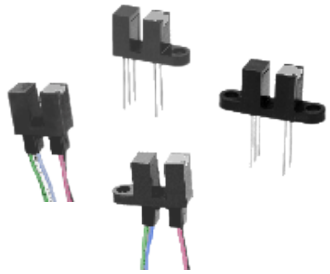
Photologic® Slotted Optical Switch

OPB460, OPB470, OPB480, OPB490 Series



Features:

- Choice of pins or wires mounting configuration
- Choice of aperture
- Choice of output configuration
- Choice of opaque or IR transmissive shell material
- Data rates to 250 kBaud
- Low power consumption

Description:

The **OPB460**, **OPB470**, **OPB480** and **OPB490** series of Photologic® integrated circuit switches provide optimum flexibility for the design engineer. Building from a standard housing with a 0.125" (3.180 mm) wide slot, a user can specify the type and polarity of TTL output, discrete shell material, aperture width and choice of mounting configurations. **OPB460** through **OPB473** have 0.425" (10.795 mm) leads with 0.320" (8.1 mm) spacing for printed circuit board mounting. **OPB480** through **OPB493** have 24" (609 mm) #26 AWG wires (UL rated).

All devices in this series exhibit performance over supply voltages ranging from 4.5 V to 16.0 V and may be specified as buffered or inverted with 10 KΩ Pull-up or Open Collector output. Devices are also TTI/LSTTL compatible and can drive up to 10 TTL loads.

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

For application information, refer to Application Bulletins 248 and 213

Applications:

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

Part Number Guide — OPB460, OPB470, OPB480, OPB490 Series

OPB 4 X X X 1 1 X

OPTEK Assembly

Photologic ® Sensor Family

Discrete Housing Material:
6 — Transmissive Shell, PCB Mountable
7 — Opaque Shell, PCB Mountable
8 — Transmissive Shell, Wire Termination
9 — Opaque Shell, Wire Termination

Electrical Specifications:
0 — Buffered 10 KΩ Output
1 — Buffered Open-Collector Output
2 — Inverted 10 KΩ Output
3 — Inverted Open-Collector Output

Mounting Configurations:
L — Emitter side mounting tab only
N — No mounting tabs
P — Sensor side mounting tab only
T — Two mounting tabs

Emitter Aperture:
1 = 0.010" [0.25 mm]

Sensor Aperture:
1 = 0.010" [0.25 mm]

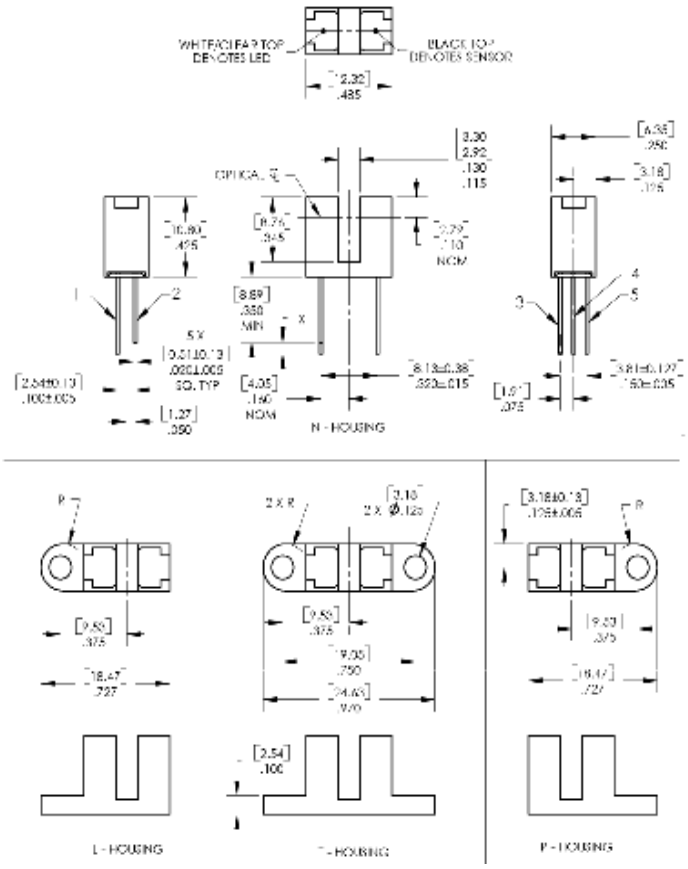
All PCB Versions RoHS Compliant:
Z = Wire Version RoHS Compliant

