

**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] <sup>(1)</sup>	260°C

**Input Infrared LED**

Supply Voltage, $V_{CC}$ (not to exceed 3 seconds)	18 V
Diode Forward DC Current	40 mA
Diode Reverse DC Voltage	2 V
Input Diode Power Dissipation <sup>(2)</sup>	75 mW

**Output Photologic®**

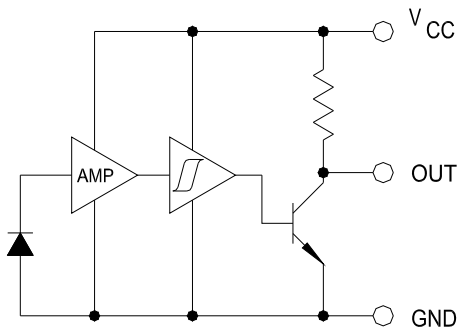
Voltage at Output Lead (Open Collector Output)	25 V
Output Photologic® Power Dissipation <sup>(3)</sup>	200 mW

Total Device Power Dissipation <sup>(4)</sup>	275 mW
---	--------

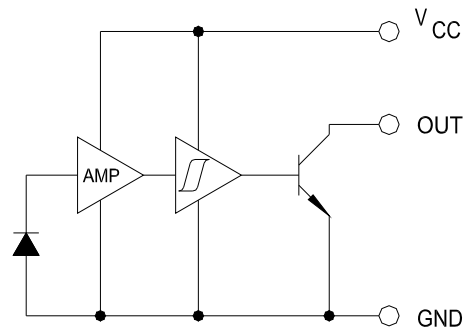
Notes:

- (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 (OPB460, OPB470) or derate linearly 1.82 mW/°C above 25° C (OPB480, OPB490).
- (3) Derate linearly 1.50 mW/°C above 25° C (OPB460, OPB470) or derate linearly 1.64 mW/°C above 25° C (OPB480, OPB490).
- (4) Derate linearly 3.17 mW/°C above 25° C (OPB460, OPB470) or derate linearly 3.45 mW/°C above 25° C (OPB480, OPB490).
- (5) The OPB460/OPB470 series are terminated with 0.020" square leads designed for printed circuit board mounting.
- (6) 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). Other wire lengths and/or colors in addition to customer selected connectors are available. Contact your local representative or call the factory.

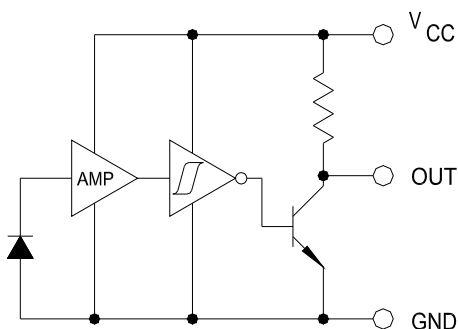
**OPB460/470/480/490 Buffered 10K Pull-Up**



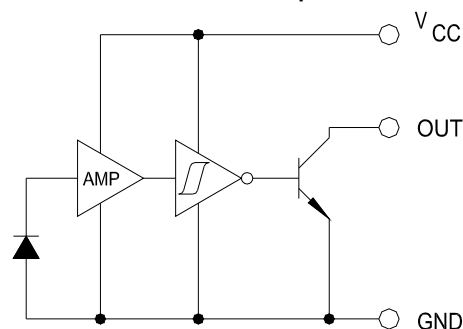
**OPB461/471/481/491 Buffered Open-Collector**



**OPB462/472/482/492 Inverted 10K Pull-Up**



**OPB463/473/483/493 Inverted Open-Collector**



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

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

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

**Input Diode**

$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$ , $T_A = 25^\circ\text{C}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$ , $T_A = 25^\circ\text{C}$

**Output Photologic® Sensor**

$V_{CC}$	Operating DC Supply Voltage	4.5	-	16	V	
$I_{CCL}$	Low Level Supply Current: Buffered with 10k pull-up <sup>(1)</sup> Buffered Open-Collector Output	-	-	7.5	mA	$V_{CC} = 16\text{ V}$ , $I_F = 0\text{ mA}$ <sup>(1)</sup>
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7.5	mA	$V_{CC} = 16\text{ V}$ , $I_F = 12\text{ mA}$
$I_{CCH}$	High Level Supply Current: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	7.5	mA	$V_{CC} = 16\text{ V}$ , $I_F = 12\text{ mA}$
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	7.5	mA	$V_{CC} = 16\text{ V}$ , $I_F = 0\text{ mA}$ <sup>(1)</sup>
$V_{OL}$	Low Level Output Voltage: Buffered with 10k pull-up Buffered Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}$ , $I_{OL} = 16\text{ mA}$ , $I_F = 0\text{ mA}$
	Inverted with 10k pull-up: Inverted Open-Collector Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}$ , $I_F = 12\text{ mA}$ <sup>(1)</sup>
$V_{OH}$	High Level Output Voltage: Buffered with 10k pull-up	$V_{CC}$ -1.5	-	-	V	$V_{CC} = 4.5\text{ V to }16\text{ V}$ , No Load, $I_F = 12\text{ mA}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	$V_{CC}$ -1.5	-	-	V	$V_{CC} = 4.5\text{ V to }16\text{ V}$ , No Load, $I_F = 0\text{ mA}$
$I_{OH}$	High Level Output Current: Buffered Open-Collector Output	-	-	14	$\mu\text{A}$	$V_{CC} = 16\text{ V}$ , $I_F = 12\text{ mA}$ , $V_{OH} = 25\text{ V}$ , $T_A = 25^\circ\text{C}$
	Inverted with 10k pull-up: Inverted Open-Collector Output <sup>(1)</sup>	-	-	14	$\mu\text{A}$	$V_{CC} = 16\text{ V}$ , $I_F = 0\text{ mA}$ , $V_{OH} = 25\text{ V}$ , $T_A = 25^\circ\text{C}$
$I_{F(+)}$	LED Positive-Going Threshold Current	-	-	10	mA	$V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$
$I_{F(+)} I_{F(-)}$	Hysteresis	-	1.4	-	-	$V_{CC} = 5\text{ V}$
$t_r, t_f$	Rise Time, Fall Time	-	50	-	ns	$V_{CC} = 5\text{ V}$ , $T_A = 25^\circ\text{C}$ , $I_F = 0$ or $12\text{ mA}$
$t_{PLH}, t_{PHL}$	Propagation Delay	-	3	-	$\mu\text{s}$	$R_L = 300\ \Omega$ to $5\text{ V}$ , $C_L = 50\text{ pF}$

Notes:

- (1) Normal application would be with light source blocked, simulated by  $I_F = 0\text{ mA}$ .
- (2) All parameters tested using pulse technique.

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