

Author: LF

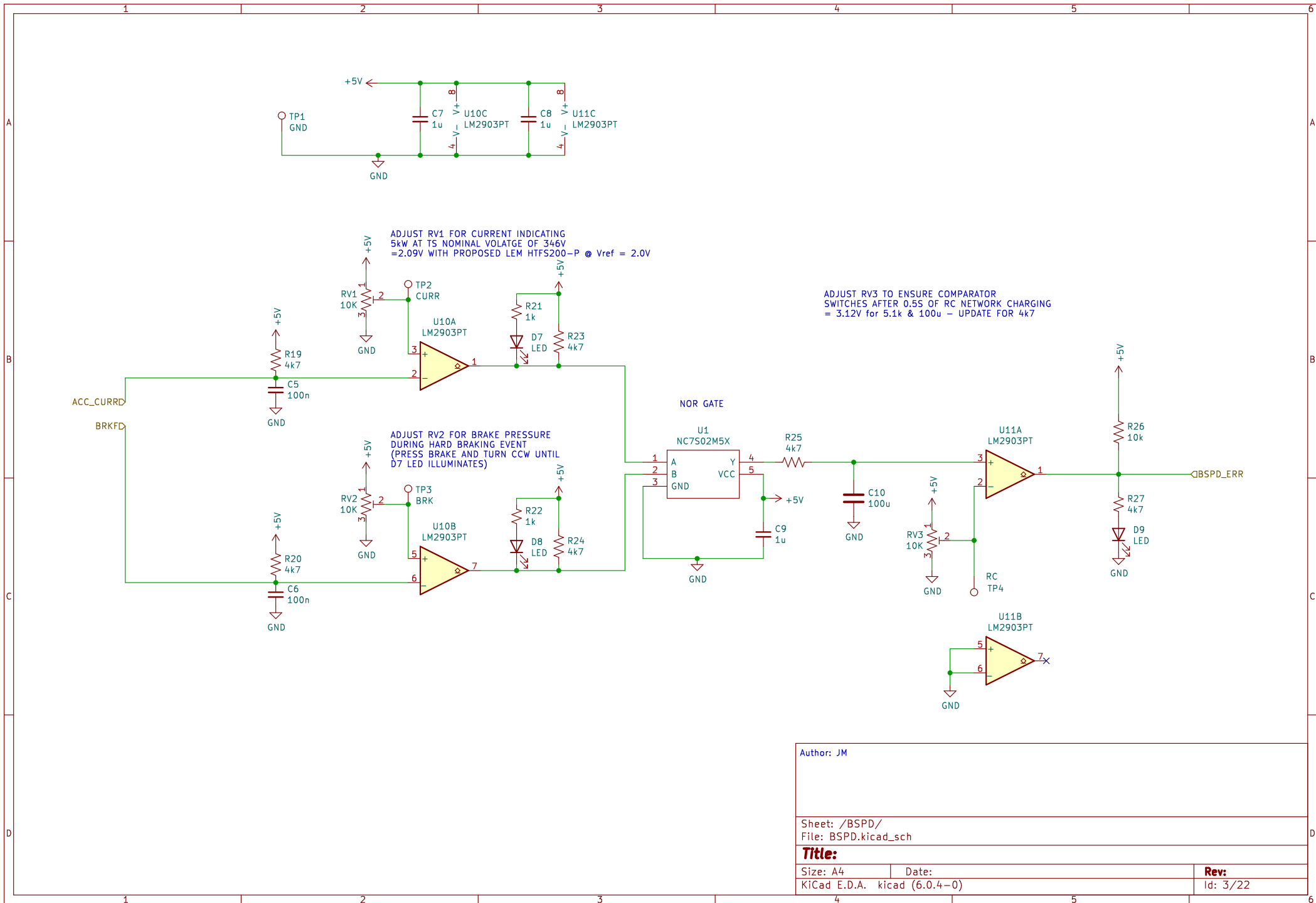
Sheet: /VMS/AIN/  
File: VMS\_AIN.kicad\_sch

