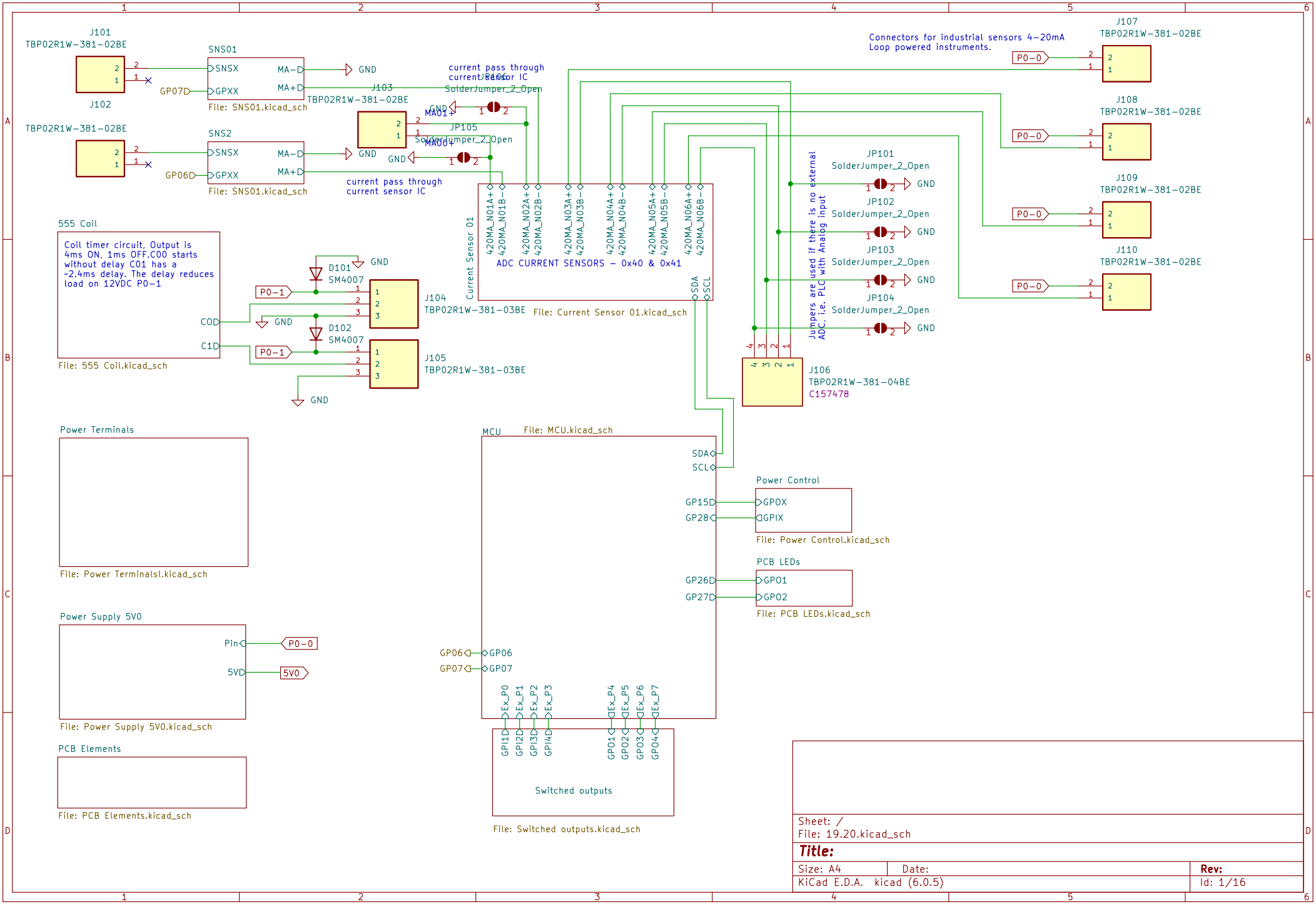
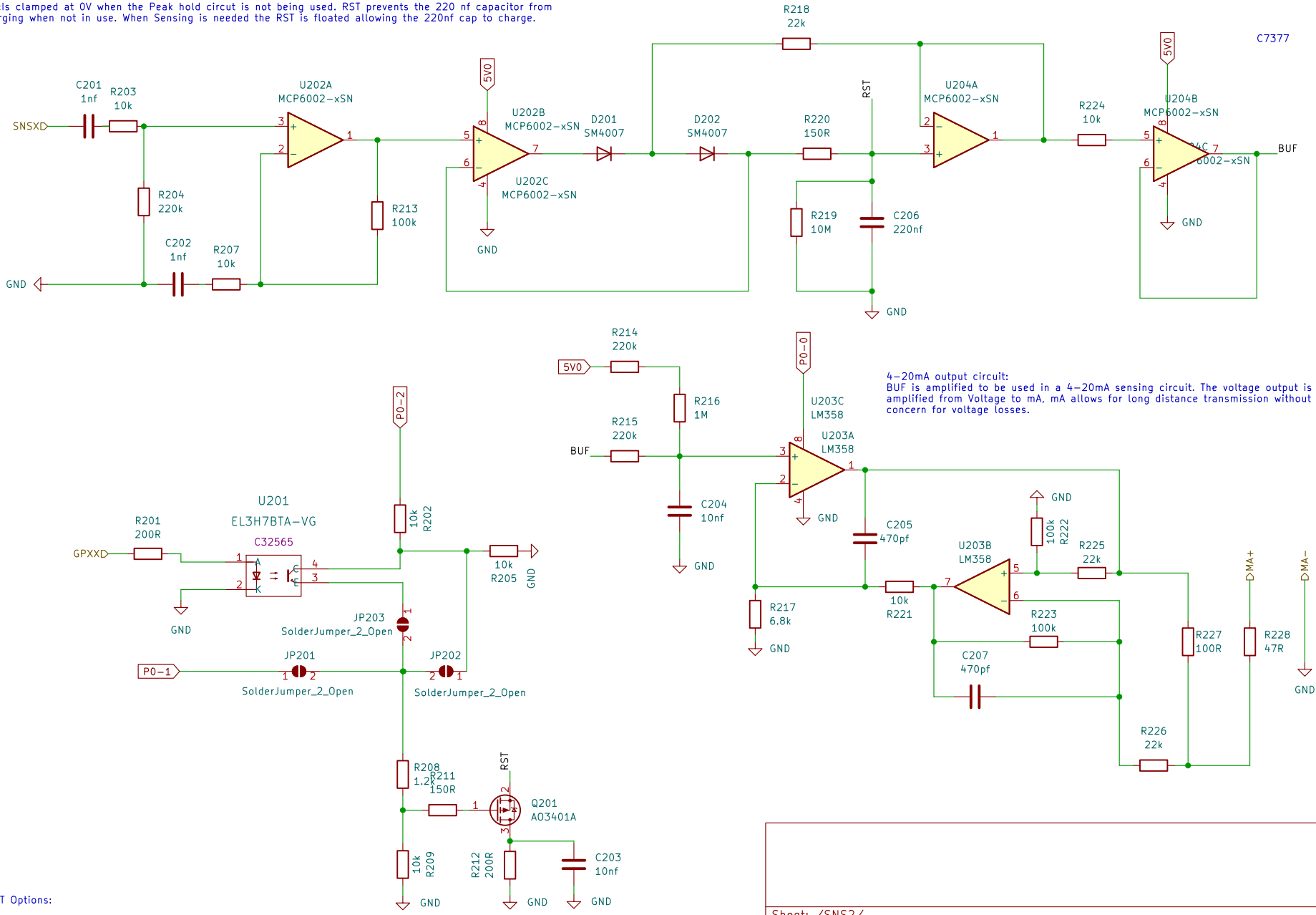

