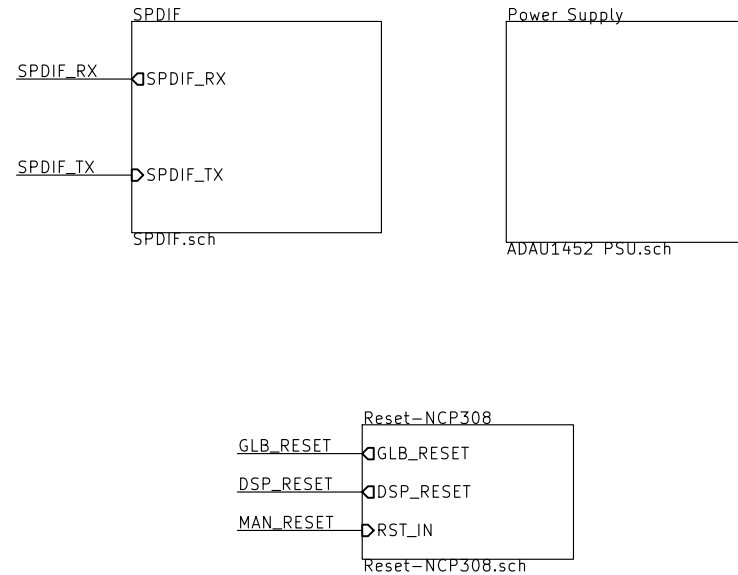
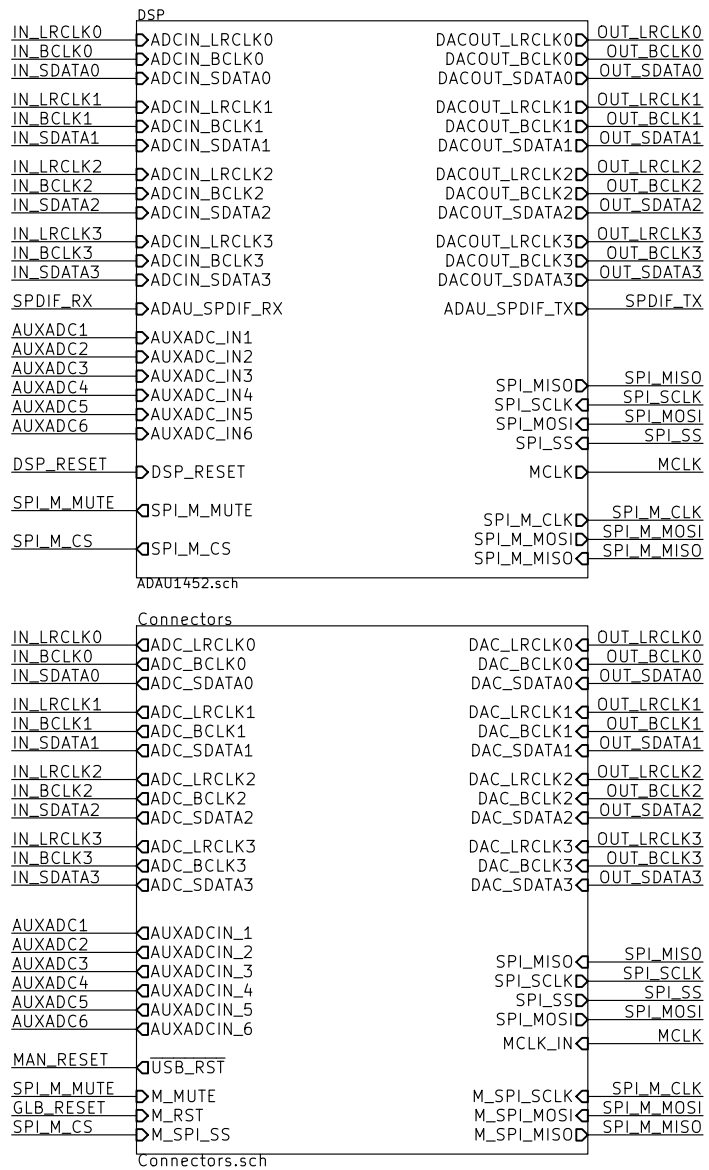


# Open Hardware DSP Platform – www.ohdsp.org

## uDSP 1.0

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



### 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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**Open Hardware DSP Platform – www.ohdsp.org**

