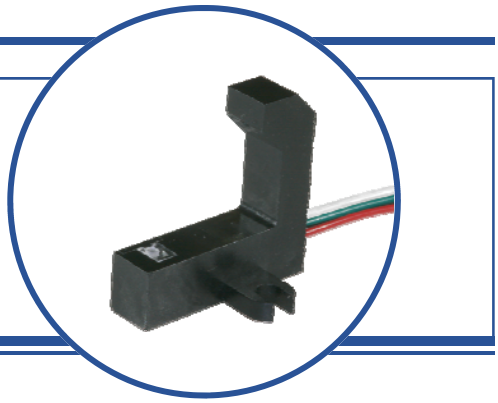
Slotted Optical Switch
OPB420AZ & OPB420BZ

TT electronics
OPTEK Technology

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 (R_{BE}) 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.

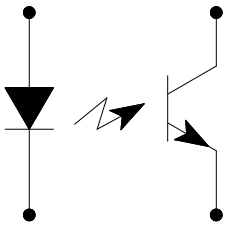
Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

Applications:

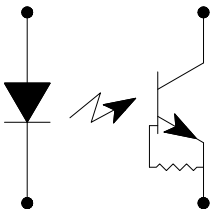
- Non-contact interruptive object sensing
- Tray-out sensor
- Low paper tray sensor
- Corner sensor
- Printers
- Copying machines
- Paper sorting equipment
- Amusement gaming equipment
- Door sensor
- Optical Switch

Part #	LED Wavelength	PhotoSensor
OPB420AZ	880 nm	Phototransistor
OPB420BZ		R_{BE} Phototransistor

