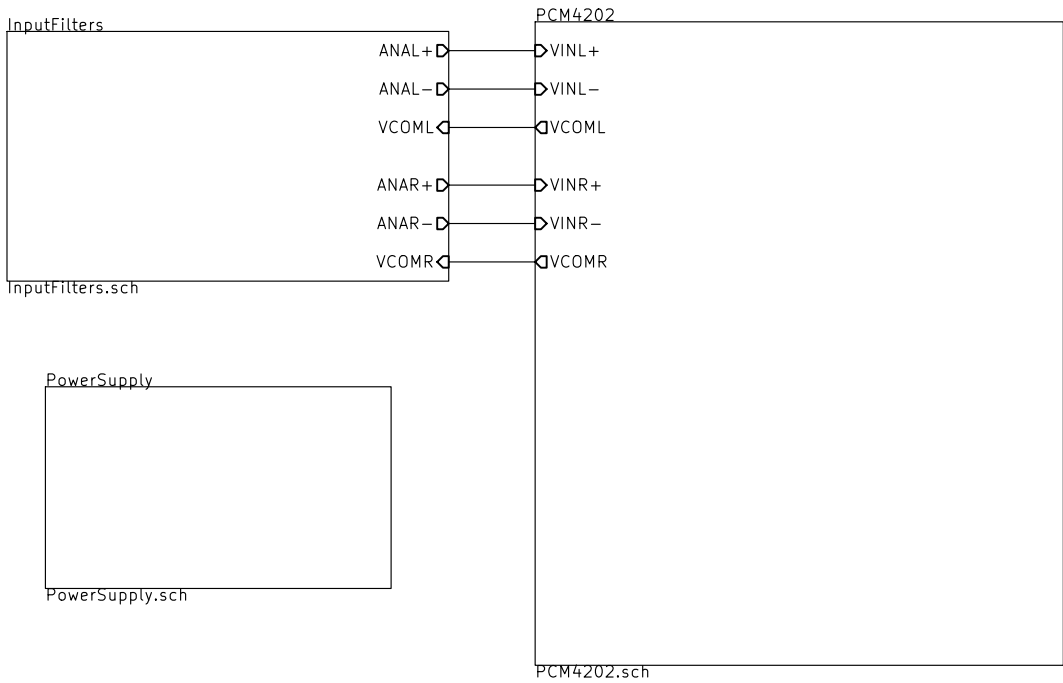


Open Hardware DSP Platform – www.ohdsp.org
PCM4202 ADC – Differential Inputs
Revision 2.0



Notes:

- All digital I/O is 3V3. Use outside this voltage can cause damage.
- See bill of materials for detailed parts information.
- Trace impedance on MCLK and I2S is designed for approx 89ohm.
- 26AWG ribbon cable used with Ground-Signal-Ground is approx 89ohm.

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| Sheet: / File: ADC-PCM4202.sch | | |
| Title: PCM4202 ADC – Differential Inputs | | |
| Size: A4 | Date: 2016-07-01 | Rev: 2.0 |
| KiCad E.D.A. kicad 4.0.2-stable | | Id: 1/4 |

PCM4202 ADC

Power Supply Decoupling: VDD and VAA rails are decoupled with L301 and L302 inductors, and a series of capacitors (C301-C312 and C315-C328) to ground (GNDD).

Signal Conditioning: Input signals are filtered by capacitors (C302-C309) and buffered by op-amps (U303, U304, U305, U306, U307, U308) before reaching the ADC's differential inputs (VINL+, VINL-, VINR+, VINR-).

ADC Chip (U301): PCM4202DBT. Pins include VREFL, AGNDL, VCOML, VINL+, VINL-, FMT0, FMT1, SLAVE, FS0, FS1, FS2, HPFD, DVDD, VREFR, AGNDR, VCOMR, VINR+, VINR-, FMT0, FMT1, S/M, CLIPL, CLIPR, RST, SCKI, LRCK, BCK, and DATA.

Configuration Pins: JP301 through JP307 are 2-pin headers for FMT0, FMT1, SLAVE, FS0, FS1, FS2, and HPFD.

Voltage Monitor Reset (U302): ADM811TART. Generates a global reset (ADC_RESET) based on the 3V3 rail using an ADM811TART (3V08 threshold).

