

Slotted Optical Switch

OPB420AZ, OPB420BZ



Features:

- Non-contact switching
- Right Angle Sensor: LED in tower, photosensor in base
- Choice of output configuration
- Optical line can be broken in three axis
- 24" minimum, 26 AWG UL approved wire leads



Description:

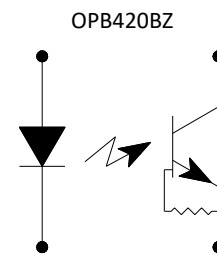
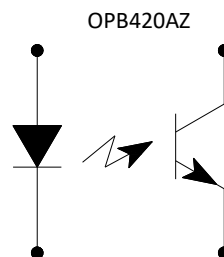
The OPB420 series optical switch consists of an infrared emitting diode (LED) and a phototransistor. The LED is mounted on the tower with the phototransistor mounted on the base of a right angle shape package. The L-Shape or right angle package configuration allows for an opaque object to block the light beam from a multitude of directions including the X-axis Y-axis and Z-axis. The optical center line between the emitter and photosensor is at 45° from the mounting base of the device. The OPB420AZ utilizes a phototransistor with a current output proportional to the input drive current of the LED. The OPB420BZ utilizes a phototransistor with a base-emitter resistance (RBE) which provides protection from low level light conditions. The OPB420BZ is ideal for applications that require an enhanced contrast ratio and immunity to background irradiance, such as detection of semi-transparent media.

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

Applications:

- Non-contact interruptive object sensing
- Tray-out sensor
- Low paper tray sensor
- Corner sensor
- Printers
- Copying machines
- Paper sorting equipment
- Amusement gaming equipment
- Door sensor
- Optical Switch

| Part # | LED Wavelength | PhotoSensor |
|----------|----------------|---------------------------------|
| OPB420AZ | 880 nm | Phototransistor |
| OPB420BZ | | R _{BE} Phototransistor |



RoHS

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

Slotted Optical Switch

OPB420AZ, OPB420BZ



Electrical Specifications

Phototransistor Version

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

| | |
|--|------------------|
| Storage & Operating Temperature Range | -40° C to +85° C |
| Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] ⁽¹⁾ | 260° C |

Input Diode

| | |
|---|--------|
| Continuous Forward Current | 50 mA |
| Peak Forward Current (1 μs pulse width, 300 pps) | 1 A |
| Reverse Voltage | 2 V |
| Power Dissipation ⁽²⁾ | 100 mW |

Output Phototransistor

| | |
|---|--------------|
| Collector-Emitter Breakdown Voltage OPB420AZ OPB420BZ | 30 V 24 V |
| Power Dissipation ⁽²⁾ | 100 mW |

Electrical Characteristics

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

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

Input Diode

 (See OP240 or OP265 for additional information)

| | | | | | | |
|-------|-----------------|-----|---|-----|---------------|----------------------|
| V_F | Forward Voltage | 1.2 | - | 1.7 | V | $I_F = 20\text{ mA}$ |
| I_R | Reverse Current | - | - | 100 | μA | $V_R = 2\text{ V}$ |

Output Phototransistor

 (See OP505 or OP705 for additional information)

| | | | | | | |
|---------------|---|------------|--------|--------|----|---|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage OPB420AZ OPB420BZ | 30 24 | - - | - - | V | $I_C = 1\text{ mA}$ $I_C = 100\ \mu\text{A}$ |
| $V_{(BR)ECO}$ | Emitter-Collector Breakdown Voltage OPB420AZ OPB420BZ | 5.0 0.4 | - - | - - | V | $I_E = 100\ \mu\text{A}$ |
| I_{CEO} | Collector-Emitter Dark Current | - | - | 100 | nA | $V_{CE} = 10\text{ V}, I_F = 0, E_E = 0$ |

Combined

| | | | | | | |
|---------------|--------------------------------------|-----|---|------|---------------|---|
| $V_{CE(SAT)}$ | Collector-Emitter Saturation Voltage | - | - | 0.4 | V | $I_C = 250\ \mu\text{A}, I_F = 20\text{ mA}$ |
| $I_{C(ON)}$ | On-State Collector Current | 1.0 | - | 10.0 | mA | $V_{CE} = 5.0\text{ V}, I_F = 20\text{ mA}$ |
| $I_{C(OFF)}$ | Off-State Collector Current—OPB420BZ | - | - | 450 | μA | $V_{CE} = 5\text{ V}, I_F = 1\text{ mA}$ ⁽⁵⁾ |

