

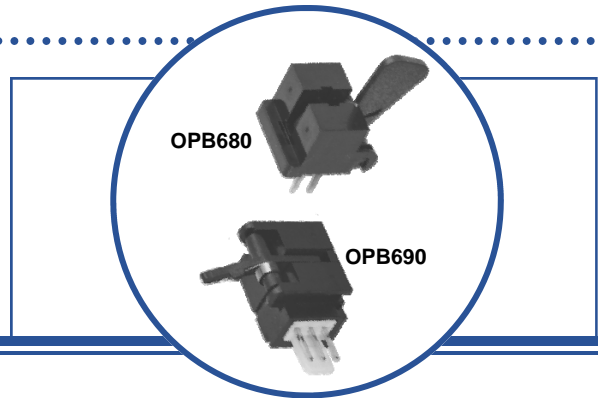
# Slotted Optical Flag Switch

## OPB680, OPB680-20, OPB690Z



### Features:

- Phototransistor output
- Mechanical switch replacement
- Enhanced signal to noise ratio
- Printed PCBoard mounting (OPB680, OPB680-20)
- Lever force options(OPB680, OPB680-20)
- 3-pin connector, 0.98" (2.5mm) Mates with Molex 22-01-1032 and terminal #08-70-0069



### Description:

Each **OPB680**, **OPB680-20** and **OPB690Z** optical flag switch consists of an infrared emitting diode in a molded plastic housing. The phototransistor has an enhanced low current roll-off that improves contrast ratio and immunity to background irradiance.

A lever arm actuated flag interrupts the light beam and switches the output between states that can readily drive logic gates. This can be actuated by passing a paper sheet without damaging the paper's edge.

**OPB680-20** offers increased lever operating force that prevents false triggering due to incidental contact in door sensing and other heavy-duty applications.

**OPB690Z** is designed to easily snap mount into a 0.037" ± 0.001" (0.940 mm ± 0.025 mm) thick material with a rectangular opening of 0.320" ± 0.003" x 0.472" (8.128 mm x 11.989 mm) minimum. Insertion into the punched side of metal is recommended.

Customized lever arms and spring torques can be designed for specific applications for each of the devices.

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

### Applications:

- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Ordering Information				
Part Number	LED Peak Wavelength	Sensor	Flag Travel Degrees Max	Lead Length / Spacing or Connector
OPB680	890 nm	Rbe Transistor	51°	0.100" / 0.275"
OPB680-20			70°	Molex 5102
OPB690Z				



**RoHS**

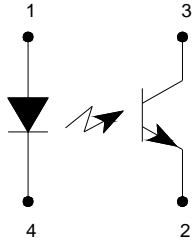
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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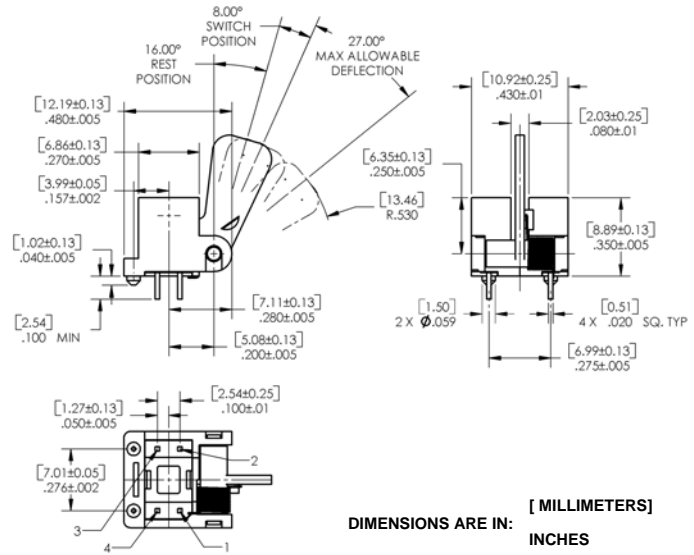
## OPB680, OPB680-20, OPB690Z



### OPB680, OPB680-20



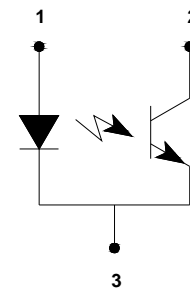
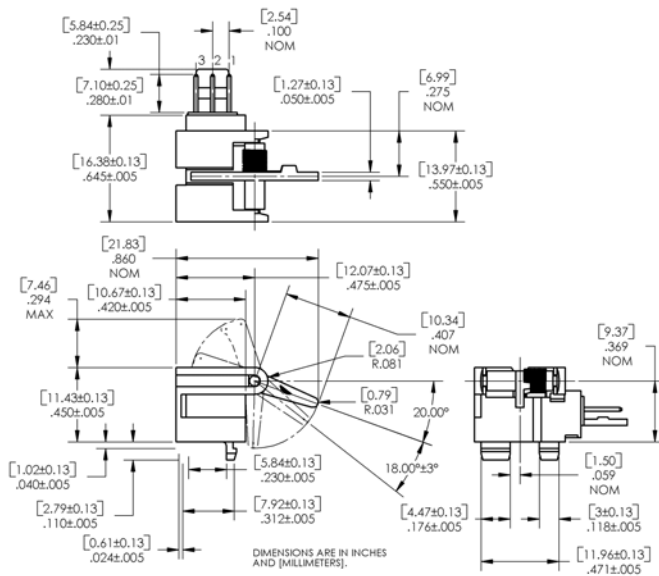
Pin #	Description	Pin #	Description
1	Anode	3	Collector
4	Cathode	2	Emitter



**Notes:**

- (1) For OPB680 and OPB680-20, the "on" condition exists when the lever arm is in the rest position (16° from vertical).
- (2) For OPB680 and OPB680-20, the "off" condition exists when the lever arm is deflected clockwise 8° ± 3° from the rest position (16° from vertical). Maximum allowable deflection is 35° from the rest position.

### OPB690Z



Pin #	Description
1	Anode
2	Collector
3	Ground

**Notes:**

- (1) For OPB690Z, the "on" condition exists when the lever arm is deflected clockwise 18° +/- 3° from the rest position (20° from vertical).
- (2) For OPB690Z, the "off" position exists when the lever arm is in the rest position (20° from vertical).
- (3) For OPB690Z, from the rest position to the switch point the lever torque measured at the end of the arm is 1.5 grams maximum.

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

Storage & Operating Temperature Range	-40°C to +100°C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron] <sup>(1)</sup>	260°C

**Input Diode**

Forward DC Current	50 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)	3 A
Reverse DC Voltage	3 V
Power Dissipation <sup>(2)</sup>	100 mW

**Output Phototransistor**

Collector-Emitter Voltage	24 V
Emitter Reverse Current	10 mA
Collector DC Current	30 mA
Power Dissipation <sup>(3)</sup>	200 mW

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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**Input Diode** (see OP245 for additional information)

$V_F$	Forward Voltage	-	-	1.6	V	$I_F = 10 \text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 3 \text{ V}$

**Output Phototransistor** (See OP755 for additional information)

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	24	-	-	V	$I_C = 100 \mu\text{A}$
$BV_{ECO}$	Emitter-Collector Breakdown Voltage	4.0	-	-	V	$I_{EC} = 100 \mu\text{A}$
$I_{CEO}$	Collector-Emitter Dark Current	-	-	100	$\mu\text{A}$	$V_{CE} = 5 \text{ V}$

**Coupled**

$V_{SAT}$	Saturation Voltage	-	-	0.4	V	$I_F = 10 \text{ mA}, I_C = 100 \mu\text{A}$
$I_{C(ON)}$	On-State Collector Current	600	-	-	$\mu\text{A}$	$I_F = 10 \text{ mA}, V_{CE} = 5 \text{ V}, \text{unblocked}$
		-	-	150	nA	$I_F = 10 \text{ mA}, V_{CE} = 5 \text{ V}, \text{blocked}$

**Mechanical**

$F_{OP}$	Operating Force OPB680, OPB690Z OPB680-20	-	-	1.5 20	g	Measured at end of lever
Cycles	Operating Cycles	100 K	-	-	cycles	-

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. Maximum 20 grams force may be applied to leads when soldering (OPB680, OPB680-20).
- (2) Derate linearly 1.33 mW/°C above 25° C.
- (3) Derate linearly 2.00 mW/°C above 25° C.

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