Clipping Indicators: Left/Right Clipping Indicators (D301, D302) using Red LEDs (1206) and BC847 transistors (TR301, TR302) to monitor CLIPR and CLIPL signals.

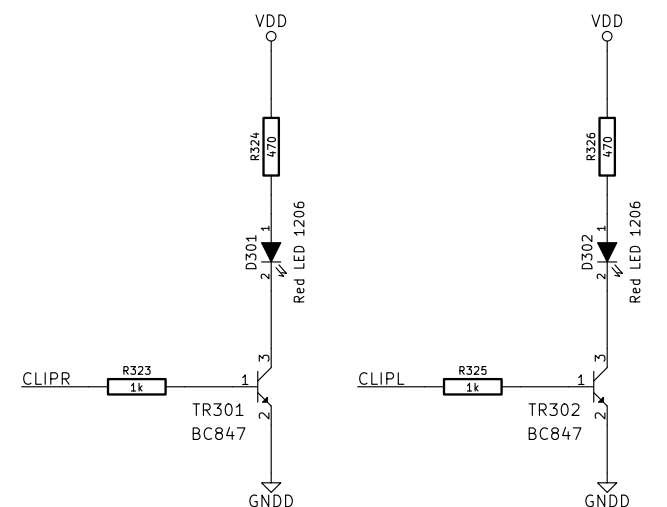
Bill of Materials:

| Ref | Value | Footprint | Quantity | Manufacturer |
|-------|---------------|-----------|----------|-------------------|
| L301 | 600R @ 100MHz | 0603 | 1 | TDK |
| L302 | 600R @ 100MHz | 0603 | 1 | TDK |
| C301 | 100p 50V COG | 0603 | 1 | TDK |
| C302 | 220u 10V | 0805 | 1 | TDK |
| C303 | 100n 50V X7R | 0805 | 1 | TDK |
| C304 | 220u 10V | 0805 | 1 | TDK |
| C305 | 22u 10V X5R | 0805 | 1 | TDK |
| C306 | 10n 50V X7R | 0805 | 1 | TDK |
| C307 | 22u 10V X5R | 0805 | 1 | TDK |
| C308 | 22u 10V X5R | 0805 | 1 | TDK |
| C309 | 10n 50V X7R | 0805 | 1 | TDK |
| C310 | 100n 50V X7R | 0805 | 1 | TDK |
| C311 | 100n 50V X7R | 0805 | 1 | TDK |
| C312 | 10n 50V X7R | 0805 | 1 | TDK |
| C315 | 100p 50V COG | 0603 | 1 | TDK |
| C316 | 10n 50V X7R | 0805 | 1 | TDK |
| C317 | 220u 10V | 0805 | 1 | TDK |
| C318 | 10n 50V X7R | 0805 | 1 | TDK |
| C319 | 10n 50V X7R | 0805 | 1 | TDK |
| C320 | 22u 10V X5R | 0805 | 1 | TDK |
| C321 | 22u 10V X5R | 0805 | 1 | TDK |
| C322 | 100n 50V X7R | 0805 | 1 | TDK |
| C323 | 100n 50V X7R | 0805 | 1 | TDK |
| C324 | 100n 50V X7R | 0805 | 1 | TDK |
| C325 | 220u 10V | 0805 | 1 | TDK |
| C326 | 100n 50V X7R | 0805 | 1 | TDK |
| C327 | 100n 50V X7R | 0805 | 1 | TDK |
| C328 | 10n 50V X7R | 0805 | 1 | TDK |
| R306 | 47 | 0603 | 1 | TDK |
| R309 | 47 | 0603 | 1 | TDK |
| R312 | N/F | 0603 | 1 | TDK |
| R313 | 0 | 0603 | 1 | TDK |
| R314 | 0 | 0603 | 1 | TDK |
| R315 | 0 | 0603 | 1 | TDK |
| R316 | 75 | 0603 | 1 | TDK |
| R317 | 100R | 0603 | 1 | TDK |
| R318 | N/F | 0603 | 1 | TDK |
| R319 | N/F | 0603 | 1 | TDK |
| R320 | N/F | 0603 | 1 | TDK |
| R321 | N/F | 0603 | 1 | TDK |
| R322 | N/F | 0603 | 1 | TDK |
| R323 | 1k | 0603 | 1 | TDK |
| R324 | 470 | 0603 | 1 | TDK |
| R325 | 1k | 0603 | 1 | TDK |
| R326 | 470 | 0603 | 1 | TDK |
| U301 | PCM4202DBT | QFN-28 | 1 | Maxim |
| U302 | ADM811TART | SOT-23 | 1 | Analog Devices |
| U303 | LMV071 | SOT-23 | 1 | Texas Instruments |
| U304 | LMV071 | SOT-23 | 1 | Texas Instruments |
| U305 | LMV071 | SOT-23 | 1 | Texas Instruments |
| U306 | LMV071 | SOT-23 | 1 | Texas Instruments |
| U307 | LMV071 | SOT-23 | 1 | Texas Instruments |
| U308 | LMV071 | SOT-23 | 1 | Texas Instruments |
| P301 | CONN_2x1 | 0603 | 1 | TDK |
| P302 | CONN_2x1 | 0603 | 1 | TDK |
| P303 | CONN_2x05 | 0603 | 1 | TDK |
| D301 | Red LED 1206 | 1206 | 1 | TDK |
| D302 | Red LED 1206 | 1206 | 1 | TDK |
| TR301 | BC847 | SOT-23 | 1 | TDK |
| TR302 | BC847 | SOT-23 | 1 | TDK |

