ESP32

THE CODEC

Control over I2C:

-The I2C SDA and SCL lines are used for configuration of audio codec. The I2C interface is mandatory and you MUST configure the codec on power-up. Otherwise it will fail to work, because all of the I2S functions are disabled by default on power-up.

2. Audio data over I2S:

The I2S interface uses

**MCLK –**for master clock. This clock makes the audio codec core (digital parts) work.

**LRCLK –**Also called the WS (or word select) defines which channel the audio data must be put out on.

**BCLK** – Also called CLK, SCK or BCK. It is the bit clock.

**DOUT, DIN** – The data output and input pins respectively.

design mistakes

For some codecs, MCLK and all I2S signals must have the same phase (all I2S bus signal must rise and fall with the rise and fall of the MCLK).

If you are using the ESP32, you can cause delays in signals by routing them throught the GPIO matrix… which changes the phase with respect to MCLK. This will result in some terrible audio. And sometimes you may get lucky.

-The range of MCLK is limited. You cannot just send 40MHz down that pin and expect the codec to work!

If you are not playing or recording audio, mute/power down the codec. The BCK line can pick up noise and clock in some garbage which comes straight out the headphones. Ugly! Route I2S lines away from MCLK.

Initialize MCLK first, I2S second and I2C last. This is because many codecs will be non-responsive to I2C commands without MCLK.