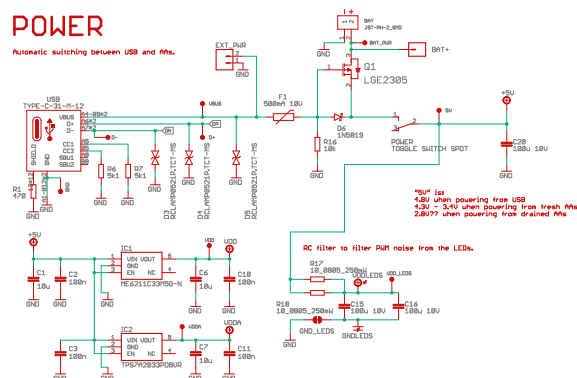
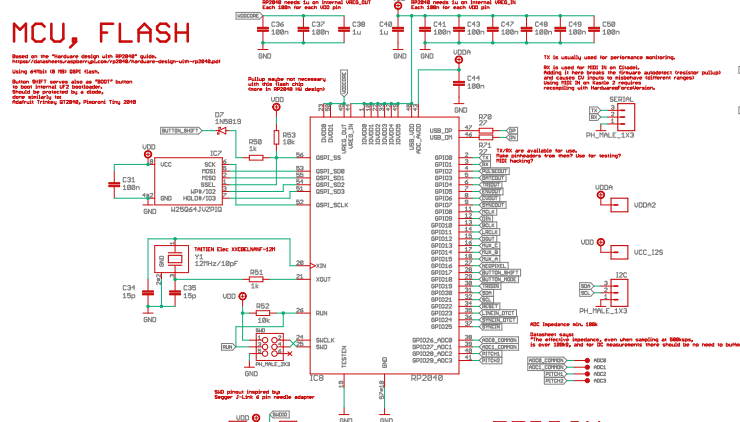


Version: 1.2
Date: 2024-09-23
Author: Vaclav Mach, Bastl Instruments
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Automatic switching between USB and AAs.

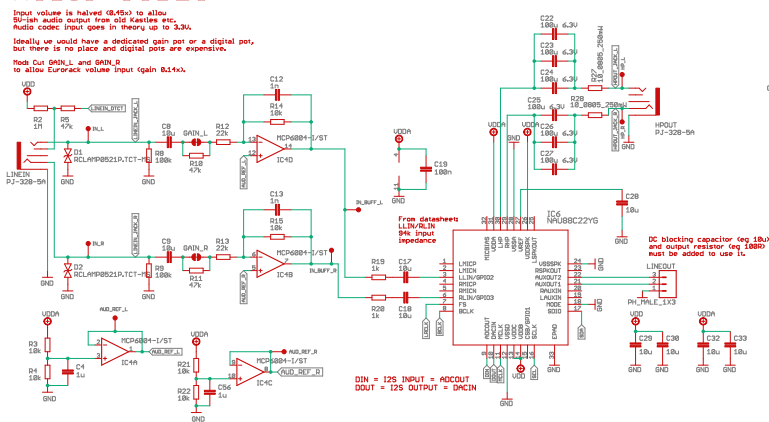


Based on the "Hardware design with SP2042" guide.
<https://datasheets.com/arnold.com/cn3042-hardware-design-01-cn3042>

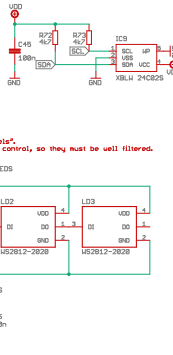


Input volume is halved (8.15x) to allow
50-ohm audio output from old Kastle's etc.
Audio codec input goes in theory up to 3.3V.
Ideally we would have a dedicated gain pot or a digital pot,
but there is no place and digital pots are expensive.

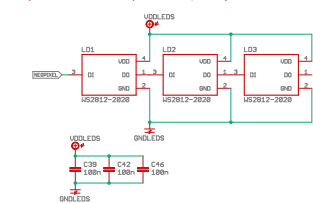
Mode Cut GAIN_L and GAIN_R
to allow Eurorack volume input (gain 8.14x).



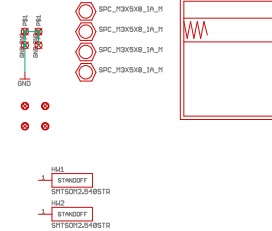
Saving calibration, LFO speed, tempo etc.
Cheap, isn't erased when firmware changes



Smart LEDs WS2812, known as "Neopixels".
They have 2KHz fixed PWM brightness control, so they must be well filtered.

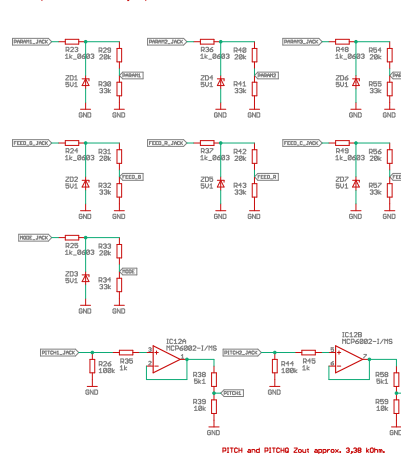


Ground holes, spacers, battery holder...

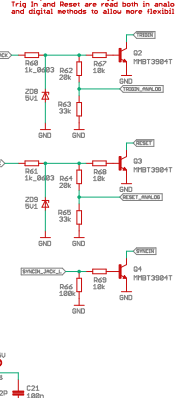


The schematic diagram illustrates the architecture of a 100-MHz 10-bit SAR ADC. The top section shows a 10-bit DAC structure with 10 comparators (COMP1 to COMP10) and 10 switches (S1 to S10) connected to a common input node. The bottom section shows the control logic, including a 10-bit digital-to-analog converter (DAC) and a 10-bit digital-to-analog converter (DAC) with a 10-bit digital-to-analog converter (DAC) and a 10-bit digital-to-analog converter (DAC).

Regular inputs are using just a resistor divider to get into 3V3 range.
Pitch inputs are buffered to get "precise" V/Oct.



Pull-downs are used for jack detection of SYNCIN and to prevent false triggers. Trig In and Reset are read both in analog and digital methods to allow more flexibility.



74MHC14 receives 3.3V inverted logic values from MCU and inverts & boosts them to "5V" (which can actually be 3.6V to 5V). PWM values are filtered into 0-"5V" range. All outputs are buffered using MCP6884.

