

# Si1172 Data Short

## Biometric Sensor Module

The module includes an IC with integrated photodetector, current-to-digital converter, and LED drivers, along with multiple LEDs and support for ECG measurements. It also supports external LEDs and photodiodes.

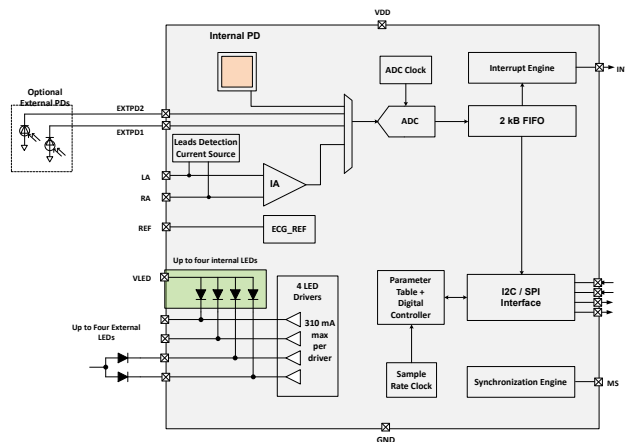
This optical heart rate sensor includes I2C and SPI digital interfaces, a programmable-event interrupt output, an analog-to-digital converter, host communications processor, four integrated LED drivers, and inputs for two external photodiodes

A large internal photodiode and high-efficiency LEDs, combined with the two optical ports at different distances from the sensor, creates a high-quality signal with different skin types. A low noise ECG interface (with support for leads on/off detection) allows you to take ECG measurements independent of, or interleaved with, PPG measurements.

The Si1172 offers excellent performance under a wide dynamic range. The Si1172 is provided in a 28 pin LGA module and is capable of operation from 1.71 to 3.63 V over the -40 to +85°C temperature range.

### Sample Applications

- Fitness wearables
- Smart watches
- Other wearable devices that require low power heart rate monitoring and ECG measurements

