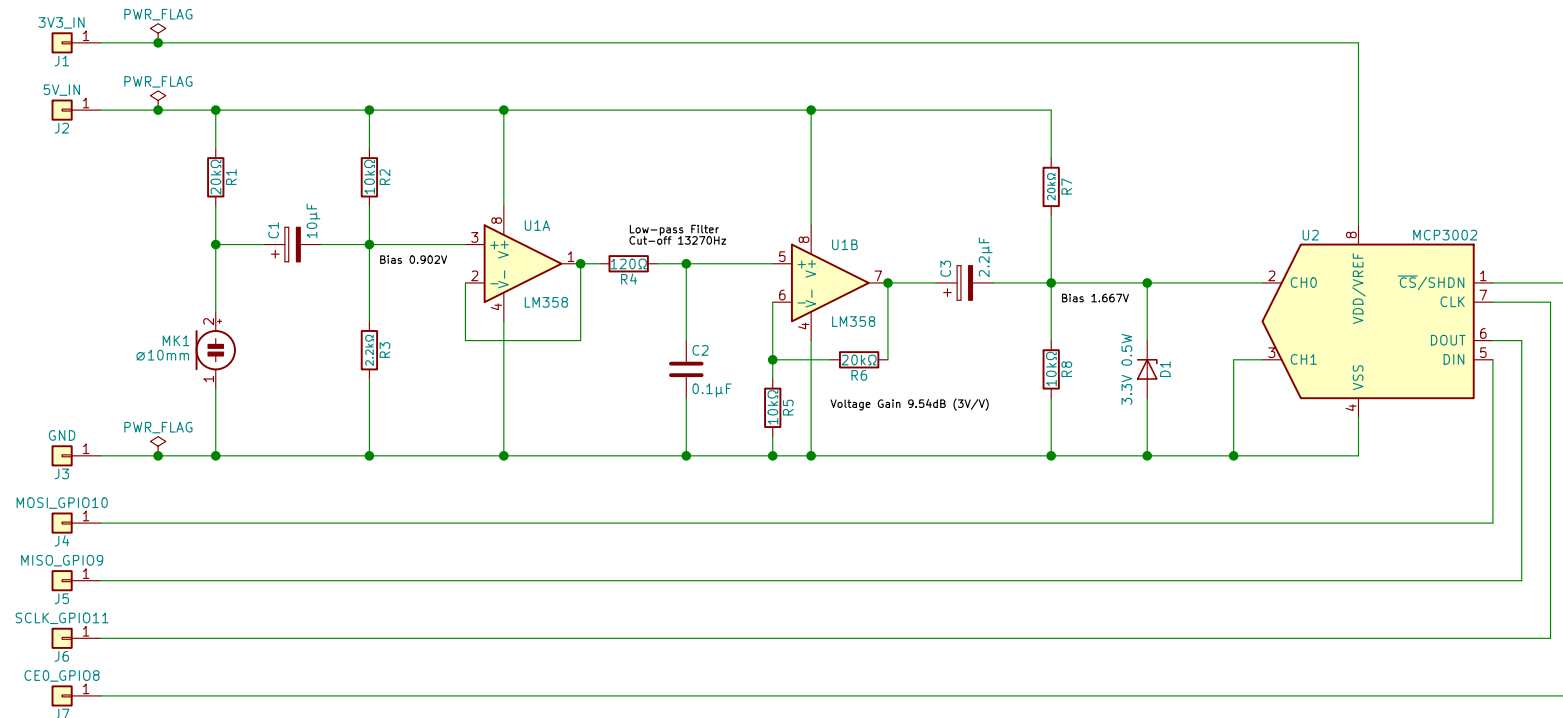


- \* Connect 3V3\_IN (J1) with 3.3 volts power pin of Raspberry Pi (RasPi).
  - \* Connect 5V\_IN (J2) with 5 volts power pin of RasPi.
  - \* Connect GND (J3) with any ground pin of RasPi.
  - \* MK1 is an electret condenser microphone (ECM). I used CM-102, which the size is approx. 10 mm in the diameter. I used 20000 ohms for the value of R1. However, the value may differ depending on models of ECMs you apply.
  - \* R2 and R3 makes a bias voltage for U1A. R7 and R8 makes a bias voltage for MCP3002 (analog-to-digital converter).
  - \* D1 is a zener diode. I used RD3.3EB. 1N5226B is an equivalent.
- The output resistance of U1B is used as the current limiting resistor for D1, so bipolar op-amps for U1A and U1B are recommended.



### Single-supply Op-amps (U1A and U1B):

- \* Output voltage close to 0 volt doesn't have linearity following with input voltage.
- \* Output voltage close to power supply voltage doesn't have linearity following with input voltage.
- \* There is input bias current in each op-amp.
- \* I recommend that you use a bipolar op-amp, but not a CMOS op-amp. CMOS one is close to ideal, but the output impedance has dominance, i.e., frequency of output changes the impedance (high phase shift). Whereas the output resistance has dominance in bipolar one (low phase shift).

This schematic is exempt from warranty, responsibility, and liability from any kind and any damage.

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JimmyKenMerchant

Sheet: /  
File: audio\_quantization.sch

**Title: Audio Quantization System**

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