J101
TBP02R1W-381-02BE
J102
TBP02R1W-381-02BE
SNS01
SNSX
GPXX
MA-
MA+
GP07
GND
File: SNS01.kicad_sch
J103
TBP02R1W-381-02BE
current pass through
current sensor IC
SolderJumper_2_Open
JP105
MA01+
MA00+
SNS2
GP06
File: SNS01.kicad_sch
current pass through
current sensor IC
Connectors for industrial sensors 4-20mA
Loop powered instruments.
J107
TBP02R1W-381-02BE
J108
TBP02R1W-381-02BE
J109
TBP02R1W-381-02BE
J110
TBP02R1W-381-02BE
P0-0
Current Sensor 01
420MA_N01A+
420MA_N01B-
420MA_N02A+
420MA_N02B-
420MA_N03A+
420MA_N03B-
420MA_N04A+
420MA_N04B-
420MA_N05A+
420MA_N05B-
420MA_N06A+
420MA_N06B-
SDA
SCL
ADC CURRENT SENSORS - 0x40 & 0x41
File: Current Sensor 01.kicad_sch
JP101
JP102
JP103
JP104
SolderJumper_2_Open
Jumpers are used if there is no external
ADC, i.e. PLC with Analog input
J106
TBP02R1W-381-04BE
C157478
555 Coil
Coil timer circuit, Output is
4ms ON, 1ms OFF.C00 starts
without delay C01 has a
~2.4ms delay. The delay reduces
load on 12VDC P0-1
C0
C1
File: 555 Coil.kicad_sch
D101
SM4007
D102
SM4007
P0-1
J104
TBP02R1W-381-03BE
J105
TBP02R1W-381-03BE
Power Terminals
File: Power Terminalsl.kicad_sch
MCU
File: MCU.kicad_sch
Power Control
GP15
GP28
GPOX
GPIX
File: Power Control.kicad_sch
PCB LEDs
GP26
GP27
GPO1
GPO2
File: PCB LEDs.kicad_sch
Power Supply 5V0
Pin
5VD
5V0
File: Power Supply 5V0.kicad_sch
GP06
GP07
Ex_P0
Ex_P1
Ex_P2
Ex_P3
Ex_P4
Ex_P5
Ex_P6
Ex_P7
GPI1
GPI2
GPI3
GPI4
GPO1
GPO2
GPO3
GPO4
Switched outputs
File: Switched outputs.kicad_sch
PCB Elements
File: PCB Elements.kicad_sch
Sheet: /
File: 19.20.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (6.0.5)
Id: 1/16

SNS: Piezo Electric sensor, used to measure knock. Op-amps used to amplify the voltage using a peak hold circuit.
The peak hold circuit has a 220 uf fap used for peak hold.

RST:Is clamped at 0V when the Peak hold circut is not being used. RST prevents the 220 nf capacitor from charging when not in use. When Sensing is needed the RST is floated allowing the 220nf cap to charge.




4-20mA output circuit:
BUF is amplified to be used in a 4-20mA sensing circuit. The voltage output is amplified from Voltage to mA, mA allows for long distance transmission without concern for voltage losses.

RST Options:

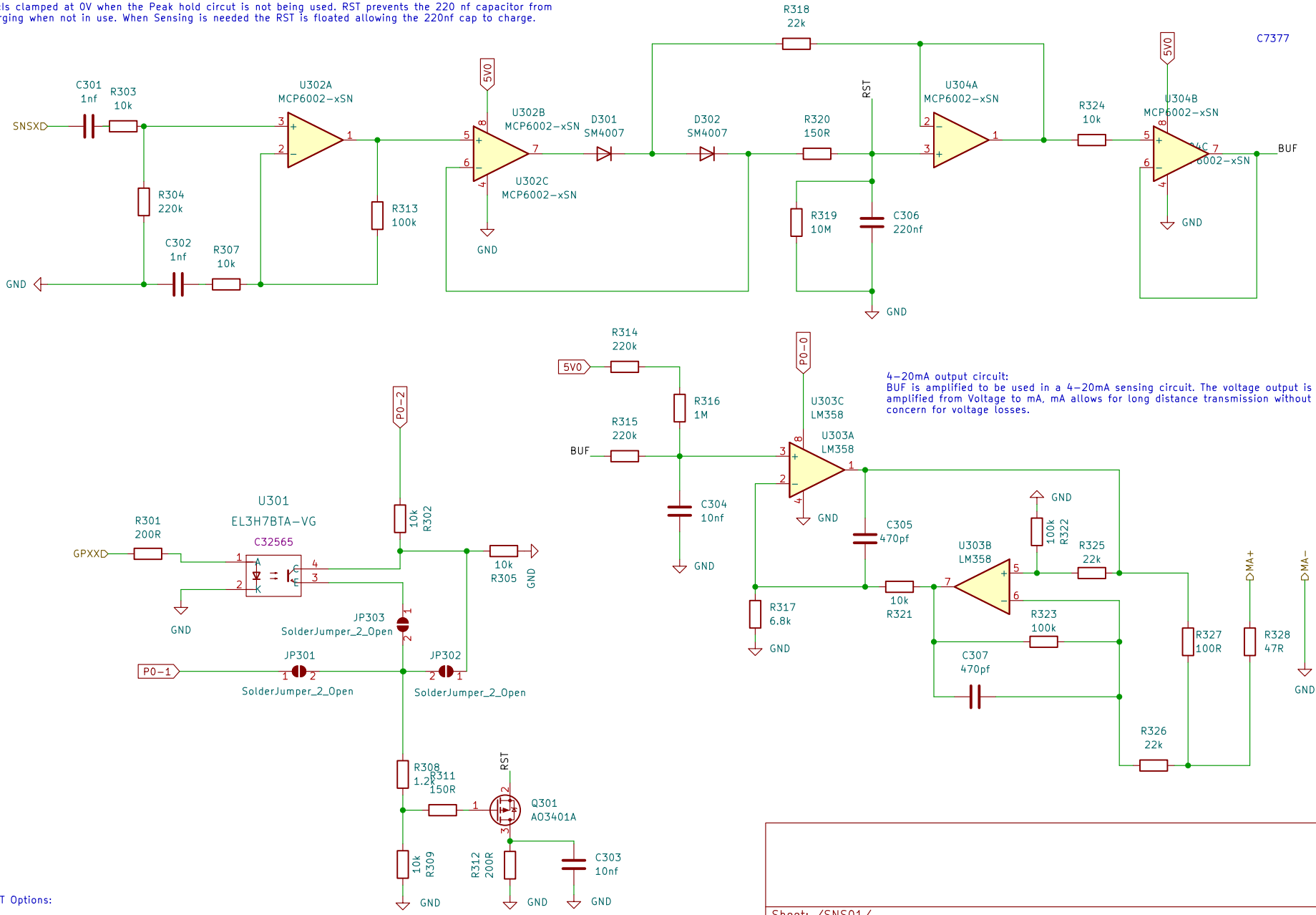
RST can be set to float by either 2 methods:

