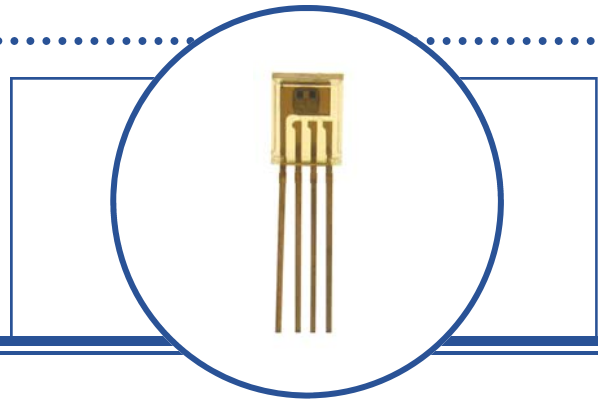


# Dual Channel Photologic Encoder Detector OPL583



## Features:

- Two matched detectors with photolithographic control of relative position
- Dual Photologic® circuitry in single package provides reduced component count
- Open collector inverter output for flexibility of circuit interface
- Low cost plastic housing



## Description:

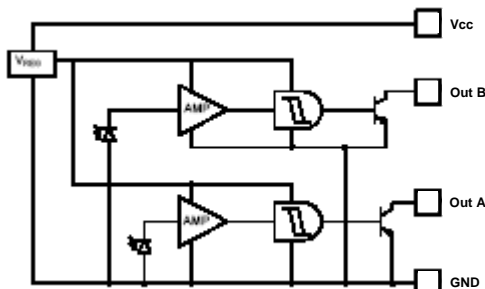
**OPL583** contains a monolithic integrated circuit that incorporates two independent photodiodes, two linear amplifiers, two Schmitt trigger circuits and two output transistors which are all served by a common voltage regulator. The fixed position of the two photodiodes and the matched characteristics of the two channels allow considerable design flexibility. The outputs are TTL/LSTTL compatible and can drive up to 8 TTL loads over a voltage range from 4.5 to 16 V.

Applications include linear and rotary encoders with resolutions determined by external apertures.

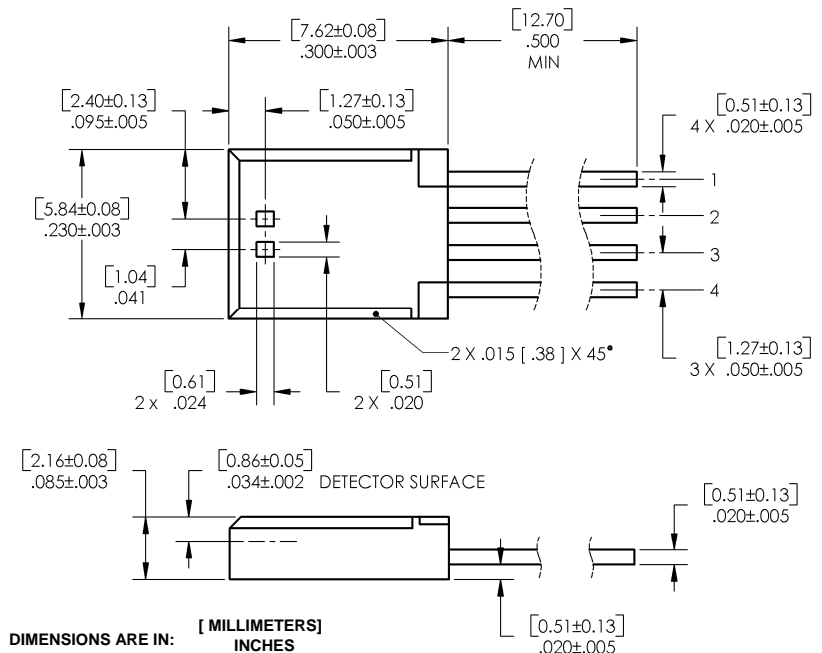
## Applications:

- Rotary and Linear encoders
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor

Ordering Information				
Part Number	Photologic®	Input Power $E_E$ (mW/cm <sup>2</sup> ) Min / Max	V <sub>CC</sub> (V) Min / Max	Lead Length/ Spacing
OPL583	Dual Channel	0.05 / 0.25	4.5/16	0.50" / 0.05"



Pin #	Description
1	V <sub>CC</sub>
2	Out-B
3	Out-A
4	Ground



RoHS

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

**Absolute Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)**

Operating Temperature Range	-40° C to +85° C
Storage Temperature Range	-40° C to +100° C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron]	260°C <sup>(1)</sup>
<b>Output Photologic®</b>	
Supply Voltage V <sub>CC</sub>	18 V <sup>(2)</sup>
Power Dissipation	200 mW <sup>(3)</sup>
Duration of Output Short to V <sub>CC</sub>	1 second
Voltage at Output	18 V
Low Level Output Current (sinking)	40 mA

