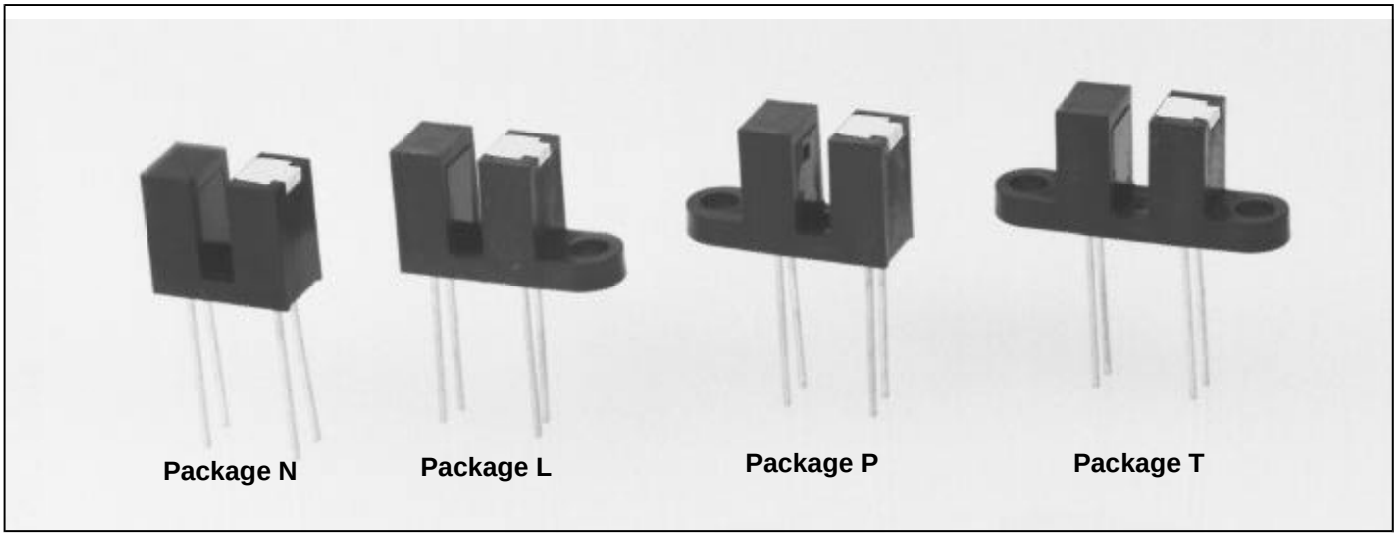
# Slotted Optical Switches
## Types OPB360, OPB370 Series




### Features

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

### Description

The OPB360/370 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) mounting tab configuration, (3) choice of lead spacing, (4) discrete shell material, and (5) 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 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.

### Replaces/Upgrades

OPB860, OPB870 Series

### Absolute Maximum Ratings ($T_A$ = 25° C unless otherwise noted)

Storage and Operating Temperature Range ..... -40° C to +85° C
Lead Soldering Temperature Range [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 1.67 mW/° C above 25° 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 of 0.220" (5.59 mm) or 0.320" (8.13 mm) is available. Leads are 0.20" sq. (5.08 mm) and 0.425" (10.80 mm) long (min).
(5) Methanol and isopropanol are recommended as cleaning agents. Plastic housings are soluble in chlorinated hydrocarbons and ketones.
(6) Polarity is denoted by color of housing top:

LED - Gray or Clear
Sensor - Black

# Types OPB360, OPB370 Series

**Electrical Characteristics** ($T_A = 25^o$ 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 Curreent | | 100 | nA | $V_{CE}$ = 10 V, $I_F$ = 0, $E_e$ = 0 |
| **Coupled** | | | | | |
| $I_{C(ON)}$ | On-State Collector Current<br>OPB360T, N, L, P55<br>OPB365T, N, L, P55<br>OPB370T, N, L, P55<br>OPB375T, N, L, P55 | 3.5 | 14.0 | mA | $V_{CE}$ = 0.4 V, $I_F$ = 20 mA |
| | OPB360T, N, L, P51<br>OPB365T, N, L, P51<br>OPB370T, N, L, P51<br>OPB375T, N, L, P51 | 2.5 | 10.0 | mA | $V_{CE}$ = 0.4 V, $I_F$ = 20 mA |
| | OPB360T, N, L, P11<br>OPB365T, N, L, P11<br>OPB370T, N, L, P11<br>OPB375T, N, L, P11 | 1.0 | 5.0 | mA | $V_{CE}$ = 0.4 V, $I_F$ = 20 mA |

SLOTTED OPTICAL SWITCHES

## PART NUMBER GUIDE

OPB 3 X X X X X

Optek Assembly

Phototransistor Output Family

Discrete Shell Material Designation
6 - Base Mount IR Transmissive Plastic Discrete Shell PC Mountable Leads