1) GP pin from mcu, when pin is set high 3V3. Powered by P0-0 24VDC.
2) P0-1, 12V remotely switched supply for ignition.
3) P0-2, 24 voltage triggered output

| | |
|---|---|
| Sheet: /SNS2/ | |
| File: SNS01.kicad_sch | |
| **Title:** | |
| Size: USLetter Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | Id: 2/16 |

SNS: Piezo Electric sensor, used to measure knock. Op-amps used to amplify the voltage using a peak hold circuit.
The peak hold circuit has a 220 uf fap used for peak hold.

RST:Is clamped at 0V when the Peak hold circut is not being used. RST prevents the 220 nf capacitor from charging when not in use. When Sensing is needed the RST is floated allowing the 220nf cap to charge.

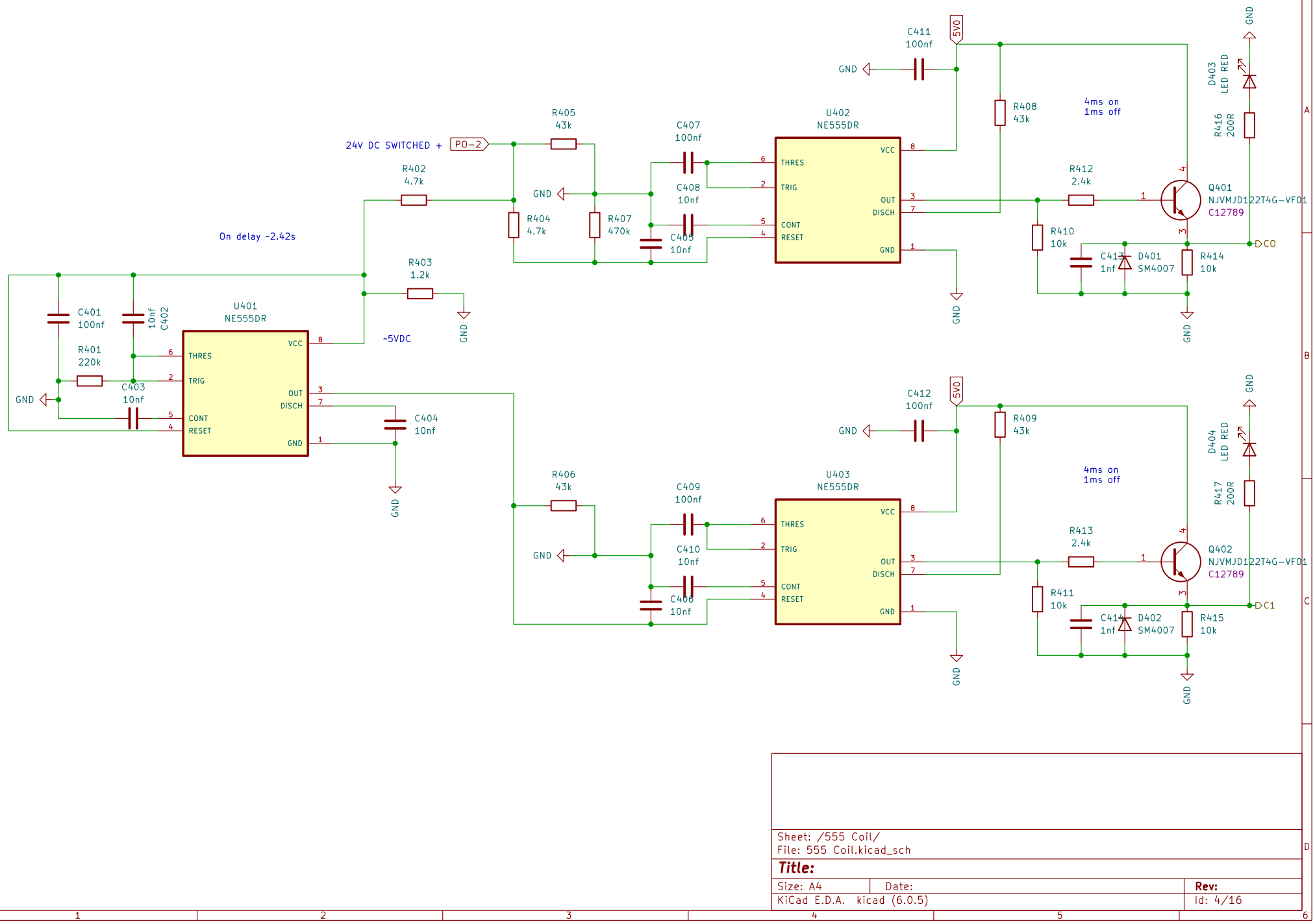



RST Options:

RST can be set to float by either 2 methods:

1) GP pin from mcu, when pin is set high 3V3. Powered by P0-0 24VDC.
2) P0-1, 12V remotely switched supply for ignition.
3) P0-2, 24 voltage triggered output

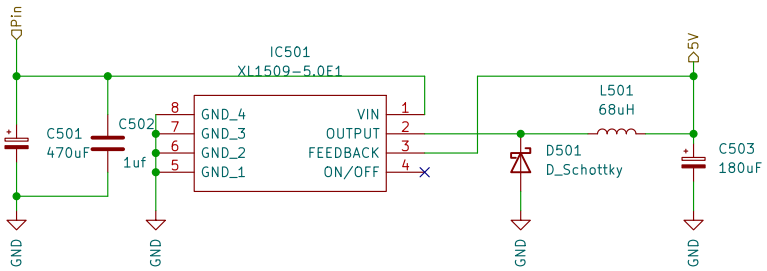
| | |
|---|---|
| Sheet: /SNS01/ | |
| File: SNS01.kicad_sch | |
| **Title:** | |
| Size: USLetter | Date: |
| KiCad E.D.A. kicad (6.0.5) | Id: 3/16 |




