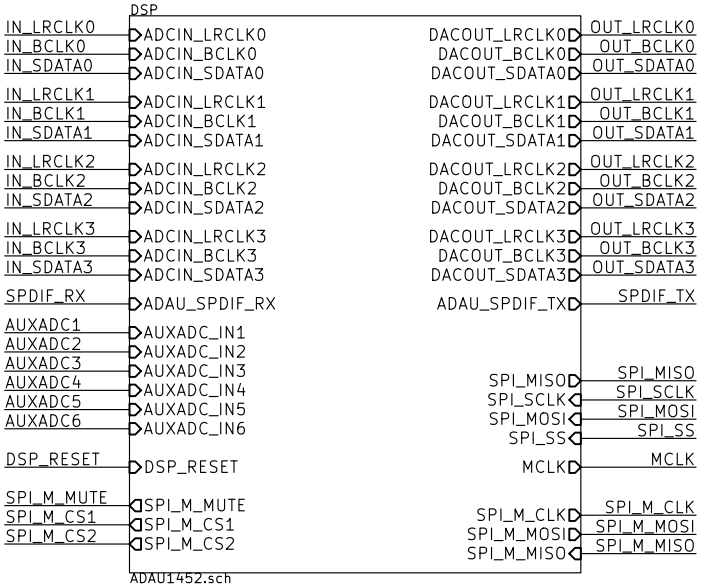
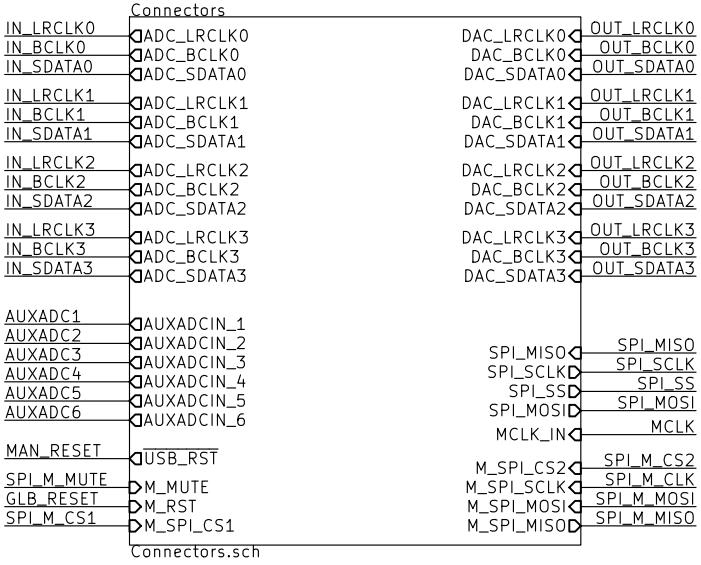
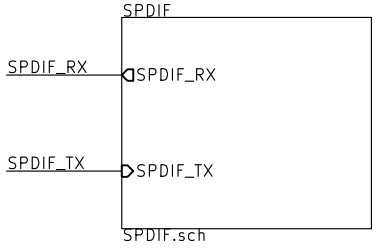
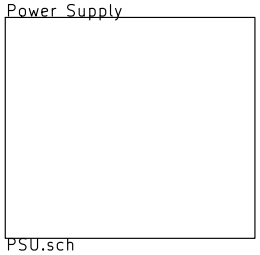
Open Hardware DSP Platform – www.ohdsp.org
uDSP 1.1

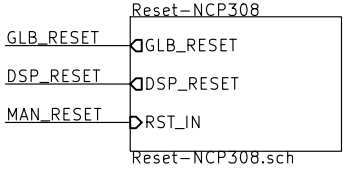
A 5cm x 5cm DSP board using Analog Device SigmaDSP devices
Supports ADAU1466, ADAU1462, ADAU1452, ADAU1451, ADAU1450
Selfboot and external control supported
All I/O routed out











Changelog:

Revision 1.1:
Add both chip select lines to master SPI headers – removed 3V3 power
Add 3V3 monitor option to reset circuit

Notes:

All digital I/O is 3V3. Use outside this voltage can cause damage.
See bill of materials for detailed parts information.

