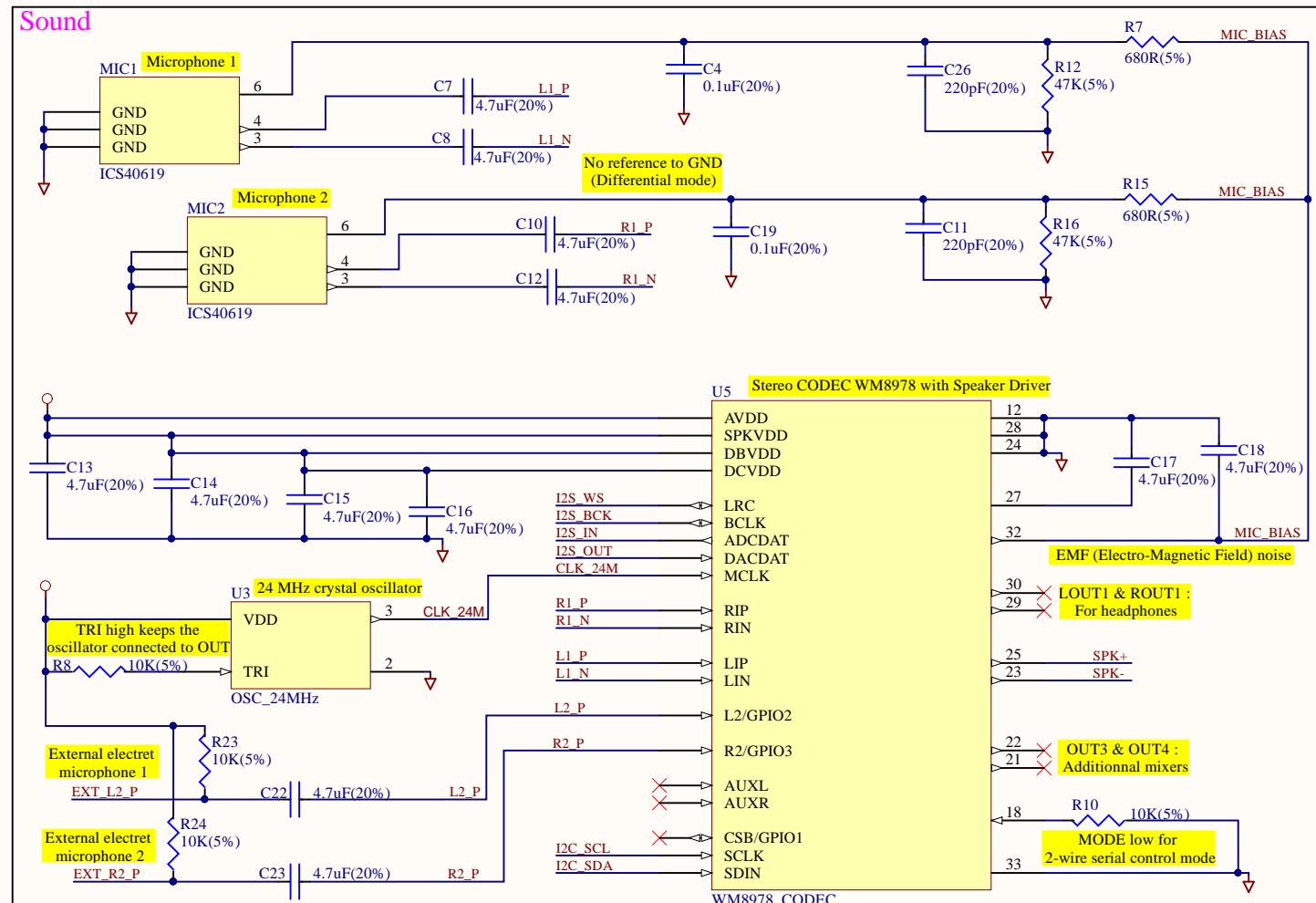