Sheet: /555 Coil/
File: 555 Coil.kicad_sch

**Title:**

| Size: A4 | Date: | **Rev:** |
|---|---|---|
| KiCad E.D.A. kicad (6.0.5) | | Id: 4/16 |

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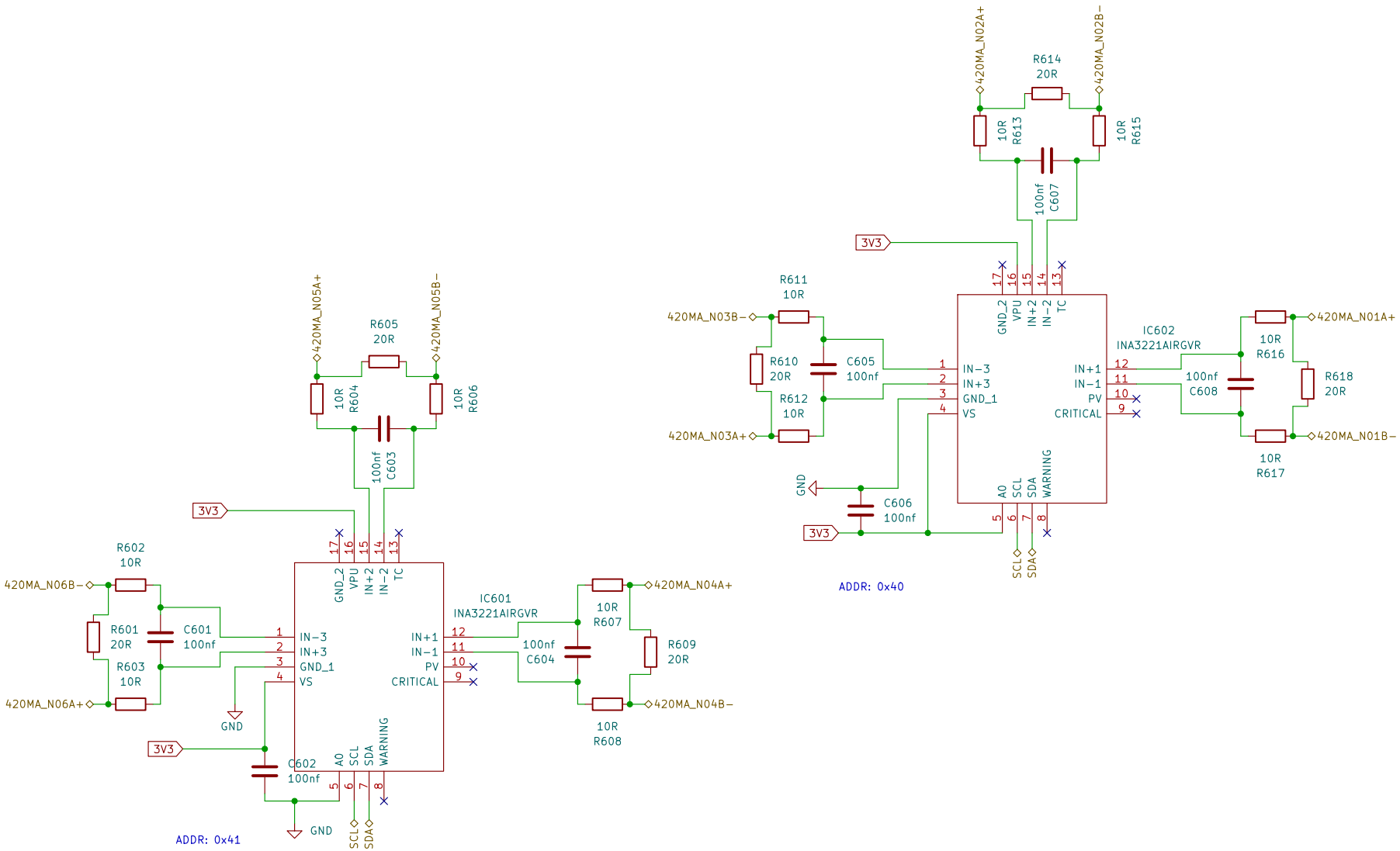
|---|---|---|
| Sheet: /Power Supply 5V0/ | | |
| File: Power Supply 5V0.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 5/16 |

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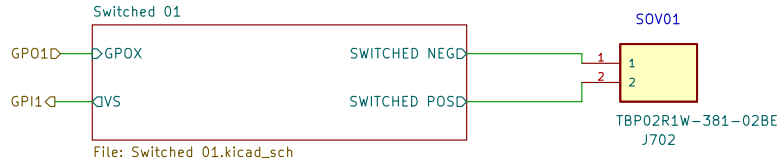
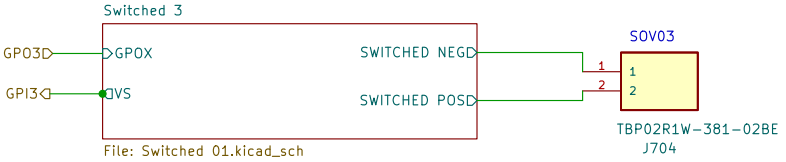
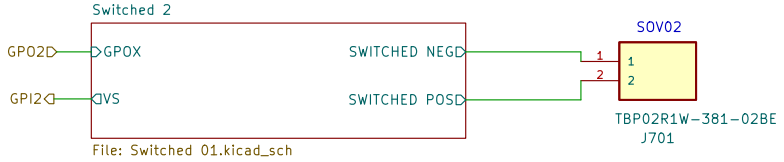
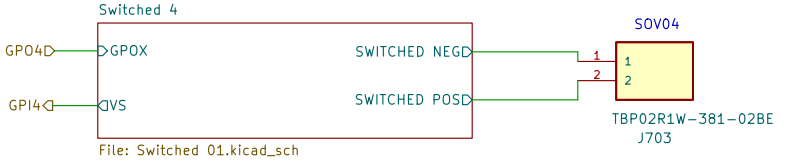
|---|---|---|
| Sheet: /Current Sensor 01/ | | |
| File: Current Sensor 01.kicad_sch | | |
| **Title:** | | |
| Size: USLetter | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 6/16 |

