

Photologic® Reflective Object Sensor
OPB760, OPB761, OPB762, OPB763 (Series N and T)
OPB770, OPB771, OPB772, OPB773 (Series NZ and TZ)



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

Supply Voltage, V_{CC} (not to exceed 3 seconds)	10 V
Storage Temperature Range	-40°C to $+85^\circ\text{C}$
Operating Temperature Range	-40°C to $+70^\circ\text{C}$
Lead Soldering Temperature (1/16" inch (1.6 mm) from case for 5 seconds with soldering iron) ⁽¹⁾	260° C
Input Diode Power Dissipation ⁽²⁾	100 mW
Output Photologic® Power Dissipation ⁽³⁾	200 mW
Total Device Power Dissipation ⁽⁴⁾	300 mW
Voltage at Output Lead (Open Collector Output)	35 V
Diode Forward DC Current	40 mA
Diode Reverse DC Voltage	3 V

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

V_F	Forward Voltage	-	-	1.8	V	$I_F = 40\text{ mA}$, $T_A = 25^\circ\text{C}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2.0\text{ V}$, $T_A = 25^\circ\text{C}$

Output Photologic® Sensor

V_{CC}	Operating DC Supply Voltage	4.75	-	5.25	V	
I_{CCL}	Low Level Supply Current: Buffered Totem-Pole Output ⁽⁵⁾⁽⁶⁾ Buffered Open-Collector Output ⁽⁵⁾⁽⁶⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 0\text{ mA}$ (output open)
	Inverted Totem-Pole Output ⁽⁵⁾ Inverted Open-Collector Output ⁽⁵⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 0\text{ mA}$ (output open)
I_{CCH}	High Level Supply Current: Buffered Totem-Pole Output ⁽⁵⁾⁽⁶⁾ Buffered Open-Collector Output ⁽⁵⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 25\text{ mA}$ (output open)
	Inverted Totem-Pole Output ⁽⁵⁾⁽⁶⁾ Inverted Open-Collector Output ⁽⁵⁾⁽⁶⁾	-	-	10	mA	$V_{CC} = 5.25\text{ V}$, $I_f = 0\text{ mA}$ (output open)
I_{OH}	High Level Output Voltage: Buffered Open-Collector Output	-	-	100	μA	$V_{CC} = 4.5\text{ V}$, $I_f = 25\text{ mA}$, $V_{OH} = 30\text{ V}$, $T_A = 25^\circ\text{C}$
	Inverted Open-Collector Output	-	-	100	μA	$V_{CC} = 4.5\text{ V}$, $I_f = 0\text{ mA}$, $V_{OH} = 30\text{ V}$, $T_A = 25^\circ\text{C}$

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 2.22 mW/°C above 25° C.
- (3) Derate linearly 4.44 mW/°C above 25° C.
- (4) Derate linearly 6.66 mW/°C above 25° C. Normal application would be with light source blocked, simulated by $I_f=0\text{ mA}$.
- (5) Tested at $d = 0.080"$ (mm) from a 90% diffuse white test surface.
- (6) Normal application would be with light source blocked, simulated by $I_f = 0\text{ mA}$.
- (7) 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.

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Photologic® Sensor (continued)						
$I_{F(+)}$	LED Positive-Going Threshold Current ⁽²⁾	-	-	25	mA	$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$
$I_{F(+)} / I_{F(-)}$	Hysteresis ⁽²⁾	1.1	-	2.0	-	$V_{CC} = 5\text{ V}$
I_{OS}	Short Circuit Output Current: Buffered Totem-Pole Output ⁽¹⁾	-15	-	-100	mA	$I_F = 25\text{ mA}$, $V_{CC} = 5.25\text{ V}$, Output = GRD
	Inverted Totem-Pole Output ⁽¹⁾	-15	-	-100	mA	$I_F = 0\text{ mA}$, $V_{CC} = 5.25\text{ V}$, Output = GRD
V_{OL}	Low Level Output Voltage: Buffered Totem-Pole Output ⁽¹⁾⁽⁴⁾	-	-	0.4	V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 12.8\text{ mA}$, $I_F = 0\text{ mA}$ or $I_F = 30\text{ mA}$
	Buffered Open-Collector Output ⁽¹⁾⁽⁴⁾	-	-	0.4	V	
	Inverted Totem-Pole Output	-	-	0.4	V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 12.8\text{ mA}$, $I_F = 25\text{ mA}$
	Inverted Open-Collector Output ⁽¹⁾⁽⁴⁾	-	-	0.4	V	
V_{OH}	High Level Output Voltage: Buffered Totem-Pole Output ⁽¹⁾	2.4	-	-	V	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 25\text{ mA}$
	Inverted Totem-Pole Output ⁽¹⁾⁽⁴⁾	2.4	-	-	V	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 0\text{ mA}$
	Inverted Totem-Pole Output ⁽³⁾ Inverted Open-Collector Output ⁽³⁾	2.4 2.4	- -	- -	V V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = -800\text{ }\mu\text{A}$, $I_F = 30\text{ mA}$

Notes:

- (1) Tested at $d = 0.080''$ (mm) from a 90% diffuse white test surface.
- (2) Tested at $d = 0.080''$ (mm), $0.150''$ (mm) and $0.220''$ (mm) from a 90% diffuse white test surface. Reference: Eastman Kodak, Catalog #E 152 7795.
- (3) Tested at $d = 0.080''$ (mm), $0.150''$ (mm) and $0.220''$ (mm) from a 5% diffuse black test surface.
- (4) Normal application would be with light source blocked, simulated by $I_F = 0\text{ mA}$.
- (5) OPB760N through OPB763N series devices are terminated with $0.20''$ (mm) square leads designed for printed PCBoard mounting.
- (6) OPB770NZ through OPB773NZ series devices are terminated with 12 inches (mm) of 7-strand 26 AWG UL1429 insulated wire on each terminal. A standard AMP No. 640442-5 connector has been attached to the lead wires to ease connection to wire harnesses.
- (7) OPB760T through OPB763T series devices are terminated with $0.020''$ (mm) square leads designed for printed PCBoard mounting.
- (8) OPB770TZ through OPB773TZ series are terminated with $12''$ (mm) of 7-strand 26 AWG UL1429 insulated wire on each terminal. A standard AMP No. 640442-5 connector has been attached to the lead wires to ease connection to wire harnesses.
- (9) All parameters tested using pulse technique.

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