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 plc

Packaging



TOLERANCE DIMENSIONS ARE: ± .25 mm [± .010"]

The **OPB480/OPB490 series** of switches are terminated with 24" (609.600 mm) of 7-strand #26 AWG, UL rated insulated wire on each terminal. Insulation colors and functions are: **red** (anode), black (cathode), white (V_{CC}), blue (output) and **green** (ground).

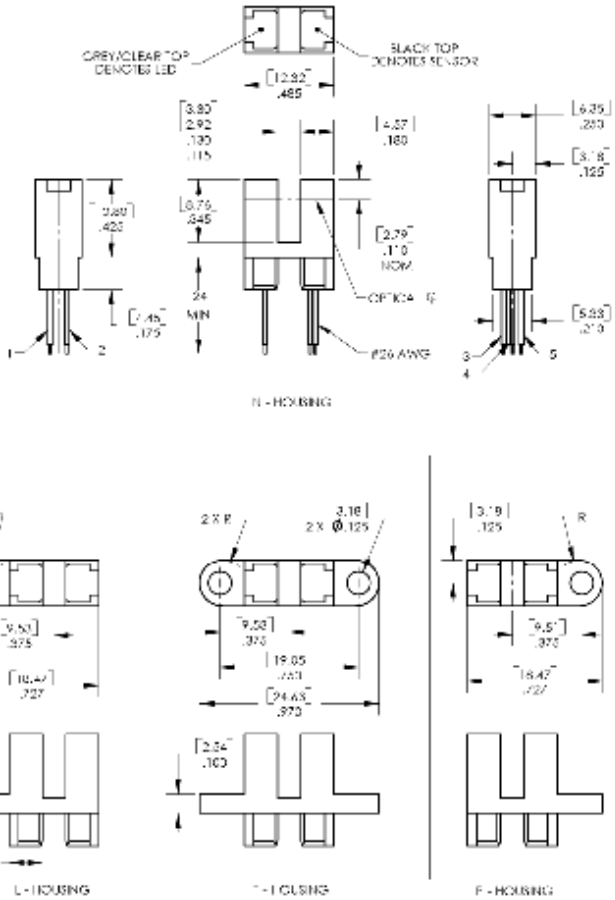
Custom wire lengths and/or colors in addition to customer selected connectors are available. Contact your local representative or call the factory.

CONTAINS POLYSULFONE

To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK's molded plastics.
Applies to: OPB460, OPB470, OPB480, OPB490.

Color-Wire Pin	Description
Red-1	Anode
Black-2	Cathode
White-3	V_{CC}
Blue-4	Output
Green-5	Ground

The **OPB460/OPB470 series** are terminated with 0.020" square leads designed for printed circuit board mounting.