OPB420AZ



OPB420BZ

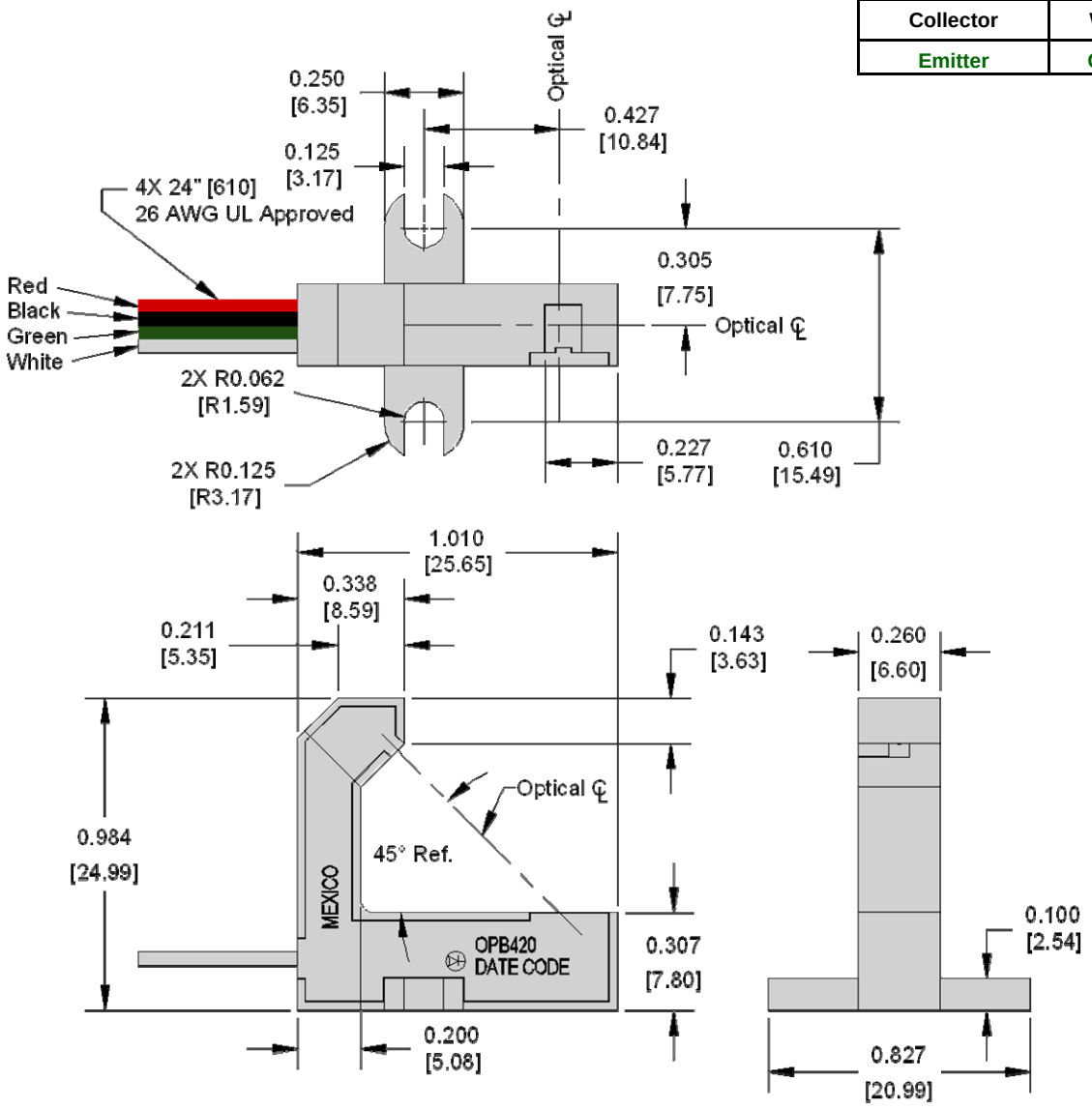


RoHS

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

Mechanical Package Information

Description	Wire Color
Anode	Red
Cathode	Black
Collector	White
Emitter	Green



Dimensions are in Inches [Millimeters]

Tolerances ±0.010" [0.25mm]

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

Phototransistor Version

Absolute Maximum Ratings (T_A=25°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

