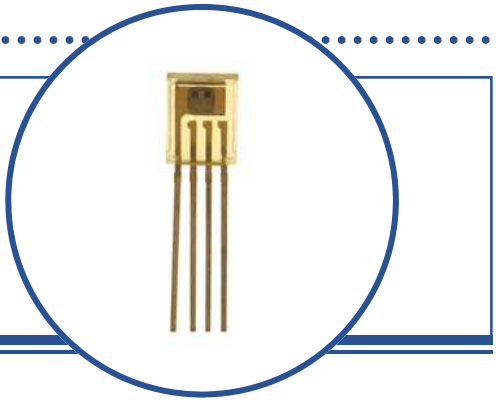
Dual Channel Photologic Encoder Detector
OPL583

TT electronics
OPTEK Technology

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:

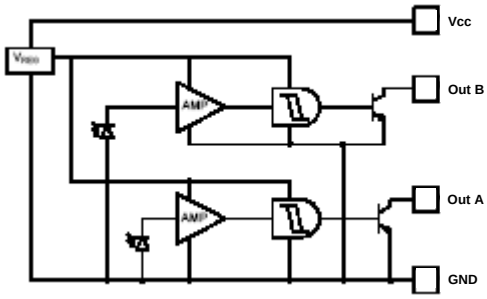
OPL583 contains a monolithic integrated circuit that incorporates two independent photodiodes, two linear amplifiers, two Schmitt trigger circuits and two output transistors which are all served by a common voltage regulator. The fixed position of the two photodiodes and the matched characteristics of 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.

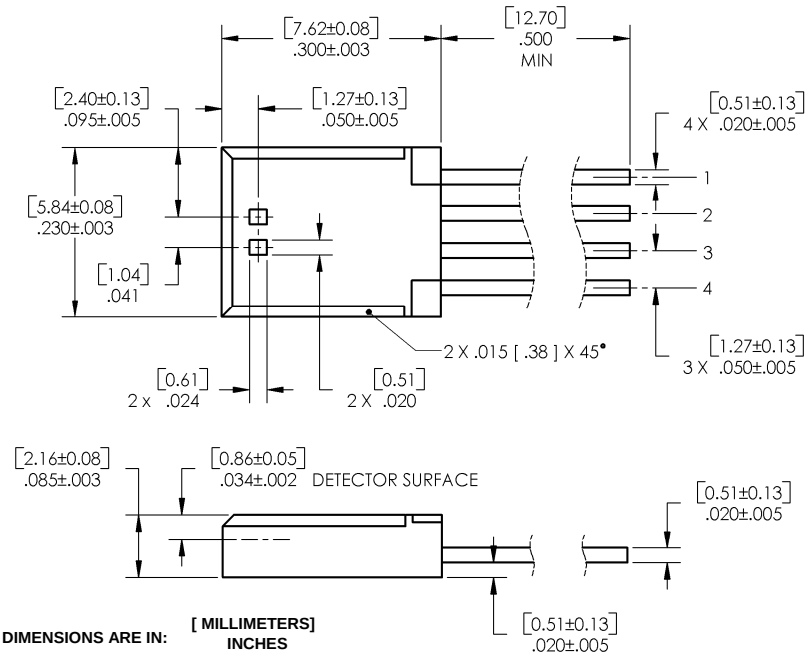
Applications:

- 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^2) Min / Max**	**V_{CC} (V) Min / Max**	**Lead Length/ Spacing**
OPL583	Dual Channel	0.05 / 0.25	4.5/16	0.50" / 0.05"



Pin #	Description
1	V_{CC}
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_A=25℃ 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(1)
Output Photologic®	
Supply Voltage V_{CC}	18 V (2)
Power Dissipation	200 mW(3)
Duration of Output Short to V_{CC}	1 second
Voltage at Output	18 V
Low Level Output Current (sinking)	40 mA

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
V_{CC}	Operating Supply Voltage(4)	4.5	-	16	V	-
$E_{ET}^{(+)}$	Positive-Going Threshold Irradiance(5)	0.05	0.10	0.25	mW/cm^2	-
$E_{ET}^{(+)}/E_{ET}^{(-)}$	Hysteresis Ratio	1.1	1.5	2	-	-
MATCH	Channel Match $E_{ET}^{(+A)}$ / $E_{ET}^{(+B)}$	0.67	1	1.5	-	-
I_{CCL}	Supply Current Both Outputs Low (both photodiodes irradiated)	-	8.5	12	mA	E_E = 0.5 mW/cm^2 (no load on output)
I_{CCH}	Supply Current Both Outputs High (both photodiodes shaded)	-	3.5	6	mA	E_E = 0 mW/cm^2 (no load on output)
I_{CCM}	Supply Current Mixed Output States (one high, one low)	-	6	-	mA	E_E = 0 mW/cm^2 and 0.5 mW/cm^2
I_{oh}	High Level Output Current	-	1	30	µA	E_E = 0 mW/cm^2 , V_{OH} = 16 V
V_{OL}	Low Level Output Voltage	-	0.21	0.4	V	E_E = 0.5 mW/cm^2 , I_{OL} = 12.8 mA
T_{PHL} T_{PLH}	Propagation Delay Output High to Low Output Low to HIgh	-	2 10	-	µs µs	V_{CC} = 5 V, R_L = 360 Ω E_E = 0 or 0.5 mW/cm^2 , f = 10 kHz, D.C. = 50%
t_r t_f	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_{CC} and GND leads to stabilize the power supply line.
(5) Irradiance measurements are made with λ = 940 nm.

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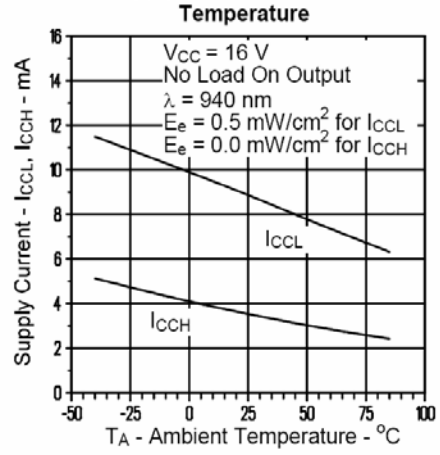
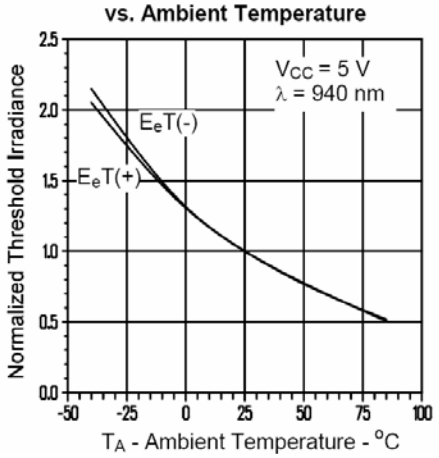
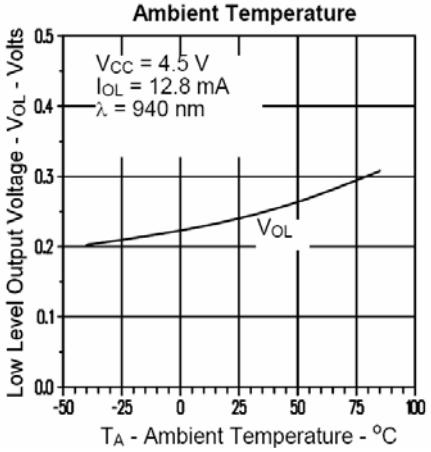
Supply Current vs. Ambient Temperature



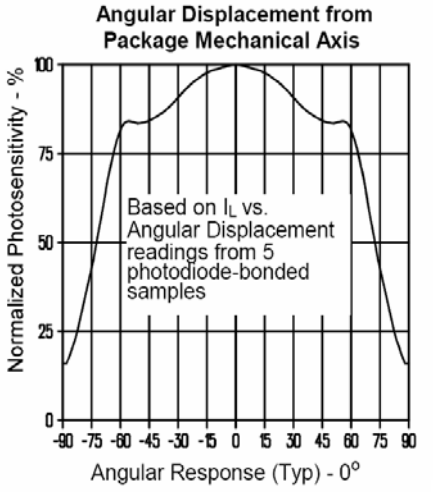
Normalized Threshold Irradiance vs. Ambient Temperature



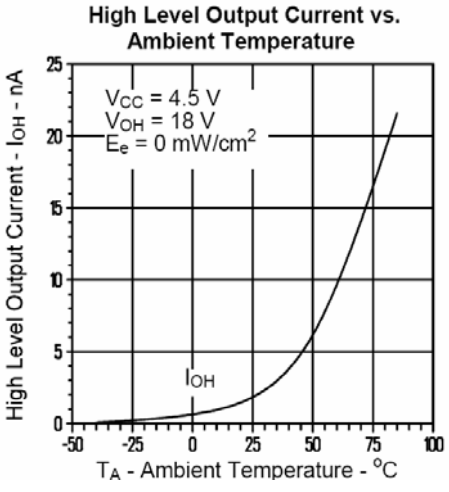
Low Level Output Voltage vs. Ambient Temperature



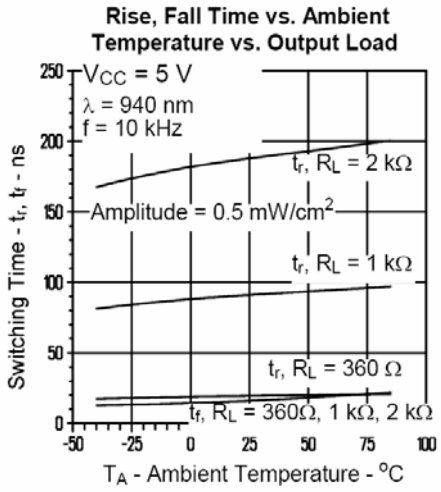
Angular Displacement from Package Mechanical Axis



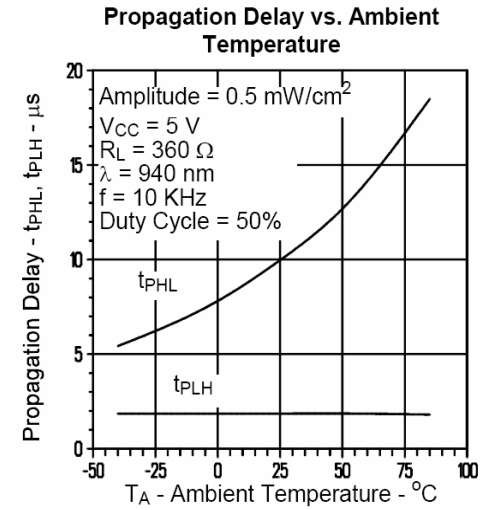
High Level Output Current vs. Ambient Temperature



Rise, Fall Time vs. Ambient Temperature vs. Output Load



Propagation Delay vs. Ambient Temperature



Typical Application Circuit