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 1.67 mW/°C above 25 °C..
- (3) Methanol or isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.
- (4) All parameters were tested using pulse technique.
- (5) Simulated optical path blocked with infrared semi-transparent object

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

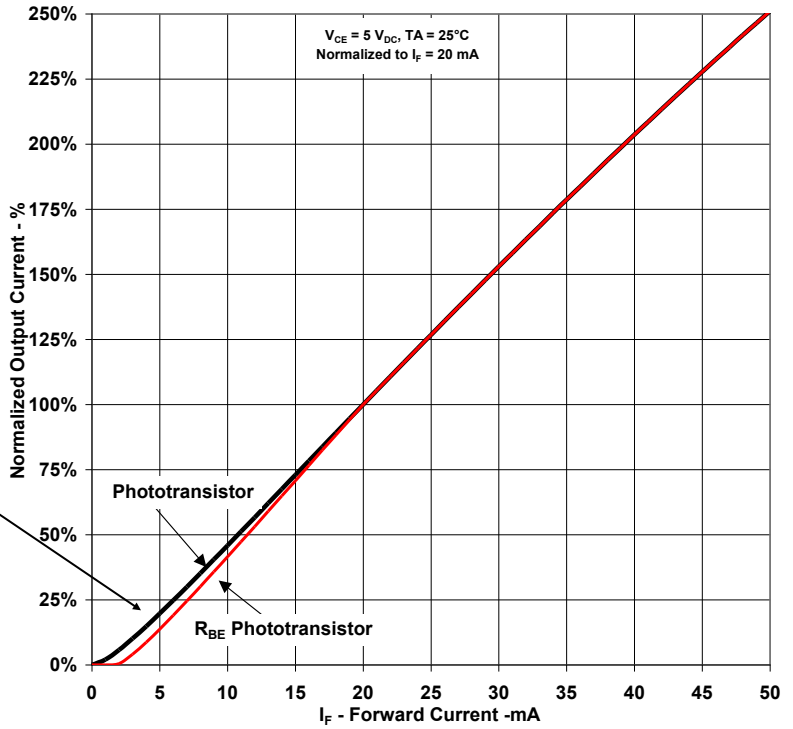
Slotted Optical Switch

OPB420AZ, OPB420BZ

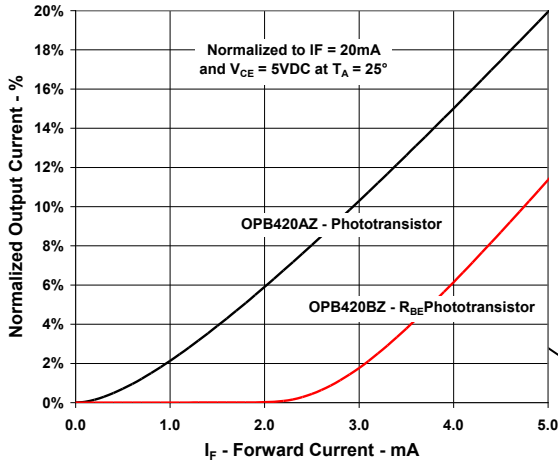


Performance

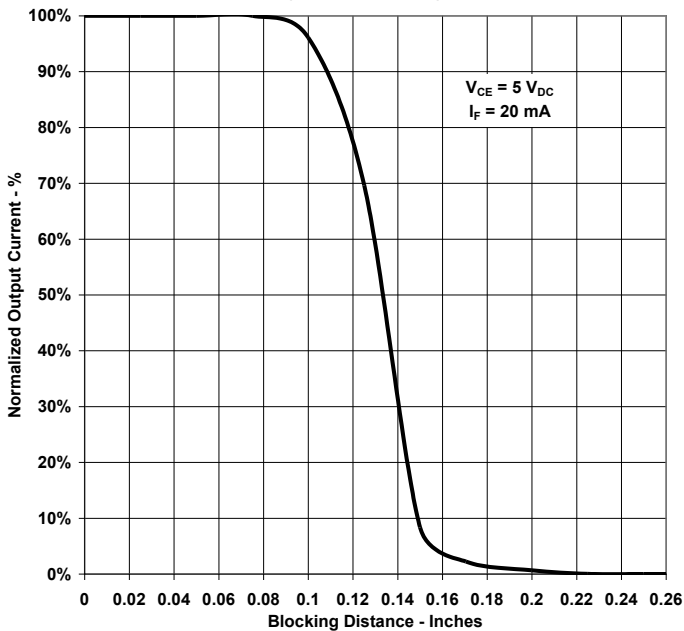
Typical Output Current Vs Forward Current