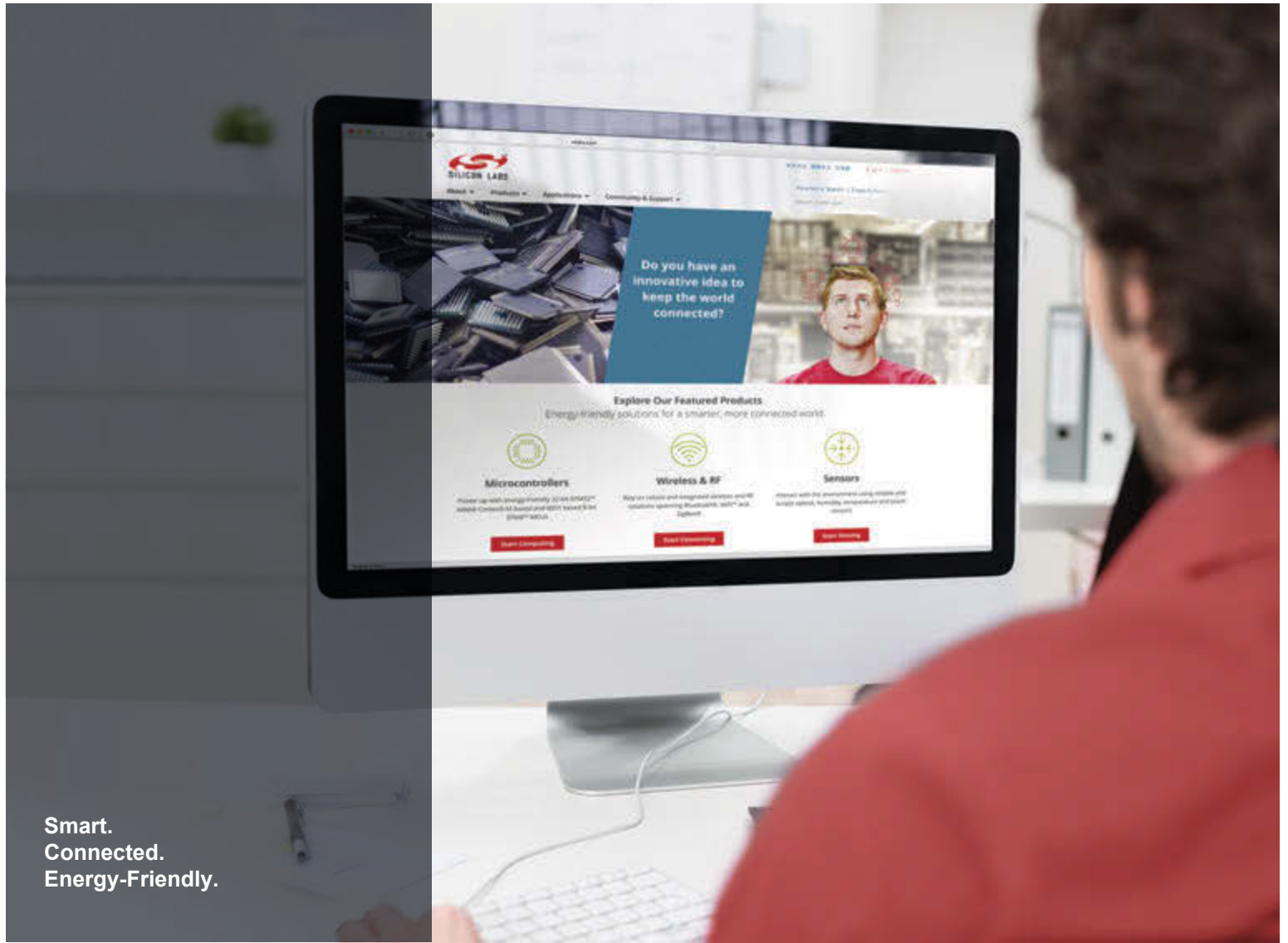


### KEY FEATURES

- Low power, high dynamic range sensor optimized for wrist-based PPG and ECG sensing
- Make time synchronized PPG and ECG measurements without host intervention
- Built-in single ECG channel and leads on/off detection optimized for high impedance dry electrode applications
- Supports integration times from 9  $\mu$ s to multiple seconds
- Average PPG sensor current <math>< 50 \mu\text{A}</math>
- 24 bit ADC with over 100 dB dynamic range and built in averaging
- 2kB FIFO interface
- Internal photodiode
- Support for external photodiodes
- Support for up to 4 LEDs in the module
- Low sleep current: 500 nA
- Low power consumption: Flexible duty cycle optimizes power consumption
- Short delay between samples improves ambient light rejection
- Four LED drivers, independently programmable from 1.7 to 310 mA
- I2C host communications with interrupts
- SPI host communications with interrupts
- Supports synchronization with an accelerometer
- 3.7 $\times$ 7.0 $\times$ 1.1 mm<sup>2</sup> LGA module
- Rated for operation from -40 to 85 °C

## 1. Ordering Guide

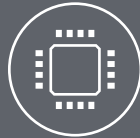
Part Number	Package	Details
Si1172G2-B3-GMR	3.7x7.0x1.1 mm LGA Module	4 integrated LED drivers, 2 integrated green LEDs (supporting up to 310 mA current each). 2 LED drivers (up to 310 mA each) available for external LEDs. Single Lead ECG support.
Si1172E2-B3-GMR	3.7x7.0x1.1mm LGA Module	4 integrated LED drivers, 2 integrated green LEDs (supporting up to 100mA current each). 2 LED drivers (upto 310 mA each) available for external LEDs. Single Lead ECG support.
Si1172K1-B3-GMR	3.7x7.0x1.1mm LGA Module	4 integrated LED drivers, 1 integrated green LED (supporting up to 310 mA), 1 integrated red LED, 1 integrated IR LED. 1 LED driver (upto 310 mA) available for external LED. Single Lead ECG support.
Si1172I3-B3-GMR	3.7x7.0x1.1mm LGA Module	4 integrated LED drivers, 2 integrated green LED (supporting up to 310mA), and 1 integrated IR LED. 1 LED driver (upto 310 mA) available for external LED. Single Lead ECG support.



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