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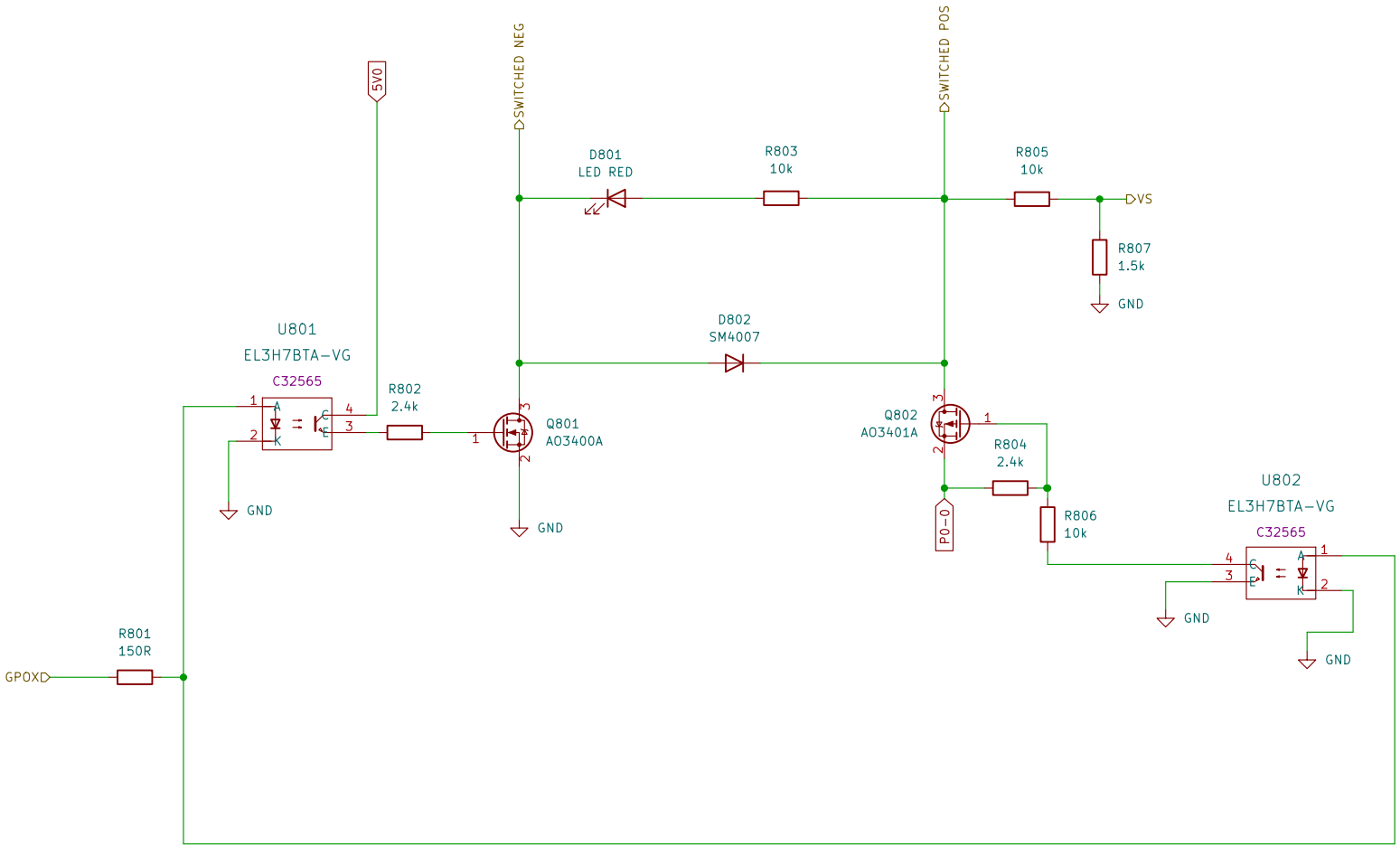
|---|---|
| Sheet: /Switched outputs/<br>File: Switched outputs.kicad_sch | |
| **Title:** | |
| Size: USLetter \| Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | Id: 7/16 |

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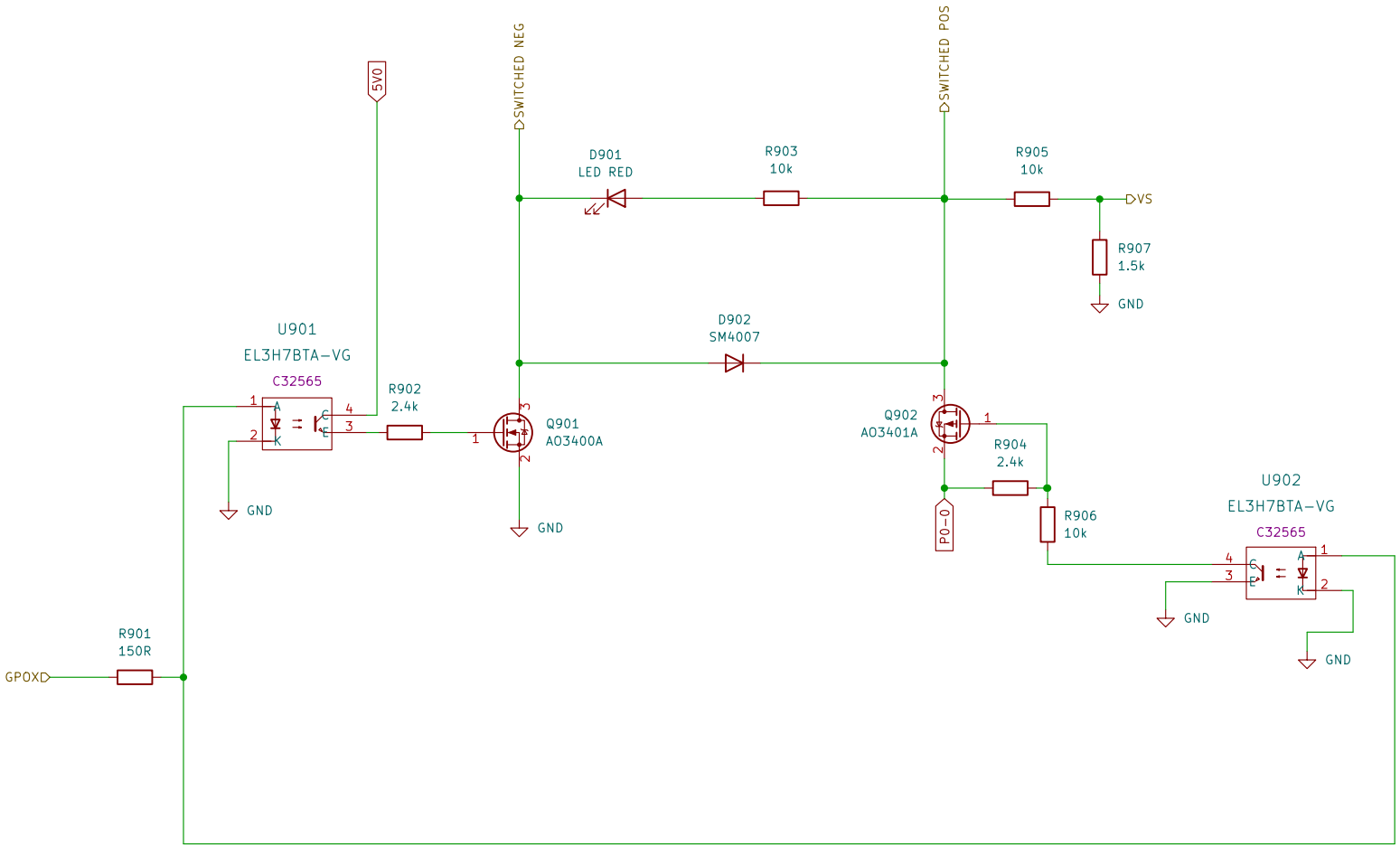
|---|---|
| Sheet: /Switched outputs/Switched 01/ | |
| File: Switched 01.kicad_sch | |
| **Title:** | |
| Size: USLetter \| Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | Id: 8/16 |

