

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| A | | | | | |
| B | | | | | |
| C | | | | | |
| D | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 |

Sheet: Power



File: Power.sch

Sheet: Valves



File: Valves.sch

Sheet: Pressure Transducers



File: PressureTransducers.sch

Sheet: Microcontroller



File: Microcontroller.sch

Sheet: Motors



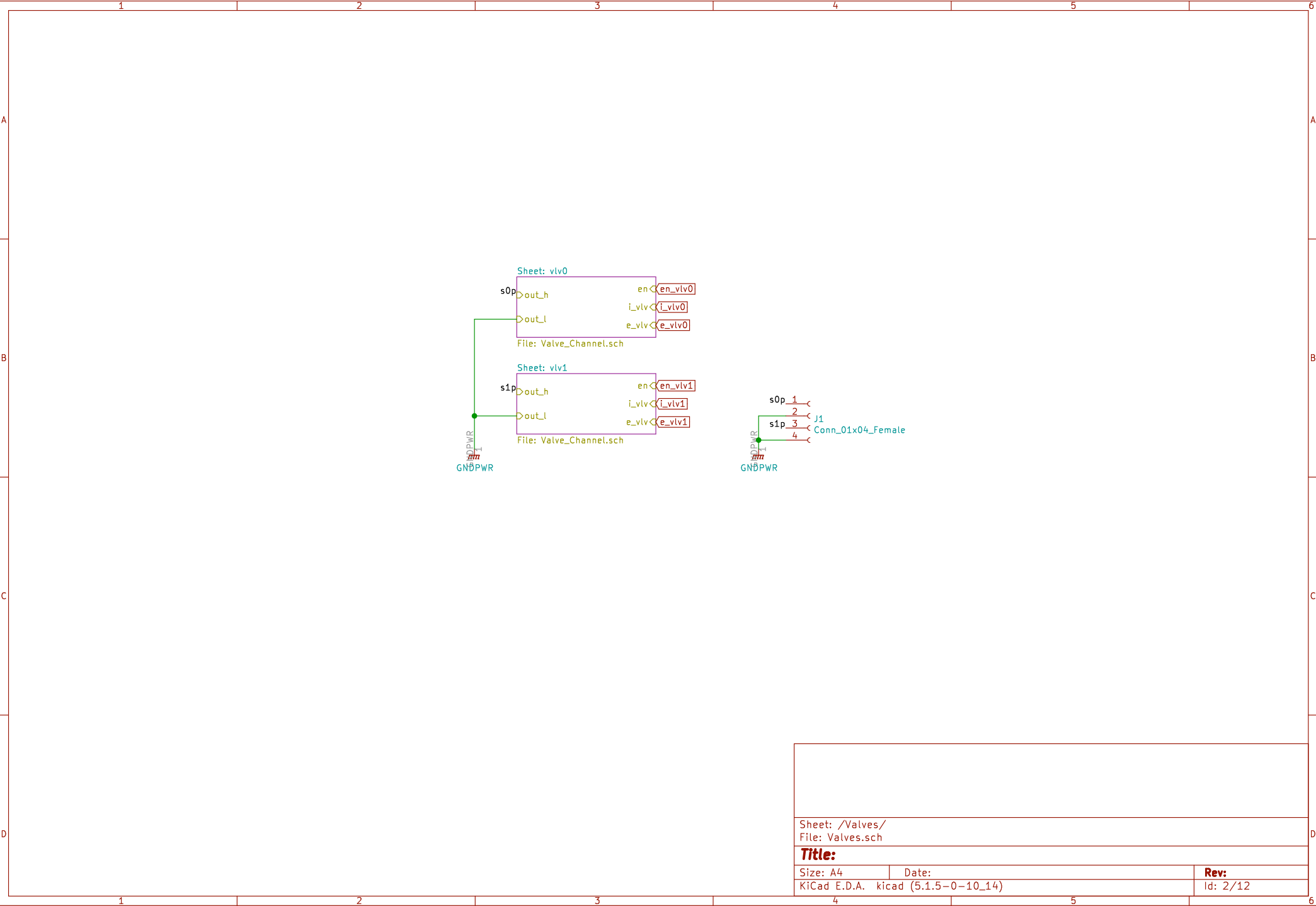
File: Motors.sch

Sheet: ADC

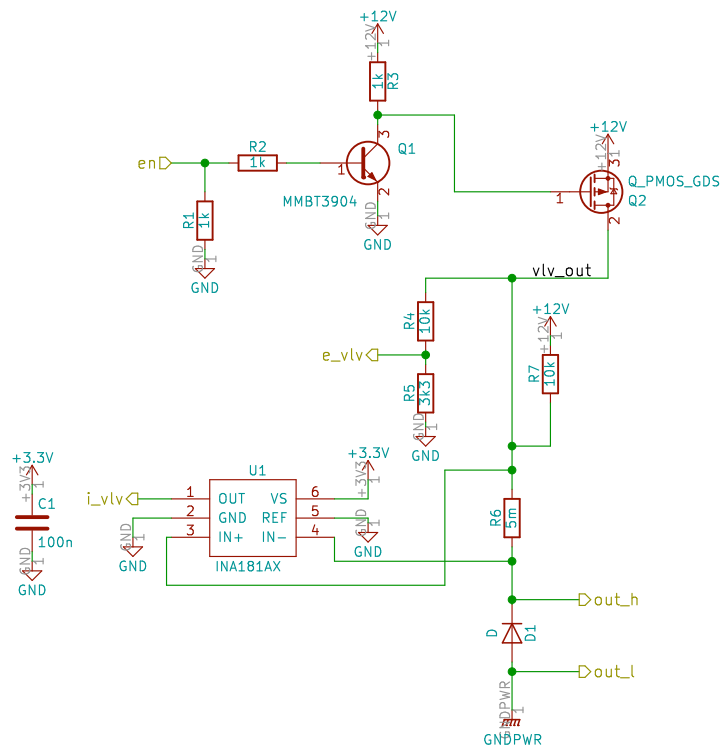


File: ADC.sch

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| | | |
| Sheet: / | | |
| File: bangbang_rev1.sch | | |
| Title: | | |
| Size: A4 | Date: | Rev: |
| KiCad E.D.A. kicad (5.1.5-0-10_14) | | Id: 1/12 |



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|-------------------------------------|-------|----------|
| Sheet: /Valves/ File: Valves.sch | | |
| Title: | | |
| Size: A4 | Date: | Rev: |
| KiCad E.D.A. kicad (5.1.5-0-10_14) | | Id: 2/12 |



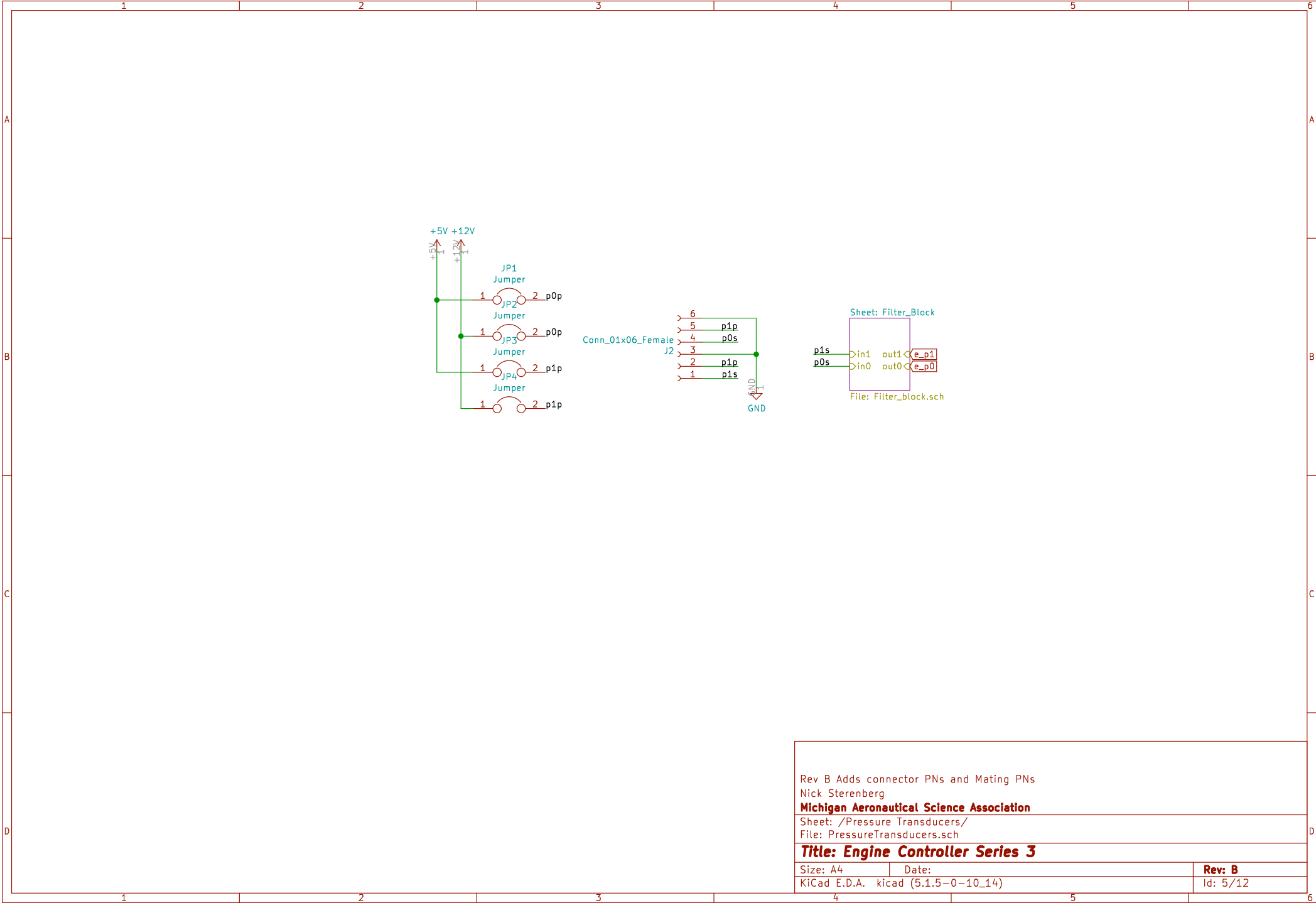
Rev B Adds connector PNs and Mating PNs
 Nick Sterenberg
Michigan Aeronautical Science Association

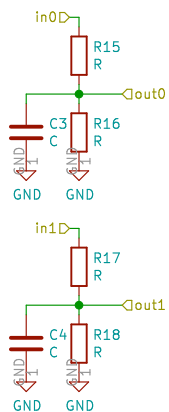
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 File: Valve_Channel.sch

Title: Engine Controller Series 3

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|------------------------------------|-------|---------------|
| Size: A4 | Date: | Rev: B |
| KiCad E.D.A. kicad (5.1.5-0-10_14) | | Id: 3/12 |

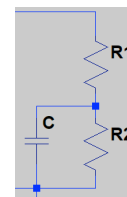
Id: 4/12





$$G_{DC} = \frac{1}{1 + \frac{R_1}{R_2}}$$

$$\omega_c = \frac{2(1 + \frac{R_1}{R_2}) - 1 - \frac{R_1}{R_2}}{R_1 C}$$



Rev B Adds connector PNs and Mating PNs
Nick Sterenberg

Michigan Aeronautical Science Association

Sheet: /Pressure Transducers/Filter_Block/
File: Filter_block.sch

Title: Engine Controller Series 3

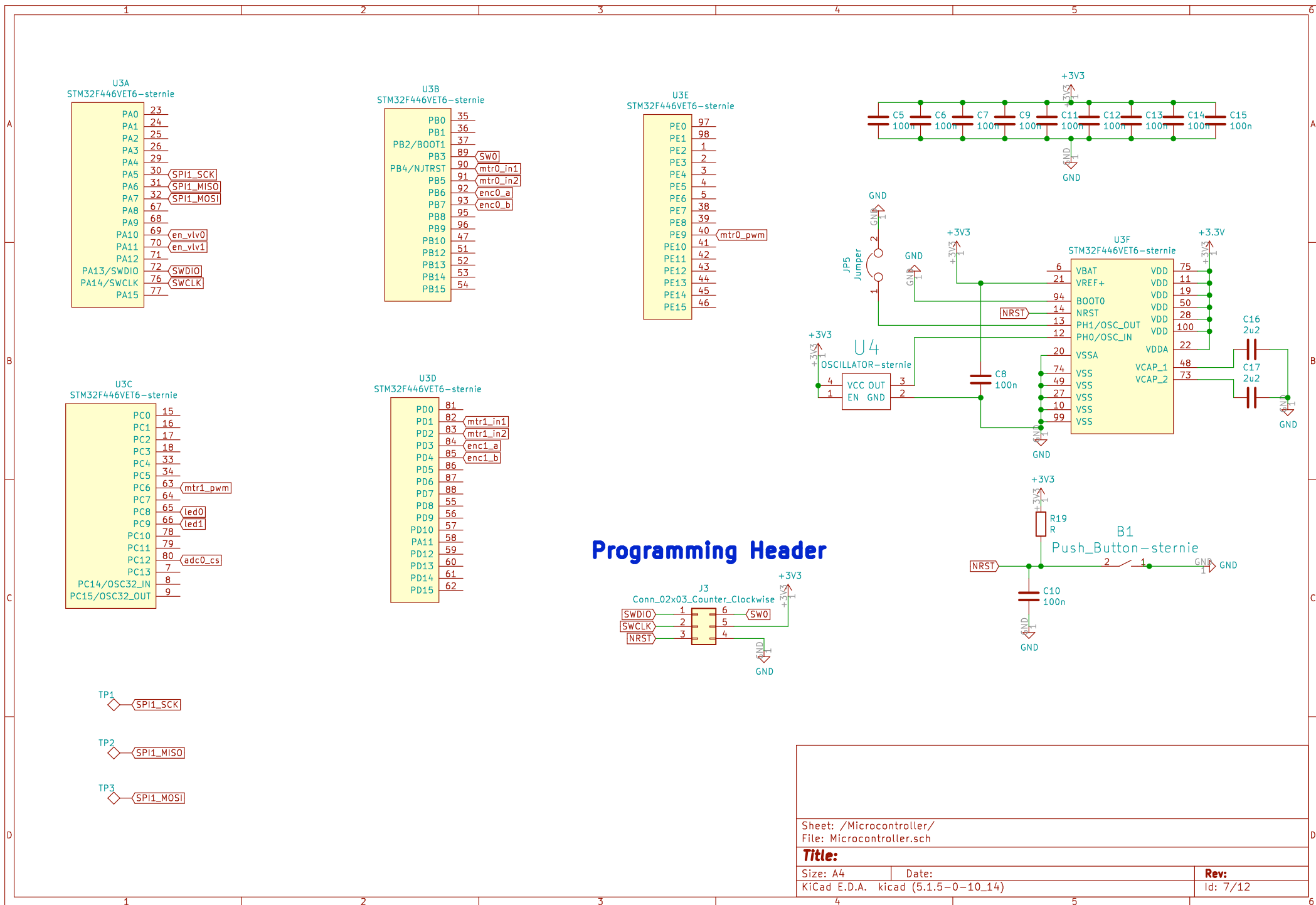
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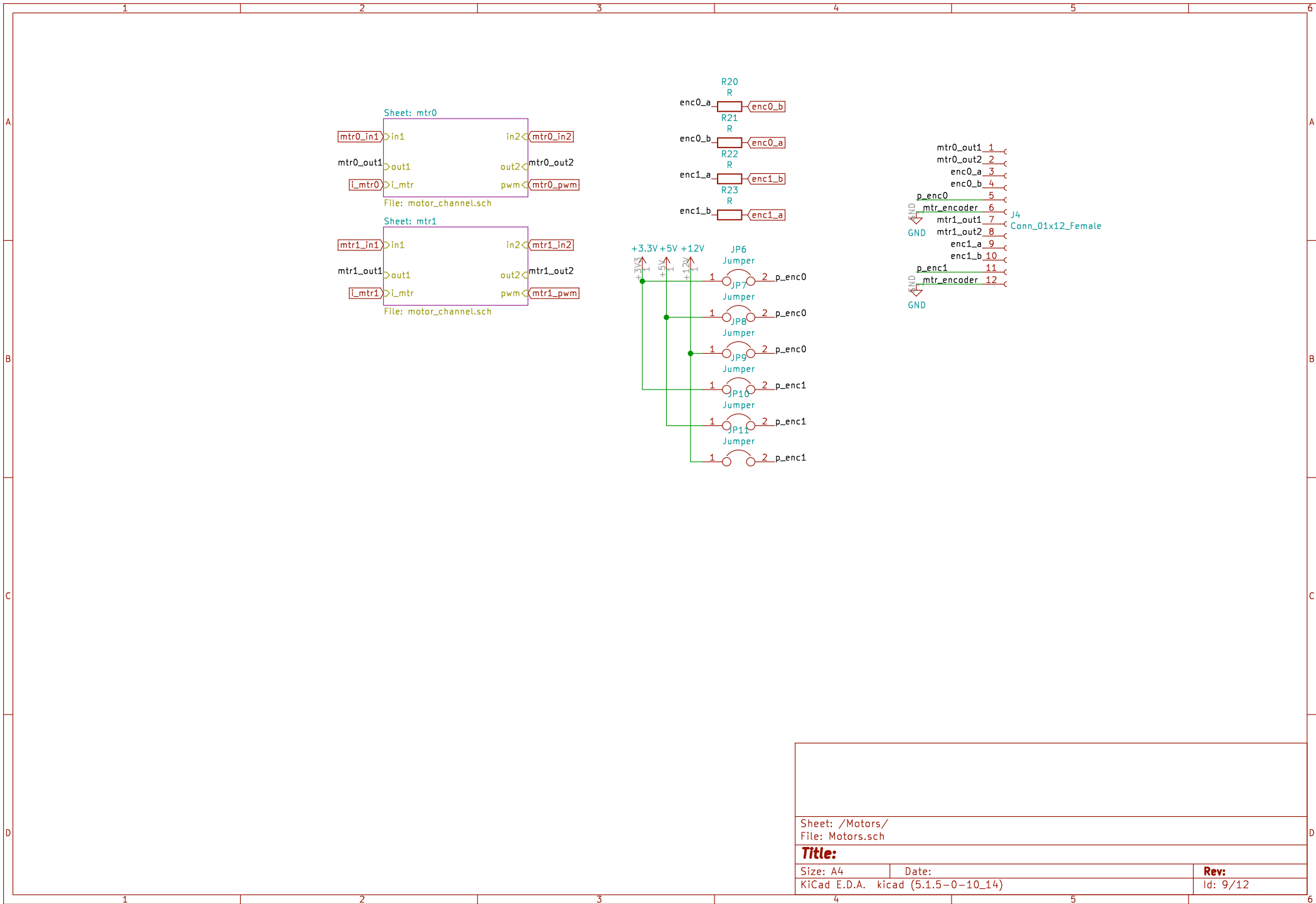
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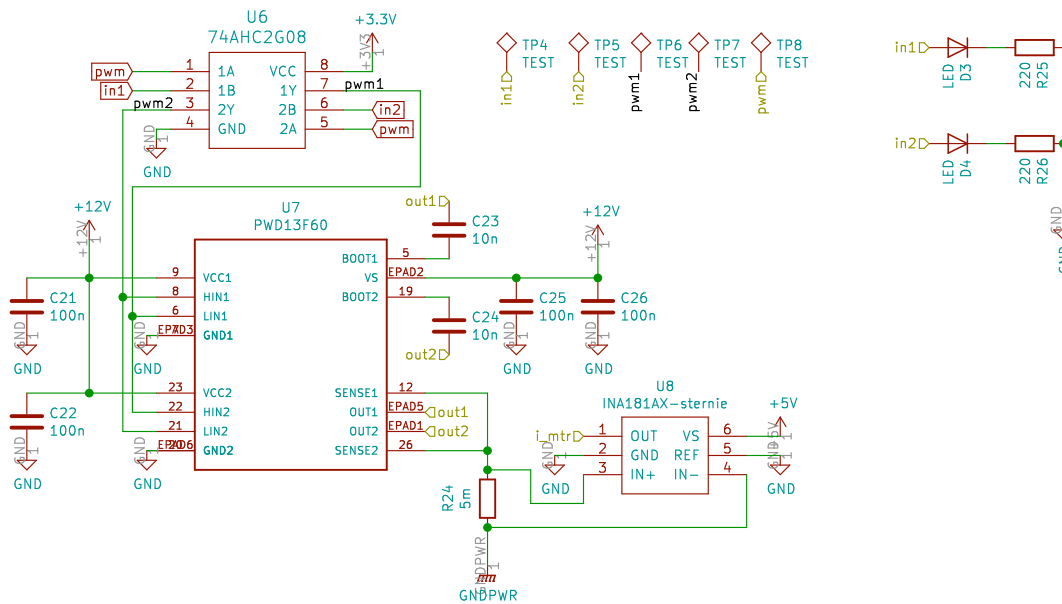
Rev: B

