

FEATURES

- 2.8 mm × 6.5 mm module with integrated optical components
- 2 green LEDs located on either side of the photodiode,
- 1 infrared LED, and 1 photodiode
- True 3-channel 250 mA LED driver
- Separate LED and AFE settings for each channel
- Dual data registers for each LED return signal
- 14-bit ADC
- 20-bit burst accumulator enabling 20 bits per sample period
- On-board sample to sample accumulator enabling up to 27 bits per data read
- Custom optical package made to work under a glass window
- Optimized SNR for signal limited cases

APPLICATIONS

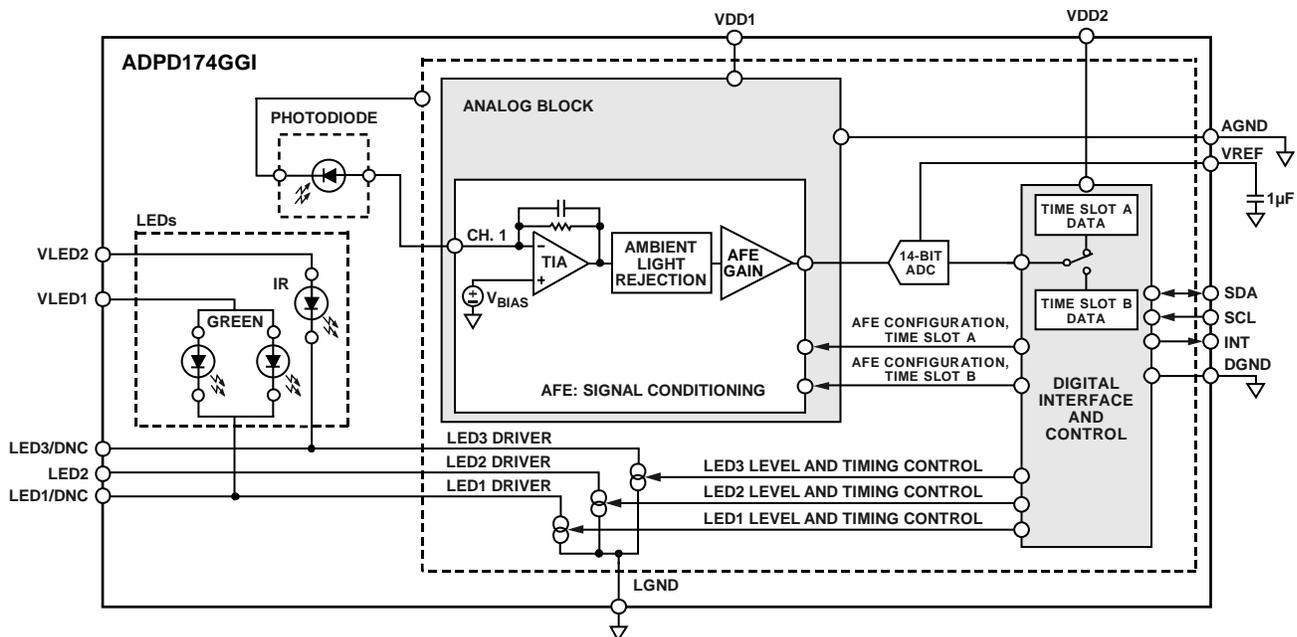
- Optical heart rate monitoring
- Reflective SpO₂ measurement

GENERAL DESCRIPTION

The ADPD174GGI is a complete photometric system designed to measure optical signals from ambient light and from synchronous reflected LED pulses. Synchronous measurement offers best-in-class rejection of ambient light interference, both dc and ac. The module integrates a highly efficient photometric front end, three LEDs, and a photodiode (PD). All of these items are housed in a custom package that prevents light from going directly from the LED to the photodiode without first entering the subject.

The front end of the ASIC consists of a control block, a 14-bit analog-to-digital converter (ADC) with a 20-bit burst accumulator, and three flexible, independently configurable LED drivers. The control circuitry includes flexible LED signaling and synchronous detection. The analog front end (AFE) features best-in-class rejection of signal offset and corruption due to modulated interference commonly caused by ambient light. The data output and functional configuration occur over a 1.8 V I²C interface.

FUNCTIONAL BLOCK DIAGRAM



NOTES
1. DNC = DO NOT CONNECT. DO NOT CONNECT TO THIS PIN WHEN USING INTERNAL LEDs.

Figure 1.

For more information about the ADPD174GGI, contact Analog Devices, Inc., at optical_sensors@analog.com.

Rev. SpA

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