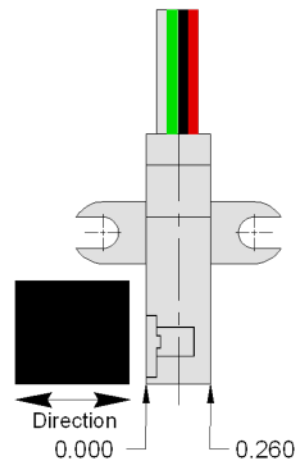
Typical Output Current Vs Forward Current



Typical Output Current Vs Distance
(Z Axis Blocked)



Z-Flag Direction



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

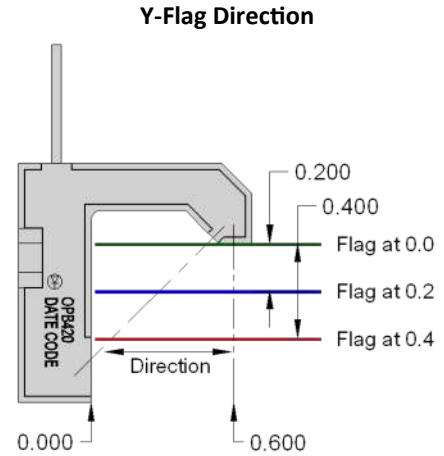
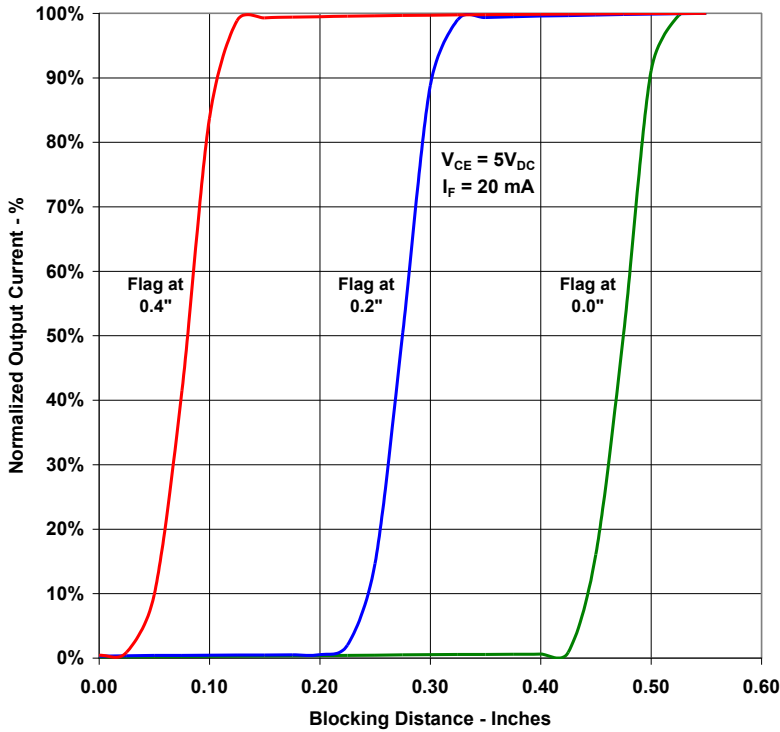
Slotted Optical Switch

