5V supply for digital and output analog electronics

+15_IN

LM7805

Mark +15 and GND as power lines

Headers to status LEDs:
L1 – GND – L2

Led_x2_split

Disable USB control (GPIO)

Power indicator

DISABLE FLASH

Sheet: DACOutputs1

File: DACOutputs.sch

Sheet: DACOutputs2

File: DACOutputs.sch

Optional breakout for 5V outputs, for use when low noise instead of current capacity is needed

Microprocessor

Sheet: DIYino

File: DIYino.sch

Isolated DC–DC convertor to power analog section

TMA0505S

Isolated analog section

Override the isolation

IO ports

Sheet: ADC_Chip

File: ADC_Chip.sch

ADC breakout

Voltage reference
with optional external

Temperature sensing, via INA330 chips

Series resistors, required to ensure stability of INA330 excitation

Optional precision resistors on–board instead of supplied via RJ45 connector

Sheet: INA330_interface1

File: INA330.sch

Sheet: INA330_interface2

File: INA330.sch

IO ports

Testpoints

Power indicator

Isolated RS485 interface

ISO3088

OPA548 Power opamps

The OPAs should start disabled, so use a buffer with a pull–down to ensure this is the case. This sacrifices the ability to monitor the thermal state, but I think it's worth it.

Sheet: ES_Buffers

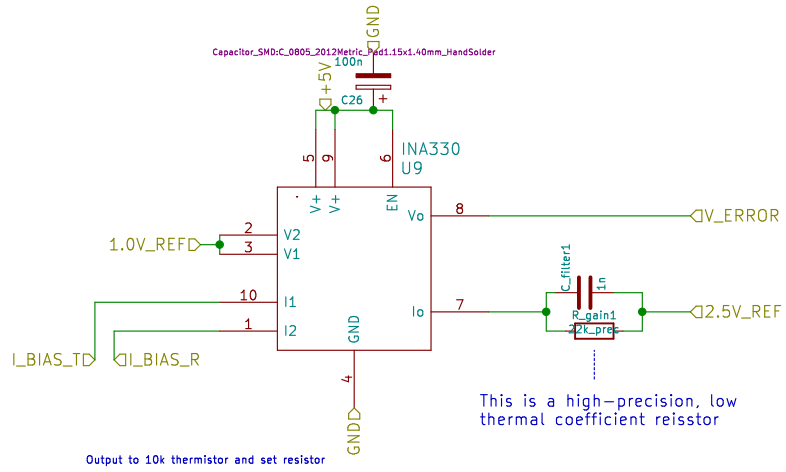
File: ES_Buffers.sch

These connectors allow connection of a daughter board, for high–current usage.
If this option is used, OPAs 1&2 must be disabled via their jumpers.
Current limits will no longer be accurate, unless the microprocessor code is also altered.

VLIM 1–4 are already broken out above

Sheet: /		
File: TempCtrl.sch		
Title:		
Size: A3	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.0)–1		Id: 1/8

Instrumentation amplifier, optimized for temperature control applications

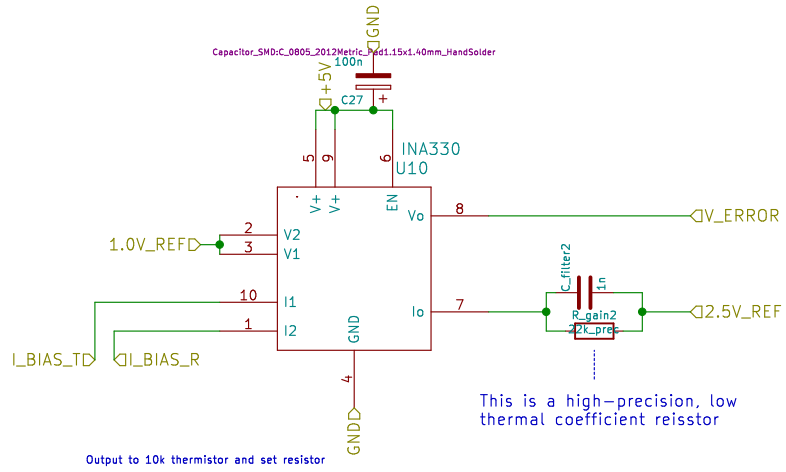


Sheet: /INA330_interface1/
File: INA330.sch

Title:

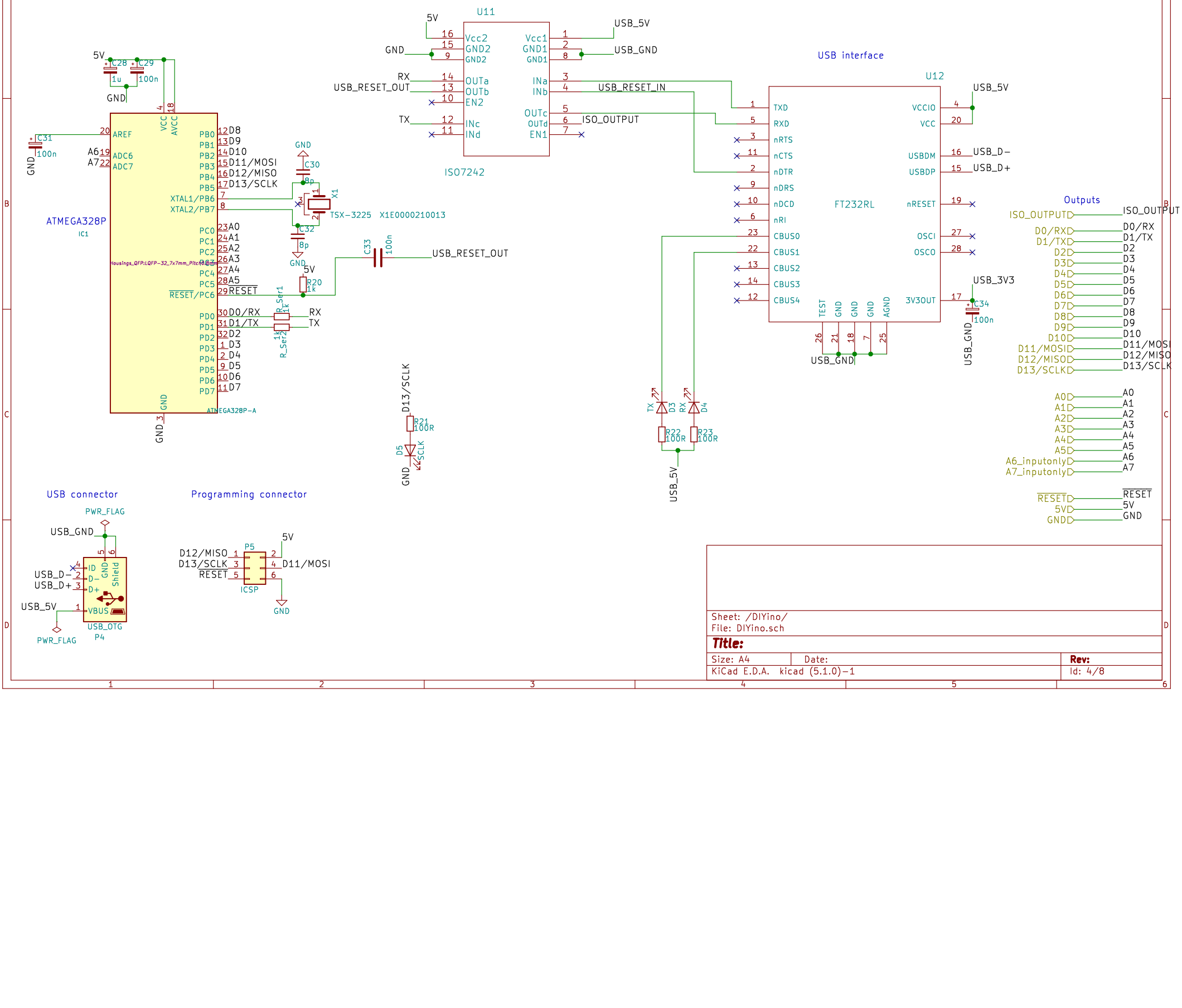
Size: A4	Date: 11 aug 2015	**Rev:**
KiCad E.D.A. kicad (5.1.0)-1		Id: 2/8