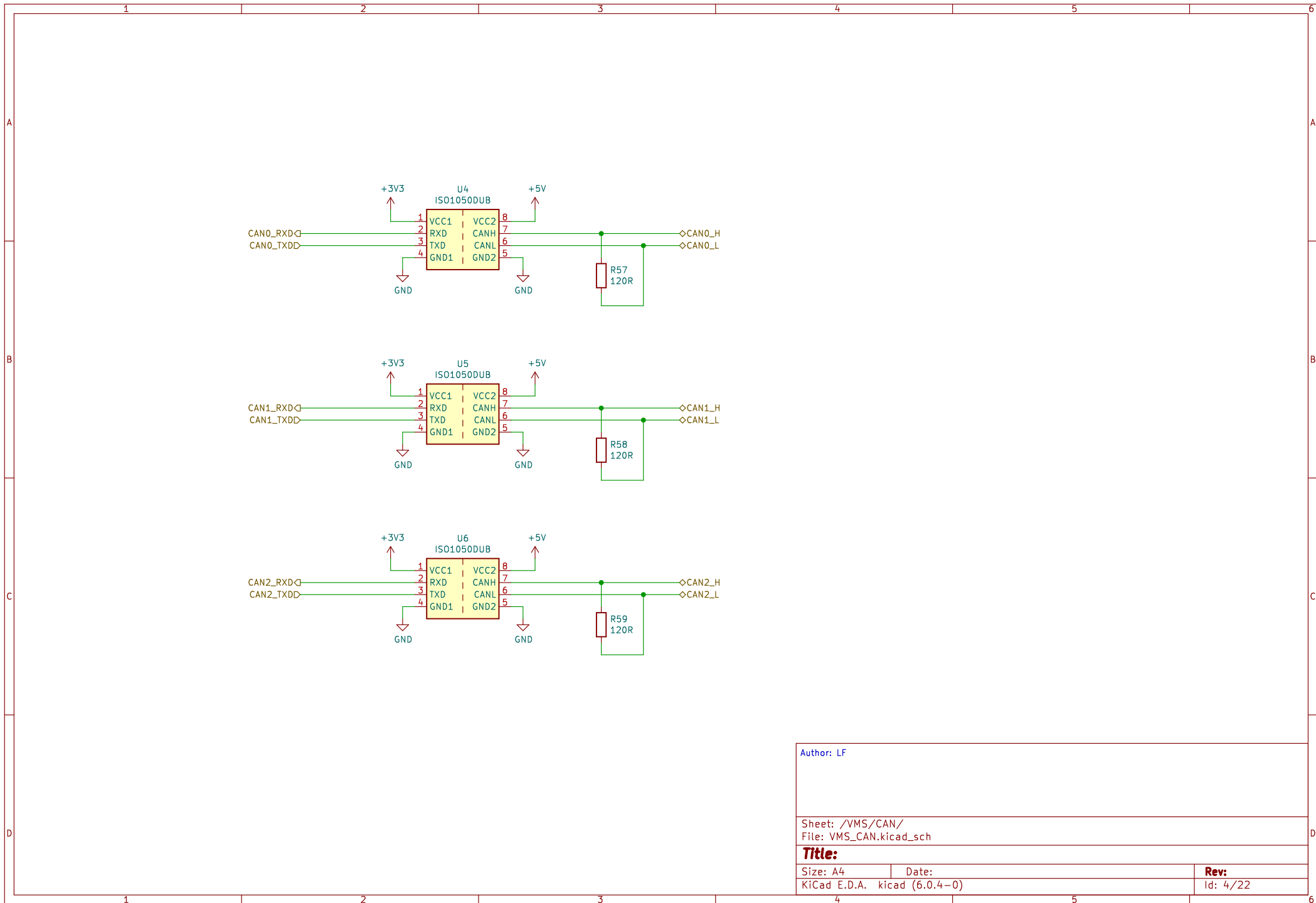
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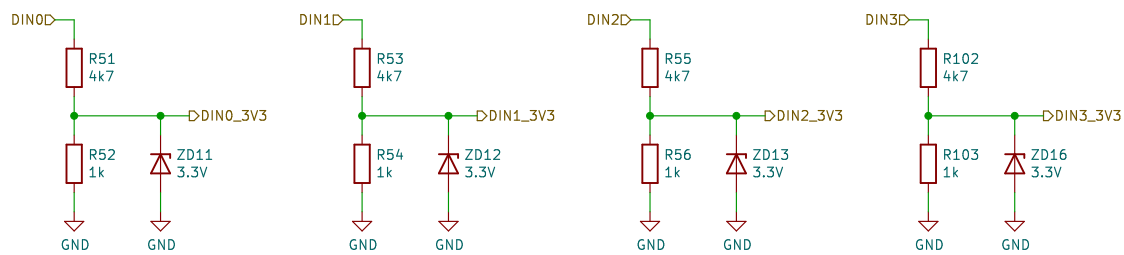
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KiCad E.D.A. kicad (6.0.4-0)

Date:

**Rev:**  
Id: 2/22

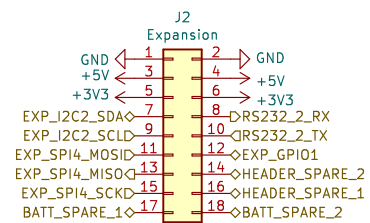






0-24V level digital input => 0-3.3V digital output

|   |       |          |
|---|-------|----------|
| Author: LF                                  |       |          |
| Sheet: /VMS/DIN/<br>File: VMS_DIN.kicad_sch |       |          |
| Title:                                      |       |          |
| Size: A4                                    | Date: | Rev:     |
| KiCad E.D.A. kicad (6.0.4-0)                |       | Id: 5/22 |



Author: LF

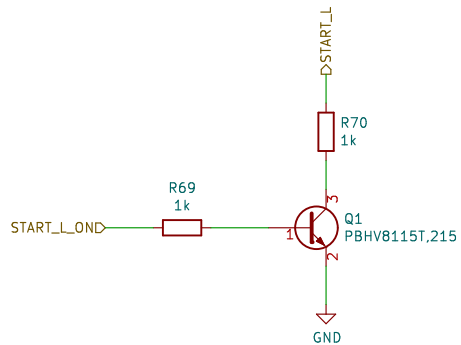
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**Title:**

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| Size: A4     | Date:           |
| KiCad E.D.A. | kiCad (6.0.4-0) |

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| <b>Rev:</b> |
| Id: 6/22    |

STARTL\_ON is a 3V3 signal from MCU  
STARTL is the output to be in series with the LED on dash



TODO  
\* Resistor sizing  
\* Test  
\* Is this BJT part ok? Change to something JLC has?

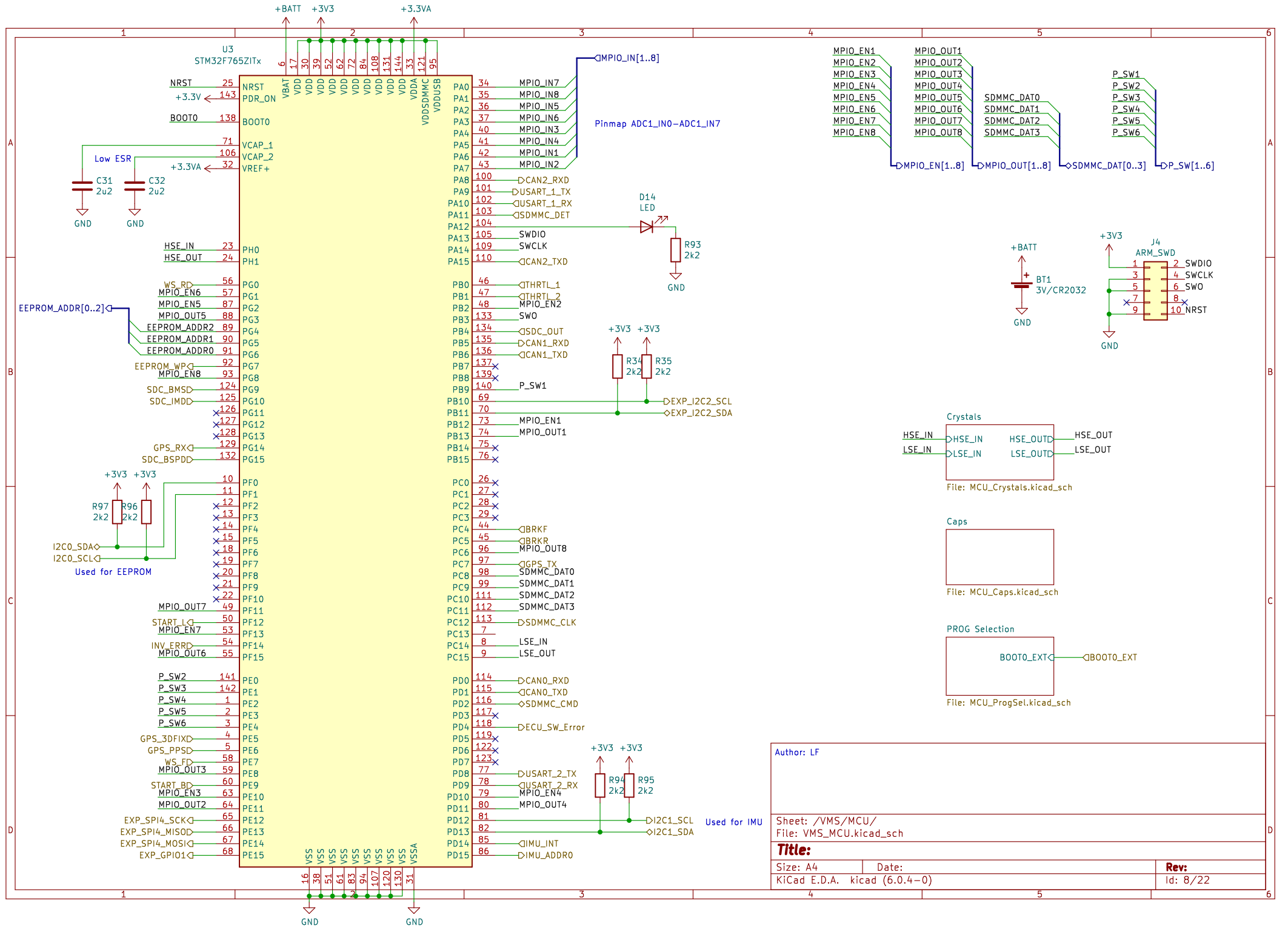
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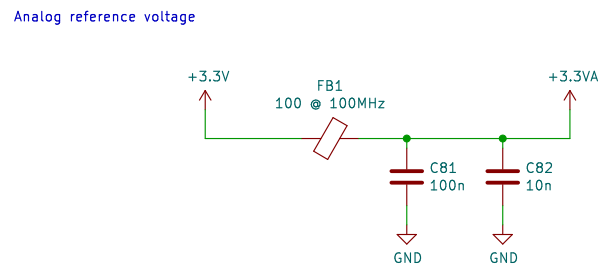
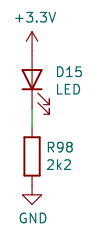
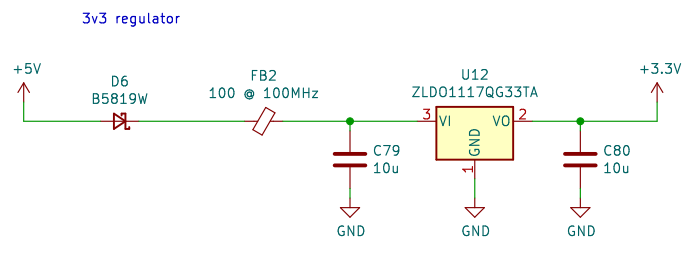
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KiCad E.D.A. kicad (6.0.4-0)

Date:

**Rev:**  
Id: 7/22

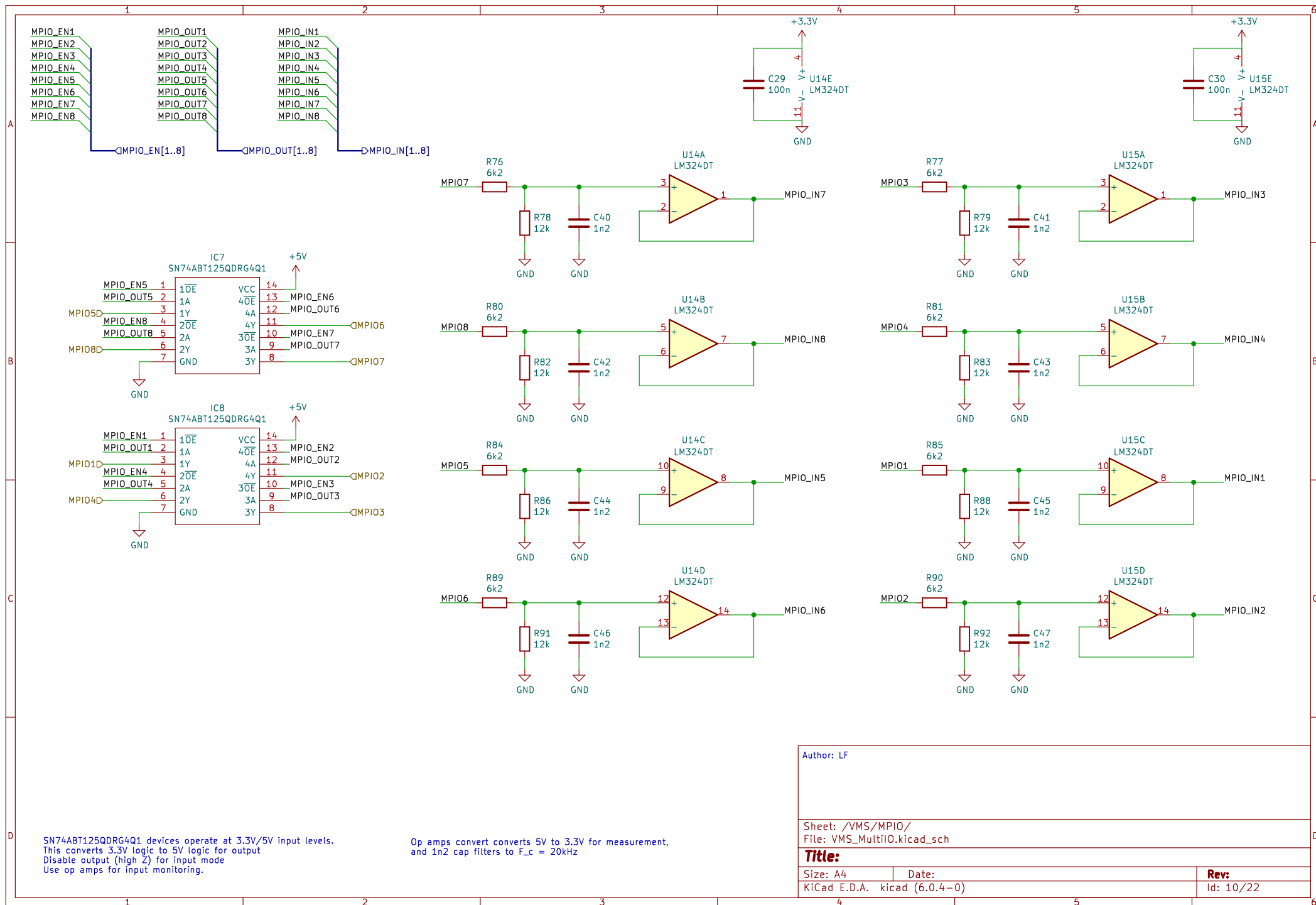






2022-10-16: Changed U12 from LM1117MPX-33NOPB (<https://www.ti.com/lit/ds/symlink/lm1117.pdf>) to ZLDO1117QG33TA as a equivalent part due to availability issues.

|  |       |          |
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| Author: LF   |       |          |
| Sheet: /VMS/MCUPower/<br>File: VMS_Power.kicad_sch |       |          |
| <b>Title:</b>                                      |       |          |
| Size: A4   | Date: | Rev:     |
| KiCad E.D.A. kicad (6.0.4-0)                       |       | Id: 9/22 |