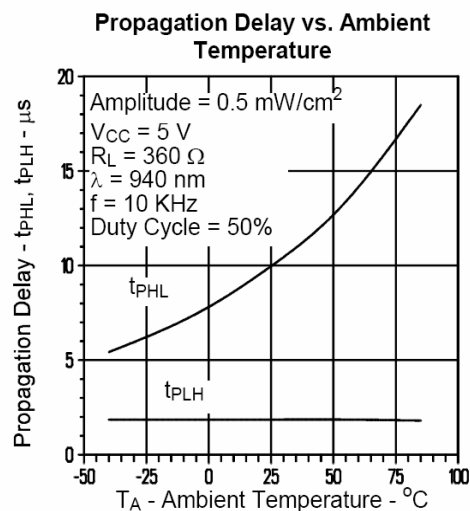
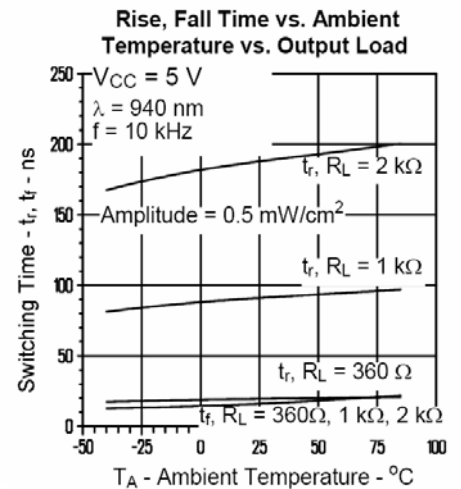
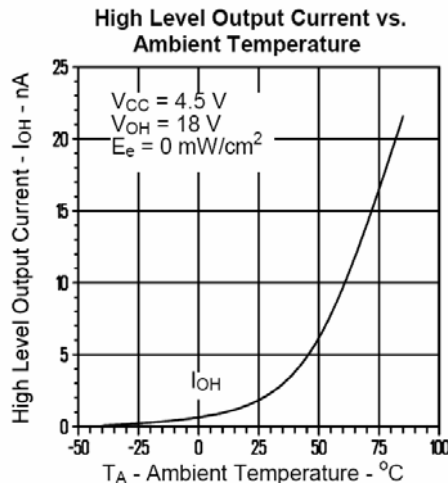
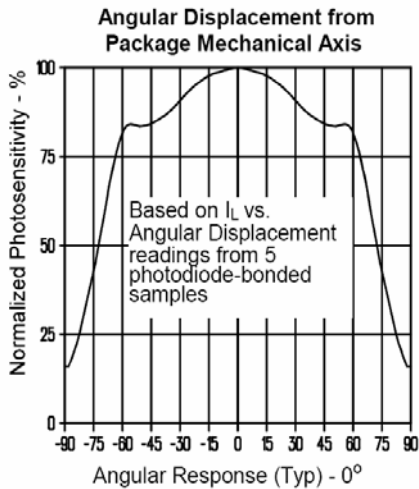
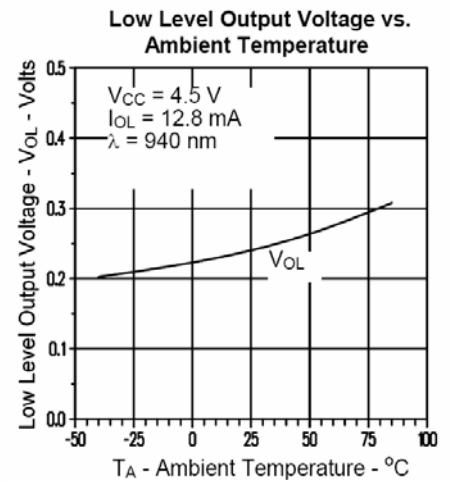
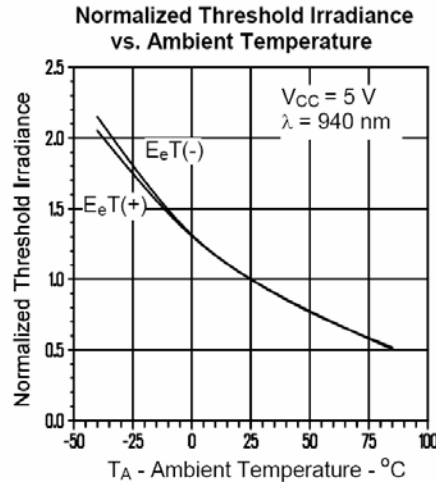
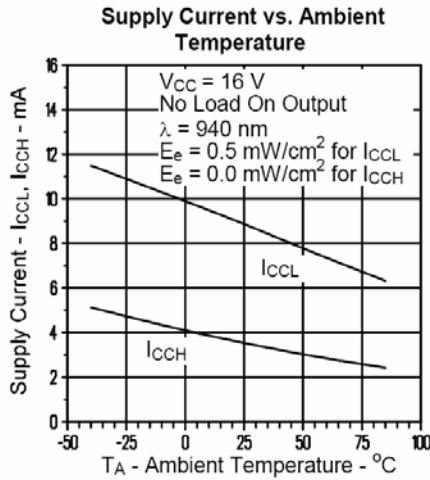
**Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)**

