

Ambiq Micro and PixArt announce development of even lower power ARM M4F+PPG Optical heart-rate-monitoring solution for next-generation wearables

Embedded World, Numenburg – February 23, 2016 – Ambiq Micro, the leader in ultra-low power ARM M4 with floating point unit microcontrollers, and PixArt Imaging Inc., a leading provider of Optical CMOS sensors for human-machine interface (HMI) solutions, today announced that the two companies have partnered to develop an ultra-low power Heart-Rate-Monitoring (HRM) solution for deployment in next-generation wearable products.

The fast-growing wearables market is rapidly evolving from devices that are primarily fitness-oriented to those that are intended to provide more sophisticated data and information on the health and wellbeing of users. As a result, continuous heart-rate-monitoring functionality is increasingly becoming a key requirement for these types of devices. This presents a huge challenge for wearable developers in balancing the limited battery resource available on wearable devices and the need for continuous HRM.

The joint solution from PixArt and Ambiq Micro now truly enables the ‘always-on’ sensing functionality for makers and OEMs looking to deliver the next generation of product for wearable health and wellness applications. Delivering a world-class power consumption figure of less than 350 μ A total power in continuous operation, the solution combines Ambiq Micro’s advanced Apollo ARM M4 with floating point unit MCU, which acts as the main processor in this advanced HRM solution, together with PixArt’s unique CMOS-sensor-based Heart Rate Monitor Family.

PixArt’s Heart Rate Monitor sensor deploys the photoplethysmogram (PPG) technique, which transmits LED light waves into the skin of the user and measures the response change caused by absorption due to pulsating arterial blood. Outputting captured PPG data from the user, these measurements can be used to monitor heart rate and stress levels.

Sen Huang, CEO of PixArt Imaging, said: “PixArt’s vision and commitment to the wellness market is deeply rooted from our proven CMOS optical sensor solution in HMI. The 800X HRM sensor family represents incredibly small packaged solution, ultra-low power and rapid deployment for the wearable markets.”

Mike Salas, VP of Marketing and Strategy of Ambiq Micro, said: “Until now, always-on heart rate monitoring has been a much talked about feature but one that is not practical to implement due to the large amount of power it consumes. By utilizing our best-in-class hardware paired with highly optimized software, Ambiq and PixArt have achieved HRM power consumption levels that are not only one of the best in the industry, but deliver on the promise of always-on HRM.”

Further Technical information

Based on the 32-bit ARM® Cortex-M4F processor core, in real-world applications the Apollo MCU from Ambiq Micro delivers typically 5 to 10 times lower energy consumption than other competitive MCUs that offer comparable performance. This high level of performance per watt can mean significantly extended battery life, which is critical for wearable electronics and battery-powered applications.

The dramatic reduction in energy consumption is achieved using Ambiq’s patented Subthreshold Power Optimized Technology (SPOT) platform. In addition, the Apollo MCU optimizes both active- and sleep-mode power – a technique that is unique in the industry. The MCU consumes an industry-leading 34µA/MHz when executing instructions from flash memory and features average sleep-mode currents as low as 140nA.

About PixArt Imaging Inc.

Headquartered from Hsin-chu, Taiwan, with offices in Silicon Valley, Japan and Malaysia, PixArt Imaging Inc. is a sensing and navigation company offering a broad selection of sensors and technologies to support today’s complex human-machine interface designs. Founded in July 1998, PixArt specializes in CMOS image sensors, capacitive touch controllers and related imaging application development. PixArt has extensive experience in mixed-signal image processing design and systems development and is dedicated to developing novel technologies to bridge the human-machine interface barrier.

About Ambiq Micro

Ambiq Micro was founded in 2010 on the simple yet powerful notion that extremely low power semiconductors are the key to the future of electronics. Through the use of pioneering ultra-low power technology, we help innovative companies around the world develop differentiated solutions that reduce or eliminate the need for batteries, lower overall system power, and maximize industrial design flexibility.

Ambiq Micro has developed breakthrough technology based on our patented Subthreshold Power Optimized Technology (SPOT™) platform that dramatically reduces the amount of power

consumed by semiconductors thus making our integrated circuits (ICs) an ideal solution for energy critical applications.

Ambiq Micro is headquartered in Austin, Texas. For more information, visit <http://www.ambiqmicro.com> and follow us @Ambiq_Micro.

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