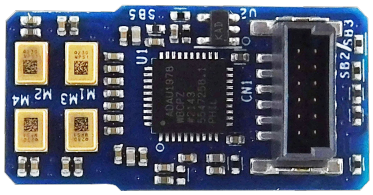
STEVAL-STWINMA2

Data brief

Industrial analog microphone array expansion for the SensorTile Wireless Industrial Node (STWIN) kit



Features

- Analog microphone array expansion for STEVAL-STWINKT1B (and STEVAL-STWINKT1)
- Connects to the STWIN core system board through a dedicated 12-pin connector
- 3 V to 5.5 V power supply input
- 4 mm square-shaped differential microphone array
- Four IMP23ABSU high-performance, single-ended, analog, bottom-port MEMS microphones
- LDK130 300 mA low quiescent current very low noise LDO
- Ultrasound frequency response up to 80 kHz
- On-board audio-grade quad ADC
- Serial audio interface (SAI) digital output

Description

The STEVAL-STWINMA2 microphone array expansion adds advanced audio sensing capabilities to the STEVAL-STWINKT1B (and STEVAL-STWINKT1) SensorTile Wireless Industrial Node (STWIN) kit for high frequency vibration monitoring applications.

The board includes four low-power, high signal-to-noise ratio (SNR) IMP23ABSU capacitive sensing microphones, supported by a very low drop voltage, low quiescent current, and low-noise voltage regulator, ideal for battery-powered applications such as STWIN.

The expansion board is connected via a dedicated 12-pin connector to the core system board.

The combination of STWIN and STEVAL-STWINMA2 is supported thanks to the software examples provided within the X-CUBE-MEMSMIC1 expansion software package for STM32Cube.

The package includes one example of microphone data steaming via USB and one example of ultrasound condition monitoring (UltrasoundFFT) that calculates the FFT of the analog microphone signal and streams the result to a PC GUI via USB.

The microphone sampling rate is set by default to 192 kHz whereas the microphone bandwidth is up to 80 kHz.

Product summary	
Industrial analog microphone array expansion for the SensorTile WirelessIndustrial Node (STWIN) kit	STEVAL-STWINMA2
Analog bottom port microphone with frequency response up to 80kHz for Ultrasound analysis and Predictive Maintenance applications	IMP23ABSUTR
STWIN SensorTile Wireless Industrial Node development kit and reference design for industrial IoT applications	STEVAL-STWINKT1B
Analog and digital MEMS microphone acquisition and processing software expansion for STM32Cube	X-CUBE-MEMSMIC1
Applications	Factory Automation Sound Sensing