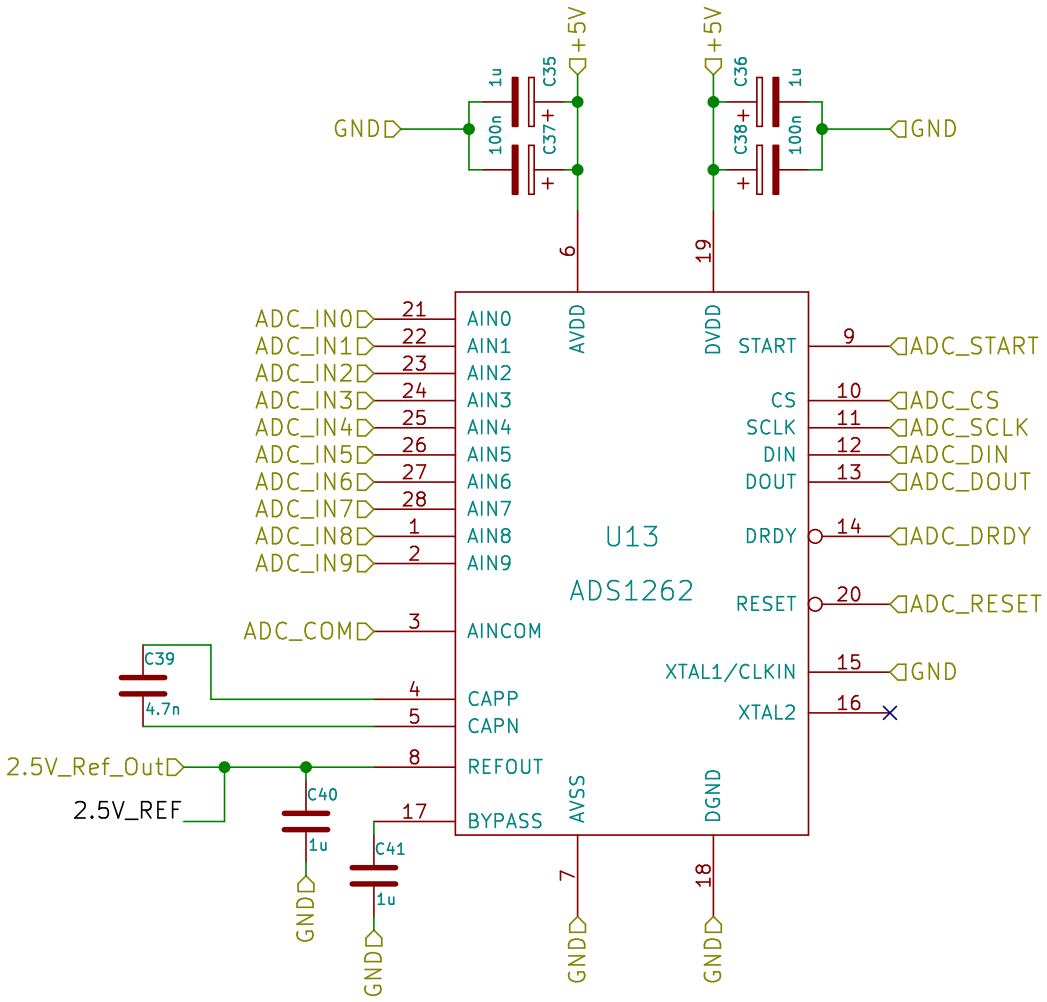
Instrumentation amplifier, optimized for temperature control applications



Sheet: /INA330_interface2/		
File: INA330.sch		
Title:		
Size: A4	Date: 11 aug 2015	**Rev:**
KiCad E.D.A. kicad (5.1.0)-1		Id: 3/8

Arduino copycat

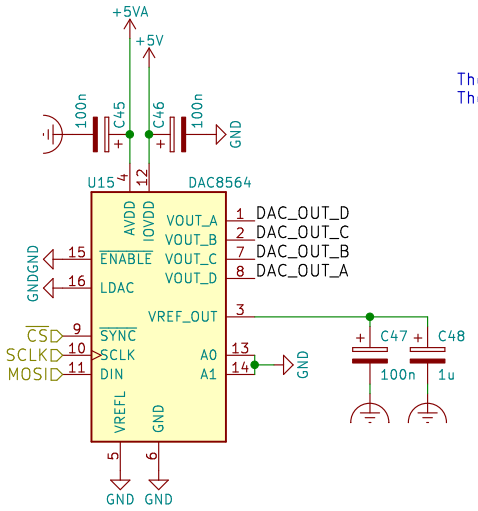




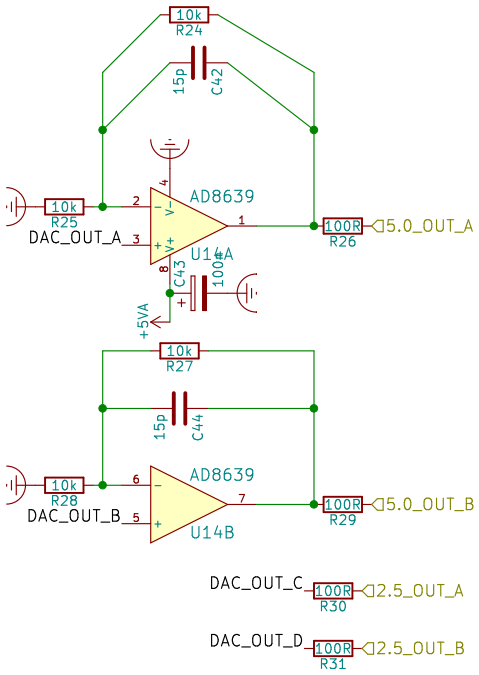
Sheet: /ADC_Chip/
File: ADC_Chip.sch

Title:

Size: A4	Date: 23 oct 2015	**Rev:**
KiCad E.D.A. kicad (5.1.0)-1		Id: 5/8



The DAC can output 0 -> 2.5V
The amplifiers double this to 0 -> 5V



These grounds will be connected at the last stages
of the design, but my be held seperate until then
to avoid crosstalk

Digital Ground:

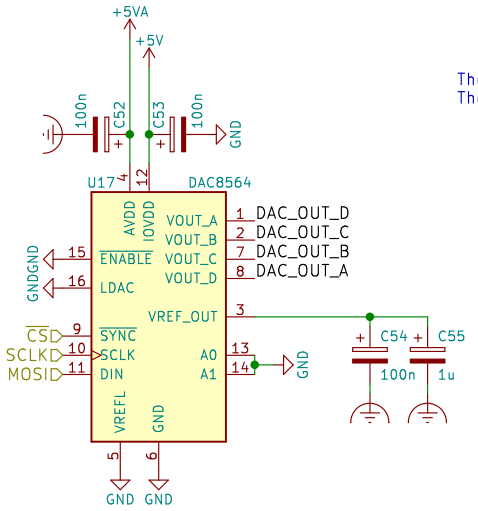
Analog Ground:

Similarily, analog and digital supplies will be recombined at the last minute

Sheet: /DACOutputs1/
File: DACOutputs.sch

Title:

Size: A4 | Date: | **Rev:**
KiCad E.D.A. kicad (5.1.0)-1 | Id: 6/8



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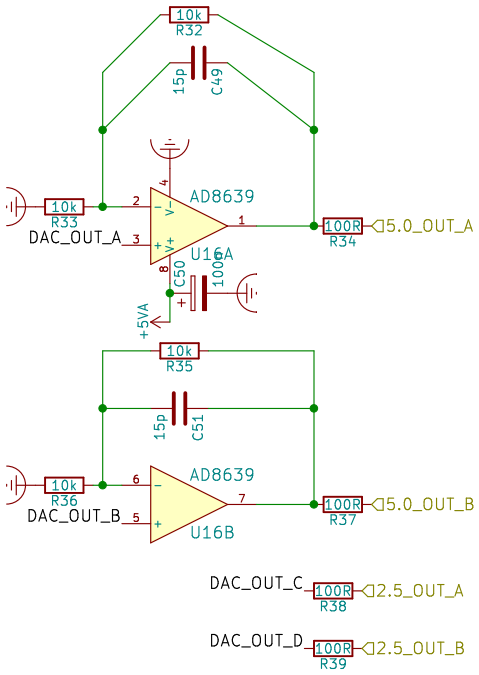


These grounds will be connected at the last stages
of the design, but my be held seperate until then
to avoid crosstalk

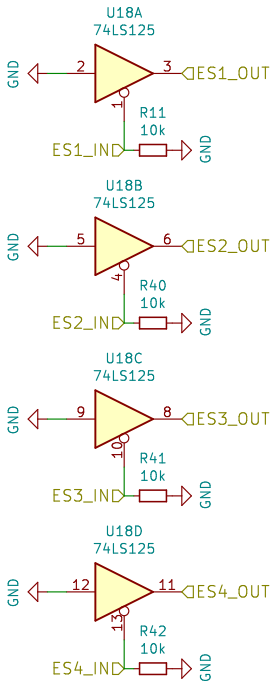
Digital Ground:

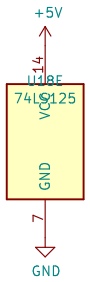
Analog Ground:

Similarily, analog and digital supplies will be recombined at the last minute

Sheet: /DACOutputs2/		
File: DACOutputs.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.0)-1		Id: 7/8

The inputs are always GND, so the ouputs will be LOW to disable the OPA548s. The outputs can be set to float instead by driving the ENABLE pins HIGH, but they start low (having been pulled down).





Sheet: /ES_Buffers/		
File: ES_Buffers.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.0)-1		Id: 8/8