7 - Base Mount Opaque Plastic Discrete Shell PC Mountable Leads

Lead Space Designator
0 = 0.320" (8.12 mm) Lead Space
5 = 0.220" (5.59 mm) Lead Space

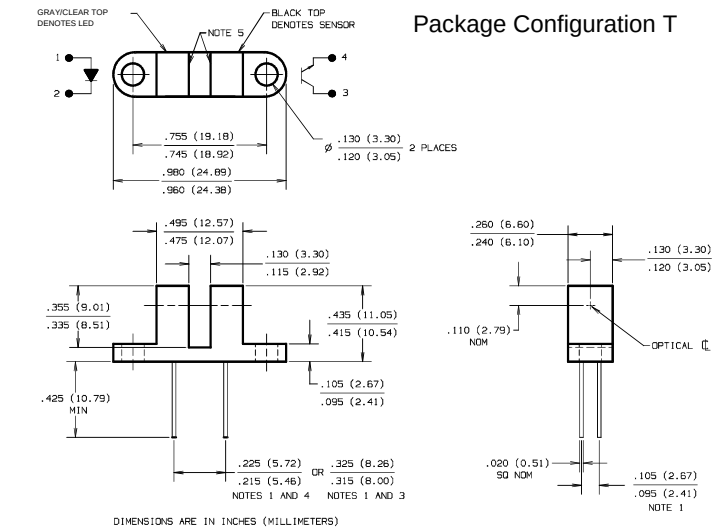
Aperture Width In Front of Sensor
5 = .0.050" 1 = 0.010"

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

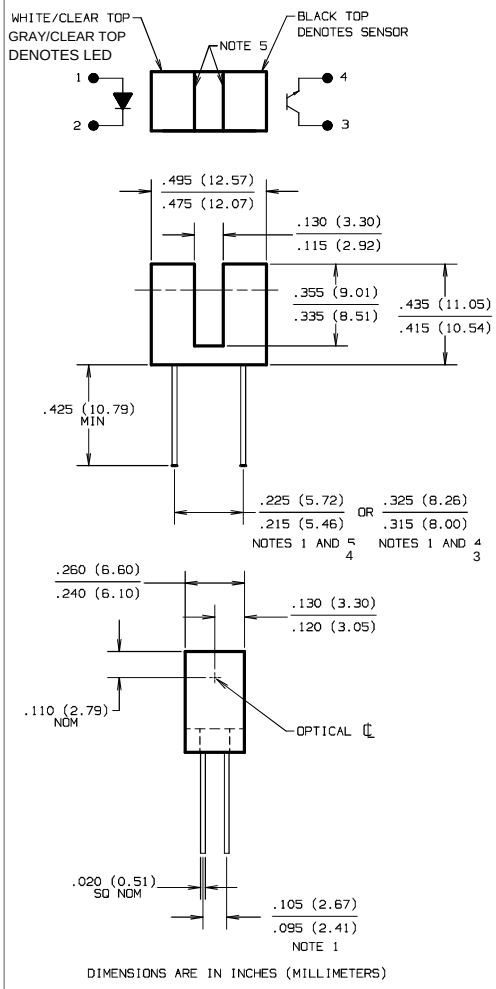
Mounting Configurations

T -Both Mounting Tabs
N - No Mounting Tabs
L - Single Mounting Tab Emitter Side
P - Single Mounting Tab Phototransistor Side

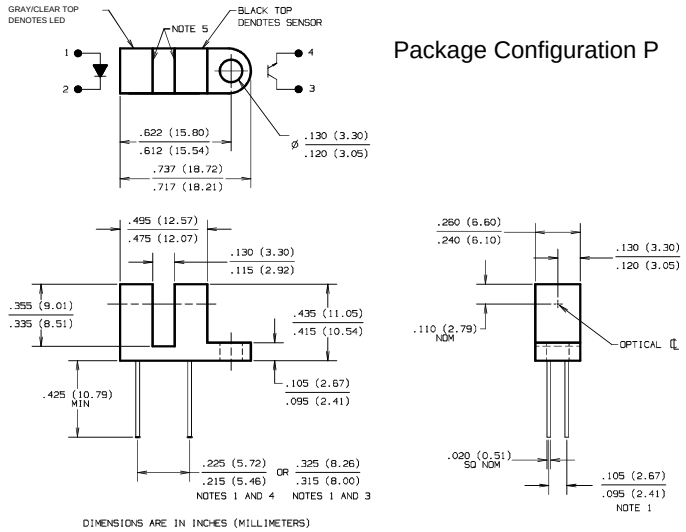
## Package Configuration T



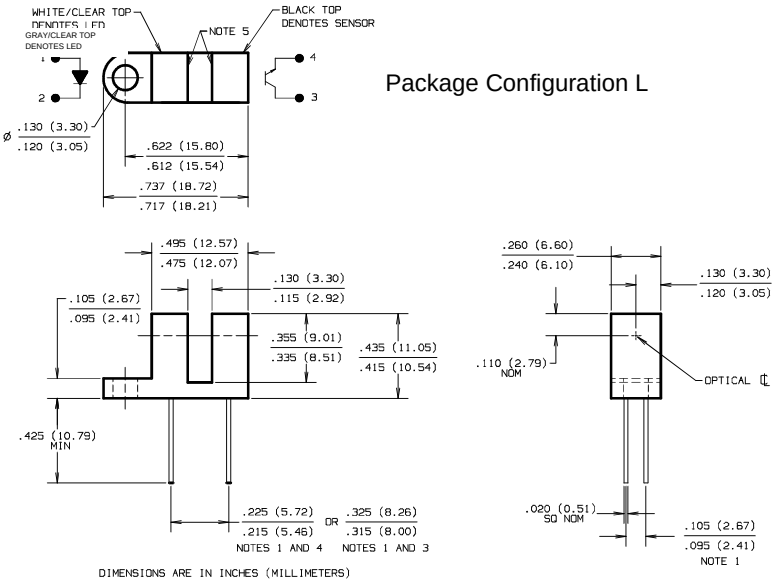

## Package Configuration N




## Package Configuration P




## Package Configuration L



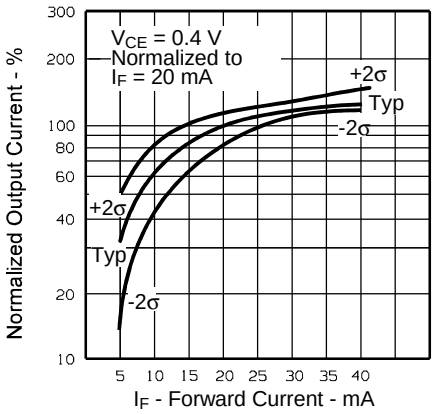

Notes:

(1) Dimension controlled at housing surace only.
(2) Methanol and isopropanol are recommended as cleaning agents. Housings are soluble in chlorinated hydrocarbons and ketones. Highly activated, water soluble fluxes may attack housings in some situations.
(3) OPB360, OPB370
(4) OPB365, OPB375
(5) Aperture dimensions dependent on part number. See Part Number Guide

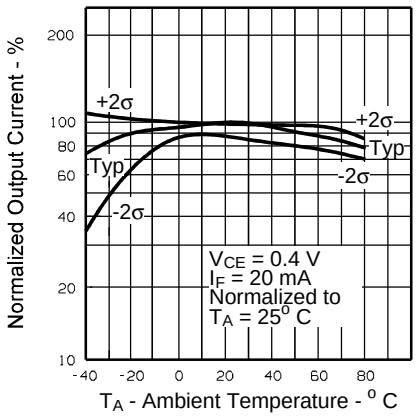
# Types OPB360, OPB370 Series

## Typical Performance Curves

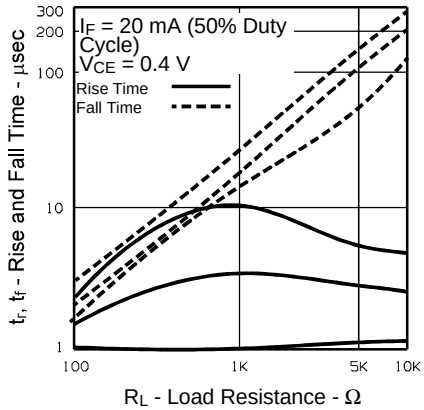
**Normalized Output Current vs Forward Current**




**Normalized Output Current vs Ambient Temperature**

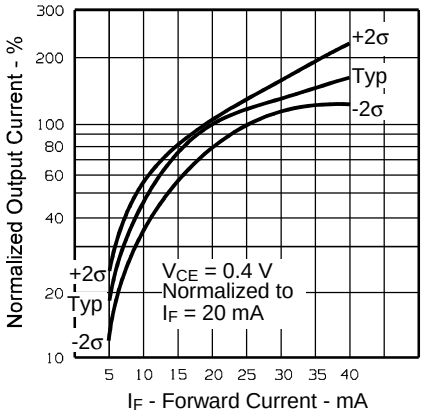



**Rise and Fall Time vs Load Resistance**




**All Part Numbers Ending in "1"**

**Normalized Output Current vs Forward Current**

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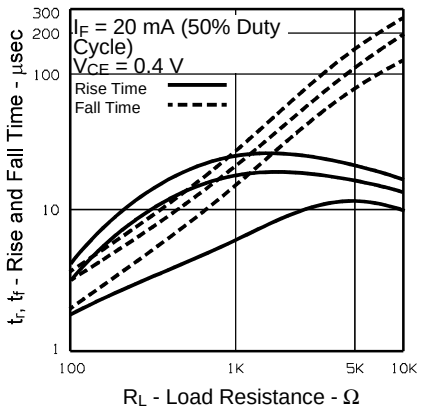


Optek reserves the right to make changes at any time in order to improve design and to supply the best possible product.