



# AUDIO IP PLATFORM BAT

IP PLATFORM BRIEF

# DOLPHIN DESIGN

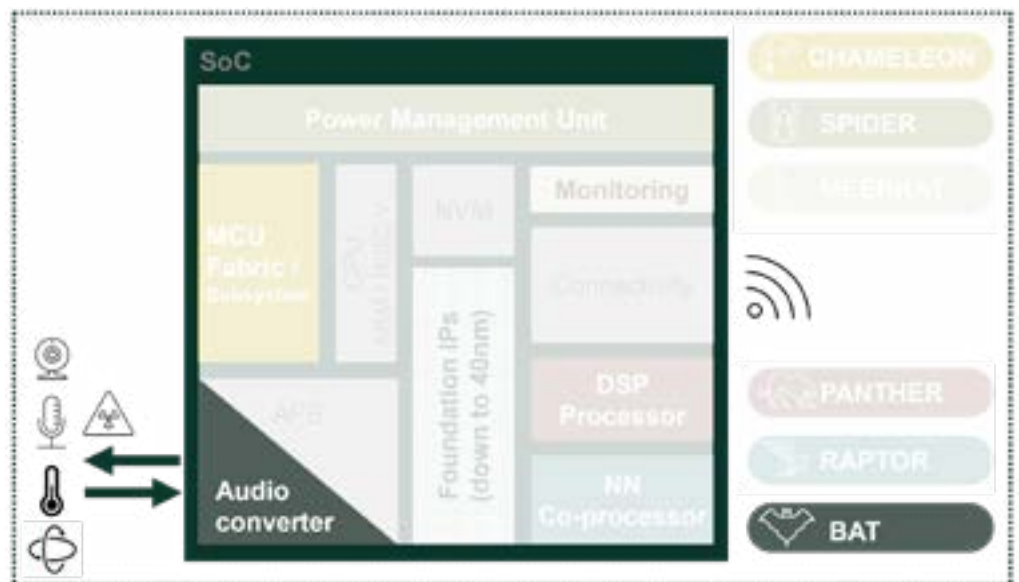
## Hear the faintest whisper and play it clear and loud

### APPLICATIONS

- TWS earbuds, headphones and headsets
- AR/VR
- Smart speakers, home appliance
- Wearables, hearables, Voice first devices
- BLE codecs
- LP and GP MCU

BAT is a widely configurable IP platform for high fidelity audio where extended battery lifetime matters. It enables on-chip integration of ultra-low power single-channel ADC for voice recording to complex multi-channel ADCs and DACs coping with multiple input audio sources and several kinds of speakers as needed in portable audio, be it TWS, SmartSpeakers, headphones or more conventional audio devices

BAT includes analog blocks for A/D and D/A conversions, headphone or speaker driving... as well as feature-rich digital signal processing and Voice Detection triggers.



### KEY FIGURES

- 8µA in Voice Detection mode
- 100% voice detected
- 106 dB SNR ADC
- 119 dB SNR DAC
- < 8µs latency mic input to HP output
- Up to 768 kHz sample rate

### TECHNOLOGY FOR BETTER FUTURE

Dolphin Design strategy focuses on increasing drastically the energy efficiency of next generation of semiconductor devices, for two major positive effects on environment:

- Extension of devices usage before their battery recharge, which in turn increases battery lifetime and decreases global electrical consumption
- Extension of device lifespan, which in turn limits the volume of toxic materials to be recycled

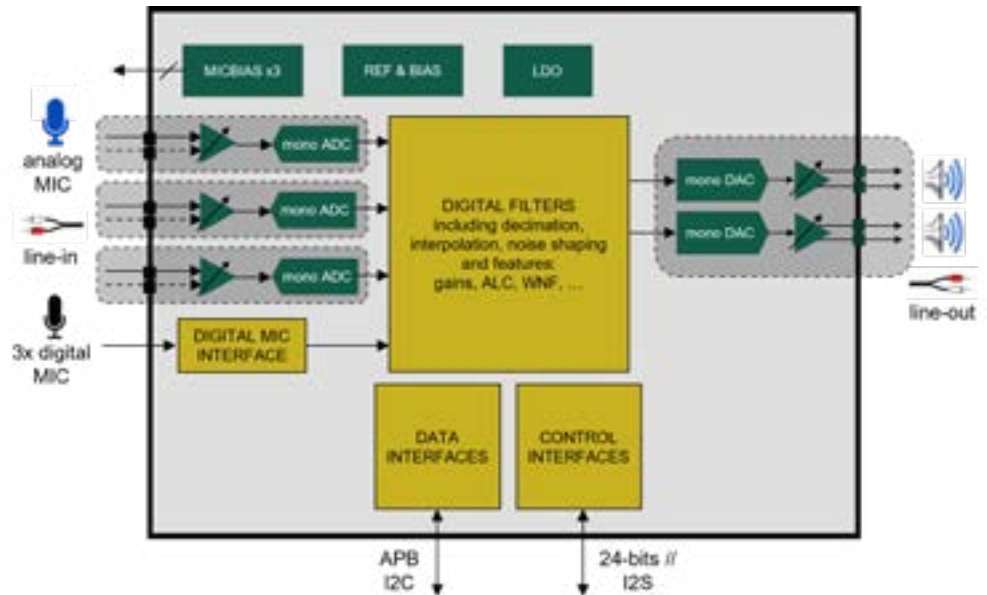
Dolphin Design's SPEED IP platform is labelled by the Solar Impulse Foundation among 1,000 solutions for tomorrow.





**KEY BENEFITS**

- Low BoM cost based on capless architecture
- Best performance versus footprint ratio
- Ultra low power in 'Always Listening' mode
- High fidelity in near and far field operations
- Extremely low noise floor
- Configurable sample rate from 16 to 768KHz
- Application optimized solution with built-in digital processing



Typical audio converter configured for TWS with BAT

**KEY FEATURES**

- Low latency digital filters
- Asynchronous audio bitstream management
- Runtime programmable capability
- Standard interfaces (I2S, I2C, AHB, APB)
- Pop up noise reduction system
- High resilience to power supply noise

**HIGH FIDELITY AUDIO**

BAT is composed of 24-bits sigma delta architecture ADC & DAC, associated amplifiers and is enhanced with feature-rich digital signal processing to match software requirements of modern algorithms like beamforming and noise cancellation.

With its disruptive Voice activity trigger, BAT can even detect a voice out of background noises and wake-up the system accordingly to perform advanced audio recognition workloads.

**LOW POWER CONSUMPTION**

Energy efficiency is optimized for each mode thanks to specific operating modes with dedicated trade-offs and various voltage support in record and playback operation.

**TOWARD AI**

New use cases are unlocked with innovative solution like Voice Activity Detection and keyword spotting in conjunction with our digital processing platforms: Chameleon MCU-subsystem, Panther DSP & Raptor NPU.

**FLEXIBILITY AND INTEGRATION**

BAT provides efficient support for analog and digital microphones, as well as line inputs and can drive headphones, line outputs and external amplifiers. Inputs, outputs and features used in BAT products are fully customizable by the end users in order to match the application requirements.