1 Schematic diagrams

Figure 1. STEVAL-STWINMA2 schematic - Mics, VDD and connector

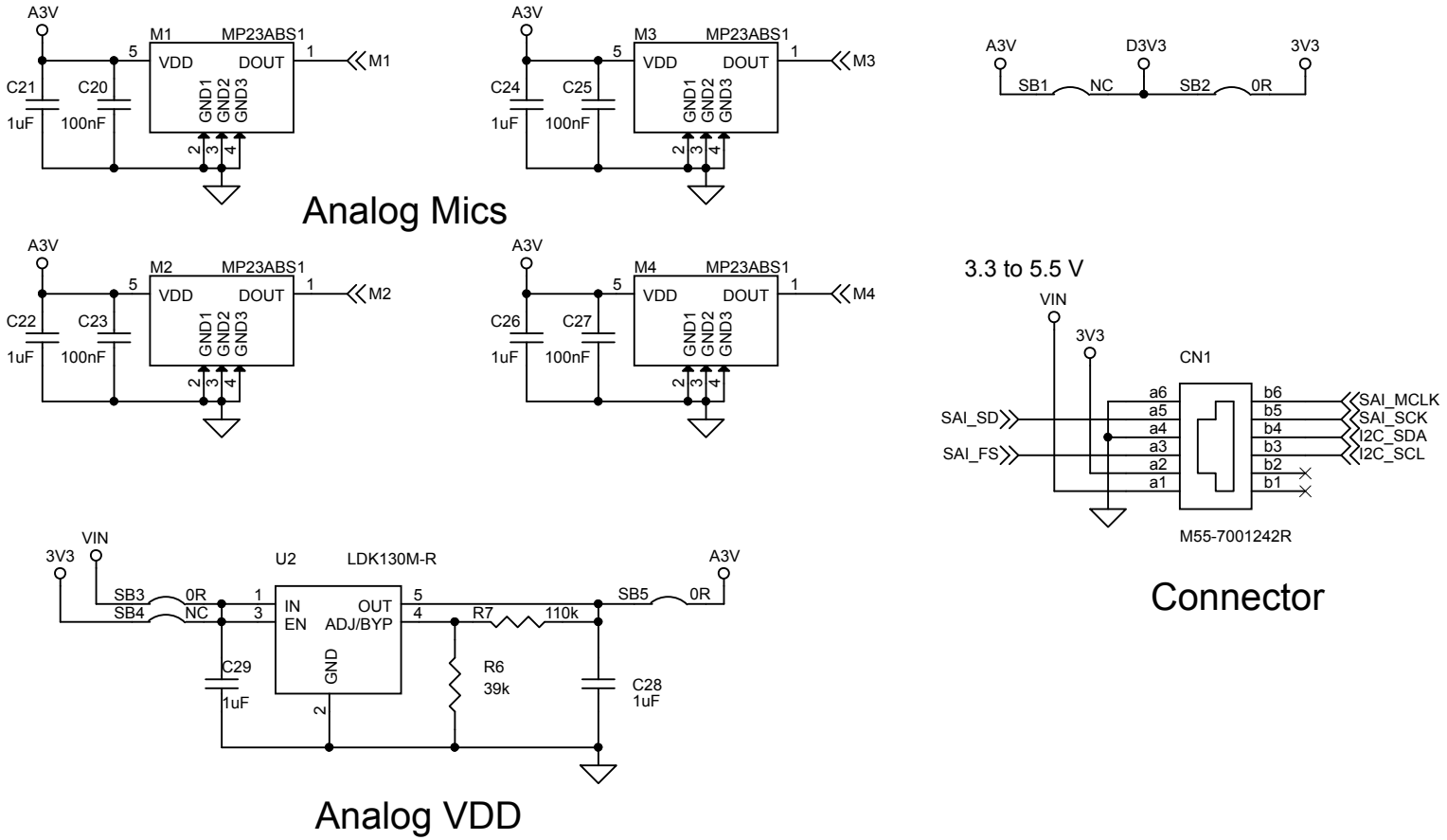
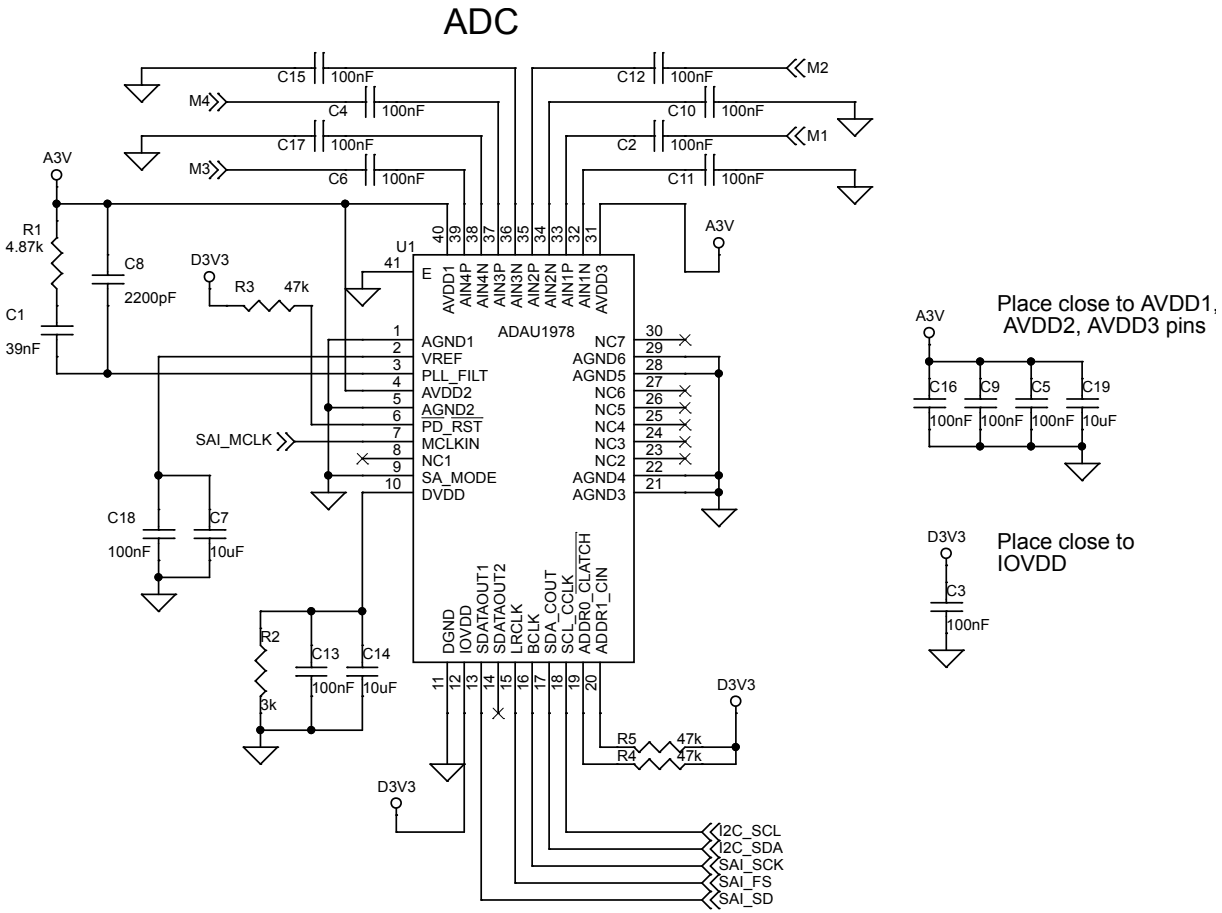


Figure 2. STEVAL-STWINMA2 schematic - ADC



Revision history

Table 1. **Document revision history**

Date	Revision	Changes
10-May-2023	1	Initial release.