Features:

- Low active power consumption of < 250 µW average power when running full Analog Signal Conditioning and Feature Extraction.
- Supports 32 frequency bins in Feature Extraction image.
- Allows for use of preset coefficients in ROM or for custom coefficients to be loaded into SRAM.
- Directly interfaces to analog MEMS microphone.
- SPI Interface (load coefficients, read audio and flags)
- On board ultra-low power regulator and clock.
- Supply operating range supports common analog MEMs microphone ranges.
  - VIN: 1.5V to 3.6V
  - AVDD: 1.2V
  - DVDD: 0.9V to 1.2V
- Direct powering of 1.2V regulated pins is supported for lowest power requirements.
- Small footprint in a 32 pin 5x5 QFN package.

Applications:

- Wake-word recognition
- Acoustic Anomaly/Event Detections
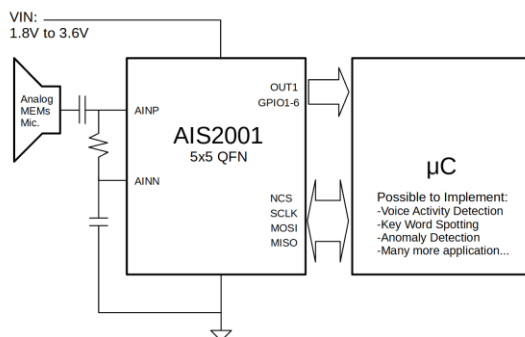- Event based classifier templates

Description:

The AIS2001 is a smart analog MEMS microphone interface with included feature extraction. Ultra-low "always on" power consumption of < 250 µW, with proper dataset training, accuracy levels greater than 95% are possible for speech and anomaly detection.

The proprietary charge domain feature extraction engine eliminates the need for data conversion and complex power-hungry DSP while generating the appropriate form of spectrogram for neural network word and sound classification input. This results in superior ultra-low power performance with no compromise in accuracy.

The analog front-end amplifier interfaces directly to single-ended analog MEMs microphones with minimum additional components. This allows for a significant power benefit compared to digital microphones. The AIS2001 can be easily interfaced to various other types of sensors such as accelerometers and heart rate monitors thanks to the variable gain input amplifier with high input impedance.

The AIS2001 development environment supports standard flows such as TensorFlow lite. The trained and quantized parameters can be stored directly in the on-chip SRAM. This provides ultimate flexibility for ultra-low power standalone applications.

Typical Application:

Example PSD Output: