AC102 High Performance and Low Power Mono Audio CODEC

■ ADC

- Mono ADC with 101dB SNR typically(A-weight)；
- –82 dB THD+N @ 0 dB gain and 1.0Vpp input；
- Mono Fully-differential analog microphone input with 0dB~31dB boost amplifier gain；
- ADC sample rates supported: 8k,11.025k,12kHz, 16kHz,22.05kHz,24kHz,32kHz,44.1kHz,48kHz；
- Programmable Microphone Bias 1.81V~2.39V；
- Support Automatic Gain Control (AGC) adjusting the ADC recording output；

■ DAC

- Mono DAC with auto attenuate:112dB SNR(A-weight) DAC without auto attenuate:104dB SNR(A-weight)；
- –87 dB THD+N @ 0dB line-out gain；
- Mono Fully-differential Line Output with 1.0Vrms maximum output voltage；
- DAC sample rates supported: 8k,11.025k,12kHz, 16kHz,22.05kHz,24kHz,32kHz,44.1kHz,48kHz；
- 3 bands parametric Biquad filter for EQ in DAC path；

■ System

- One TWI control interface up to 400 kHz；
- One 8KHz ~ 48KHz I2S/PCM interface；
- Adjustable 44.1K/48K sample rate without software driver；
- 2 Integrated LDOs，analog LDO output is 1.8V，digital LDO output is 1.2V；
- 3 mm x 3 mm 20-pin QFN Package，pitch 0.4mm；

■ Low Power

- Support single 1.8V or 3.3V power supply；
- < 3mA Mono 48ksps ADC Record with fully-differential analog microphone input；
- < 3mA Mono 48ksps DAC Playback with line-out driver output；

■ Description

The AC102 is a high-performance, low-power, mono audio CODEC optimized for use in portable applications. The device integrates support one fully-differential analog microphone input and mono line output driver.

The mono 24-bit multi-bit sigma delta ADC with digital decimation filters has programmable gain with automatic gain control (AGC). Digital audio output word length from 8-24 bits and sampling rates from 8kHz to 48kHz are supported.

A multi-bit sigma delta DAC is used with digital audio input word length from 8-24 bits and sampling rates from 8 to 48kHz. The parametric Equalizer consists of 3-band EQ for playback path. Gain, center frequency, and bandwidth of each band EQ can be programmed independently to compensate frequency response of speakers, and to meet various user preferences.

The AC102 provides many formats of serial audio data interface to the input of the DAC or output from the ADC through LRCK, BCLK and SDIN/SDOUT pins. These formats are I2S, left justified, right justified, PCM mode.

The AC102 is controlled through TWI (2-wire serial interface). The clock supports up to 400 KHz rate. It works only in the slave mode.

■ Applications

- Portable audio applications
- Digital Cameras and video cameras
- Wireless headset
- Tablets and e-Books

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Typical Application Diagram

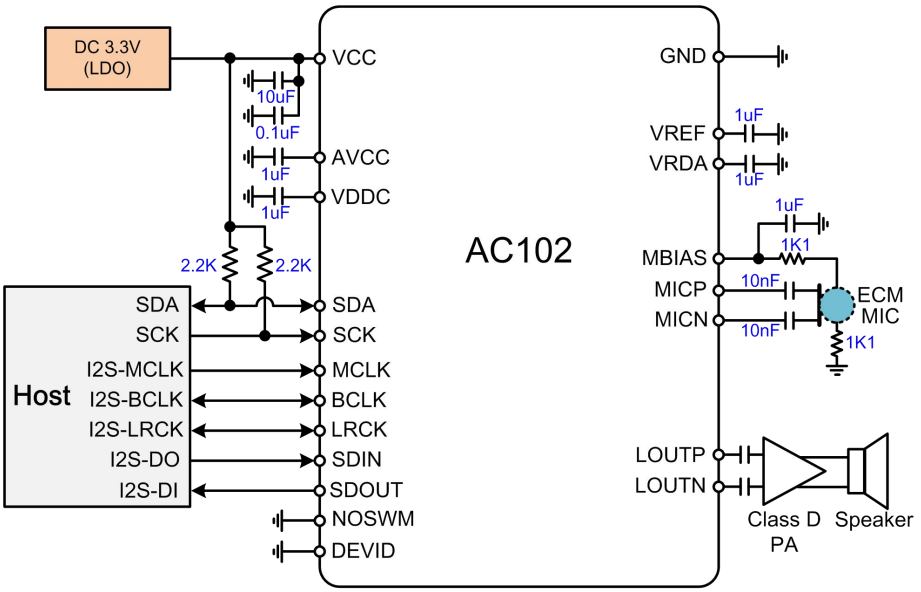


Figure 1 Single 3.3V Supply Typical Application Diagram

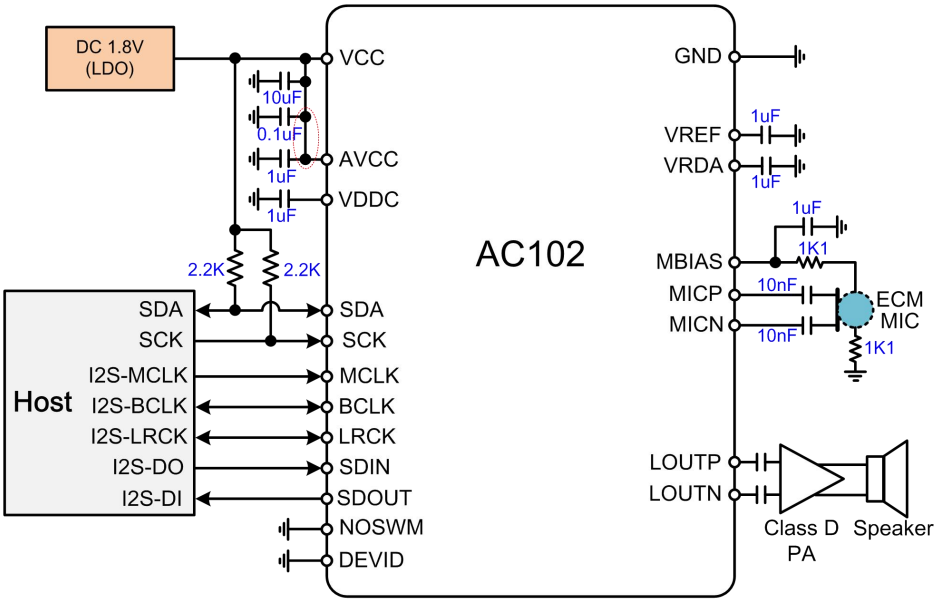


Figure 2 Single 1.8V Supply Typical Application Diagram

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