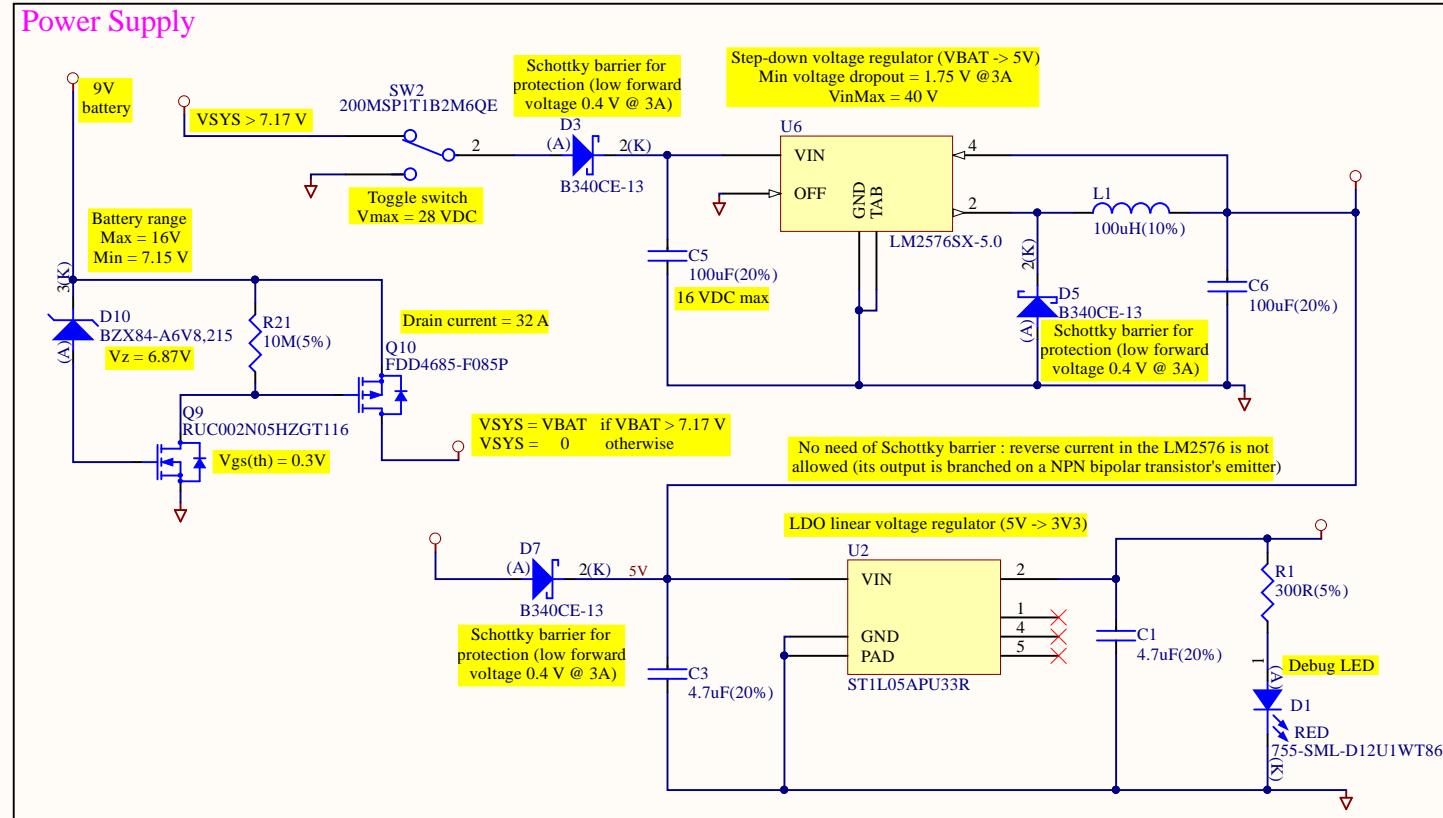


