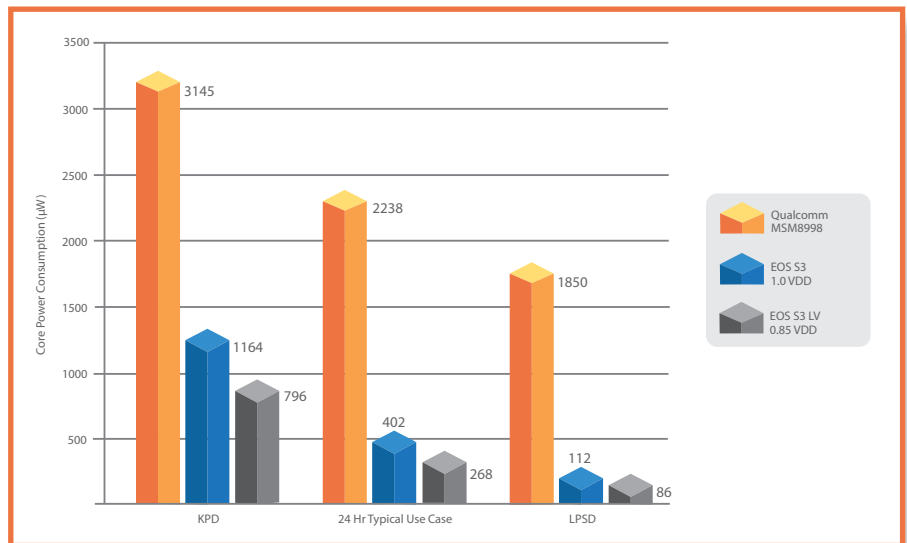




QuickLogic's EOS™ S3 Sensor Processing Platform is the world's only ultra-low power SoC which combines always-on/always-listening voice processing with fast, efficient and sophisticated sensor processing capabilities to enable a new class of context-aware use cases in hearable, wearable, smartphone and IoT applications. Example end products include smart glasses, home security, children's watches, and Bluetooth®-enabled headsets.



24Hr Typical Use-Case: Consists of 30% of day in KPD mode and 70% in LPSD.

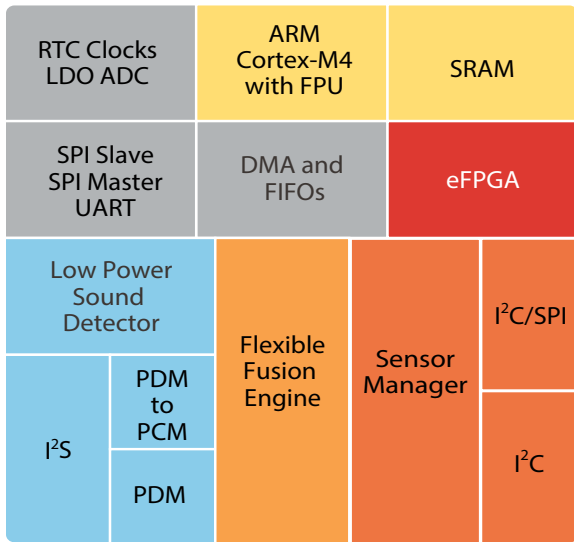
## The EOS S3 Solution

The SoC platform can process complex sensor algorithms and voice triggers while maintaining ultra-low power consumption to extend the battery life of IoT devices such as hearables, wearables, HMD/VR, remote controls, etc.

