

Long Distance Reflective Switch

OPB732, OPB732WZ



Features:

- PC board mounting (OPB732)
- 24" (610 mm) 26 AWG wired with mounting tabs (OPB732WZ)
- Non-contact infrared switch
- Up to 1" or more reflective distance depending on circuitry



Description:

OPB732 uses an Infrared LED and Phototransistor in a reflective switch configuration. The assembly is offered with either PCBoard through hole pins (**OPB732**) or 24" (610 mm), 26 AWG wires (**OPB732WZ**), and uses an opaque housing to reduce the sensor's ambient light sensitivity. The emitter and sensor are protected by a clear window, providing a device that can operate in a dusty environment. The phototransistor can be configured as a Common Collector or Common Emitter device.

While an object is in the reflective path of the device, light from the LED will be reflected back to the housing irradiating the surface (base) of the phototransistor. When Infrared light strikes the phototransistor, the transistor becomes forward biased and is considered to be in the "ON" state, providing an $I_{C(ON)}$ current proportional to the light striking the phototransistor. With the Infrared light from the LED not being reflected to the phototransistor, the phototransistor turns "OFF," minimizing the $I_{C(ON)}$ current.

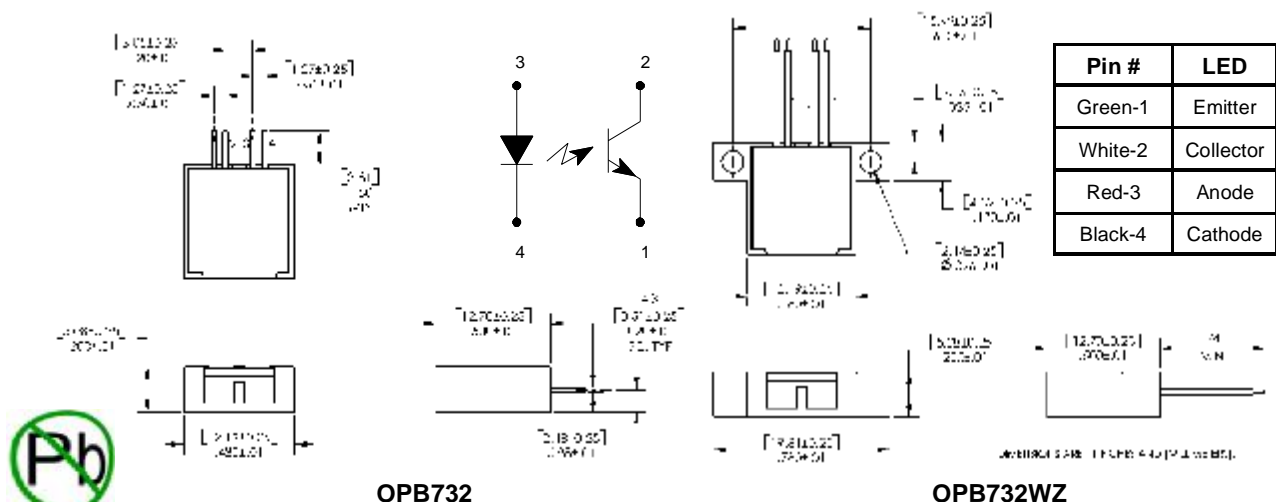
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Equipment security
- Door sensor
- Machine safety
- End of travel sensor
- Door sensor

Ordering Information

| Part Number | LED Peak Wavelength | Lead Length / Spacing |
|-------------|---------------------|-----------------------|
| OPB732 | 850 nm | 0.150"/ see diagram |
| OPB732WZ | | 24" / 26 AWG Wire |



RoHS

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

| | |
|---|-------------------|
| Storage Temperature | -40° C to +100° C |
| Operating Temperature | -40° C to +85° C |
| Lead Soldering Temperature (1/16" (1.6mm) from case for 5 seconds with soldering iron) ⁽²⁾ | 260° C |

LED

| | |
|---|--------|
| Forward Current | 50 mA |
| Peak Forward current (2 μs pulse width, 0.1% Duty Cycle) | 1 A |
| Reverse DC Voltage | 3 V |
| Power Dissipation | 100 mW |

Output Photo Transistor

| | |
|---------------------------|--------|
| Collector-Emitter Voltage | 30 V |
| Collector DC Current | 50 mA |
| Power Dissipation | 100 mW |

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

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | CONDITIONS |
|--------|-----------|-----|-----|-----|-------|------------|
|--------|-----------|-----|-----|-----|-------|------------|

Input LED (See OP240 for additional information, reference only)

| | | | | | | |
|-------|-----------------|---|---|-----|---------------|----------------------|
| V_F | Forward Voltage | - | - | 1.8 | V | $I_F = 20\text{ mA}$ |
| I_R | Reverse Current | - | - | 100 | μA | $V_R = 2\text{ V}$ |

Output Phototransistor (See OP550 for additional information, reference only)

| | | | | | | |
|---------------|-------------------------------------|----|---|-----|----|---|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | 30 | - | - | V | $I_C = 100\text{ }\mu\text{A}$, $E_E = 0\text{ mw/cm}^2$ |
| I_{CEO} | Collector-Emitter Dark Current | - | - | 100 | nA | $V_{CE} = 10\text{ V}$, $E_E = 0\text{ mw/cm}^2$ |