OPB420AZ, OPB420BZ

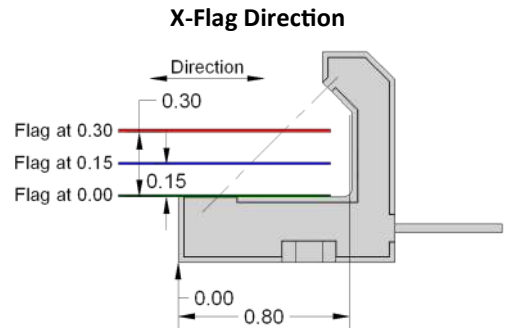
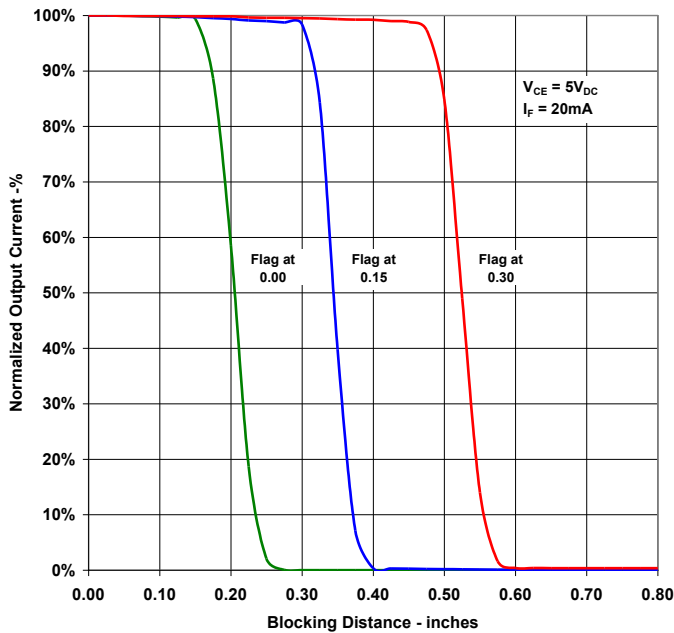


Performance

Typical Output Current Vs Distance (Y-Axis Blocked)



Typical Output Current Vs Distance X-Axis Blocked

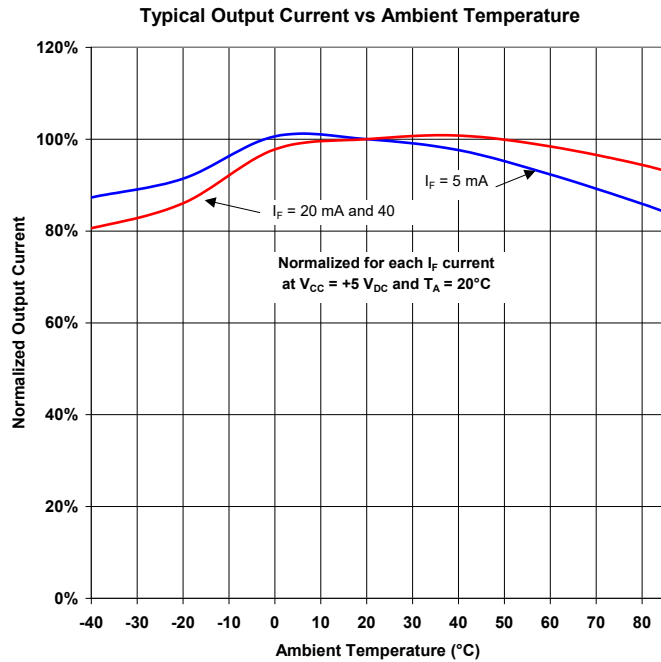
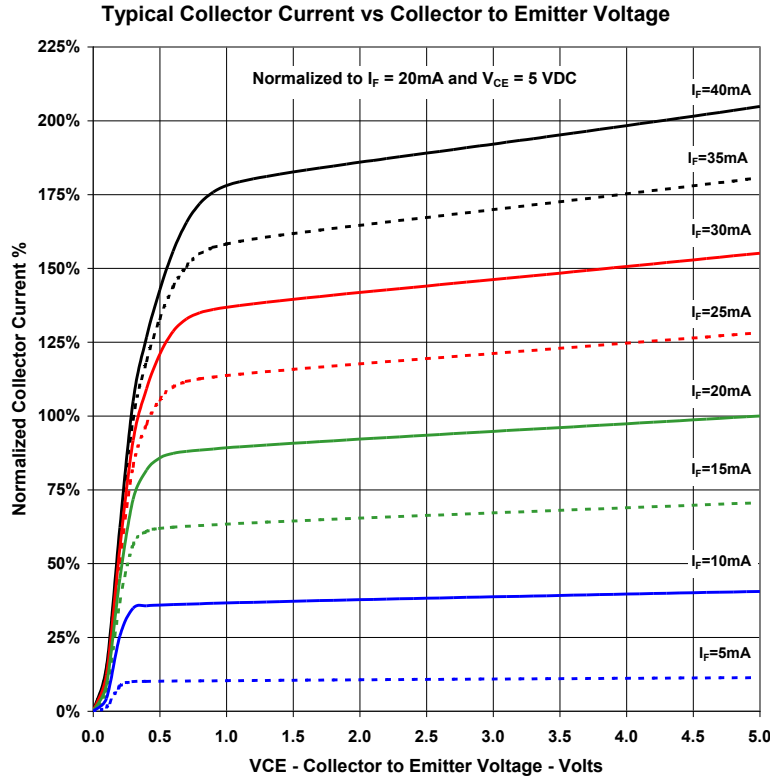


