Press Release

ams introduces ultra-thin sensor bringing new blood-oxygen monitoring capability to earbuds, patches, and other wearable devices

News facts:

- **AS7038RB SpO_2 sensor integrates photodiode, filter and signal processing in a compact package just 0.65mm thin**
- **Superior optical performance supports use in medical-grade patient-monitoring patches and oximeters, enabling remote monitoring by healthcare teams**
- **Sensor includes electrical circuitry for concurrent ECG measurement**
- **Can be used to aid COVID-19 (SARS-CoV-2) early-symptom diagnostics**

Premstaetten, Austria (September 17, 2020) -- ams (SIX: AMS), a leading worldwide supplier of high performance sensor solutions, today introduces the industry's thinnest dedicated sensor for blood oxygen saturation (SpO_2) measurement, bringing the capability to remotely monitor this vital sign to small consumer products such as earbuds, smart watches and wristbands, as well as to medical devices such as patches and oximeters.

The high performance of the new AS7038RB also means that it is suitable for innovative applications in remote diagnostic equipment, such as disposable patches used for SpO_2 and electro-cardiogram (ECG) measurement in hospital emergency rooms. This gives medical teams and patients greater flexibility to choose how, where and when measurements of these vital signs are taken using non-invasive methods for fast response.

In fact, a growing body of evidence suggests that low SpO_2 is an early symptom of the COVID-19 disease before the onset of breathing difficulty in some at-risk patients. The development of a wearable SpO_2 measurement device based on the AS7038RB can be used remotely and therefore help in the treatment of people infected with the SARS-CoV-2 virus.

Wim Renirie, Vice President and General Manager for the Accessory and Wearable Solutions Business Line at ams, said: "The introduction of the AS7038RB marks another ams breakthrough in technology for remote diagnostics. ams is working actively with a range of partners to develop innovative solutions for the testing and diagnosis of COVID-19. The AS7038RB offers an additional diagnostic tool, enabling the creation of wearable and disposable equipment for monitoring blood oxygen saturation accurately and safely, without requiring the presence of a medical practitioner."

Small form factor and high integration for use in space-constrained designs

The AS7038RB's combination of small size, integrated functionality, and a high-performance signal chain makes it ideal for OEMs that are developing innovative applications for health monitoring in space-constrained consumer or medical products. The sensor, housed in a package with a footprint of 3.70mm x 3.10mm and which is just 0.65mm thin, integrates a highly sensitive photodiode, four LED drivers, an analog front end, and a sequencer. It is supplied with application software for SpO_2 and heart rate measurement. The analog front end also supports concurrent ECG measurement complying with the requirements of the IEC 6060-2-47 medical standard.

The accuracy of the AS7038RB's SpO_2 measurements, very closely matching the outputs from medical-grade pulse oximeters used in hospital testing facilities, is in part due to the unique on-wafer interference filter technology developed by ams. The filter enables the AS7038RB to capture optical signals in the 590nm-710nm and near infrared (800nm-1050nm) wavelength bands of interest for SpO_2 measurement, while blocking interference from ambient light at other wavelengths.

When combined with ams' high-sensitivity photodiode, which has a large light-sensitive area of 2.5mm^2, this produces a very high optical signal-to-noise ratio. This eases implementation in optically challenging applications such as disposable chest patches, wristbands, and smart watches.

Innovative flexible implementation allows use in a wide range of applications

The AS7038RB's provision of drivers for up to four external LEDs gives OEMs the flexibility to place the LEDs in the best position for the application. This means LED placement can be optimized for the different skin thicknesses and bone structure at the wrist, chest, forehead, finger, etc.

The sensor's high sensitivity and high signal-to-noise ratio enable it to operate effectively with a low optical power output from the LEDs. The integrated LED drivers provide for adjustment of the drive current, so the OEM can balance system power consumption and measurement performance, helping to extend run-time between battery charges in devices such as earbuds, which contain a small battery power source.

The AS7038RB is available for sampling now and goes into mass production in October.

For sample requests or more technical information about the AS7038RB SpO_2 sensor, go to https://ams.com/AS7038RB.

Further family members for heart rate and heart-rate variability monitoring

ams is also announcing today the AS7038GB, a version of the sensor with peak sensitivity at the 525nm (green) wavelength for use in heart rate (HRM) and heart rate variability (HRV) measurement. A modular version, the AS7030B HRM/HRV sensor, integrates two 535nm LEDs in a single package measuring 3.55mm x 6.2mm x 1mm.

About ams

ams is a global leader in the design and manufacture of advanced sensor solutions. Our mission is to shape the world with sensor solutions by providing a seamless interface between humans and technology.

ams' high-performance sensor solutions drive applications requiring small form factor, low power, highest sensitivity and multi-sensor integration. Products include sensor solutions, sensor ICs, interfaces and related software for consumer, communications, industrial, medical, and automotive markets.

With headquarters in Austria, ams employs around 9,000 people globally and serves more than 8,000 customers worldwide. ams is listed on the SIX Swiss Exchange (ticker symbol: AMS). More information about ams can be found at https://ams.com

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