KiCad E.D.A. kicad (5.1.5-0-10_14)

Id: 6/12







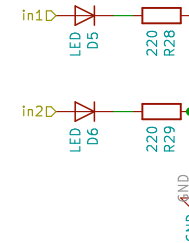
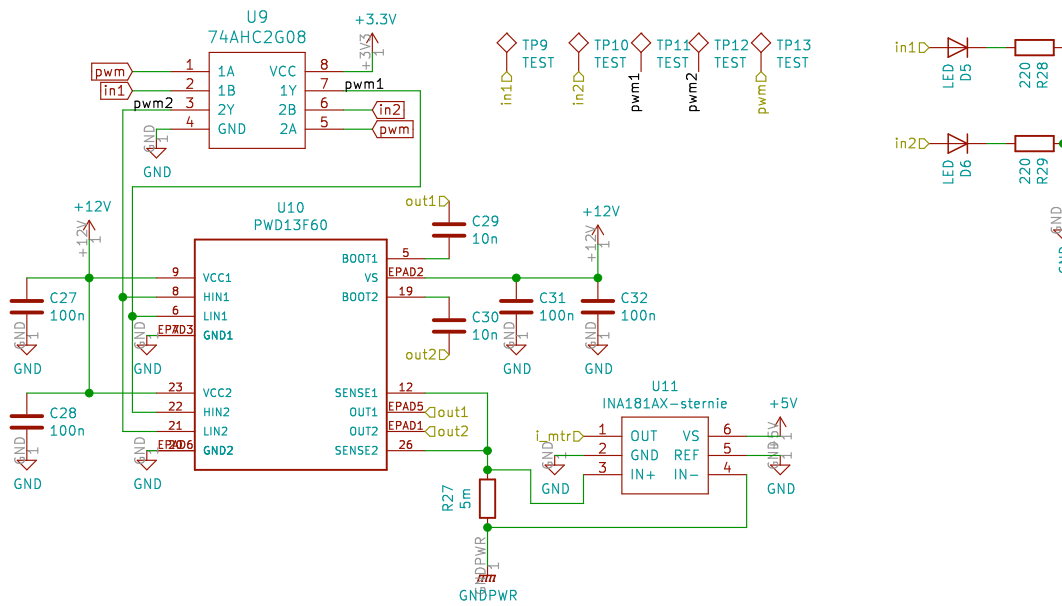
Sheet: /Motors/mtr0/
File: motor_channel.sch

Title:

Size: A4
KiCad E.D.A. kicad (5.1.5-0-10_14)

Date:

Rev:
Id: 10/12



Sheet: /Motors/mtr1/
File: motor_channel.sch

Title:

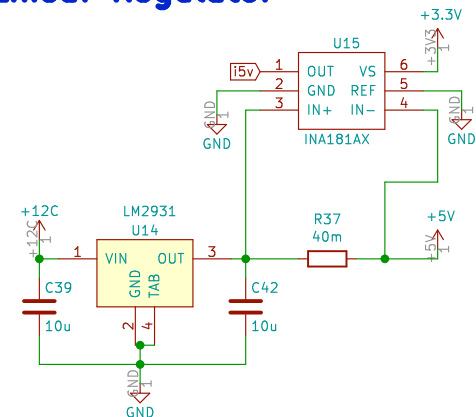
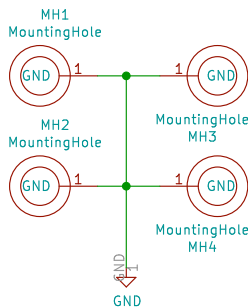
Size: A4
KiCad E.D.A. kicad (5.1.5-0-10_14)

Date:

Rev:
Id: 11/12



The circuit diagram shows a precision current source. It consists of two main integrated circuits: a TL1963A-33DCYR (U12) and an INA181A (U13). The TL1963A is configured as a voltage follower, with its non-inverting input (VIN) connected to a +12V supply through a 10µF capacitor (C37). Its output (OUT) is connected to its inverting input (GND TAB) through a 10µF capacitor (C38). The INA181A is configured as a precision current source. Its non-inverting input (IN+) is connected to the output of the TL1963A. Its inverting input (IN-) is connected to a +3.3V supply through a 40mΩ resistor (R35). The output of the INA181A (OUT) is connected to a +3.3V supply through a 10µF capacitor (C39). The output of the current source is taken from the output of the INA181A (OUT) and is connected to a +3.3V supply through a 10µF capacitor (C39).



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