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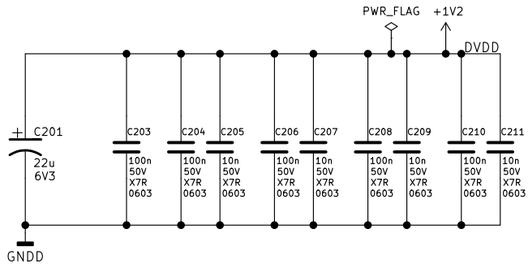
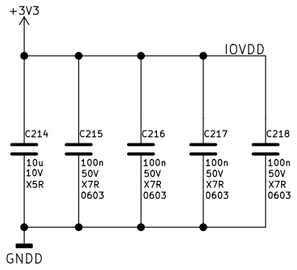
Sheet: /
File: uDSP–1.1.sch

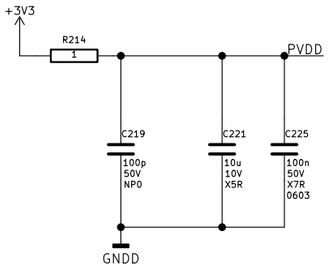
Title: uDSP

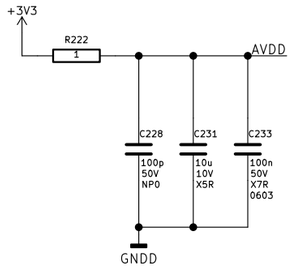
Size: A4	Date: 2019–04–02	**Rev: 1.1**
KiCad E.D.A. kicad (5.1.0)–1		Id: 1/6

DSP (ADAU1466,ADAU1462,ADAU1452,ADAU1451,ADAU1450)





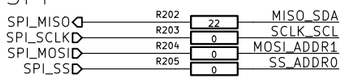


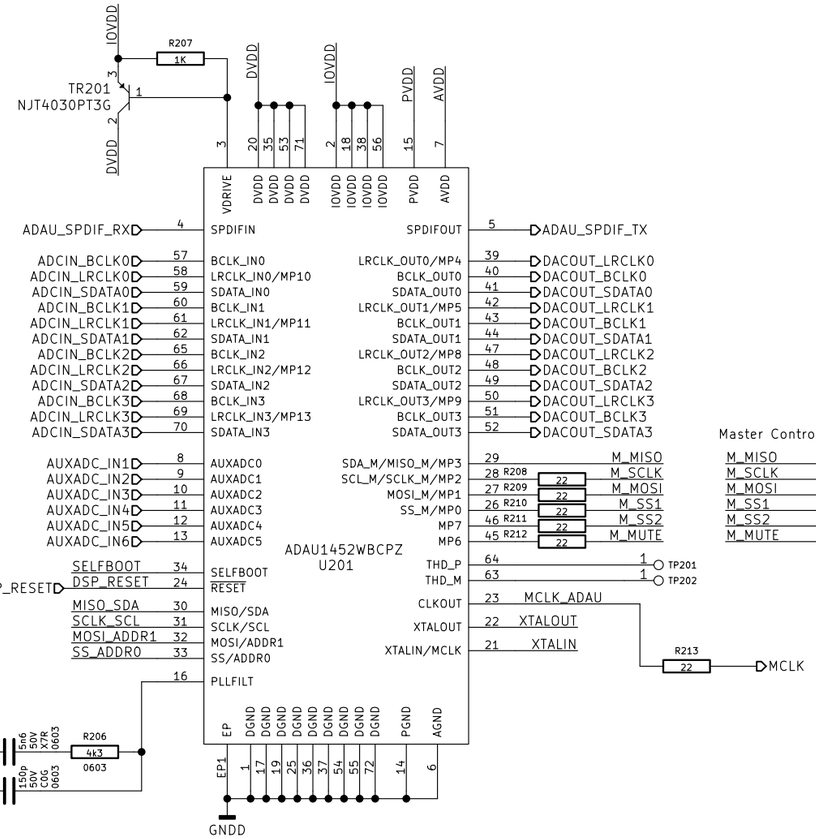


Slave control port

Used for external control and programming.

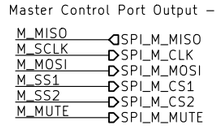
SPI





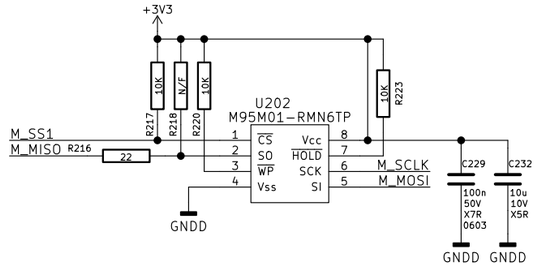
U201 can be ADAU1466, ADAU1462, ADUA1452, ADUA1451, or ADAU1450.
SPDIF is not support on the ADAU1450.