- Unique multi core architecture (M4F, FFE, LPSD) provides world class computational capability at industry leading power levels
- Delivers 80% more compute capability than traditional ARM® Cortex®-M4 based microcontroller sensor hub solutions at a fraction of the power consumption
- Dedicated voice processing architecture enables Low-Power Sound Detection (LPSD) at 86 µW and always-on Key Phrase Detection (KPD) under 268 µW



## EOS S3 Sensor Processing Platform Block Diagram



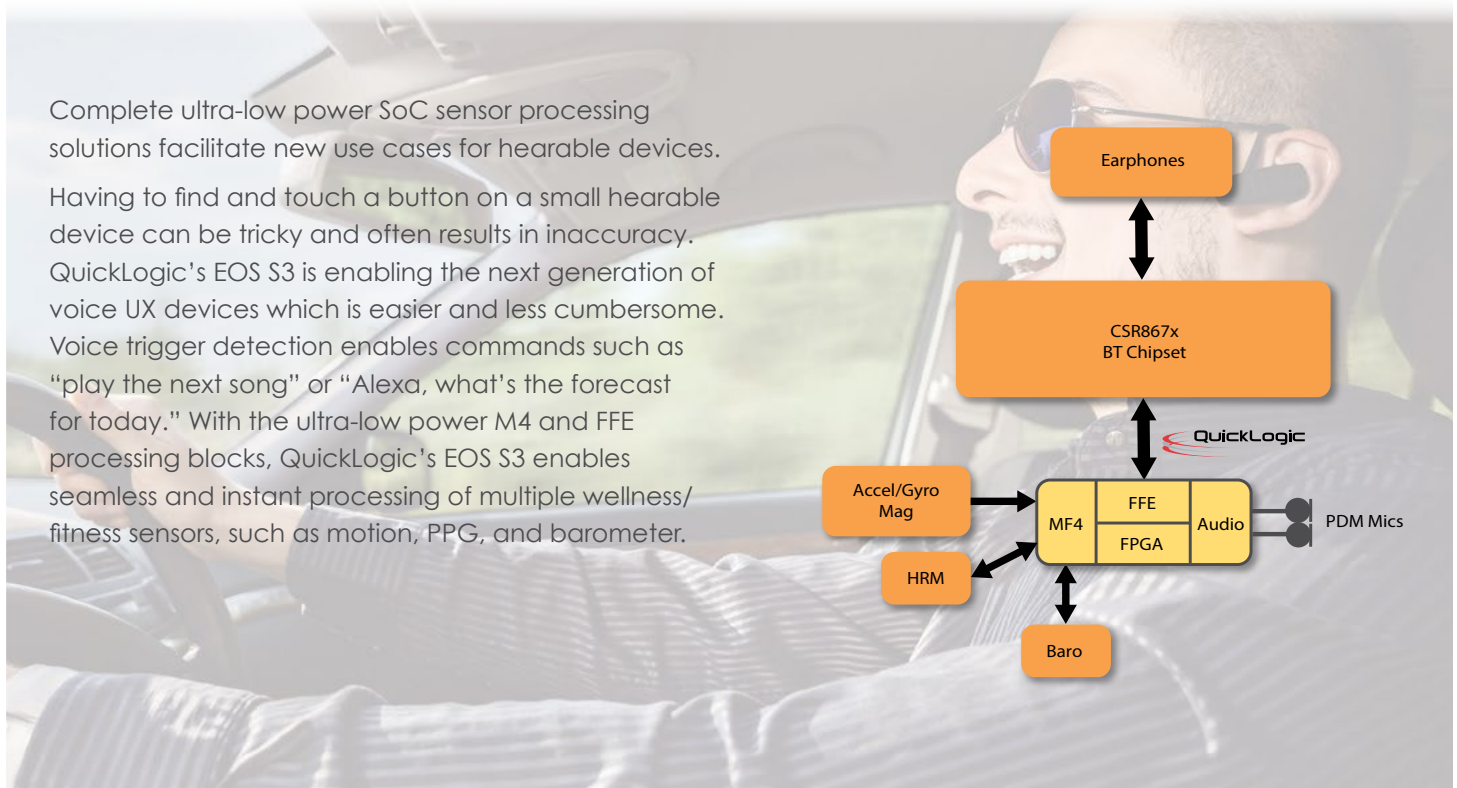
- **Sensor Manager** – Autonomously manages and controls all sensors
- **Flexible Fusion Engine (FFE)** – 10 MHz DSP-like processor supports always-on computational processing at one fourth the power
- **eFPGA** – Enables custom logic functions and I/O expansions
- **Voice Processing** – Hard-coded Low Power Sound Detector (LPSD) and PDM to PCM conversion minimizes audio processing power
- **ARM Cortex-M4 with FPU** – Up to 80 MHz and 512 KB SRAM for general purpose processing and running O/S
- **Serial I/O** – SPI Master/Slave, I<sup>2</sup>C, UART
- **System** – DMA, Integrated RTC, Oscillators, ADC, LDO