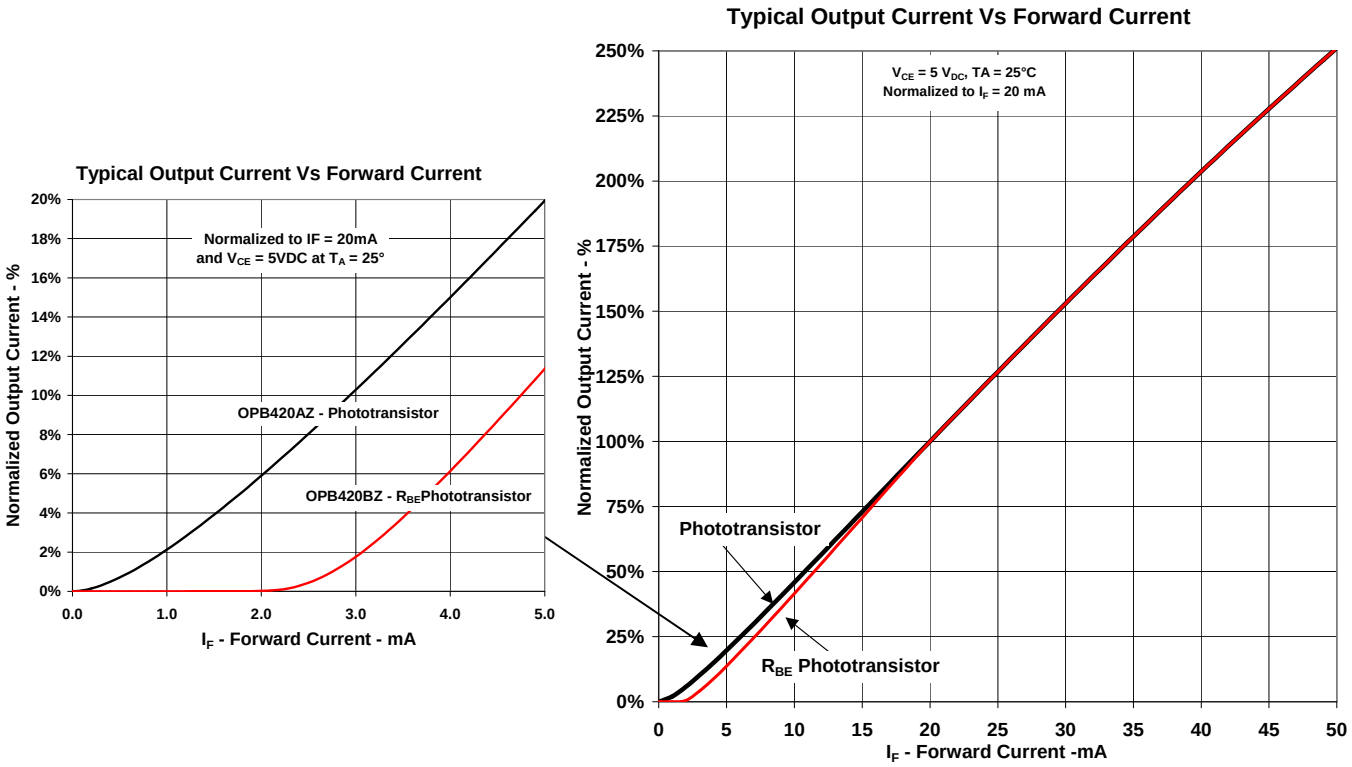
Output Phototransistor

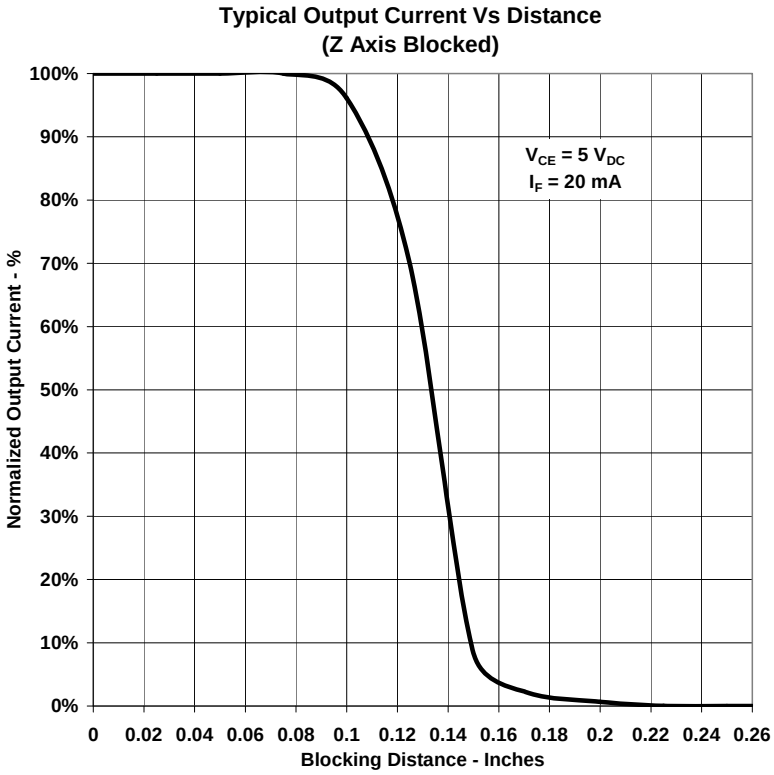
Collector-Emitter Breakdown Voltage OPB420AZ OPB420BZ	 30 V 24 V
Power Dissipation (2)	100 mW

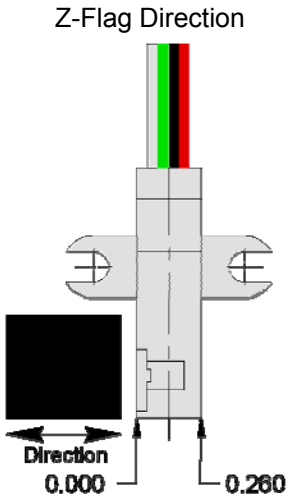
Electrical Characteristics (T_A = 25°C unless otherwise noted)

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 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2 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 mA I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage OPB420AZ OPB420BZ	 5.0 0.4	 - -	 - -	V	 I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current	-	-	100	nA	V_{CE} = 10 V, I_F = 0, E_E = 0
Combined						
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	-	-	0.4	V	I_C = 250 µA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current	1.0	-	10.0	mA	V_{CE} = 5.0 V, I_F = 20 mA
$I_{C(Off)}$	Off-State Collector Current— OPB420BZ	-	-	450	µA	V_{CE} = 5 V, I_F = 1 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