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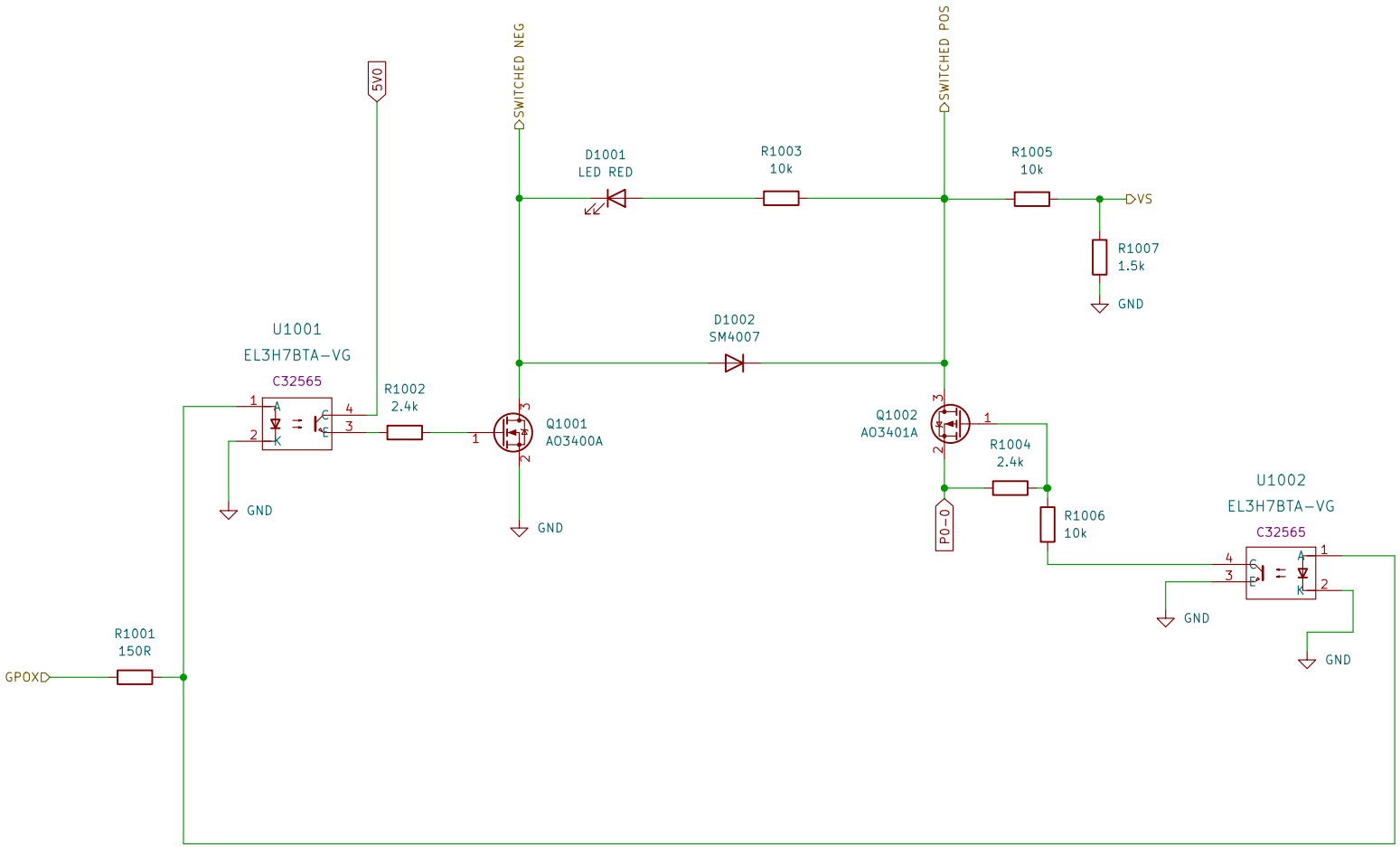
|---|---|
| Sheet: /Switched outputs/Switched 2/ | |
| File: Switched 01.kicad_sch | |
| **Title:** | |
| Size: USLetter Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | Id: 9/16 |

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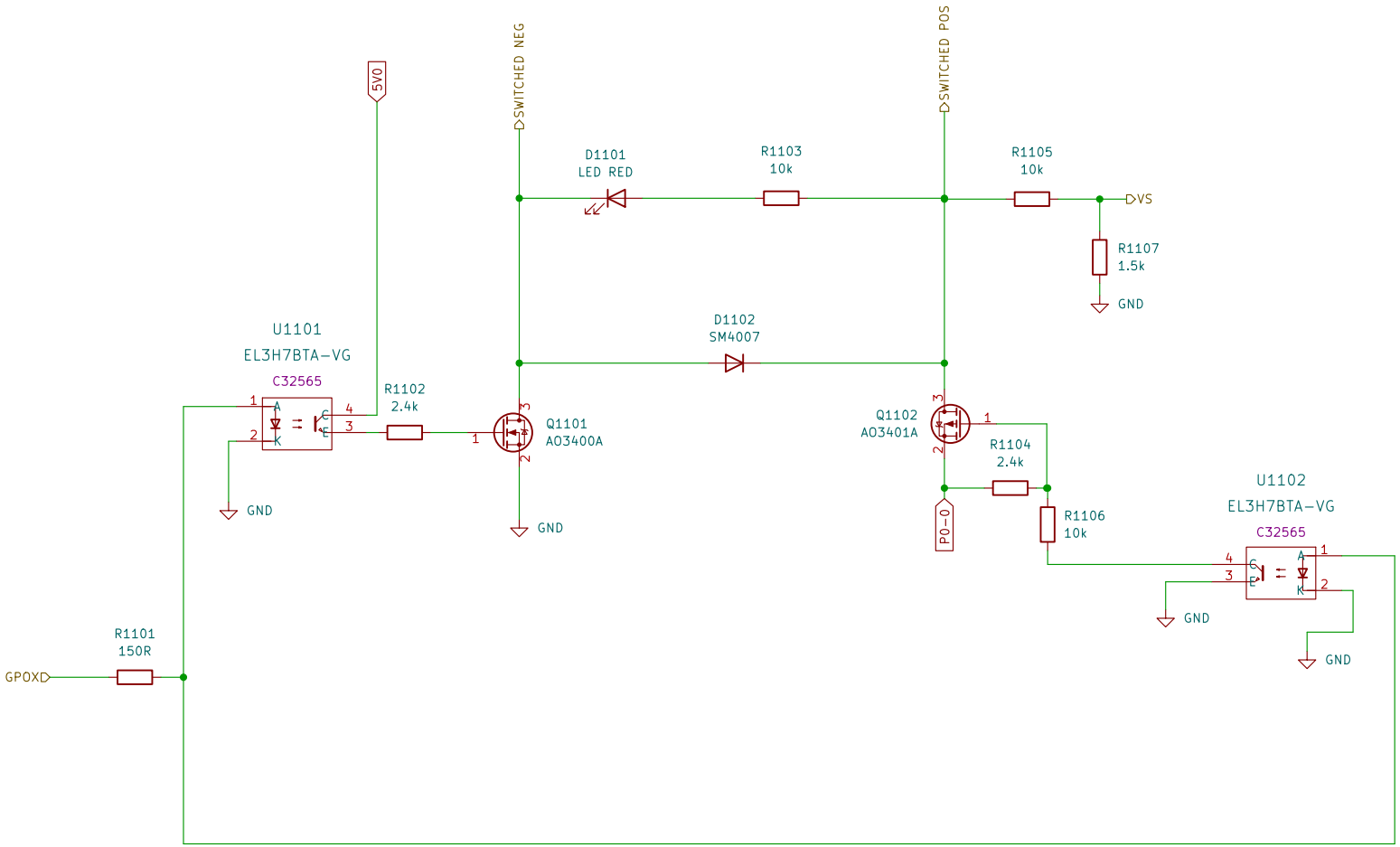
|---|---|
| Sheet: /Switched outputs/Switched 3/ | |
| File: Switched 01.kicad_sch | |
| **Title:** | |
| Size: USLetter \| Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | Id: 10/16 |