## Applications

### EOS S3 Hearable Application — Enables Cloud AI Support and Local Voice Commands

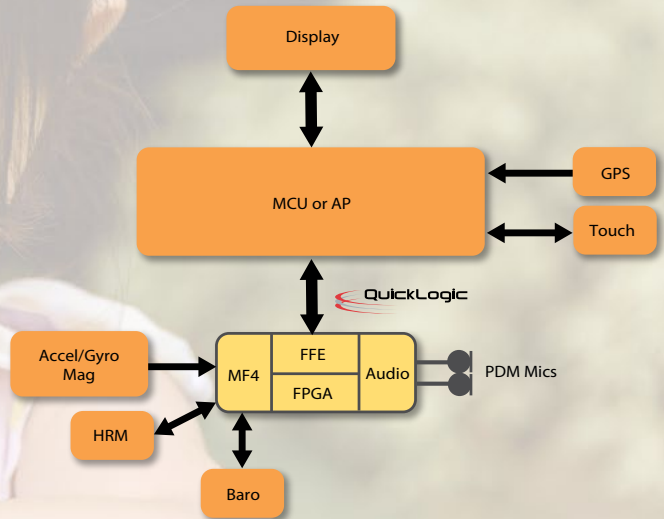
Complete ultra-low power SoC sensor processing solutions facilitate new use cases for hearable devices.

Having to find and touch a button on a small hearable device can be tricky and often results in inaccuracy. QuickLogic's EOS S3 is enabling the next generation of voice UX devices which is easier and less cumbersome. Voice trigger detection enables commands such as "play the next song" or "Alexa, what's the forecast for today." With the ultra-low power M4 and FFE processing blocks, QuickLogic's EOS S3 enables seamless and instant processing of multiple wellness/fitness sensors, such as motion, PPG, and barometer.



## EOS S3 Wearable Application — Enables Touchless UX and S.O.S Messages/Calls

Because smart watches/bands are small, it's hard to navigate the menus to open the apps and send messages. QuickLogic's EOS S3 enables the next generation of control by delivering always-on voice triggers, such as "Start Mail", "Start Music" or "Call Mom". Always-on listening will even allow children's watch/band products to deliver an "SOS" distress call or text message when the child speaks a dedicated distress word. By offloading the main MCU or AP, the EOS S3 can extend the battery life of the device by always processing the sensor data while the higher power AP/MCU is asleep.



## EOS S3 Smartphone Application — Always-Listening and Always-On

Always-on sensors enable more natural user interactions for an immersive user experience. QuickLogic's sensor processing platform allow ultra-low power implementations of algorithms.





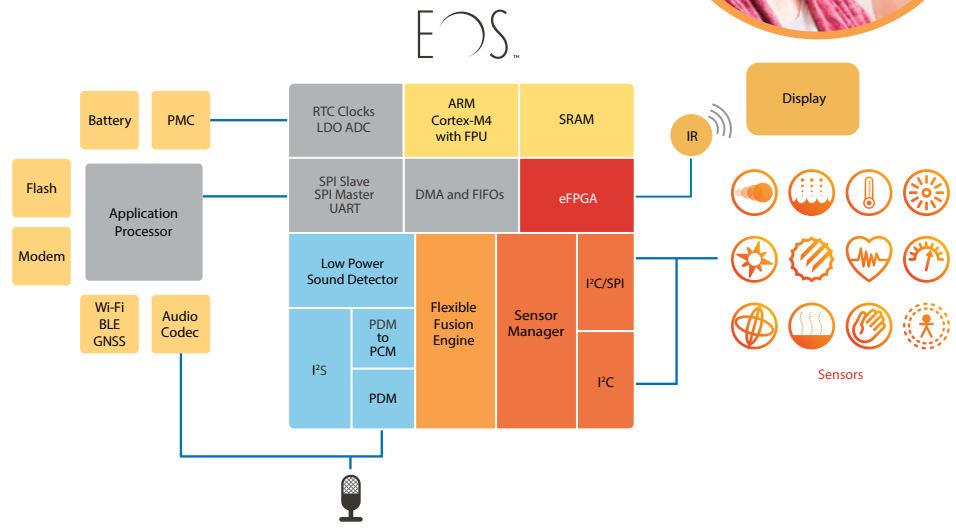
Always-on, always-listening processing powered by Sensory™



