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## MAX86165

## Miniature Optical Heart Rate Module

### General Description

The MAX86165 is an ultra-low-power, completely integrated, optical data acquisition system. On the transmitter side, the MAX86165 has a programmable low-noise LED driver with an IR emitter. On the receiver side, MAX86165 consists of a high efficiency PIN photodiode and an optical readout channel. The optical readout has a low-noise signal conditioning analog front end (AFE), including 20-bit analog-to-digital converter (ADC) and an industry-leading ambient light cancellation (ALC) circuit. Due to the low power consumption, compact size, ease and flexibility of use, the MAX86165 is ideal for a wide variety of optical sensing applications such as heart rate detection and proximity sensing in small spaces such as ear buds.

The MAX86165 operates on a single 2.7V to 5.5V  $V_{LED}$  supply voltage. Each device has a 128-word built-in FIFO. The MAX86165 is available in a 10-pin OLGA package with compact package dimensions of 2mm x 2.5mm x 0.82mm and operates over  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  temperature range.

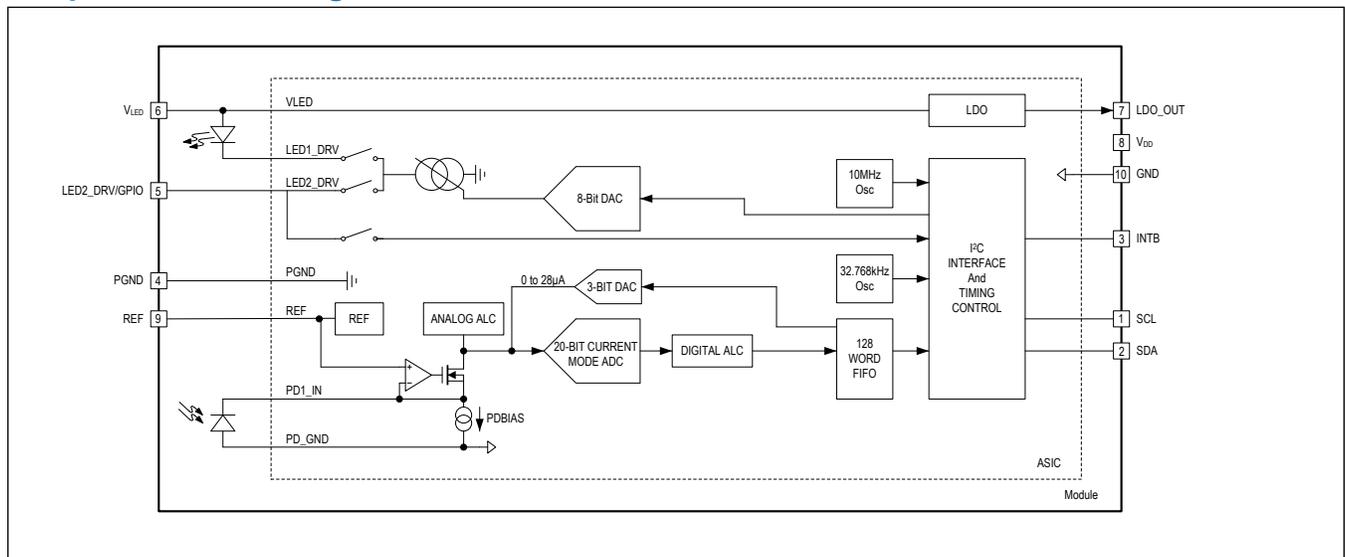
### Benefits and Features

- Complete Single-Channel Optical Data Acquisition System in a Tiny Module
- Optimized Architecture for Reflective Heart Rate Monitoring
- Integrated Infrared Proximity Sensing
- Optimized Performance to Detect Continuous Monitoring for Heart Rate Variability (HRV)
- High-Resolution 20-bit Charge Integrating ADC
- Low-Noise 8-Bit LED Current DAC
- Excellent Signal to Noise Ratio (SNR) up to 94.5dB in White Card Loop-Back Test
- Excellent Ambient Range and Rejection
  - Up to 200 $\mu\text{A}$  Ambient DC Current
  - 80dB Ambient Rejection at 120Hz
- Ultra Low-Power Operation for Wearable Devices
- Miniature 2mm x 2.5mm x 0.82mm 10-pin OLGA Package

### Applications

- Optimized for In-Ear Applications
- AR/VR Glasses
- Miniature Package for Mobile Applications

### Simplified Block Diagram



**Ordering Information** appears at end of data sheet.

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# ABRIDGED DATA SHEET

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