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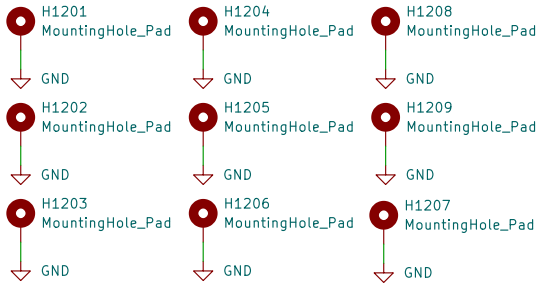
|---|---|
| Sheet: /Switched outputs/Switched 4/ | |
| File: Switched 01.kicad_sch | |
| **Title:** | |
| Size: USLetter \| Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | Id: 11/16 |

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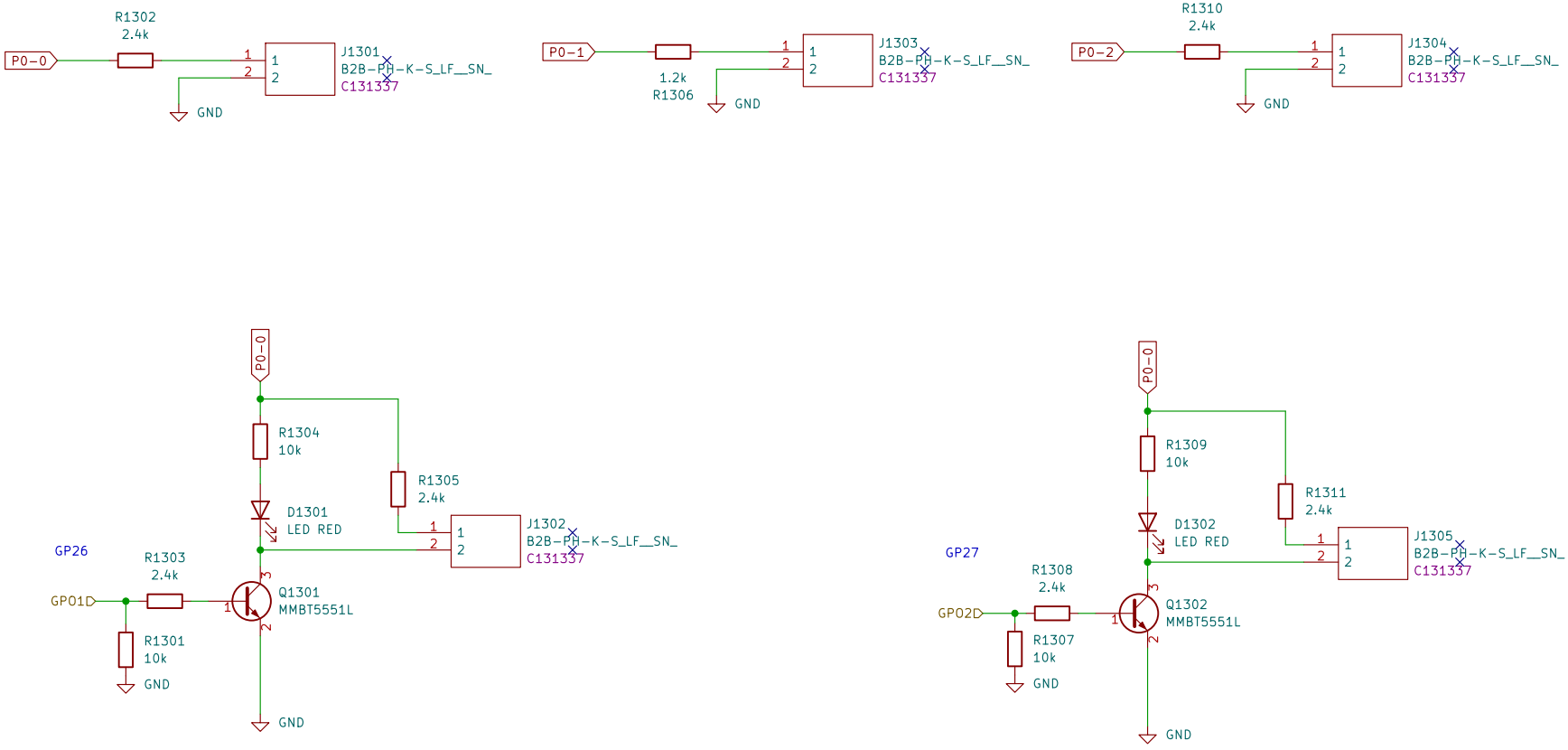
|---|---|---|
| Sheet: /PCB Elements/ | | |
| File: PCB Elements.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 12/16 |