Android-compliant sensor fusion by CyWeeMotion™

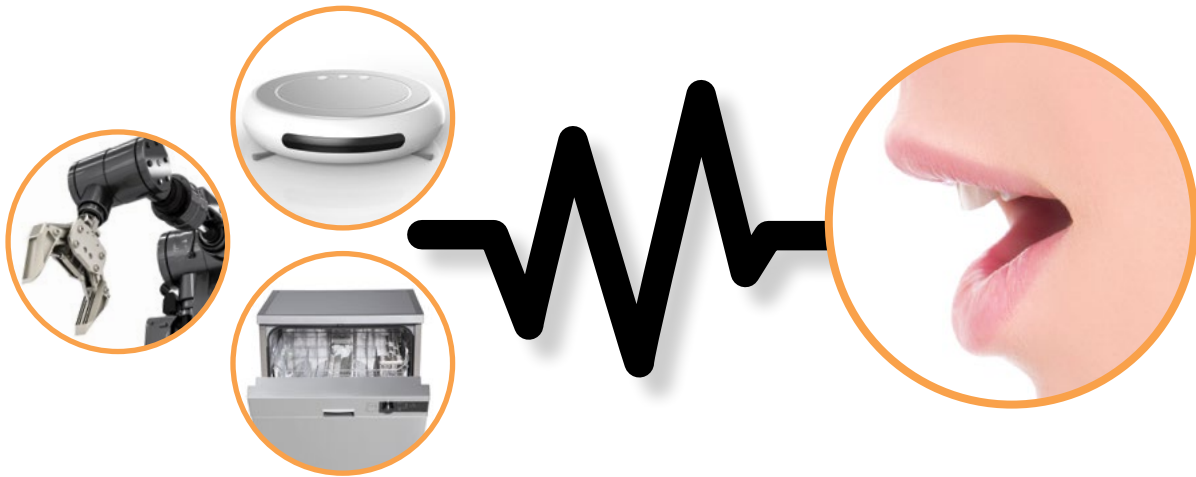


Reduced component count with EOS S3 two-in-one solution



## General IoT Application — Enables Voice UX

Voice triggers can initiate or stop an event or process. For example, a robotic vacuum can be told to “Clean” or “Go Recharge”, while a dishwasher can be commanded to “Wash”, “Rinse” or “Dry”. Thanks to its ultra-low power consumption, QuickLogic’s EOS S3 platform can be “always on” and listening for these key words or phrases and still maintain long battery life. In addition, the EOS S3 SoC can batch and then process data from other sensors without a significant impact on power consumption.



**About QuickLogic:** QuickLogic Corporation (NASDAQ: QUIK) enables OEMs to maximize battery life for highly differentiated, immersive user experiences with Smartphone, Wearable, Hearable and IoT devices. QuickLogic delivers these benefits through industry leading ultra-low power customer programmable SoC semiconductor solutions, embedded software, and algorithm solutions for always-on voice and sensor processing. The company’s embedded FPGA initiative also enables SoC designers to easily implement post production changes, and increase revenue by providing hardware programmability to their end customers. For more information about QuickLogic, please visit [www.quicklogic.com](http://www.quicklogic.com).

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