SN74ABT125QDRG4Q1 devices operate at 3.3V/5V input levels.  
 This converts 3.3V logic to 5V logic for output  
 Disable output (high Z) for input mode  
 Use op amps for input monitoring.

Op amps convert converts 5V to 3.3V for measurement,  
 and 1n2 cap filters to F<sub>c</sub> = 20kHz

Author: LF

Sheet: /VMS/MPIO/  
 File: VMS\_MultiIO.kicad\_sch

**Title:**

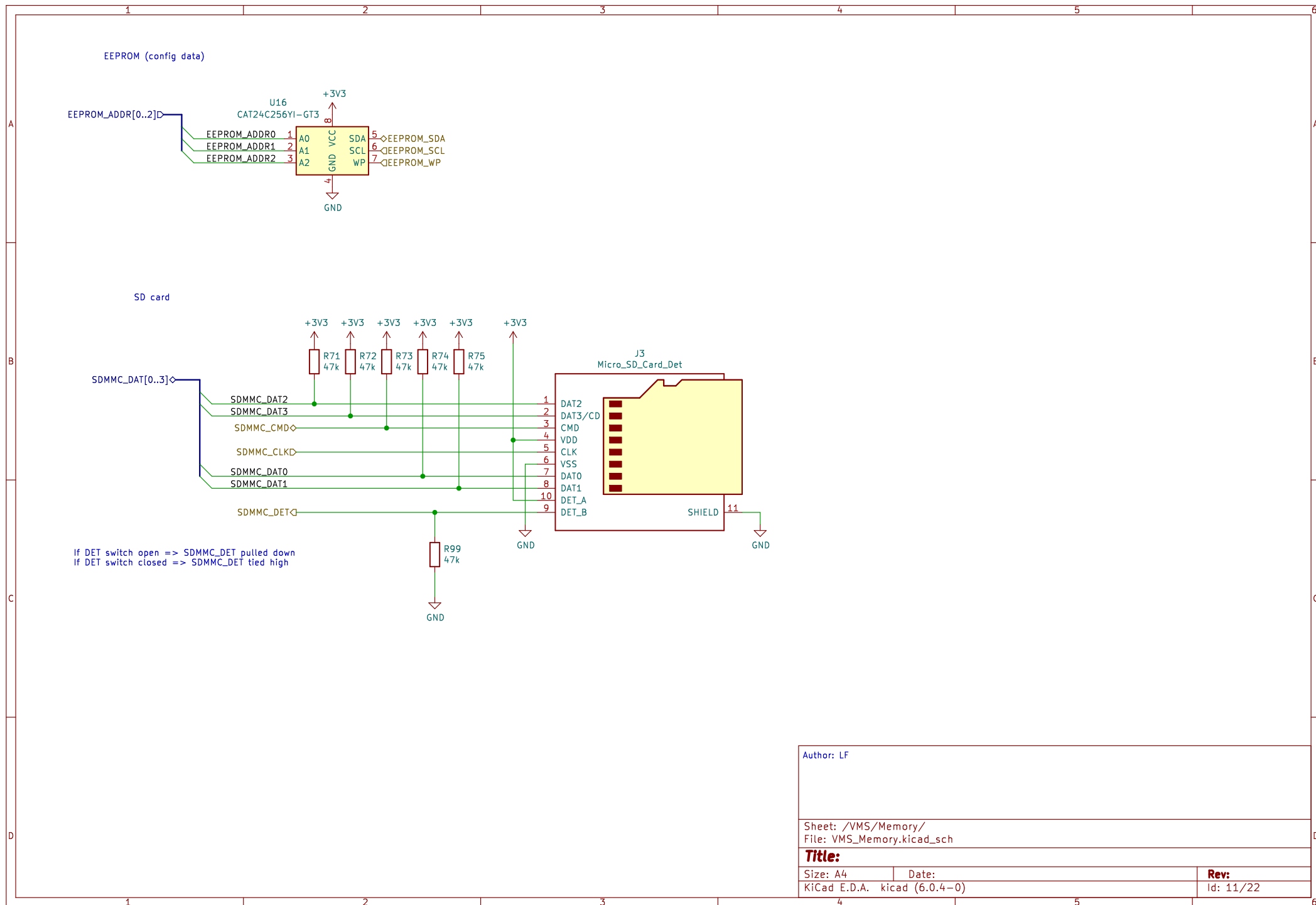
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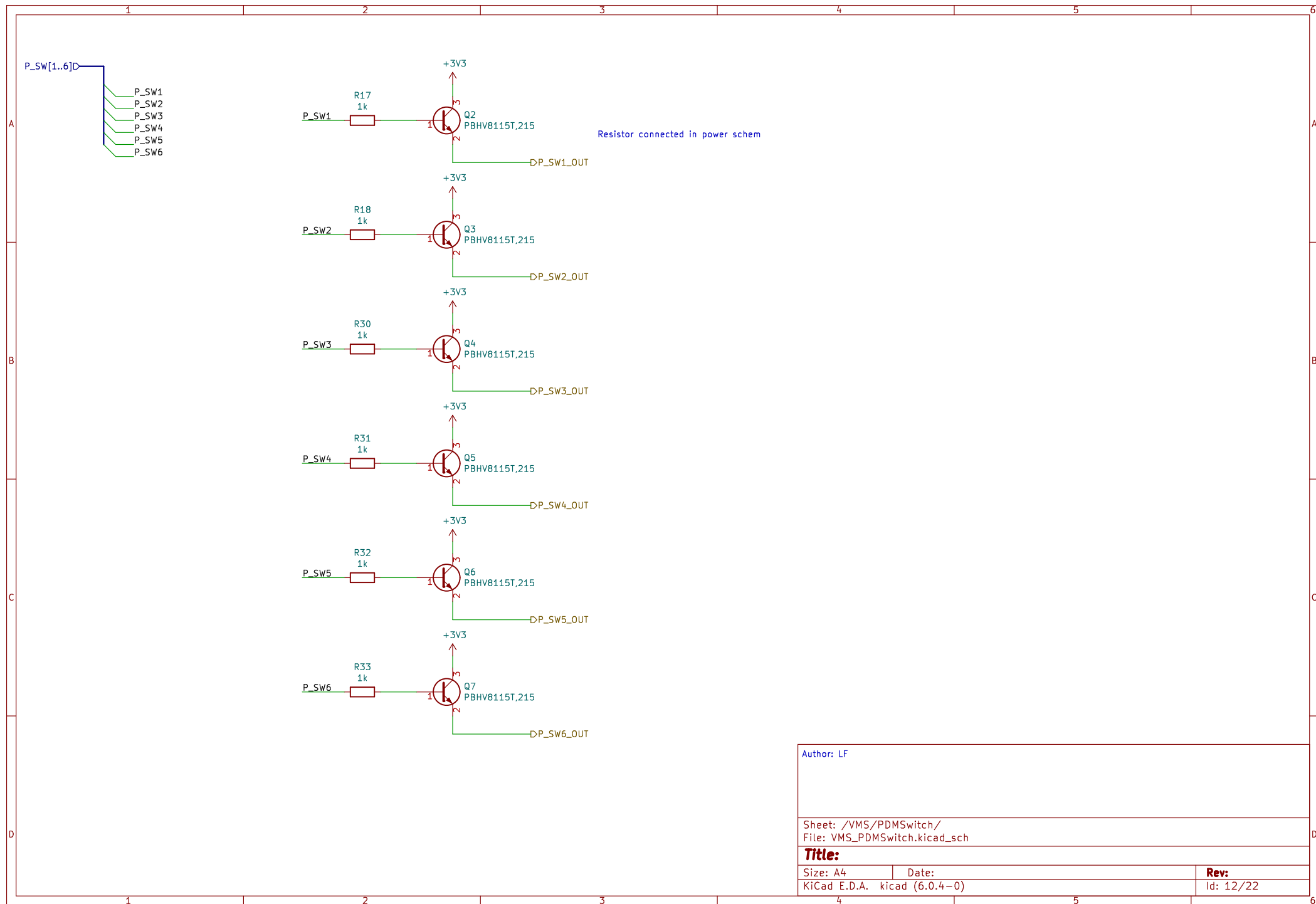
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**Rev:**