Sheet: /  
File: uDSP.sch

**Title: uDSP**

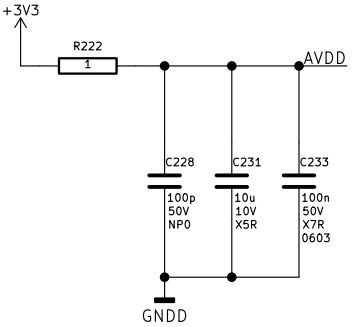
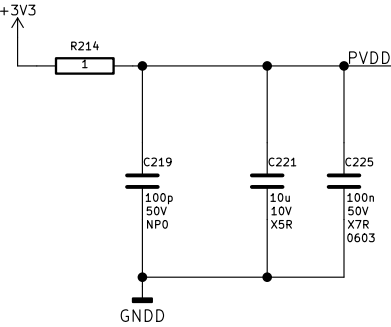
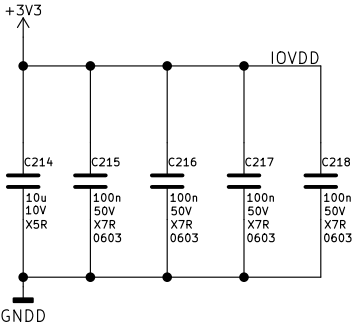
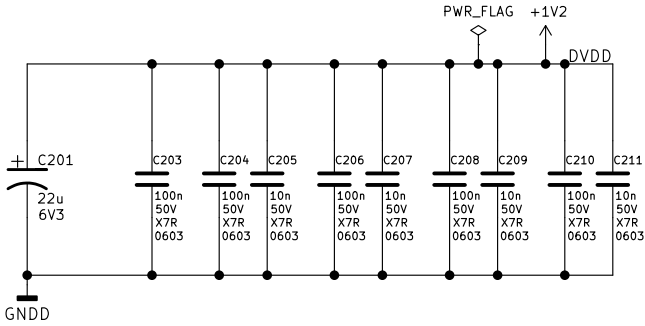
Size: A4 Date: 2019-03-11

KiCad E.D.A. kicad (5.0.2)-1

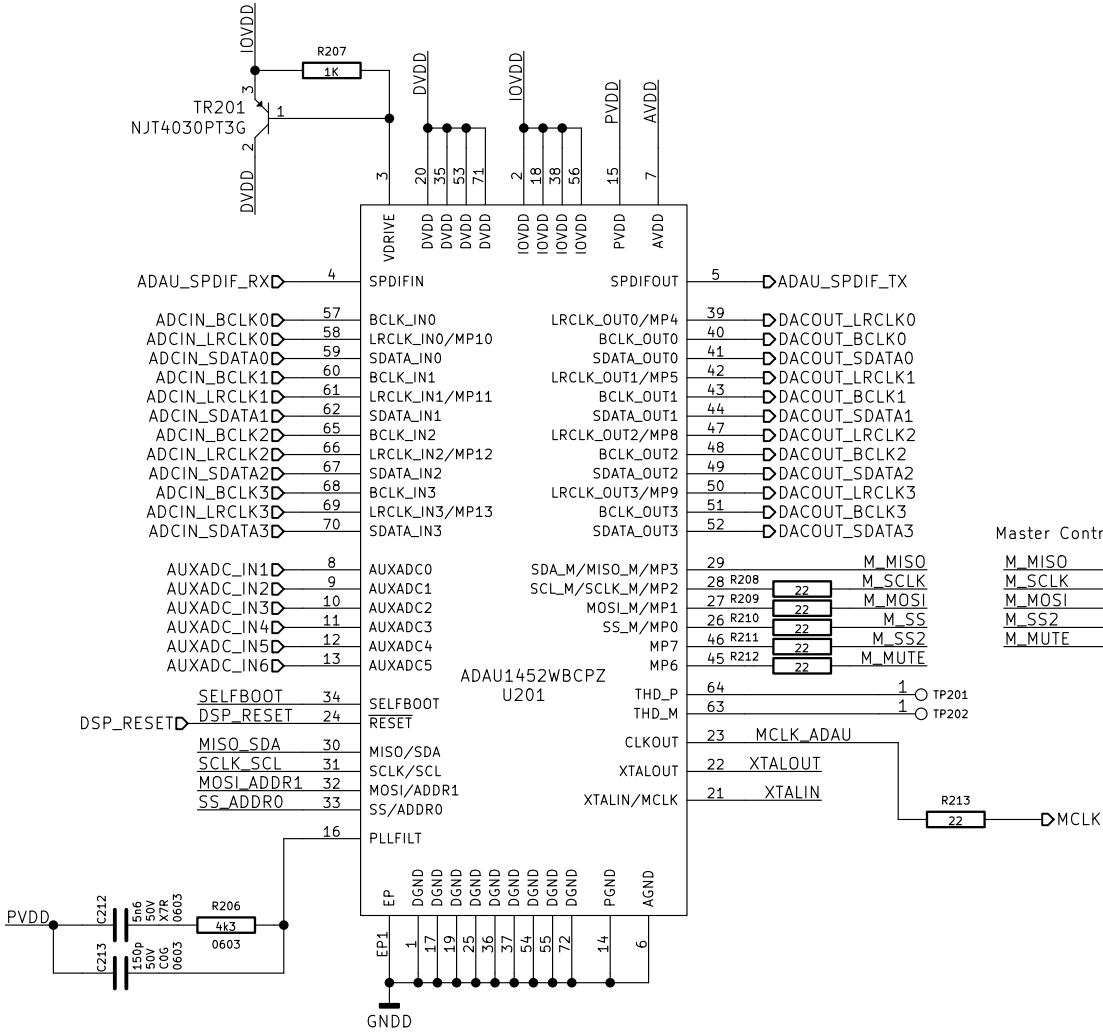
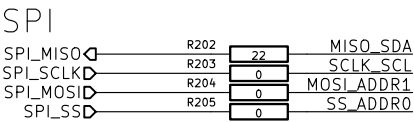
**Rev: 1.0**

Id: 1/6

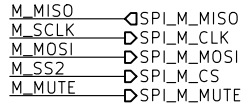
DSP (ADAU1466,ADAU1462,ADAU1452,ADAU1451,ADAU1450)



Slave control port  
Used for external control and programming.

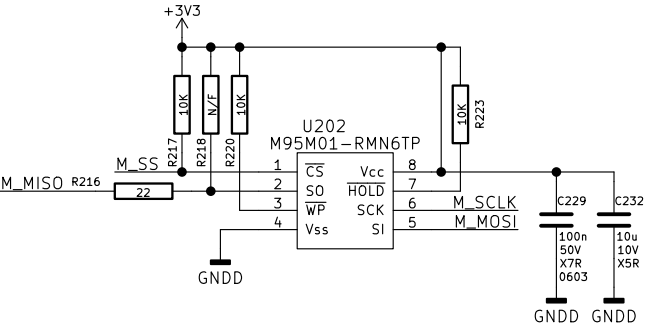


Master Control Port Output - SPI



SPI EEPROM

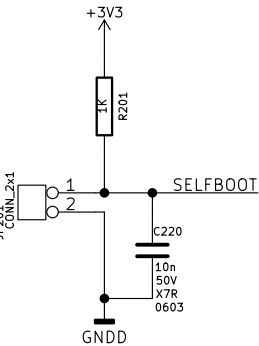
Connects to master serial port  
Fit an EEPROM such as the 24AA1024 to allow selfboot operation



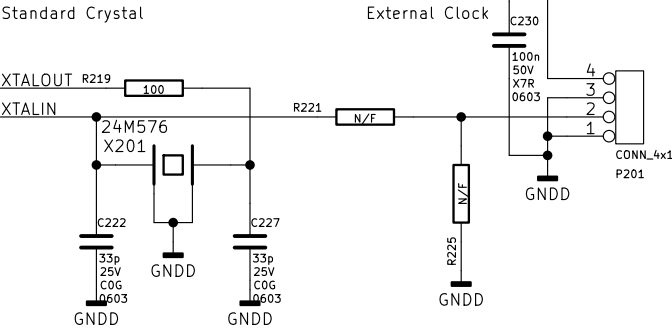
U201 can be ADAU1466, ADAU1462, ADUA1452, ADAU1451, or ADAU1450.  
SPDIF is not support on the ADAU1450.

Selfboot Jumper

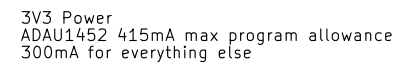
Leave JP201 open for selfboot.  
Short JP201 to disable self boot and program the EEPROM.  
Short JP201 to use SPI external control instead of selfboot.



Master Clock - Two Options

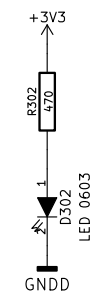


5V Input  
4.85V to 5.5V max



Vdrop 1.7V with 5V input  
Power dissipation =  $0.72\text{A} \times 1.7\text{V} = 1.2\text{W}$   
Temperature rise =  $63\text{C/W} \times 1.6\text{W} = 75\text{C}$

Excluding PCB copper heatsink effect

$$+3V3$$


MNT301 MNT303 FID301 FID303

☐ ☐ ☐ ☐

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Sheet: /Power Supply/

Title: uDSP

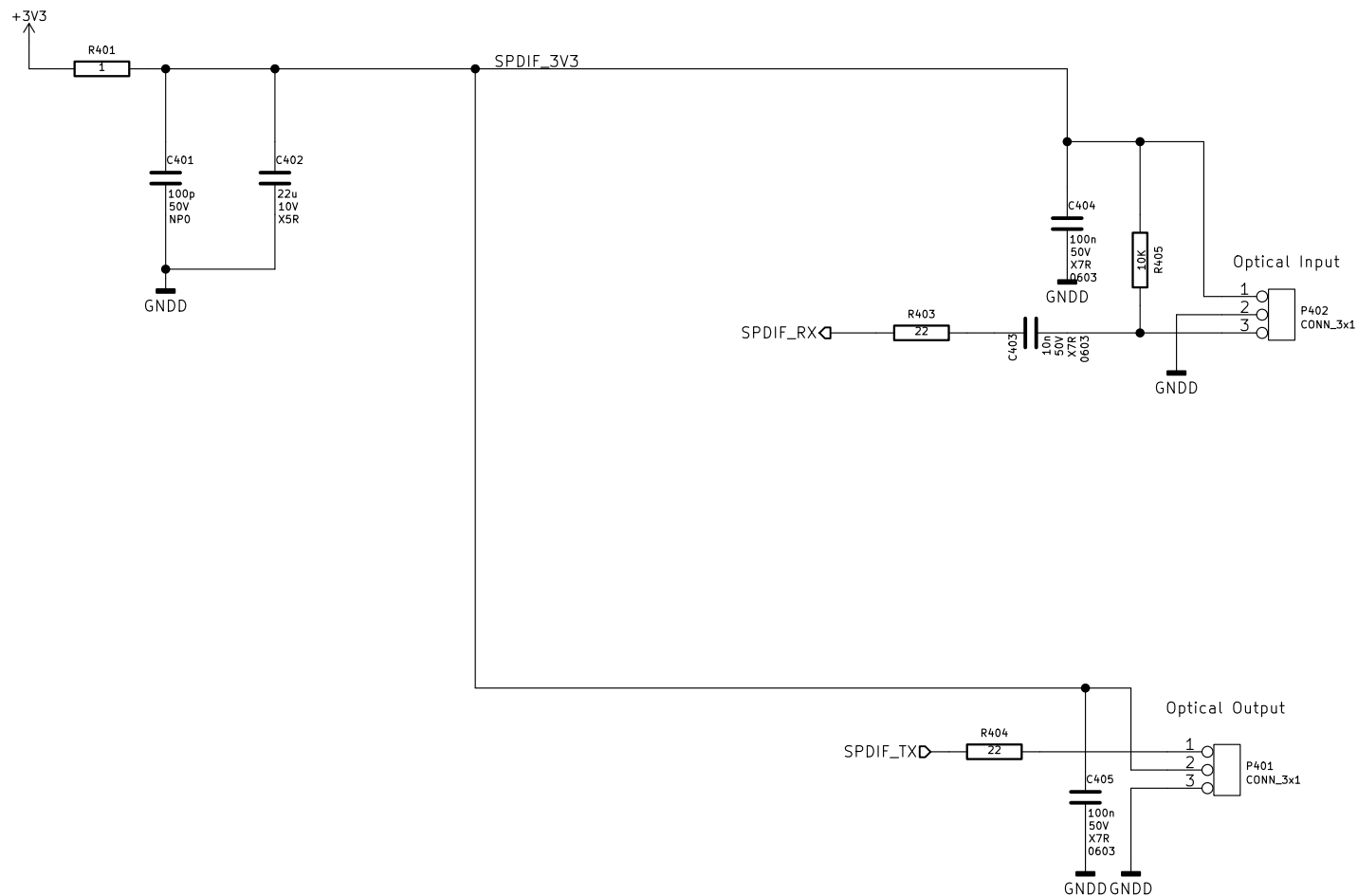
Size: A4	Date: 2019-03-11
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Size: A4	Date: 2019-05-11
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Rev: 1.0
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Id: 3/6

# SPDIF Optical Input and Output – Mounted off-board



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Sheet: /SPDIF/

File: SPDIF.sch

**Title: uDSP**

Size: A4 Date: 2019-03-11

KiCad E.D.A. kicad (5.0.2)-1

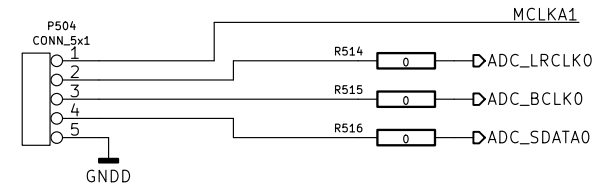
**Rev: 1.0**

Id: 4/6

## 12S Inputs

Diagram illustrating the pin connections for P504 CONN\_5x1:

- Pin 1: Connected to MCLKA1.
- Pin 2: Connected to R514 (0) and ADC\_LRCLK0.
- Pin 3: Connected to R515 (0) and ADC\_BCLK0.
- Pin 4: Connected to R516 (0) and ADC\_SDAT0.
- Pin 5: Connected to GND.

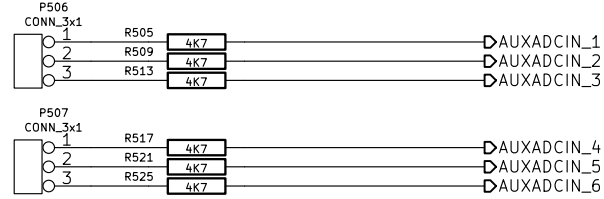


**P506**  
CONN\_3x1

Pin	Resistor	Value	Destination
1	R505	4K7	AUXADCIN_1
2	R509	4K7	AUXADCIN_2
3	R513	4K7	AUXADCIN_3

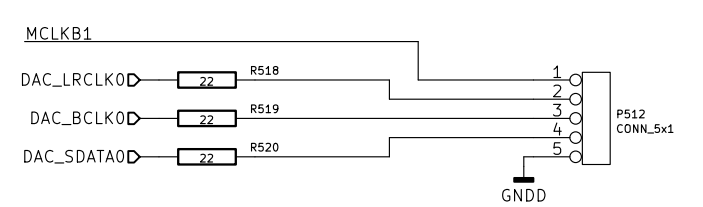
**P507**  
CONN\_3x1

Pin	Resistor	Value	Destination
1	R517	4K7	AUXADCIN_4
2	R521	4K7	AUXADCIN_5
3	R525	4K7	AUXADCIN_6



Schematic diagram of the DAC pin connections for the P512 CONN\_5x1 connector. The connections are:

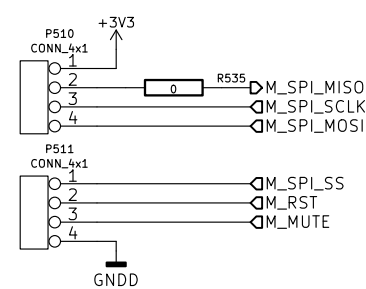
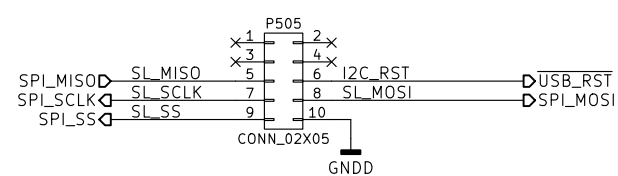
- MCLKB1 to pin 1
- DAC\_LRCLK0 to pin 2 (via resistor R518)
- DAC\_BCLK0 to pin 3 (via resistor R519)
- DAC\_SDAT00 to pin 4 (via resistor R520)
- Pin 5 is connected to GND



Pin connection diagram for P505:

- Pin 1: SL\_MISO
- Pin 2: I2C\_RST
- Pin 3: SL\_SCLK
- Pin 4: SL\_MOSI
- Pin 5: SL\_SS
- Pin 6: USB\_RST
- Pin 7: SL\_SCLK
- Pin 8: SL\_MOSI
- Pin 9: SL\_SS
- Pin 10: GND

Labels: P505, CONN\_02X05, GND.



The diagram shows two connectors, P508 and P509, each with three pins. P508 is labeled 'CONN\_3x1' and has pins 1, 2, and 3. P509 is also labeled 'CONN\_3x1' and has pins 1, 2, and 3. A ground symbol labeled 'GND' is connected to pin 3 of P509. The connections are as follows:

- P508 Pin 1: SL\_MISO
- P508 Pin 2: SL\_SCLK
- P508 Pin 3: SL\_MOSI
- P509 Pin 1: SL\_SS
- P509 Pin 2: I2C\_RST
- P509 Pin 3: GND

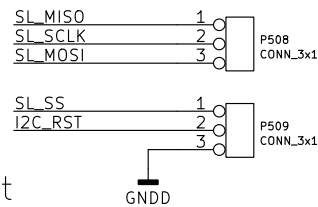
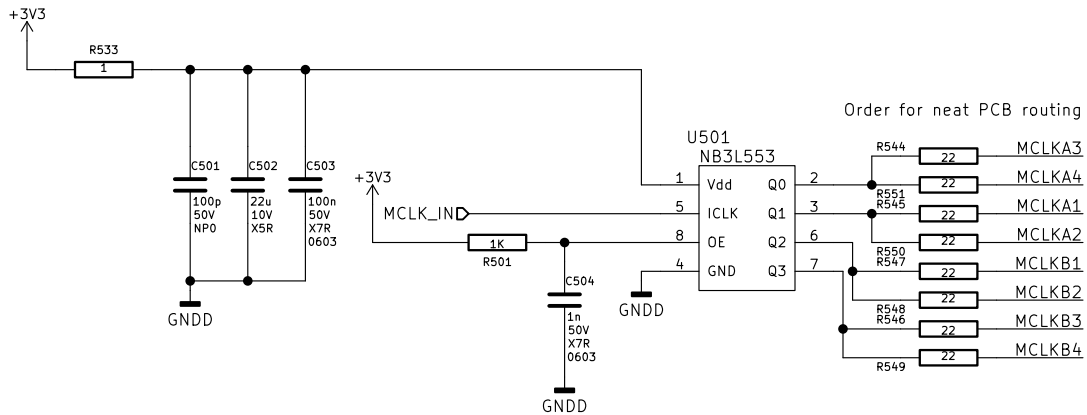
[illegible]

Figure 10 shows the DAC pin connections. The DAC\_LRCLK1 pin is connected to a 22 ohm resistor (R522), which is then connected to pin 1 of the P513 CONN\_5x1 connector. The DAC\_BCLK1 pin is connected to a 22 ohm resistor (R523), which is then connected to pin 2 of the P513 CONN\_5x1 connector. The DAC\_SDAT1 pin is connected to a 22 ohm resistor (R524), which is then connected to pin 3 of the P513 CONN\_5x1 connector. The GND symbol is connected to the bottom of the connector, which is pin 5.

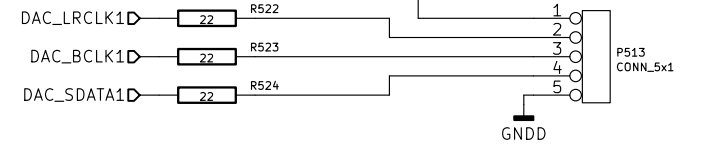


Figure 10 shows the DAC pin connections. The DAC pins are connected to the P514 CONN\_5x1 connector via resistors (R526, R527, R528) and a ground connection (GND).

DAC Pin	Resistor	Connector Pin
DAC_LRCLK2	R526	1
DAC_BCLK2	R527	2
DAC_SDAT2	R528	4
		5 (GND)

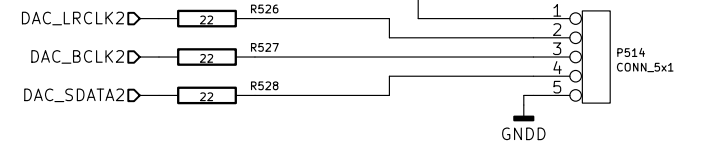
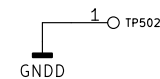
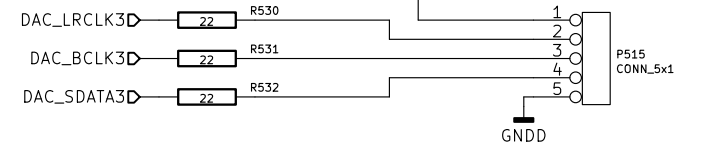