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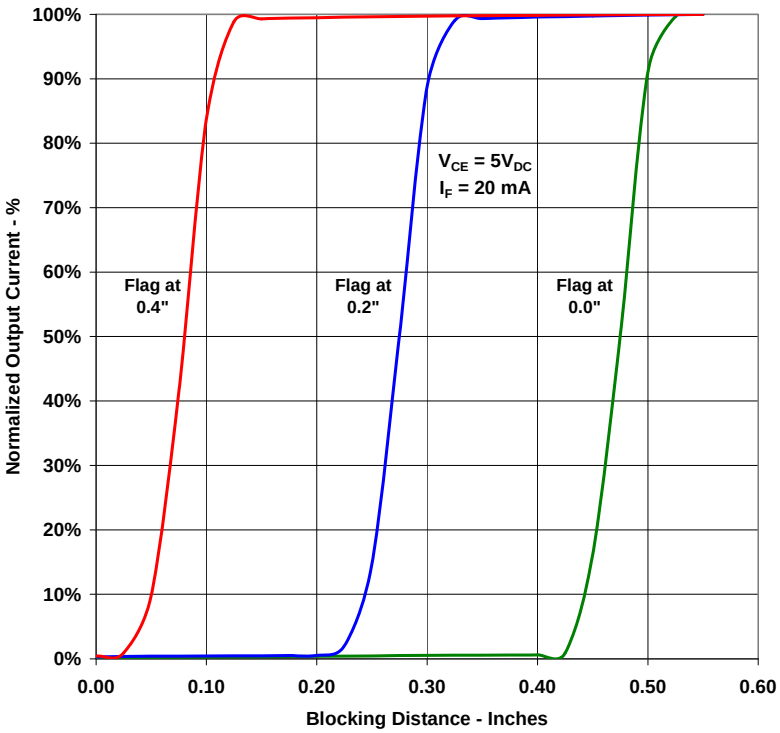
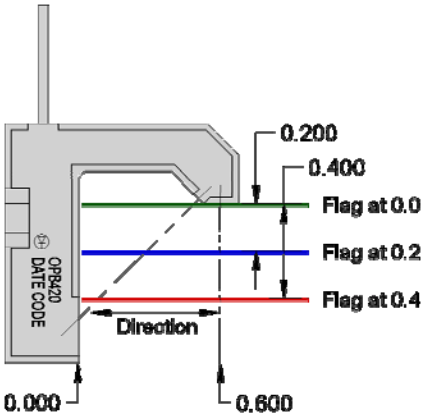
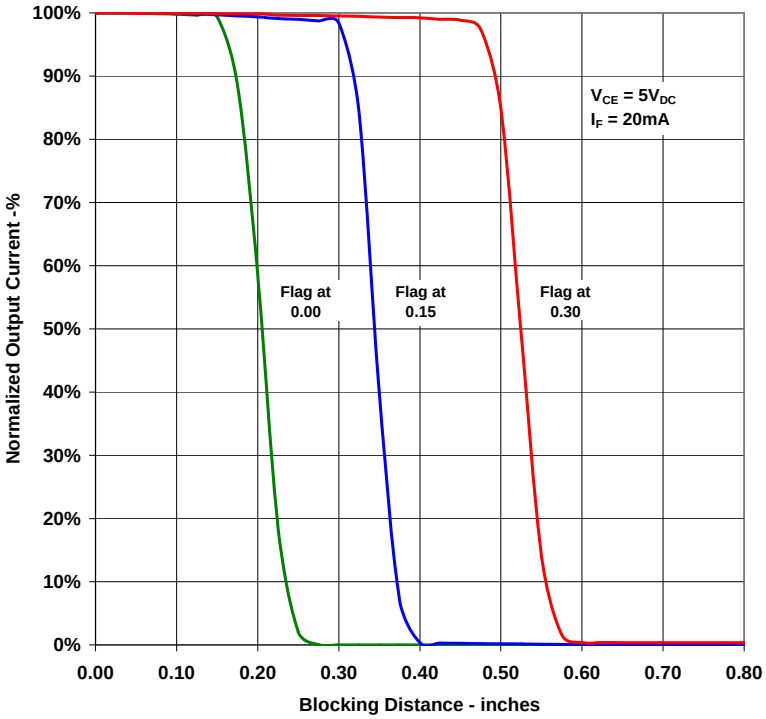
Typical Output Current Vs Distance (Y-Axis Blocked)