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 Sheet: /PCM4202/
 File: PCM4202.sch
Title: PCM4202 ADC - Differential Inputs
 Size: A3 Date: 2016-07-01 Rev: 2.0
 KiCad E.D.A. kicad 4.0.2-stable Id: 3/4

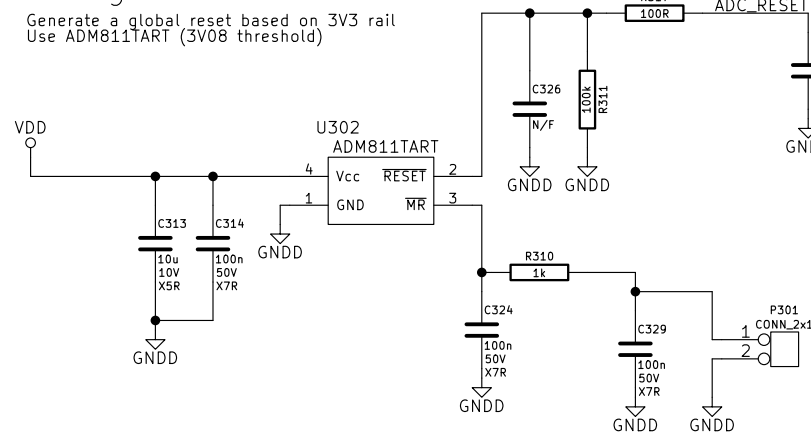
Note
Value of R314 and R315
75R if PCM4202 set as master
0R if PCM4202 set as slave

Left/Right Clipping Indicators



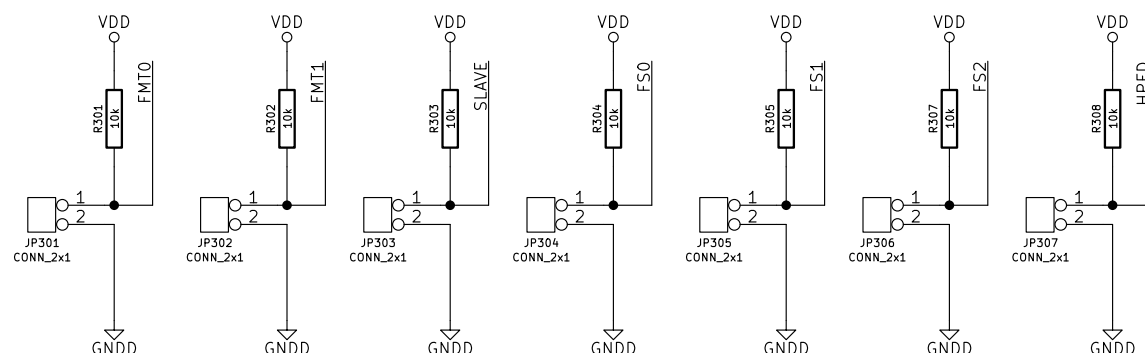
Voltage Monitor Reset

Generate a global reset based on 3V3 rail
Use ADM811TART (3V08 threshold)