Master Control Port Output – SPI



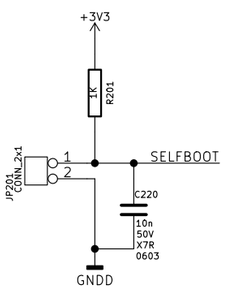
SPI EEPROM

Connects to master serial port
Fit an EEPROM such as the 24AA1024 to allow selfboot operation



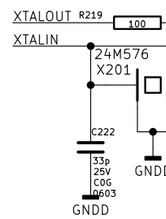
Selfboot Jumper

Leave JP201 open for selfboot.
Short JP201 to disable self boot and program the EEPROM.
Short JP201 to use SPI external control instead of selfboot.

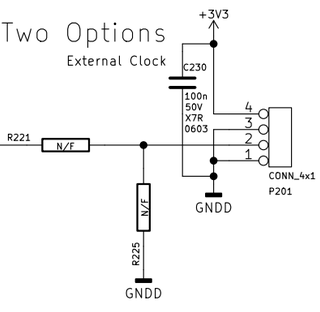


Master Clock – Two Options

Standard Crystal



External Clock



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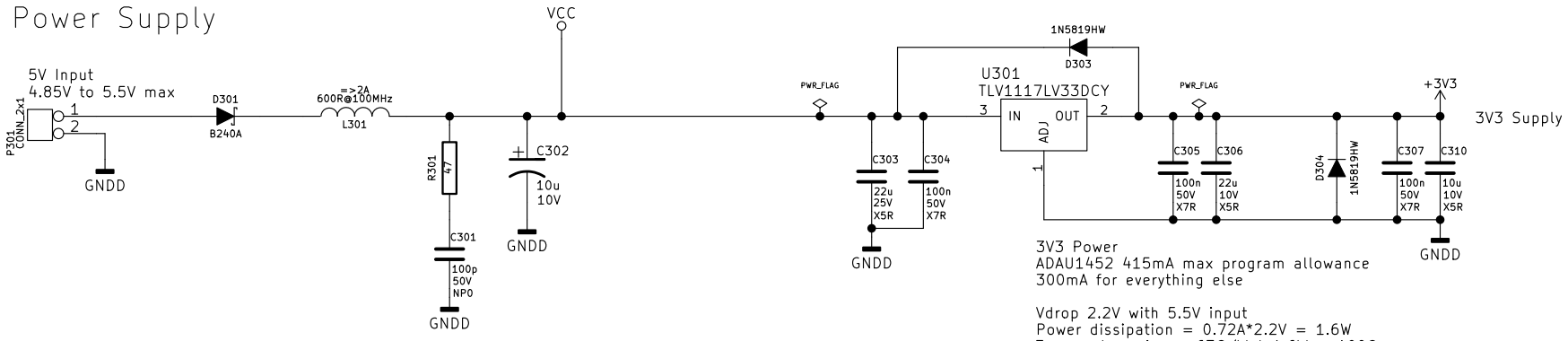
Sheet: /DSP/
File: ADAU1452.sch

Title: uDSP

Size: A3	Date: 2019-04-02	**Rev: 1.1**
KiCad E.D.A. kicad (5.1.0)-1		Id: 2/6

Power Supply



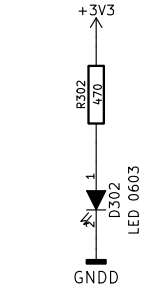
3V3 Power
ADAU1452 415mA max program allowance
300mA for everything else

Vdrop 2.2V with 5.5V input
Power dissipation = 0.72A*2.2V = 1.6W
Temperature rise = 63C/W * 1.6W = 100C

Vdrop 1.7V with 5V input
Power dissipation = 0.72A*1.7V = 1.2W
Temperature rise = 63C/W * 1.6W = 75C