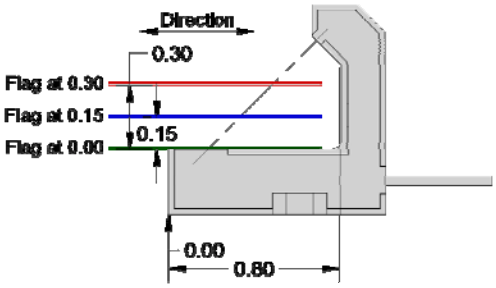
Y-Flag Direction



Typical Output Current Vs Distance X-Axis Blocked



X-Flag Direction



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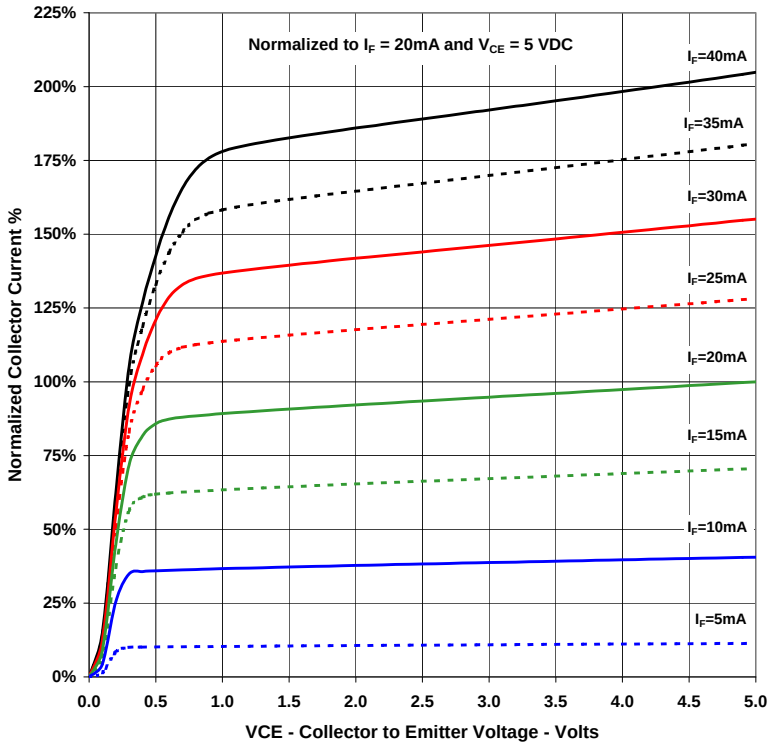
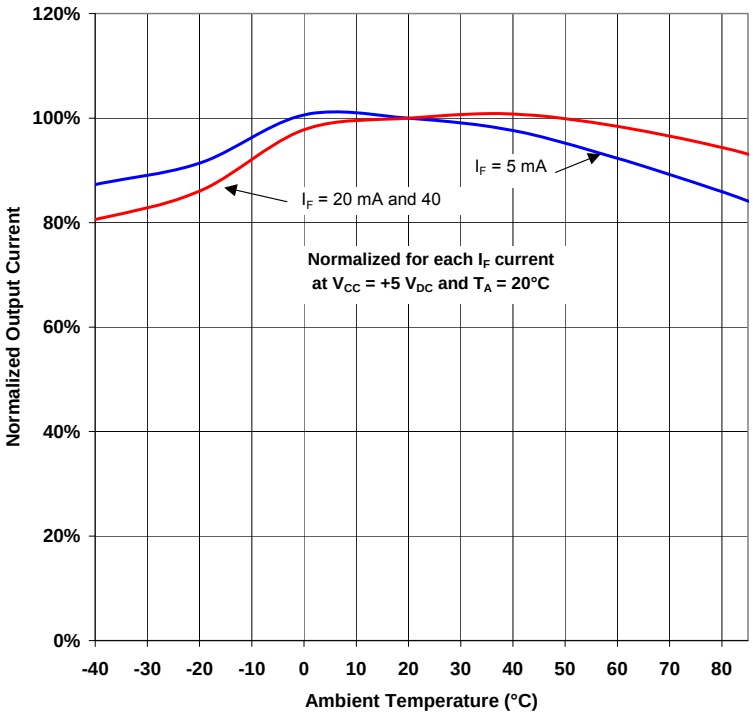
Typical Collector Current vs Collector to Emitter Voltage



Typical Output Current vs Ambient Temperature



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