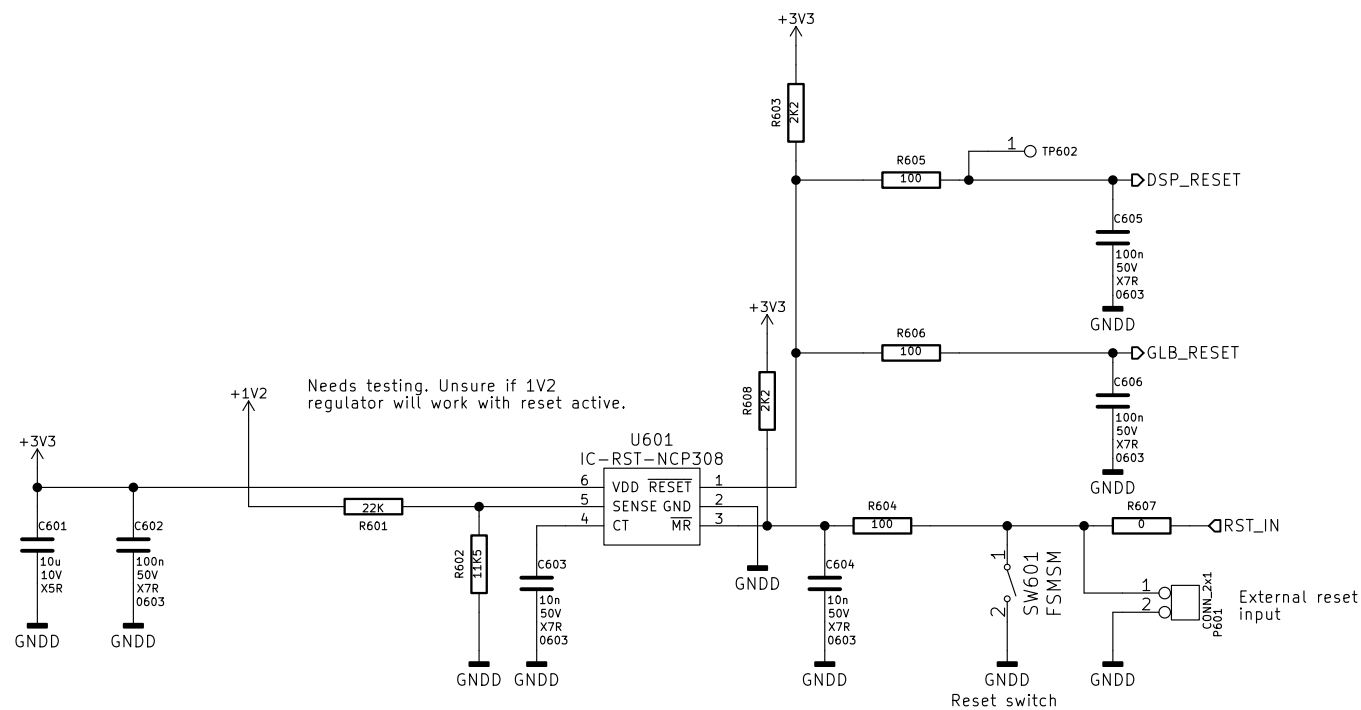
Diagram showing the connection of DACs to the P515 connector:

- DAC\_LRLCK3 (pin 22, R530) connects to P515 pin 1.
- DAC\_BCLK3 (pin 22, R531) connects to P515 pin 3.
- DAC\_SDATA3 (pin 22, R532) connects to P515 pin 4.
- GND connects to P515 pin 5.



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Sheet: /Connectors/ File: Connectors.sch	
<b>Title: uDSP</b>	
Size: A3	Date: 2019-03-11
KiCad E.D.A. kicad (5.0.2)–1	Rev: 1.0 Id: 5/6

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



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Sheet: /Reset-NCP308/

Title: uDSP

Size: A4	Date: 2019-03-11
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Size: A4	Date: 2019
KiCad E.D.A.	kicad (5.0.2)-1

Rev: 1.0
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Id: 6/6