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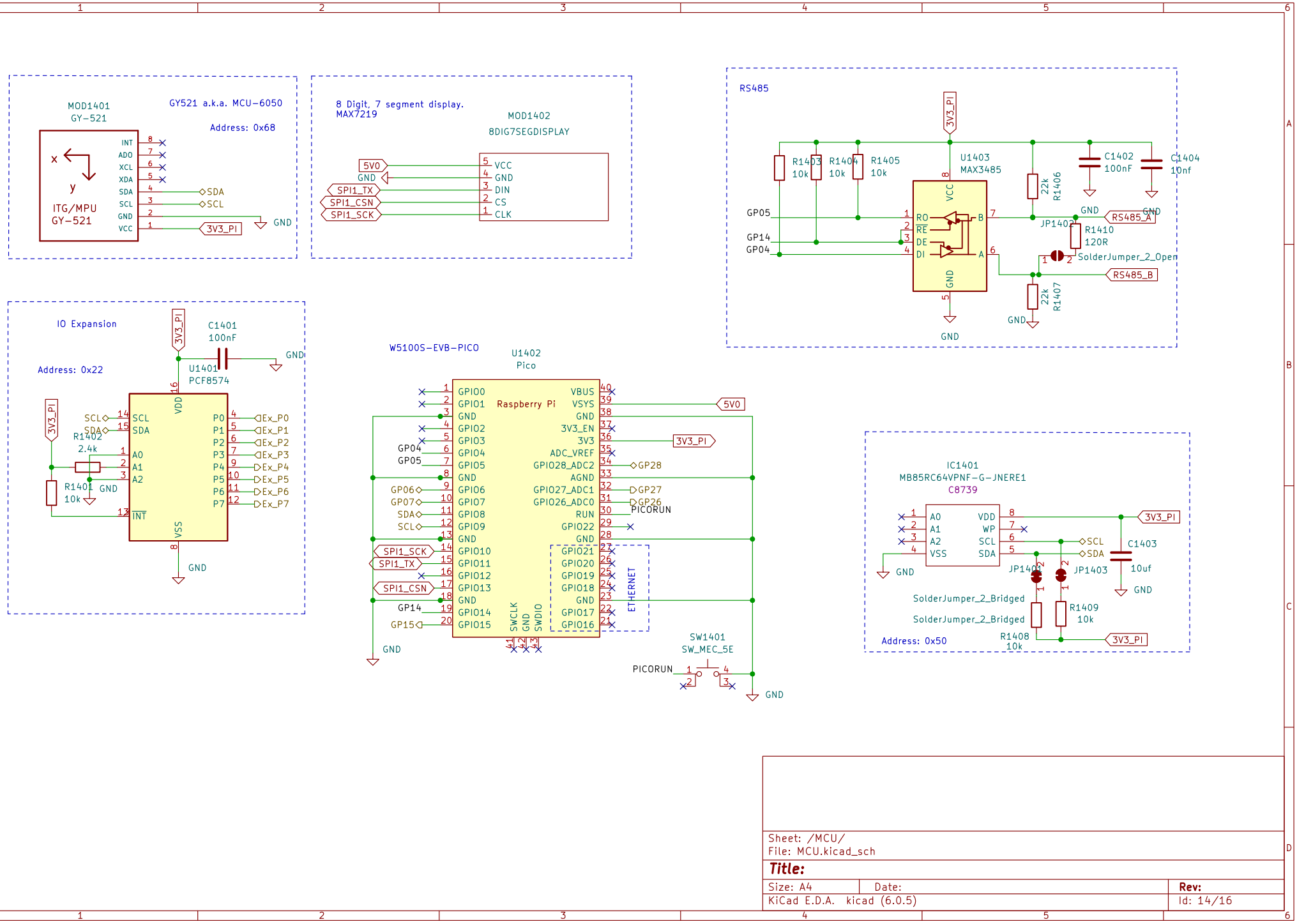
|---|---|---|
| Sheet: /PCB LEDs/ | | |
| File: PCB LEDs.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 13/16 |

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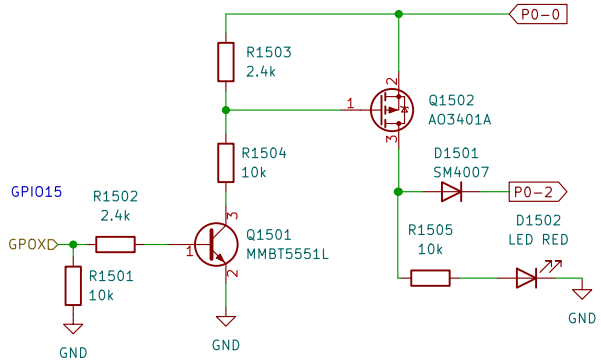
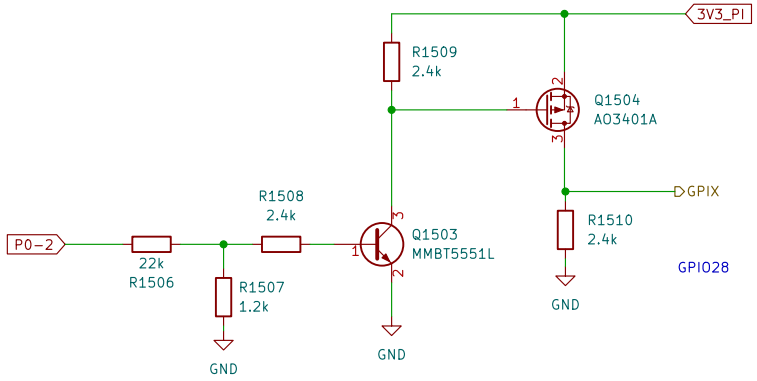
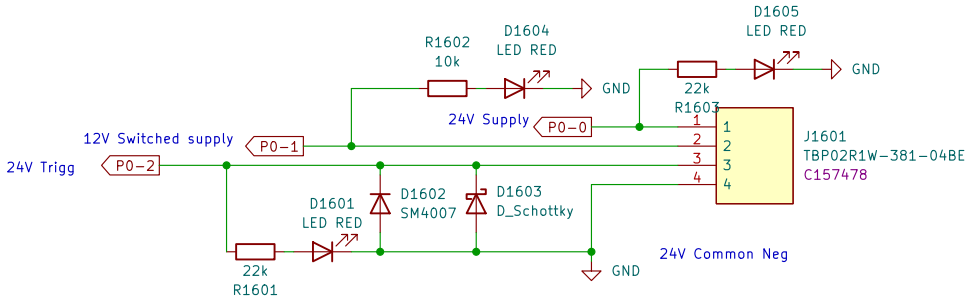
|---|---|---|
| Sheet: /MCU/ | | |
| File: MCU.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 14/16 |




| | | |
|---|---|---|
| Sheet: /Power Control/<br>File: Power Control.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 15/16 |




| | | |
|---|---|---|
| Sheet: /Power Terminals/<br>File: Power Terminalsl.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: | **Rev:** |
| KiCad E.D.A. kicad (6.0.5) | | Id: 16/16 |