Excluding PCB copper heatsink effect

Power LED



Mounting Holes and Fiducials

MNT301 MNT303 FID301 FID303

MNT302 MNT304 FID302 FID304

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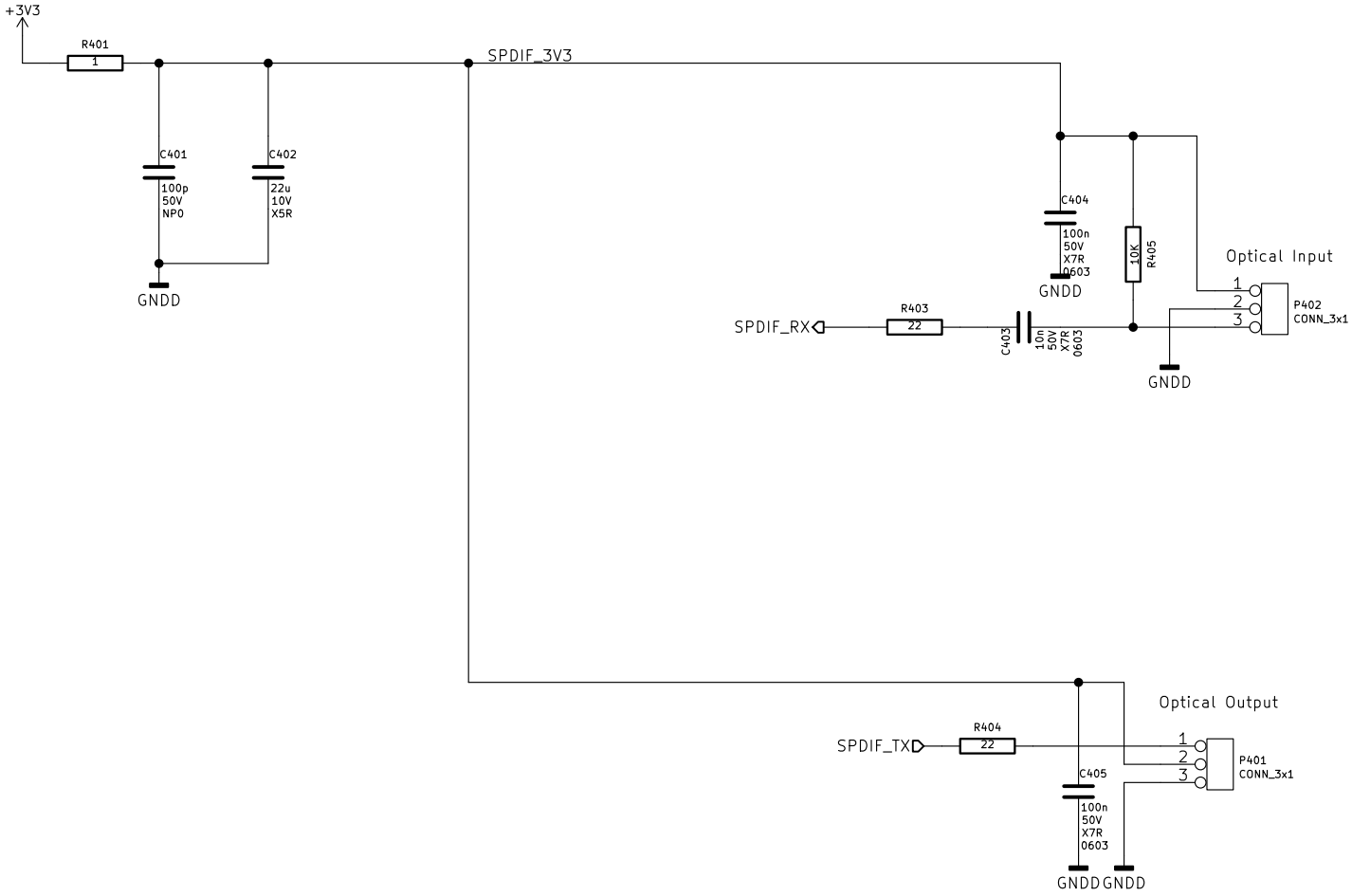
Sheet: /Power Supply/
File: PSU.sch

Title: uDSP

Size: A4	Date: 2019-04-02	**Rev: 1.1**
KiCad E.D.A. kicad (5.1.0)-1		Id: 3/6

SPDIF Optical Input and Output – Mounted off-board



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Sheet: /SPDIF/
File: SPDIF.sch