General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

Performance



General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

Slotted Optical Switch

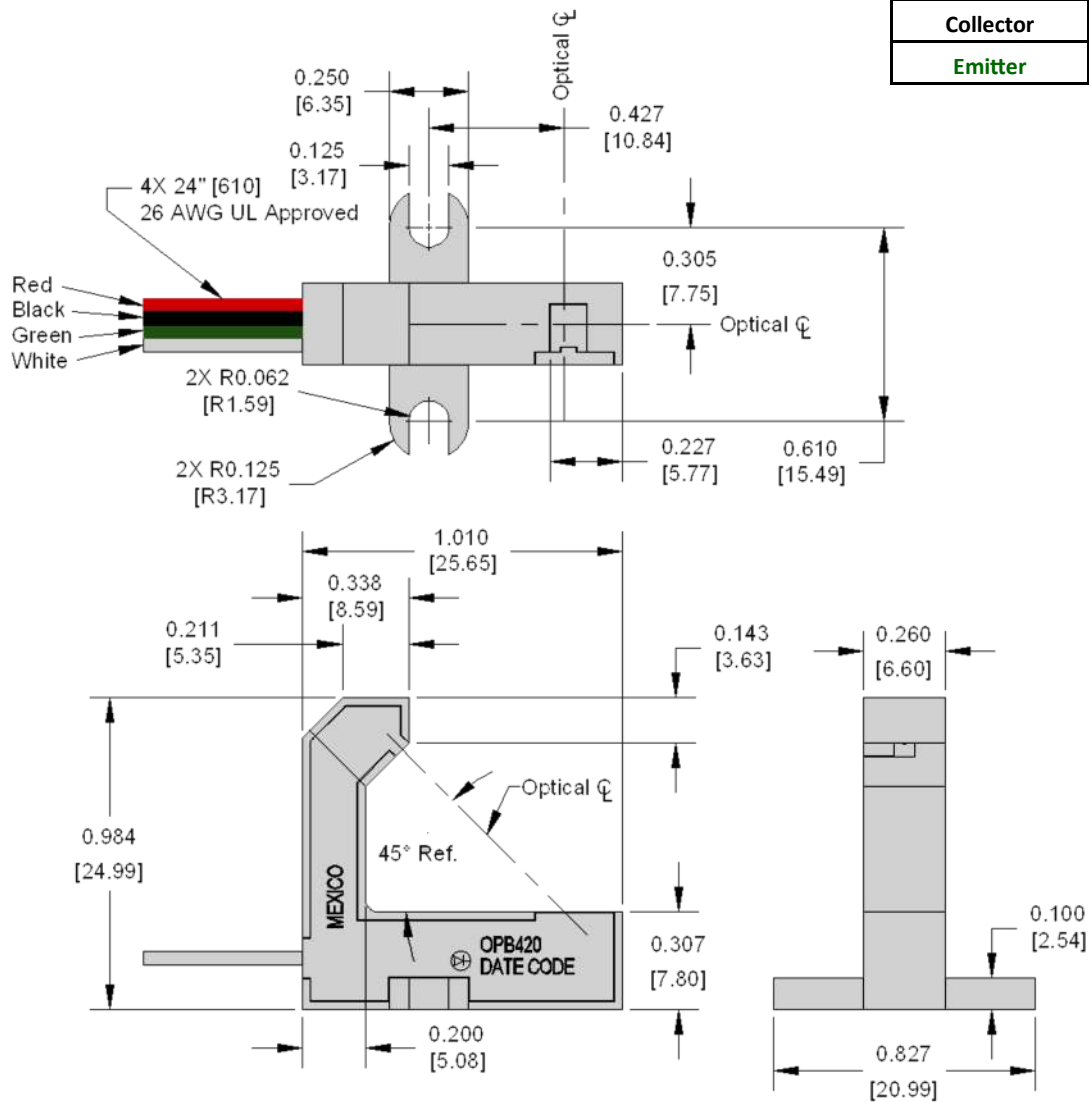
OPB420AZ, OPB420BZ



Packaging

Mechanical Package Information

| Description | Wire Color |
|-------------|------------|
| Anode | Red |
| Cathode | Black |
| Collector | White |
| Emitter | Green |



Dimensions are in Inches [Millimeters]
Tolerances $\pm 0.010''$ [0.25mm]

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com