

Vital Signs Module

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AS7024 – Smart Health & Fitness solution

- Multiple vital signs sensor for wearables and smart health: HRM, HRV & ECG
- Accurate, cuffless blood pressure measurement
- Highly integrated module: 3 LEDs and 5 photodiodes
- 1-stop shop combining Hardware and Algorithm
- Small size solution 2.70mm x 6.1mm



**Sensing
is life.**

General Description

The operation of the AS7024 is based on photoplethysmography (PPG) and electrocardiogram (ECG). PPG is the most used HRM method which measures the pulse rate by sampling light modulated by the blood vessels, which expand and contract as blood pulses through them. ECG is the reference for any measurement of the bio potential generated by the heart.

The AS7024 is supported by algorithms converting the PPG and ECG readings into digital HRM, HRV and Blood Pressure values. The module includes the LEDs, photo-sensor,

analog front-end (AFE) and sequencer as well as application software.

In addition to HRM/HRV and Blood Pressure, the module also enables skin temperature and skin resistivity measurements by providing interfaces to external sensors.

The AS7024's low-power design and small form factor is particularly well suited to application in fitness bands, smart watches, sports watches and smart patches, in which board space is limited and in which users look for extended, multi-day intervals between battery recharges.

Features

- Single module integrated solution
- 5 Photo Diodes (4 for PPG, 1 for Prox), 3 LEDs (2 green, 1 IR), Analog Front End
- Dimension 2.70mm x 6.1mm
- Low noise Optical Front End
- Synchronous demodulators
- Programmable sequencer & HP filter
- Low noise analog electrical front for ECG and additional measurements
- Algorithms for HRM, motion compensation, blood pressure

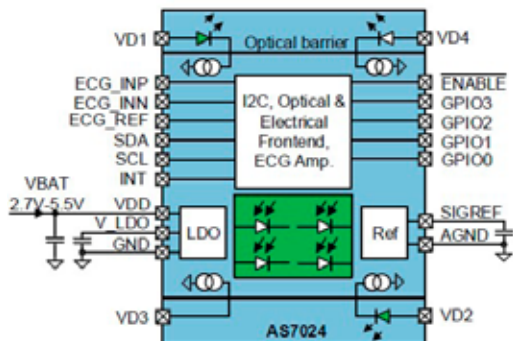
Benefits

- Allows small size application e.g. wearable and mobile
- Reliable PPG and HRM measurement
- Works reliably with ambient light
- Off load processor ensuring long operating time
- Additional information e.g. ECG, Blood Pressure, Temperature
- 1-stop shop combining Hardware and Algorithm allows quick time to market

Applications

- Wearables
- Smart health
- Smart patches
- Smartphones
- Automotive
- Health & Wellness

Block Diagram



Spectral Responsivity