Notes - LM2576 :
Pin VIN: Connect to power supply and input bypass capacitors CIN. Path from VIN pin to high frequency bypass CIN and GND must be as short as possible.
Pin FB : Connect to the midpoint of feedback divider to set VOUT for ADJ version or connect this pin directly to the output capacitor for a fixed output version.
Pin OFF : Connect to GND to enable the voltage regulator. Do not leave this pin float.
Source : <http://www.ti.com/lit/ds/svmlink/lm2576.pdf>

Notes - ST1105 :
The expected values of the input and output ceramic capacitors are from $1\mu F$ to $22\mu F$ with $4.7\mu F$ typical. The input capacitor has to be connected within 1 cm from V_I terminal. The output capacitor has also to be connected 1 cm far from output pin. There isn't any upper limit to the value of the input capacitor.
Source : <https://www.mouser.ch/datasheet/2/389/st1105-974244.pdf>

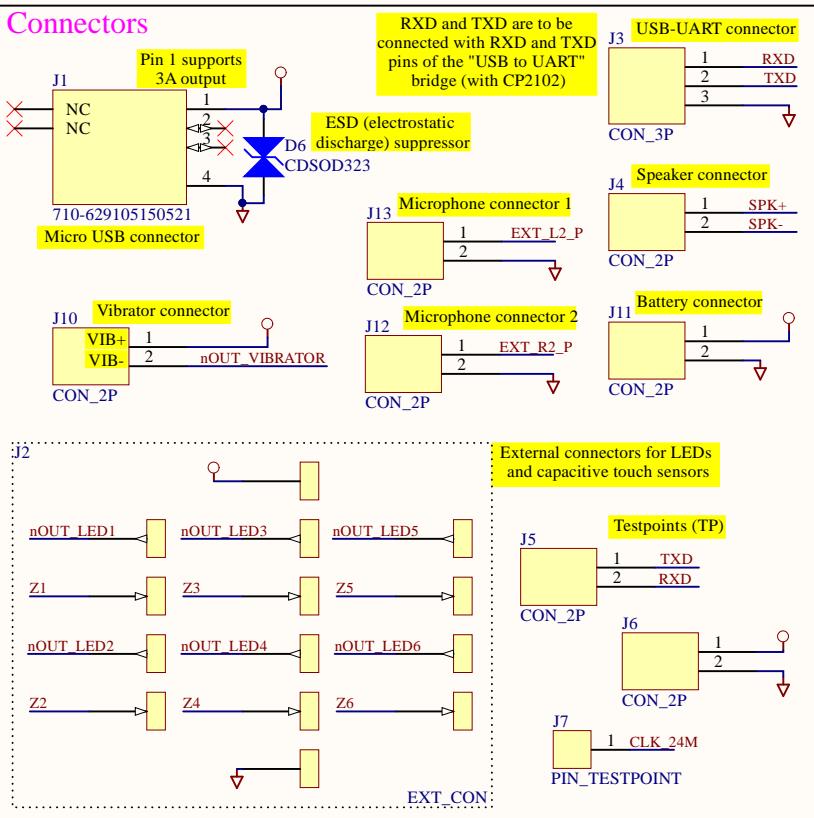
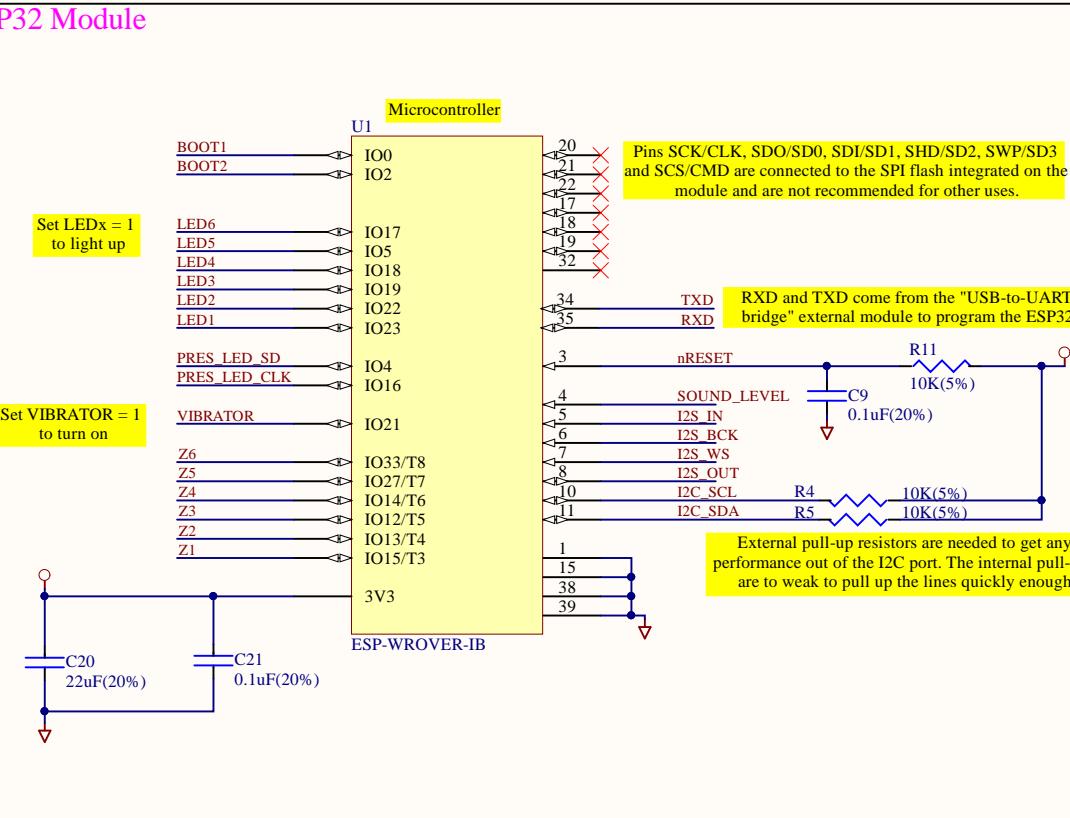