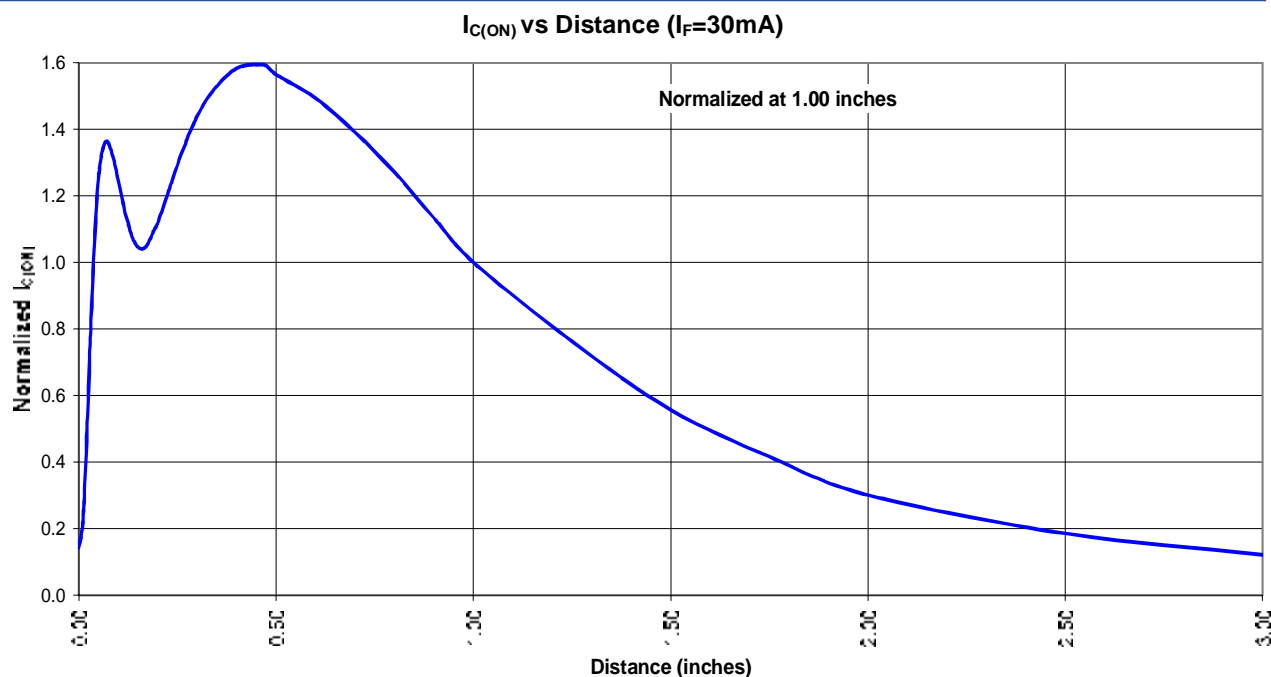
Coupled

| | | | | | | |
|---------------|---|------|---|-----|---------------|---|
| $V_{CE(SAT)}$ | Collector-Emitter Saturation Voltage ⁽⁴⁾ | - | - | 0.4 | V | $I_C = 250\text{ }\mu\text{A}$, $I_F = 30\text{ mA}$, (4) |
| $I_{C(ON)}$ | On-State Collector Current ⁽⁴⁾ | 0.25 | - | - | mA | $V_{CE} = 1\text{ V}$, $I_F = 30\text{ mA}$, (4) |
| I_{CX} | Cross Talk | - | - | 50 | μA | $V_{CE} = 5\text{ V}$, $I_F = 30\text{ mA}$, No reflective surface |

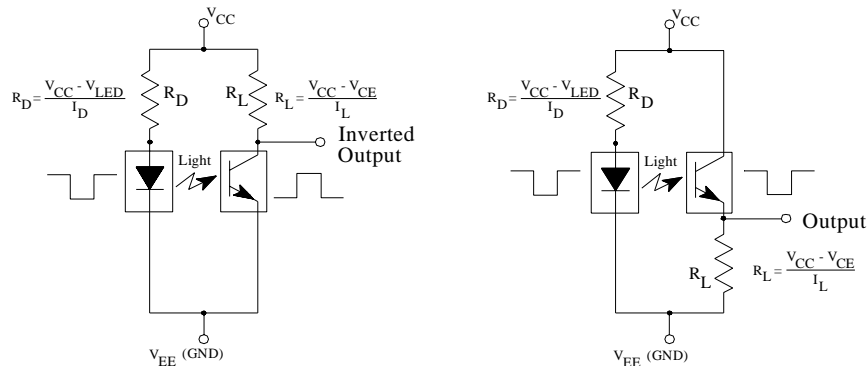
Notes:

- (1) All parameters tested using pulse technique.
- (2) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (3) Methanol or isopropanol are recommended as cleaning agents. The plastic housing is soluble in chlorinated hydrocarbons and ketones.
- (4) Distance = 1" (from front of package to a 90% diffuse reflective white card)

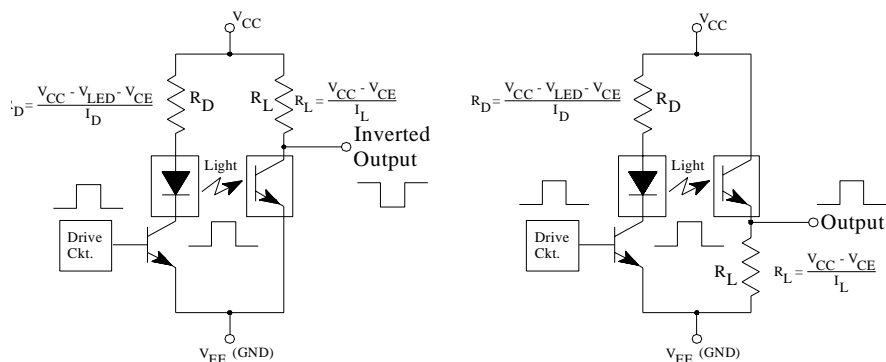
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DC—Drive Circuit for LED & Phototransistor



Pulsed—Drive Circuit for LED & Phototransistor



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