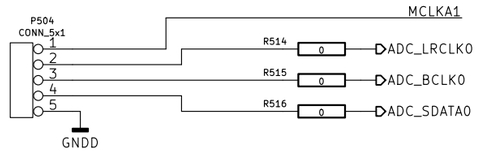
Title: uDSP

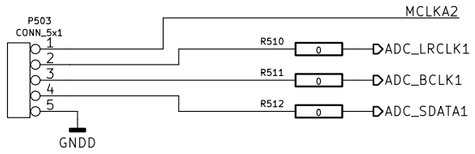
Size: A4	Date: 2019-04-02	**Rev: 1.1**
KiCad E.D.A. kicad (5.1.0)-1		Id: 4/6

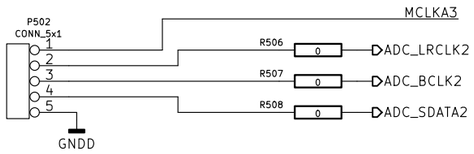
Connectors

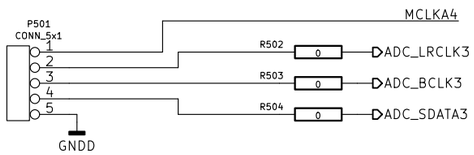
I2S Inputs

See ADAU14xx datasheet for details
Inputs are highly flexible



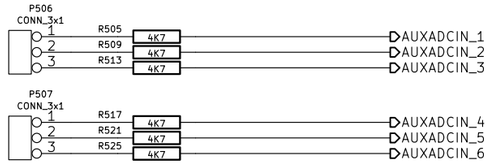






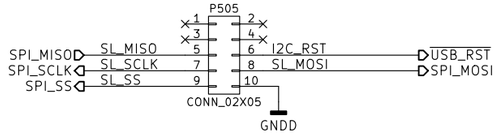
AUX ADC Inputs

These are 3V3 max input
They have limited protection

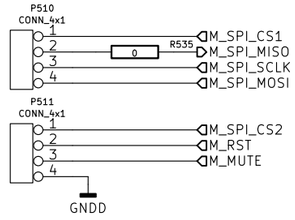


ADI EVAL-ADUSB2Z USB/I2C Programming/Control

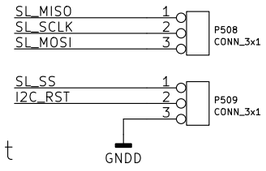
These go to the slave port
These are 3V3 lines only!



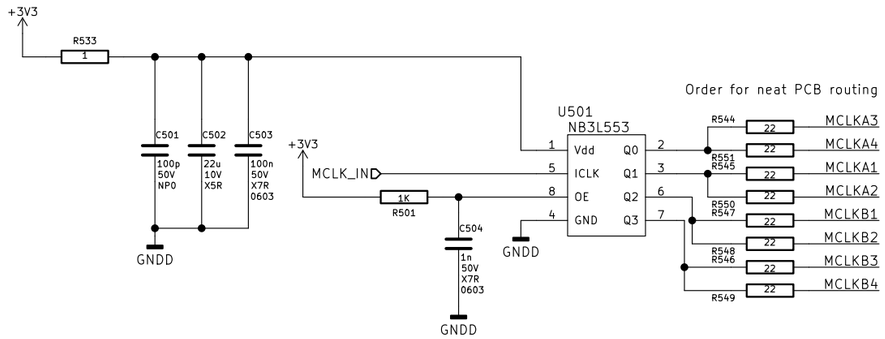
Master SPI Port



Slave SPI Port

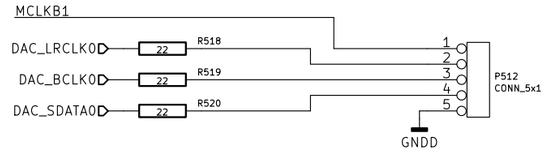


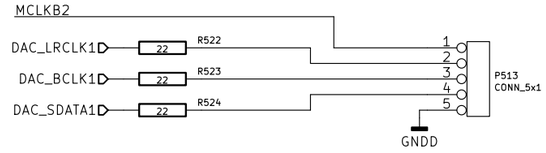
Master Clock Fan Out

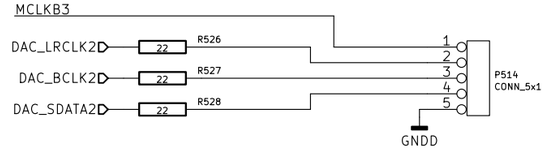


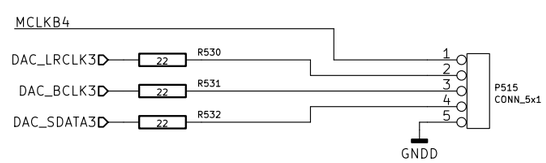
I2S Outputs

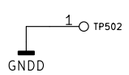
See ADAU14xx datasheet for details
Outputs are highly flexible