Notes about ICS40619 microphone:
1. A 0.1 μF ceramic capacitor placed close to the ICS-40619 supply pin is used for testing and is recommended to adequately decouple the microphone from noise on the power supply.
2. A de-blocking capacitor is required at the output of the microphone. This capacitor creates a high-pass filter.
Source : https://eu.mouser.com/ds/2/76/WM8978_v4.5-1141768.pdf

Notes about FW/functions:
1. PLL pre-scaling and PLL N and K values should be set appropriately so that SYSCLK is no greater than 12.288MHz.
2. MCLKDIV (by default = 010 = divide by 2) : Sets the scaling for either the MCLK or PLL clock output (under control of CLKSEL)
CLKSEL (by default = 1) : Controls the source of the clock for all internal operation (0=MCLK, 1=PLL output) -> Needs to be turned to 0
3. DACVOL : The signal volume from each hi-fi DAC can be controlled digitally. The gain and attenuation range is -127dB to 0dB in 0.5dB steps. The level of attenuation for an eight-bit code X is given by:
 $0.5 * (X-255) \text{ dB}$ for $1 \leq X \leq 255$; MUTE for $X = 0$
Source : https://www.mouser.com/ds/2/76/WM8978_v4.5-1141768.pdf

Notes - PS :
Two standard PS interfaces are available in ESP32. They can be operated in master or slave mode, in full duplex and half-duplex communication modes, and can be configured to operate with an 8-/16-/32-/48-/64-bit resolution as input or output channels. BCK clock frequency, from 10 kHz up to 40 MHz, is supported. When one or both of the PS interfaces are configured in the master mode, the master clock can be output to the external DAC/CODEC. Both of the PS interfaces have dedicated DMA controllers, PDM and BT PCM interfaces are supported.
Source : https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf

Notes - ESP32 Boot Mode Selection :
1. GPIO0 : The ESP32 will enter the serial bootloader when GPIO0 is held low on reset. Otherwise it will run the program in flash.
-> Low/GND = ROM serial bootloader for esp32p0
-> High/VCC = Normal execution mode
GPIO0 has an internal pullup resistor, so if it is left unconnected then it will pull high. Use the button marked "BOOT" that pulls GPIO0 low when pressed.
2. GPIO2 must also be either left unconnected/floating, or driven Low, in order to enter the serial bootloader. In normal boot mode (GPIO0 high), GPIO2 is ignored.
3. GPIO12 (MTDI) : The MTDI is internally pulled high in the module, as the flash and SRAM in ESP32-WROVER only support a power voltage of 1.8 V (output by VDD_SDIO). If driven High, flash voltage (VDD_SDIO) is 1.8V not default 3.3V.
4. GPIO15 (MTDO) : If driven Low, silences boot messages printed by the ROM bootloader. Has an internal pull-up, so unconnected = High = normal output.
Source : <https://github.com/espressif/esp32/wiki/ESP32-Boot-Mode-Selection>



Interface with the external world:

