

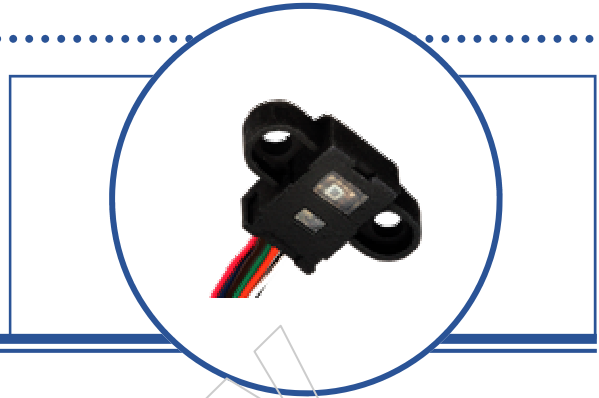
Reflective Color Sensor Assembly

OPB780



Features:

- High-resolution conversion of light intensity to frequency
- Programmable color output frequency
- Communicates directly with a microcontroller
- Single-supply operation (2.7 V to 5.5 V)
- Power-down feature
- Typical nonlinearity error 0.2% at 50 kHz
- Stable 200 ppm/° coefficient



Description:

The **OPB780** color sensor uses a programmable light-to-frequency converter that combines 64 configurable silicon photodiodes (on a 144 um center and measuring 120 um x 120 um each) and a current-to-frequency converter on a single monolithic CMOS integrated circuit, packaged in a small, lightweight package that makes it ideal for using in miniature applications.

The output is a square wave (50% duty cycle) with a frequency directly proportional to light intensity (irradiance). Digital inputs and digital output high-impedance state for multiple-unit sharing of a microcontroller input line.

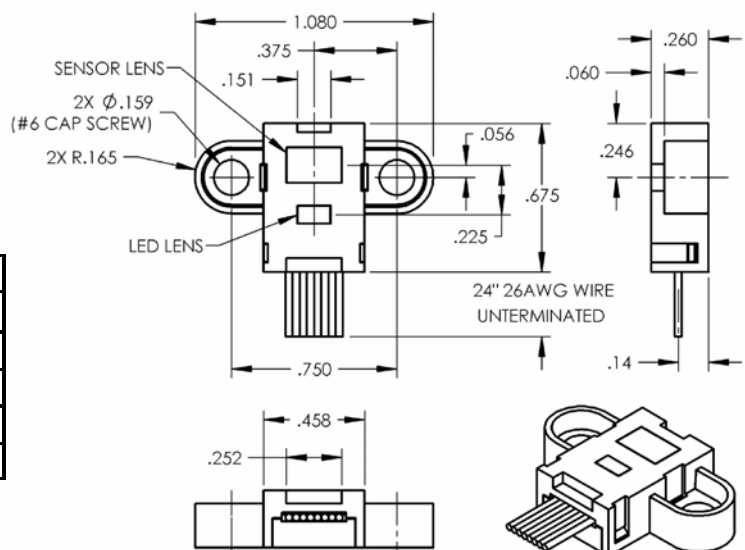
The light-to-frequency converter reads an 8 x 8 array of photodiodes that consists of four groups of 16 photodiodes each, segregated by color: 16 photodiodes with red filters, 16 photodiodes with green filters, 16 photodiodes with blue filters and 16 clear photodiodes with no filters. Each color's group of 16 photodiodes is interdigitated to minimize the effect of non-uniformity of incident irradiance. Each color's group is also connected in parallel. The type of photodiode used during operation is pin-selectable.

For more information, contact your local representative or OPTEK.

Applications:

- Photographic equipment
- Colorimetry
- Chemical analyzers
- Display contrast controls
- High resolution digital measurement of light intensity

Pin	No.	I/O	Description
GND	8	-	Power supply ground ¹
\overline{OE}	7	I	Enable for F_O (active low)
OUT	2	O	Output frequency (F_O)
S2, S3	4, 4	I	Photodiode type selection inputs
V_{DD}	1	-	Supply voltage



Note:
(1) All voltages are referenced to GND.



Ordering Information	
OPB780	Reflective Color Sensor Assembly

DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY OCCUR.

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