

### 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

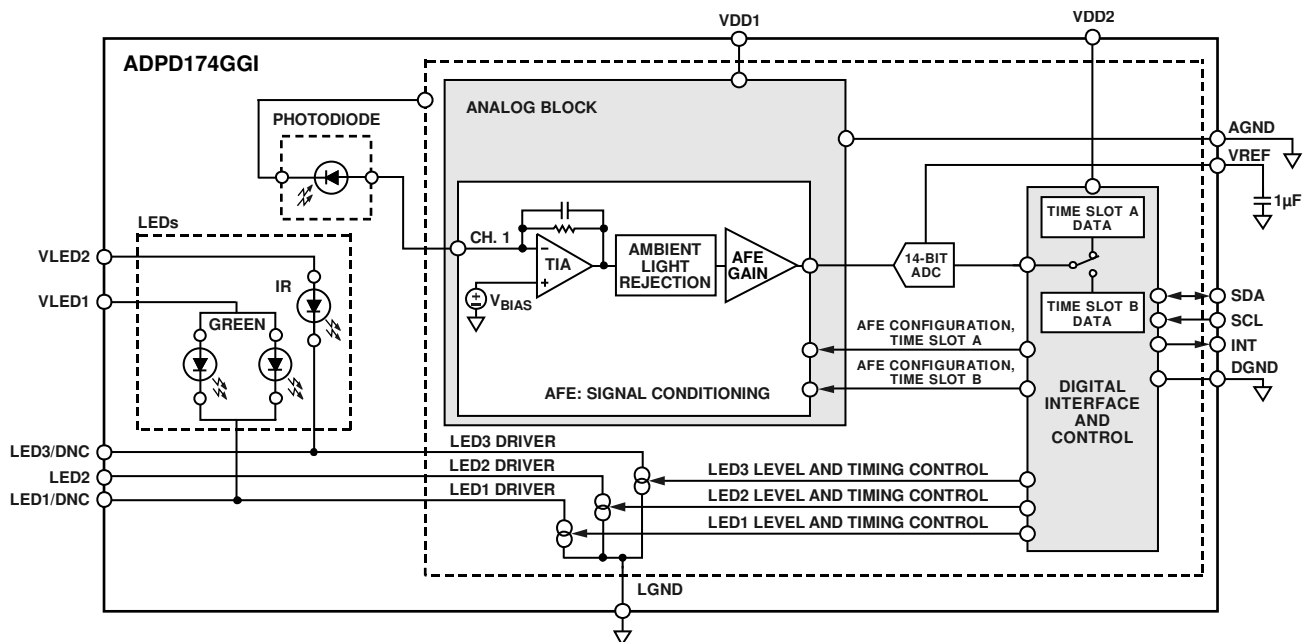
- Optical heart rate monitoring
- Reflective SpO<sub>2</sub> measurement

### 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 I<sup>2</sup>C 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](mailto:optical_sensors@analog.com).

### Rev. SpA

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

### Document Feedback

**NOTES**