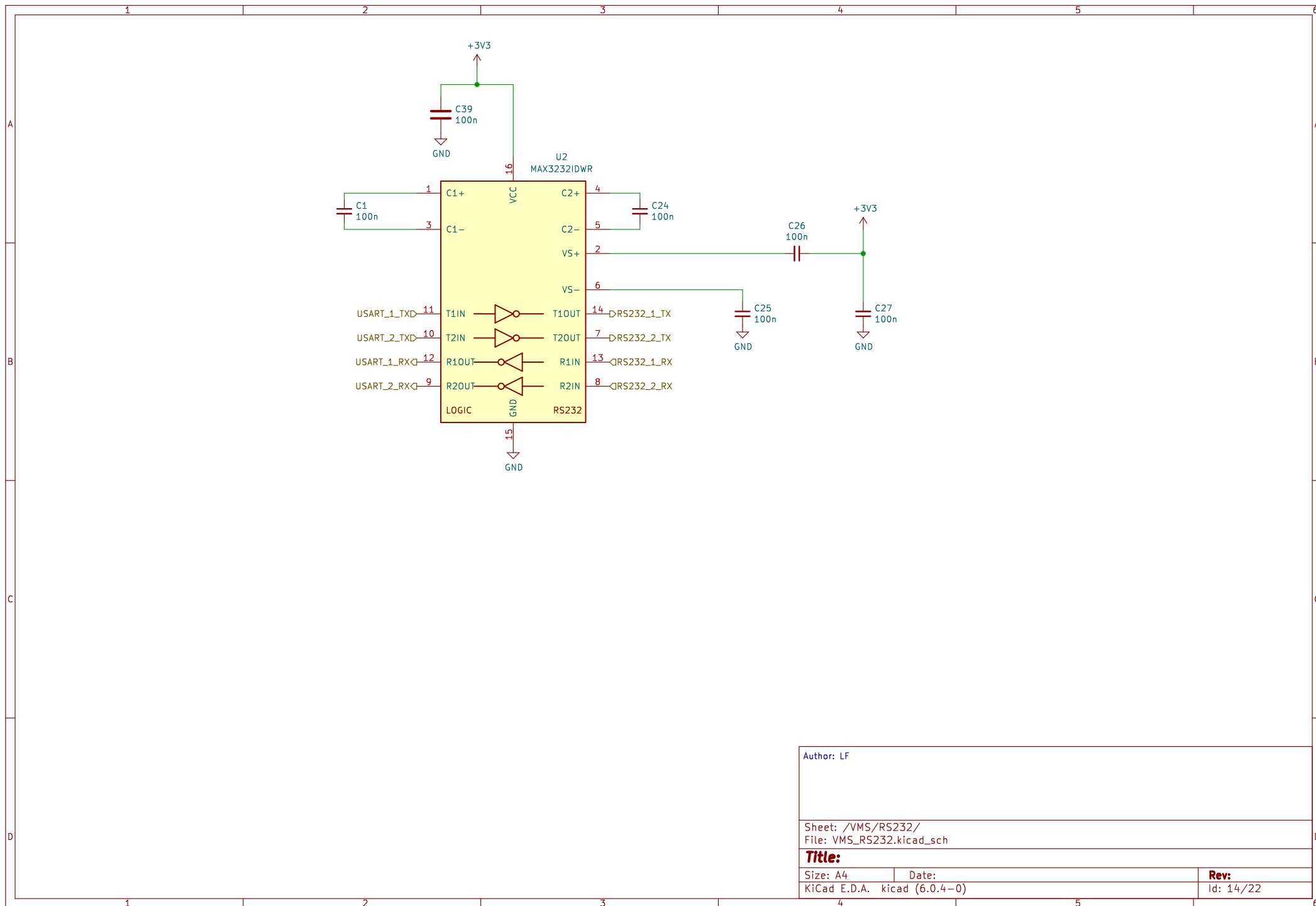
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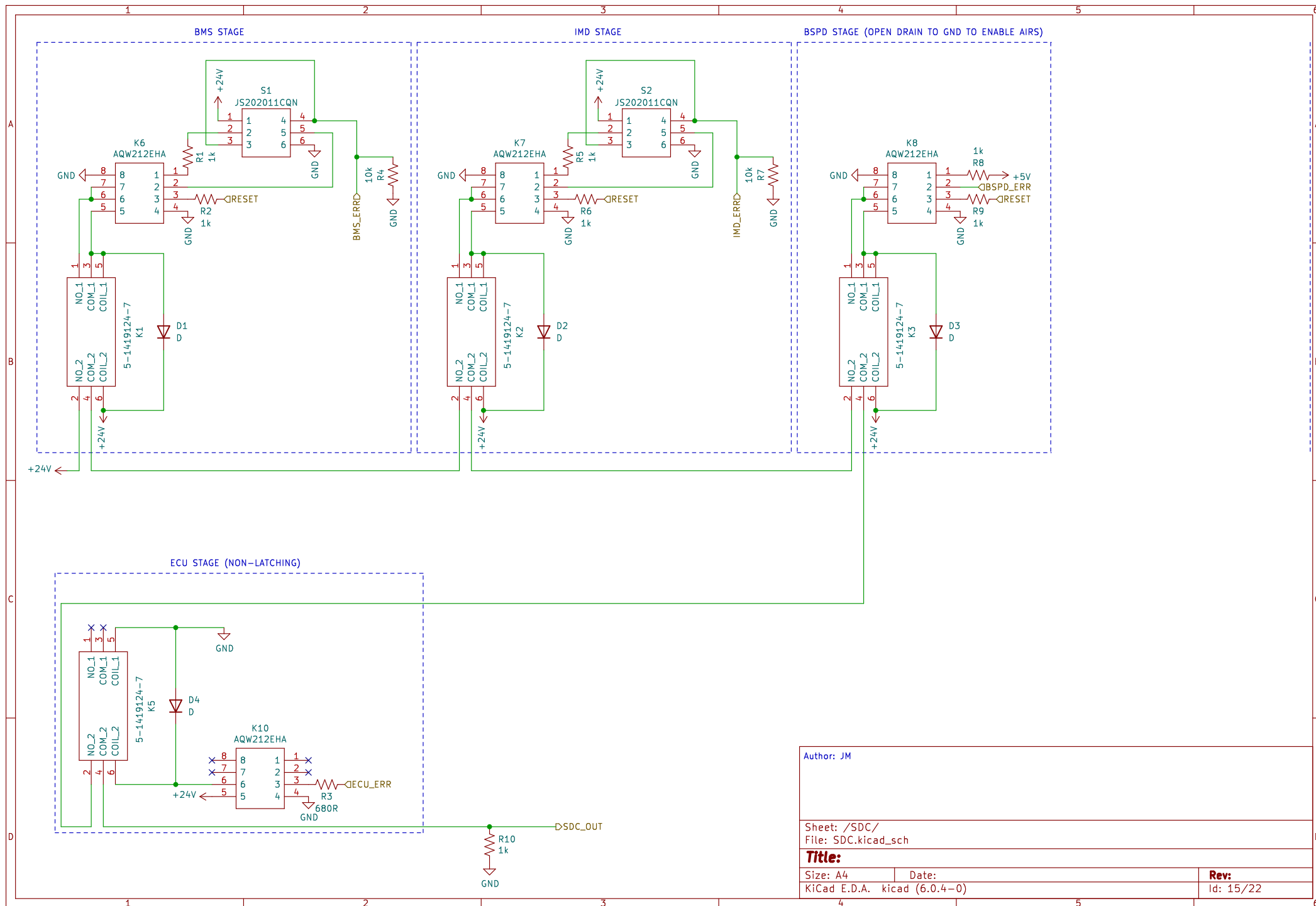


