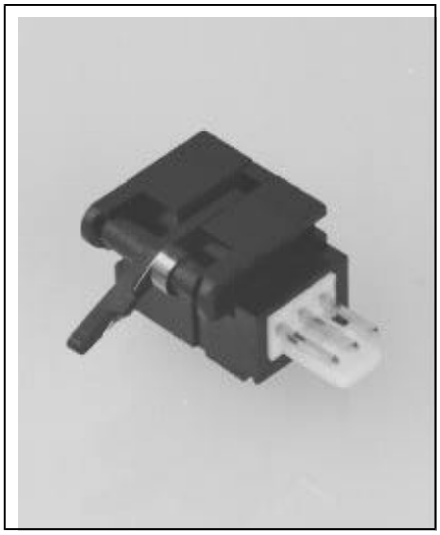
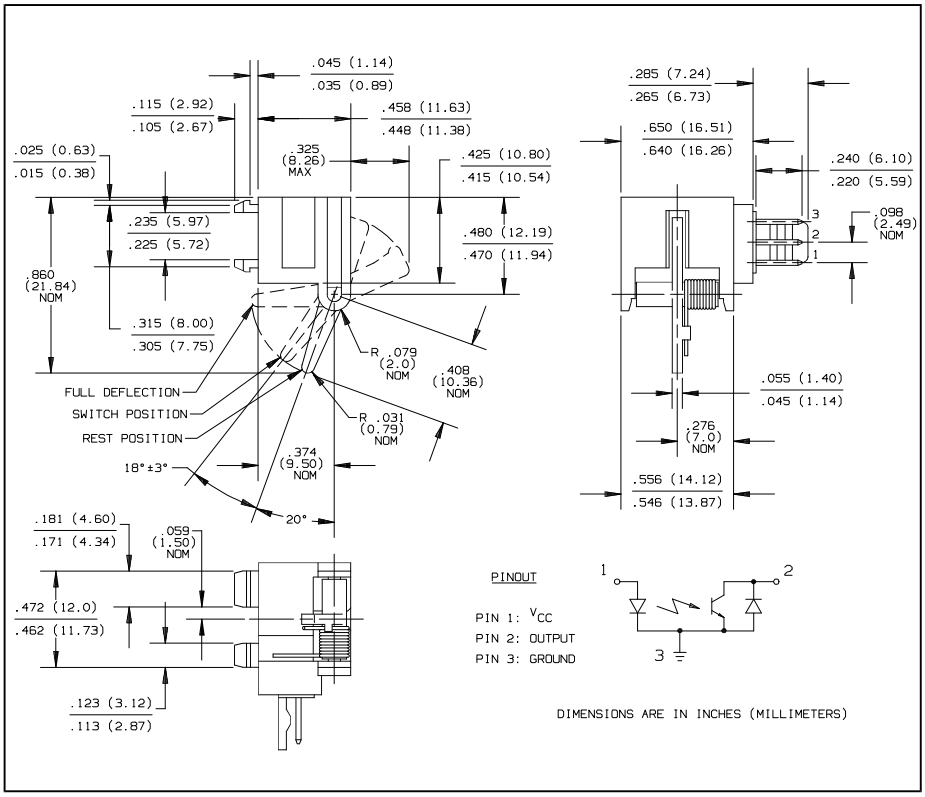
Slotted Optical Flag Switch
Type OPB690





Features

- Phototransistor output
- Mechanical switch replacement
- 3-pin connector (Ho Tien L2561-03), Molex compatible connector 5102 series housing and 5103 series terminal
- Enhanced signal to noise ratio

Description

The OPB690 consists of an NPN phototransistor and an infrared emitting diode in a molded plastic housing. The phototransistor has an enhanced low current roll-off which improves contrast ratio and immunity to background irradiance. A lever arm actuated flag interrupts the light beam, switching the transistor output between states that can readily drive logic gates.

This switch is designed to easily snap mount into a 0.037" ± 0.001" (0.94 mm) thick material with a rectangular opening of 0.320" ± 0.003" x 0.472" (8.13 mm x 11.99 mm) minimum. Insertion into the punched side of metal is recommended.

Customized lever arms and spring torques can be designed for specific applications.

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

Storage and Operating Temperature . . . . . -40° C to +100° C

Input Diode

Forward DC Current . . . . . 50 mA
Peak Forward Current (1 µs pulse width, 300 pps) . . . . . 3.0 A
Reverse DC Voltage . . . . . 3.0 V
Power Dissipation . . . . . 100 mW(1)

Output Phototransistor

Collector-Emitter Voltage . . . . . 30 V
Emitter Reverse Current . . . . . 10 mA
Collector DC Current . . . . . 30 mA
Power Dissipation . . . . . 200 mW(2)

Notes:
(1) Derate linearly 1.33 mW/° C above 25° C.
(2) Derate linearly 2.0 mW/° C above 25° C.
(3) "Off" condition exists when the lever arm is in the rest position (20° from vertical) as shown in the figure.
(4) "On" condition exists when the lever arm is deflected clockwise 18° +/- 3° form the rest position (20° from vertical) as shown in the figure.
(5) From the rest position to the switch point, lever torque measured at the end of the arm is 1.5 grams max.

RoHS

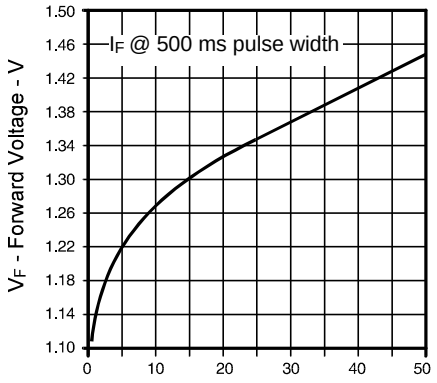
For RoHS compliant devices add "Z" to the end of the part number: OPB690Z

Type OPB690

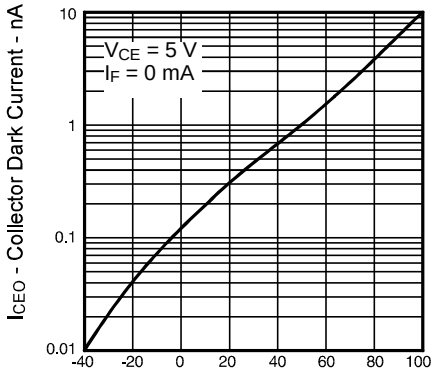
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.6	V	I_F = 10 mA
I_R	Reverse Current		100	µA	V_R = 3.0 V
Output Phototransistor					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	I_C = 100 µA
I_{ECO}	Emitter Reverse Current		100	µA	V_{EC} = 0.4 V
I_{CEO}	Collector-Emitter Dark Current		100	nA	V_{CE} = 5 V
Coupled					
V_{SAT}	Saturation Voltage		0.4	V	I_F = 10 mA, I_C = 100 µA, Gap unblocked
$I_{C(ON)}$	On-State Collector Current	600		µA	I_F = 10 mA, V_{CE} = 5 V

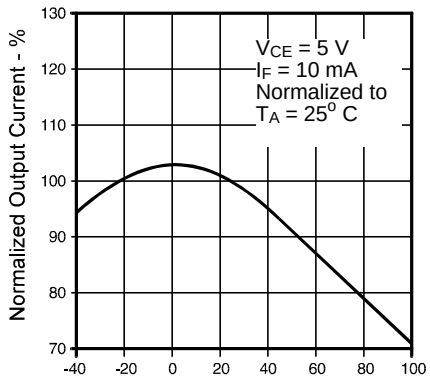
Forward Current vs Forward Voltage Input Diode



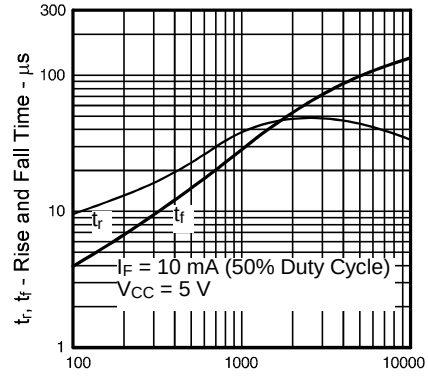
Collector Dark Current vs Ambient Temperature



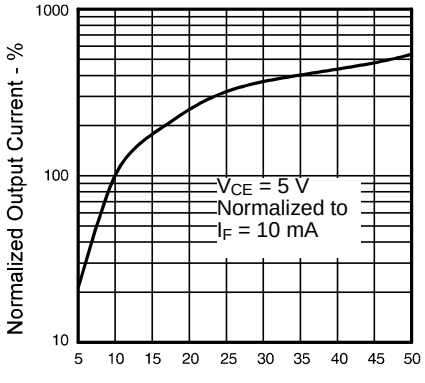
Normalized Output Current vs Ambient Temperature



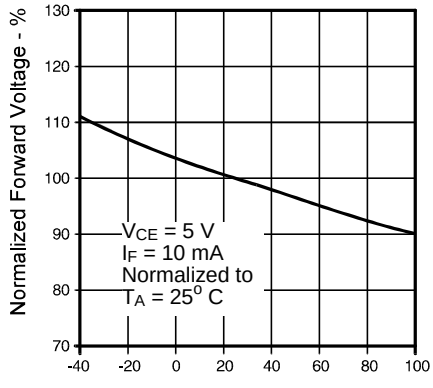
Rise and Fall Time vs Load Resistance



Normalized Output Current vs Forward Current



Normalized Forward Voltage vs Ambient Temperature



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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