Configuration Pins

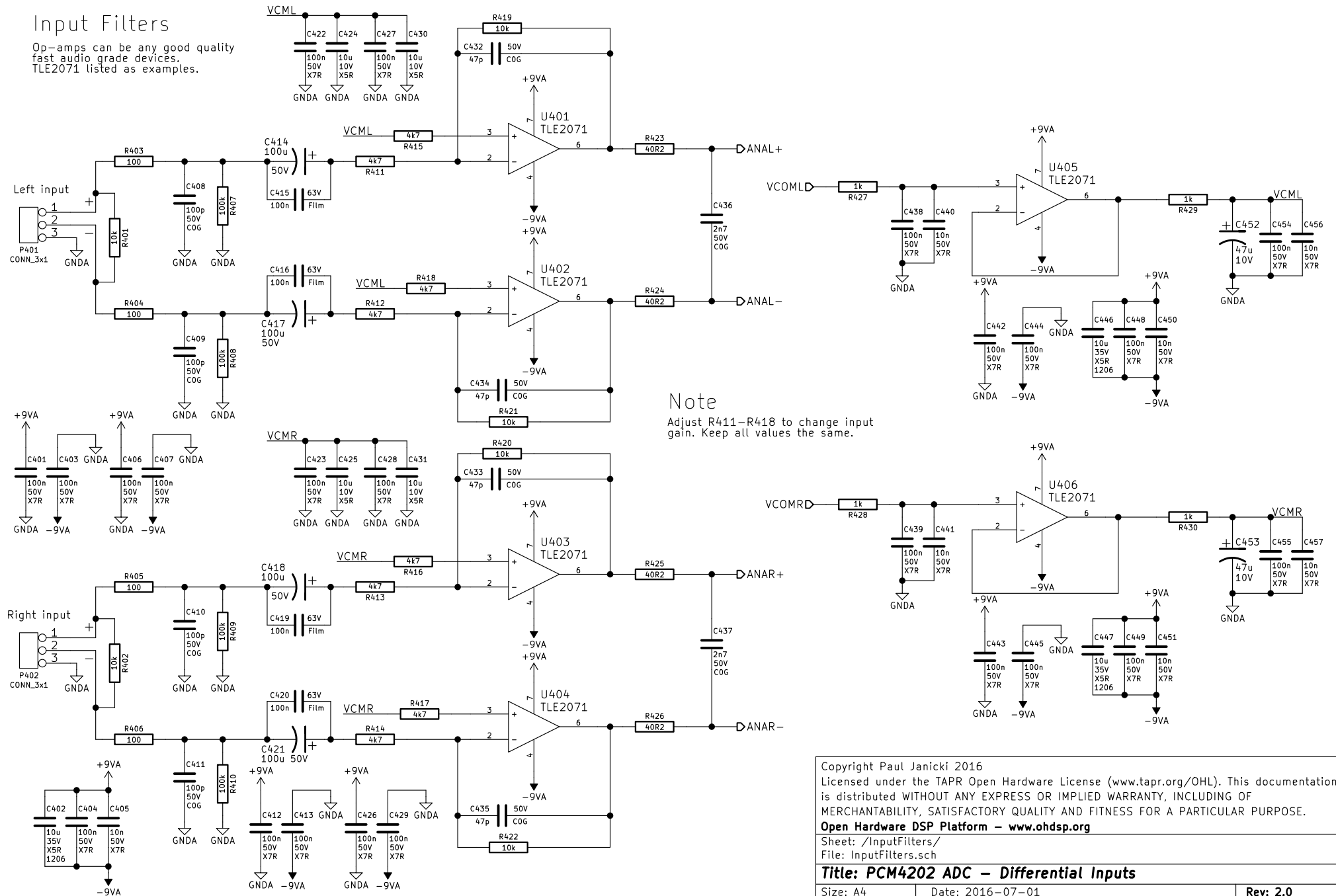
Refer to datasheet for information on configuration



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| Sheet: /PCM4202/ File: PCM4202.sch | |
| Title: PCM4202 ADC – Differential Inputs | |
| Size: A3 | Date: 2016–07–01 |
| KiCad E.D.A. kicad 4.0.2–stable | Rev: 2.0 Id: 3/4 |

Input Filters

Op-amps can be any good quality fast audio grade devices, TLE2071 listed as examples.



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