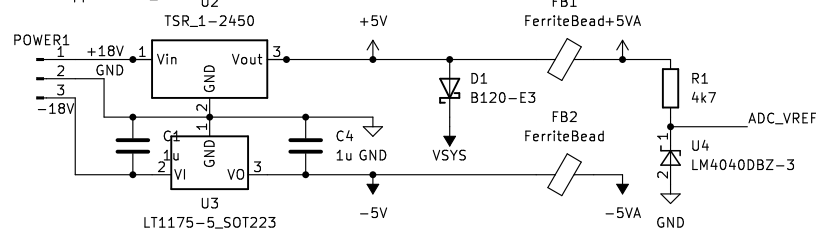
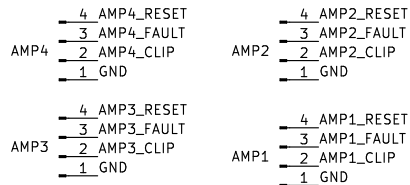
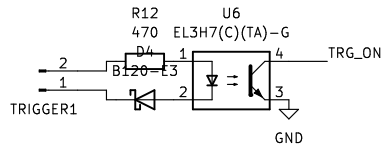


We use a switching buck regulator for the positive 5V supply as this draws the most current, mainly the Pico, the display and the front panel LED. The negative supply is only used by the buffer opamp so can use a standard regulator.

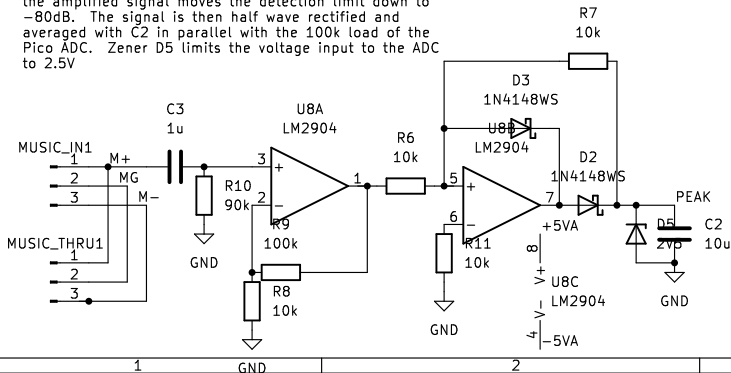
VSYS for the Pico is supplied via a schottky diode, and the analogue supplies are filtered by ferrite beads. This section also supplies ADC_VREF U2



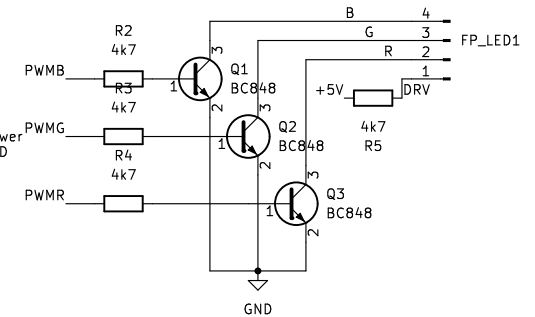
Opto-isolated 12V trigger input. 470R resistor limits input current at 12V to 25mA, allowing triggering by voltages from 5V through to 18V



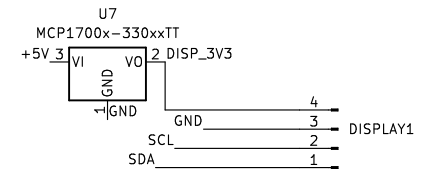
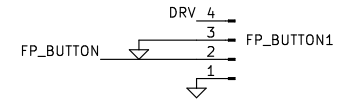
Music input peak detector. Signal is buffered and amplified by 20dB to overcome the noise limitations of the Pico ADC which is only 8.7ENOB or -60dB. Using the amplified signal moves the detection limit down to -80dB. The signal is then half wave rectified and averaged with C2 in parallel with the 100k load of the Pico ADC. Zener D5 limits the voltage input to the ADC to 2.5V



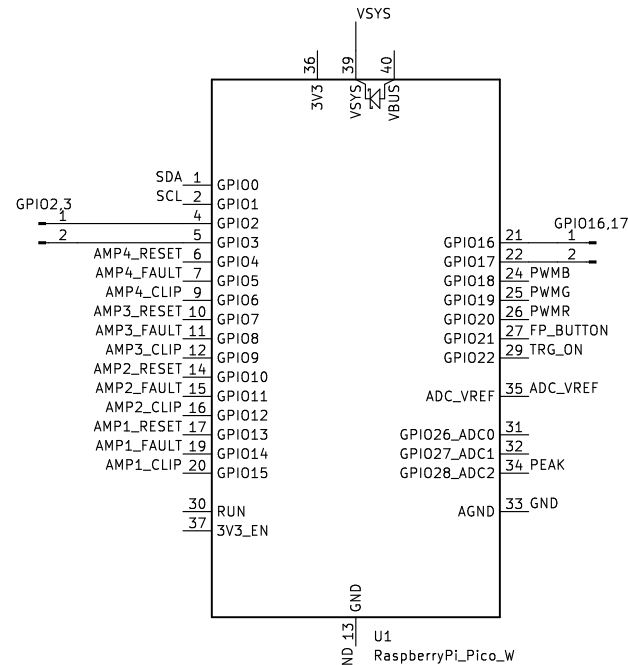
The front panel LED driver uses the +5V supply and a resistor to limit current to 1mA, with each LED controlled by a transistor so the Pico doesn't have to sink the current. It's overkill at 1mA, but a more current-hungry LED might be used (in which case lower the value of R5). The 1mA default is so that the LED isn't too bright



The front panel button (if it has an LED ring) shares current drive with the front panel button



The display connector has its own 3v3 supply rather than using the one on the Pico. From experience, a strong local supply helps prevent display glitches.



- H1 MountingHole
- H2 MountingHole
- H3 MountingHole
- H4 MountingHole

Sheet: /
File: amp_controller.kicad_sch

Title:

Size: A4
KiCad E.D.A. kicad 7.0.9

Date:

Rev:

Id: 1/1