© TT Electronics plc

Electrical Specifications

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

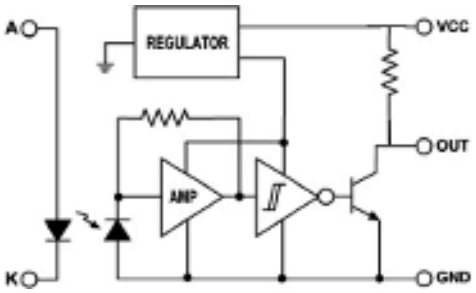
Storage & Operating Temperature Range	-40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron] (1)	260° C
Input Infrared LED	
Diode Forward DC Current	40 mA
Diode Reverse DC Voltage	2 V
Input Diode Power Dissipation (2)	100 mW
Output Photologic®	
Supply Voltage, V_{CC} (not to exceed 3 seconds)	18 V
Voltage at Output Lead (Open Collector Output)	25 V
Output Photologic® Power Dissipation (3)	200 mW
Total Device Power Dissipation (4)	300 mW

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(2) Derate linearly 1.10 mW/° C above 25° C.
(3) Derate linearly 2.26 mW/° C above 25° C.
(4) Derate linearly 3.36 mW/° C above 25° C.

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.

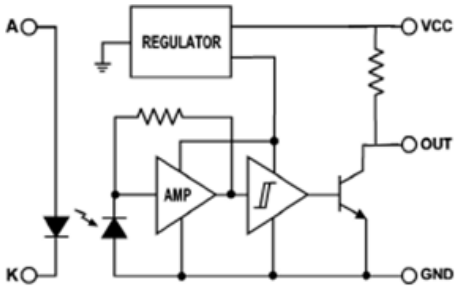
© TT Electronics plc

OPB460/470/480/490 Buffered 10K Pull-Up



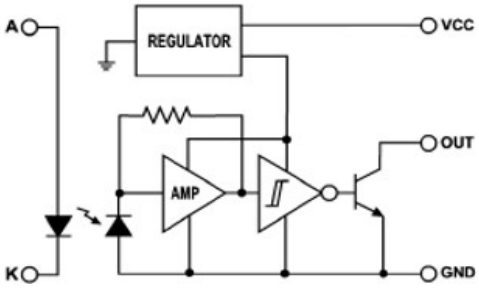
Output with light - High

OPB472/482/492 Inverted 10K Pull-Up



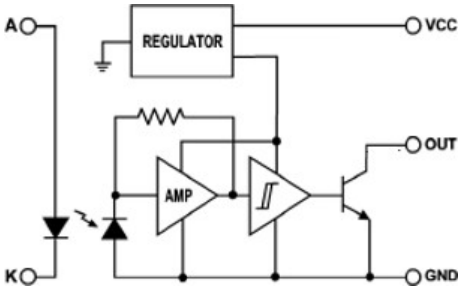
Output with light - Low

OPB461/471/481/491 Buffered Open-Collector



Output with light - High

OPB463/473/483/493 Inverted Open-Collector



Output with light - Low

Color-Wire Pin	Description
Red	Anode (A)
Black	Cathode (K)
White	V_{CC}
Blue	Output
Green	Ground

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 plc

Electrical Specifications

Electrical Characteristics (T_A = 25° C unless otherwise noted) (2)