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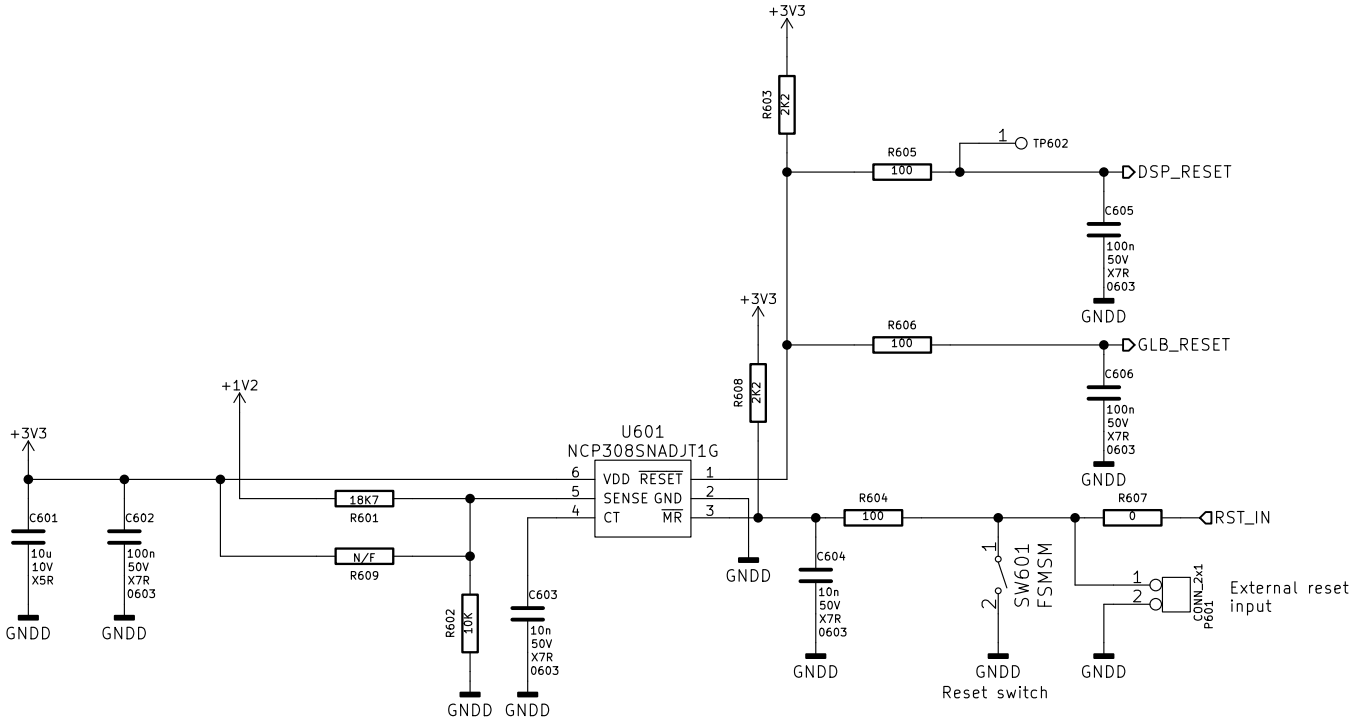
Sheet: /Connectors/
File: Connectors.sch

Title: uDSP

Size: A3	Date: 2019-04-02	**Rev: 1.1**
KiCad E.D.A. kicad (5.1.0)-1		Id: 5/6

Voltage Monitor Reset

Generate a global reset based on 1V2 voltage rail.
Use NCP308SNADJT1G adjustable version.
Supports external reset signal.



Fit R601 OR R609
For 3V3 R609 = 68K, R602 = 10K, R601 = NOT FITTED/UNPOPULATED
For 1V2 R601 = 18K7, R602 = 10K, R609 = NOT FITTED/UNPOPULATED

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Sheet: /Reset-NCP308/
File: Reset-NCP308.sch

Title: uDSP

Size: A4	Date: 2019-04-02	**Rev: 1.1**
KiCad E.D.A. kicad (5.1.0)-1		Id: 6/6