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
V <sub>CC</sub>	Operating Supply Voltage <sup>(4)</sup>	4.5	-	16	V	-
E <sub>ET</sub> <sup>(+)</sup>	Positive-Going Threshold Irradiance <sup>(5)</sup>	0.05	0.10	0.25	mW/cm <sup>2</sup>	-
E <sub>ET</sub> <sup>(+)</sup> /E <sub>ET</sub> <sup>(-)</sup>	Hysteresis Ratio	1.1	1.5	2	-	-
MATCH	Channel Match E <sub>ET</sub> <sup>(+A)</sup> / E <sub>ET</sub> <sup>(+B)</sup>	0.67	1	1.5	-	-
I <sub>CCL</sub>	Supply Current Both Outputs Low (both photodiodes irradiated)	-	8.5	12	mA	E <sub>E</sub> = 0.5 mW/cm <sup>2</sup> (no load on output)
I <sub>CCH</sub>	Supply Current Both Outputs High (both photodiodes shaded)	-	3.5	6	mA	E <sub>E</sub> = 0 mW/cm <sup>2</sup> (no load on output)
I <sub>CCM</sub>	Supply Current Mixed Output States (one high, one low)	-	6	-	mA	E <sub>E</sub> = 0 mW/cm <sup>2</sup> and 0.5 mW/cm <sup>2</sup>
I <sub>oh</sub>	High Level Output Current	-	1	30	μA	E <sub>E</sub> = 0 mW/cm <sup>2</sup> , V <sub>OH</sub> = 16 V
V <sub>OL</sub>	Low Level Output Voltage	-	0.21	0.4	V	E <sub>E</sub> = 0.5 mW/cm <sup>2</sup> , I <sub>OL</sub> = 12.8 mA
T <sub>PHL</sub> T <sub>PLH</sub>	Propagation Delay Output High to Low Output Low to High	-	2 10	-	μs μs	V <sub>CC</sub> = 5 V, R <sub>L</sub> = 360 Ω E <sub>E</sub> = 0 or 0.5 mW/cm <sup>2</sup> , f = 10 kHz, D.C. = 50%
t <sub>r</sub> t <sub>f</sub>	Output Rise Time Output Fall Time	-	20 15	-	ns ns	-

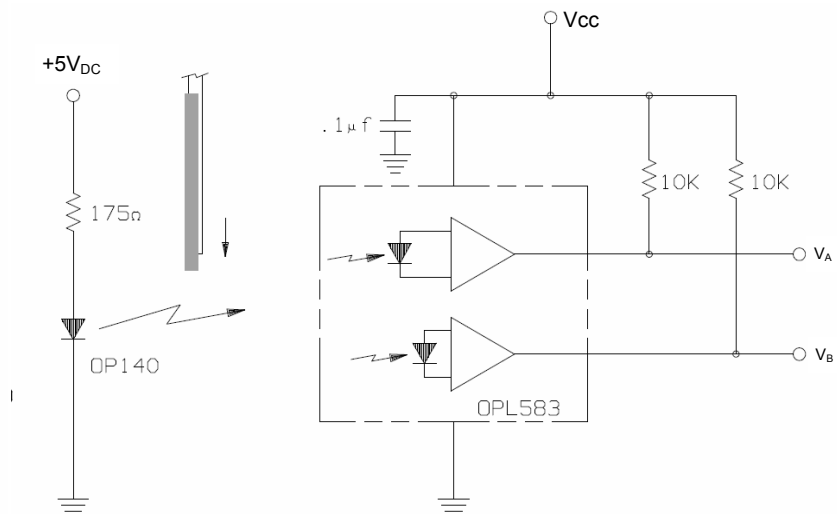
Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (2) Derate linearly 0.37 V/°C above 58° C.
- (3) Derate linearly 2.67 mW/° C above 25° C.
- (4) A 0.01 μF capacitor should be used across the V<sub>CC</sub> and GND leads to stabilize the power supply line.
- (5) Irradiance measurements are made with λ = 940 nm.

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### Typical Application Circuit



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