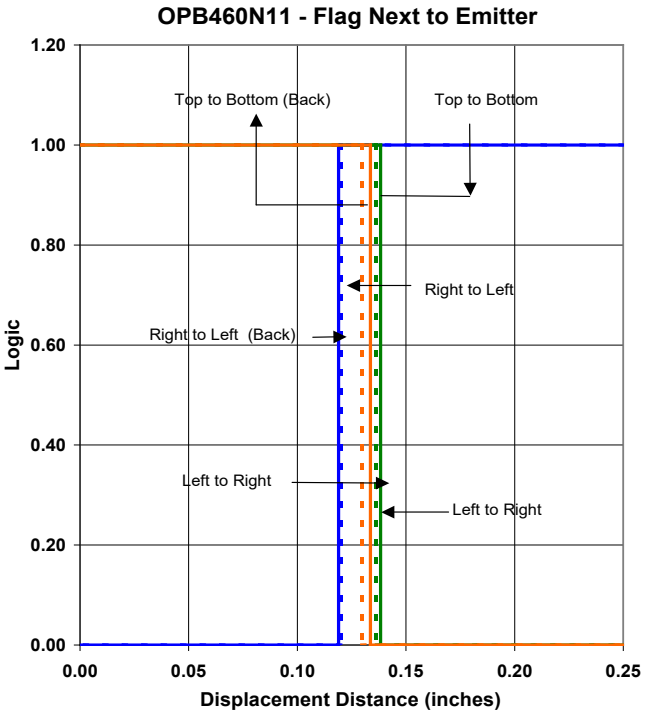
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage	1.0	-	1.7	V	I_F = 20 mA, T_A = 25° C
I_R	Reverse Current	-	-	100	µA	V_R = 2 V, T_A = 25° C
Output Photologic® Sensor						
V_{CC}	Operating DC Supply Voltage	4.5	-	16	V	
I_{CCL}	Low Level Supply Current: Buffered with 10k pull-up(1) Buffered Open-Collector Output	-	-	7.5	mA	V_{CC} = 16 V, I_F = 0 mA (1)
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7.5	mA	V_{CC} = 16 V, I_F = 12 mA
I_{CCH}	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	7.5	mA	V_{CC} = 16 V, I_F = 12 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7.5	mA	V_{CC} = 16 V, I_F = 0 mA (1)
V_{OL}	Low Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	0.4	V	V_{CC} = 4.5 V, I_{OL} = 16 mA, I_F = 0 mA
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	0.4	V	V_{CC} = 4.5 V, I_F = 12 mA (1)
I_{OH}	High Level Output Voltage: Buffered Open-Collector Output	-	-	14	µA	V_{CC} = 16 V, I_F = 12 mA, V_{OH} = 25 V, T_A = 25° C
	Inverted with 10k pull-up: Inverted Open-Collector Output (1)	-	-	14	µA	V_{CC} = 16 V, I_F = 0 mA, V_{OH} = 25 V, T_A = 25° C
$I_{F(+)}$	LED Positive-Going Threshold Current	-	-	10	mA	V_{CC} = 5 V, T_A = 25° C
$I_{F(+)}/I_{F(-)}$	Hysteresis	-	1.4	-	-	V_{CC} = 5 V
t_r, t_f	Rise Time, Fall Time	-	50	-	ns	V_{CC} = 5 V, T_A = 25° C, I_F = 0 or 12 mA
t_{PLH}, t_{PHL}	Propagation Delay	-	3	-	µs	R_L = 300 Ω to 5 V, C_L = 50 pF

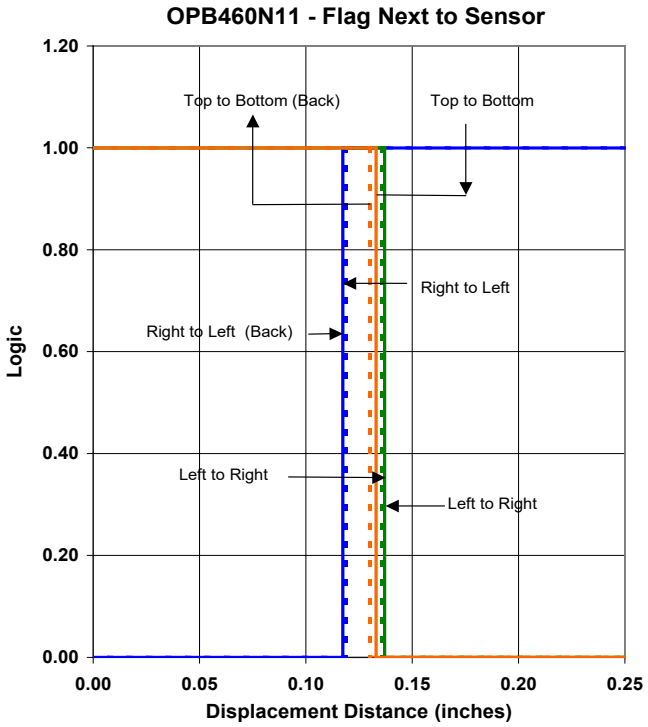
Notes:
(1) Normal application would be with light source blocked, simulated by I_F = 0 mA.
(2) All parameters tested using pulse technique.