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| Author: LF  |       |           |
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| KiCad E.D.A. kicad (6.0.4-0)                      |       | Id: 11/22 |



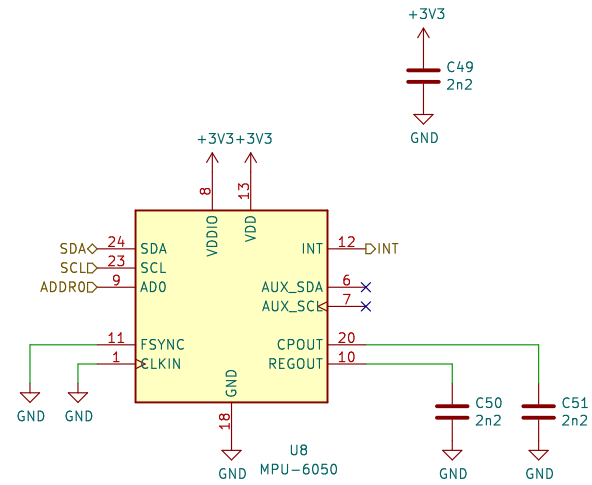




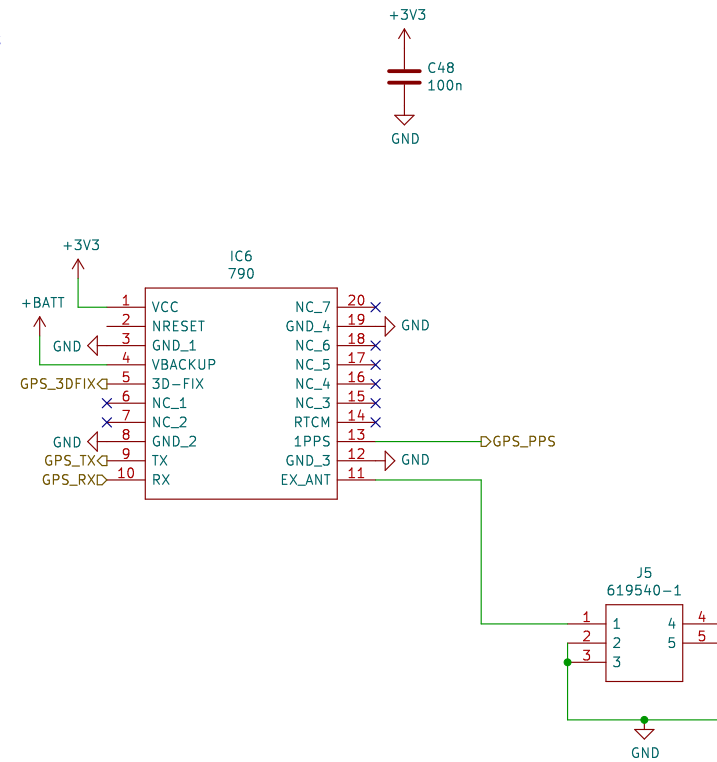


|                              |       |
|------------------------------|-------|
| Author: JM                   |       |
| Sheet: /SDC/                 |       |
| File: SDC.kicad_sch          |       |
| <b>Title:</b>                |       |
| Size: A4                     | Date: |
| KiCad E.D.A. kicad (6.0.4-0) |       |
| <b>Rev:</b>                  |       |
| Id: 15/22                    |       |

IMU



GPS



Author: LF

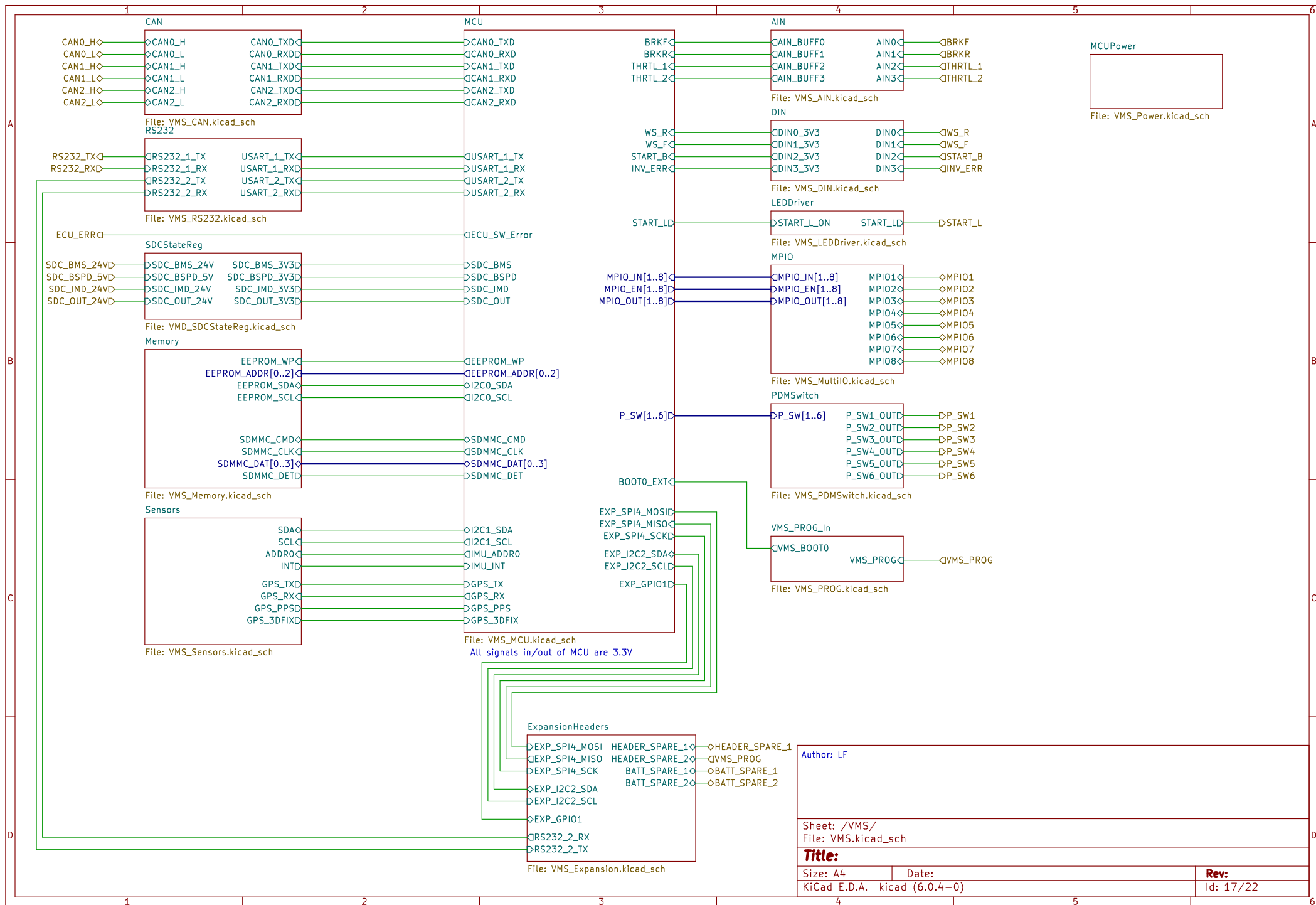
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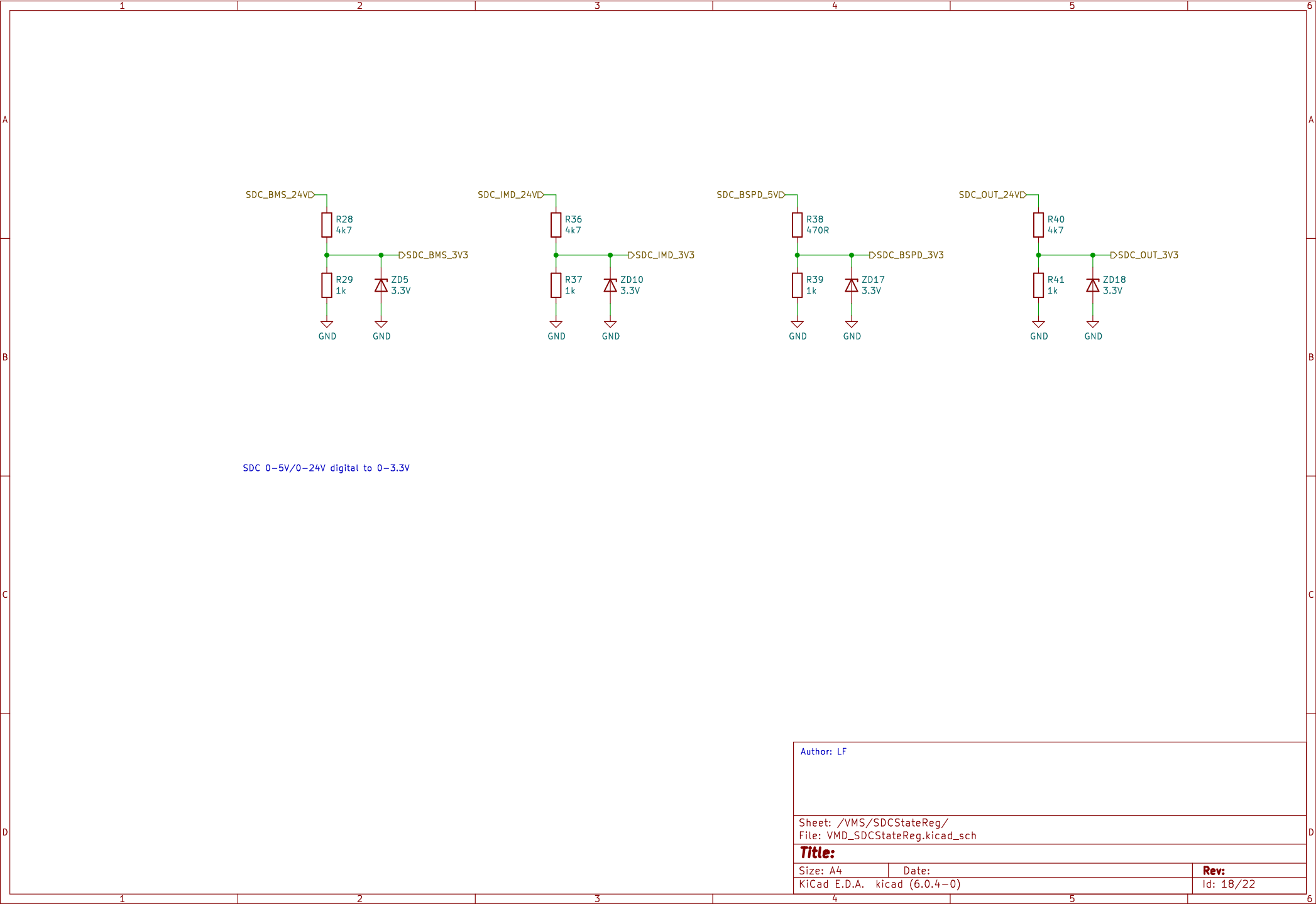
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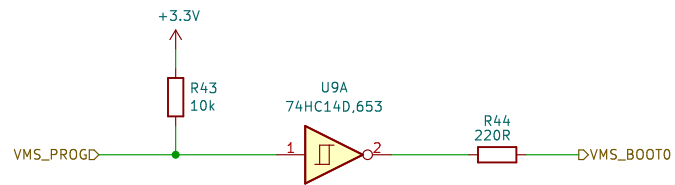
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**Rev:**  
Id: 16/22