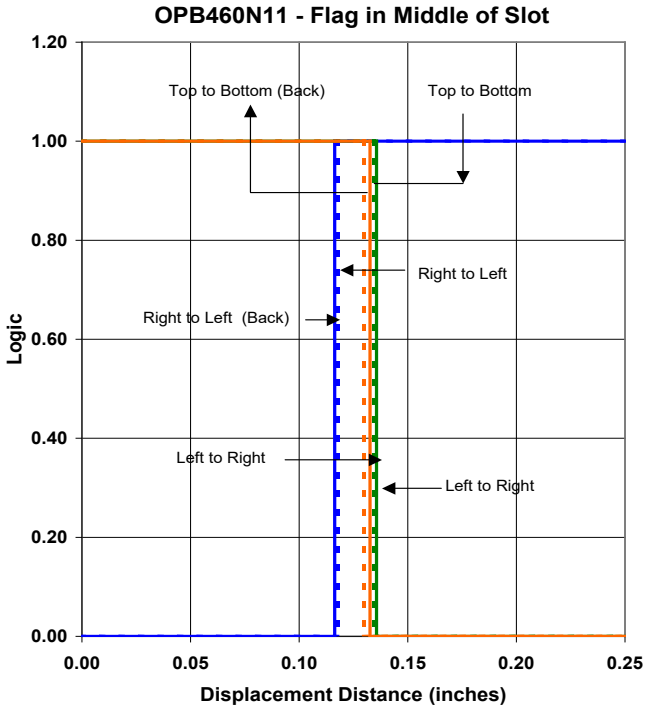
General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

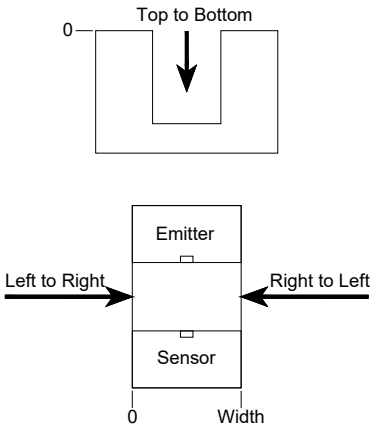
© TT Electronics plc

Typical Performance





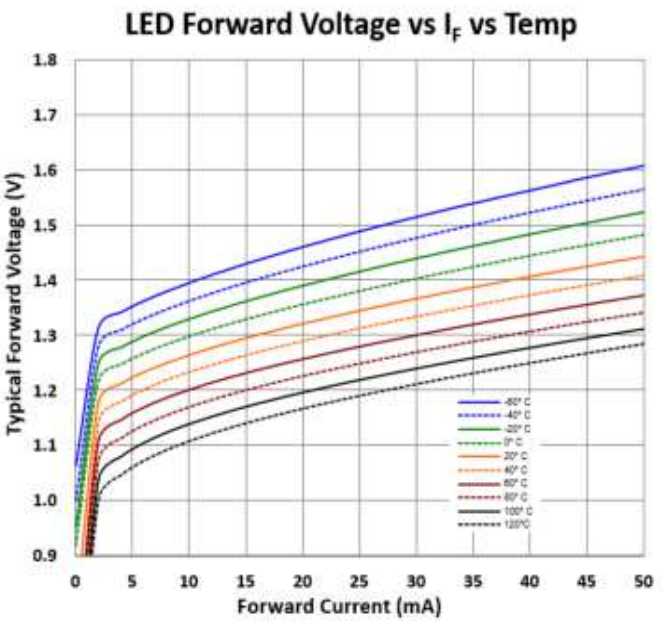


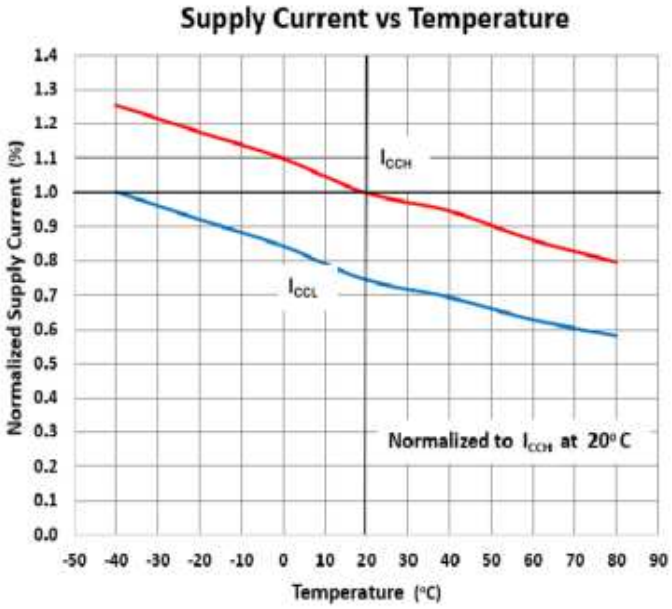


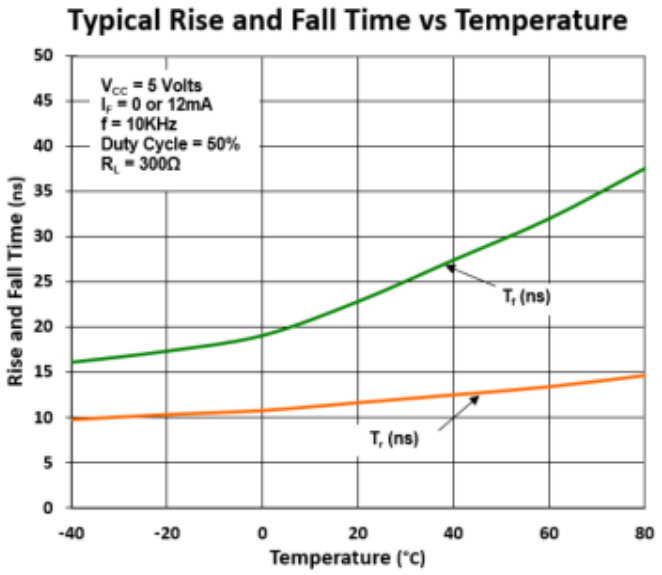
General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

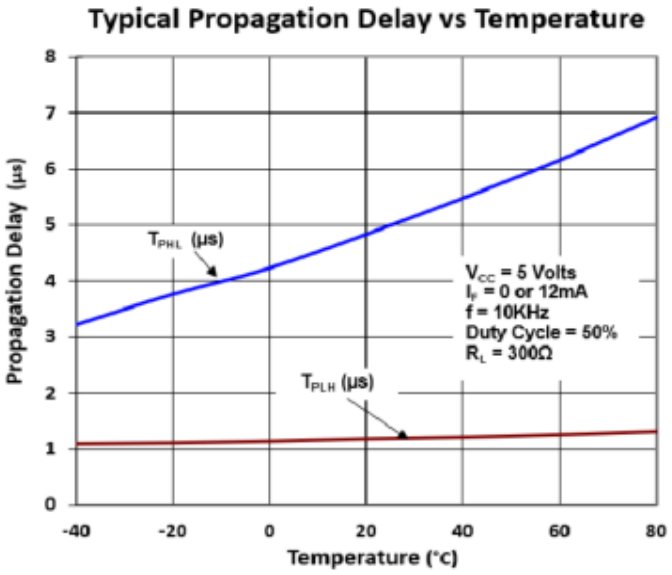
© TT Electronics plc

Typical Performance









© TT Electronics plc