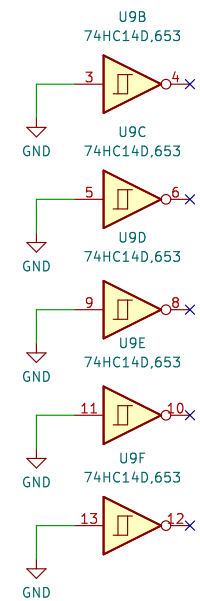
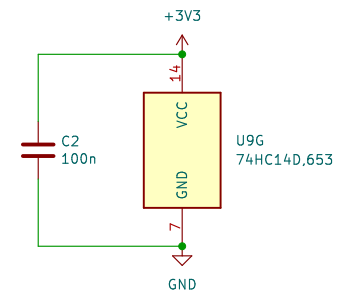






When VMS\_PROG pulled down, R43 330uA/1mW.

Leave VMS\_PROG open for BOOT0=0V (normal boot mode)  
Tie VMS\_PROG to GND for BOOT0=3.3V (flash update mode)



Author: LF

Sheet: /VMS/VMS\_PROG\_In/  
File: VMS\_PROG.kicad\_sch

**Title:**

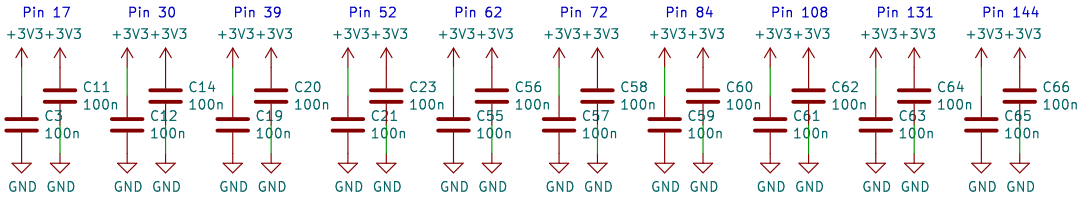
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Date:

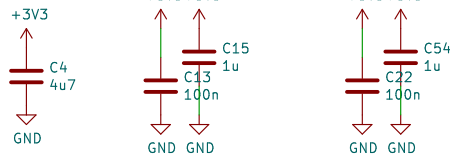
**Rev:**

Id: 19/22

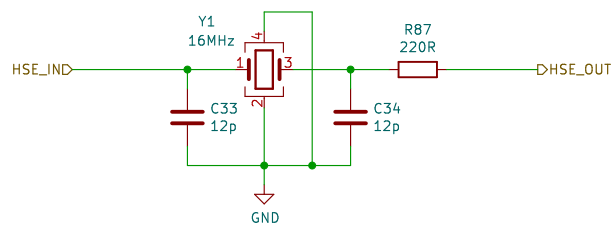
Ceramic bypass caps



Decoupling cap  
close to pkg

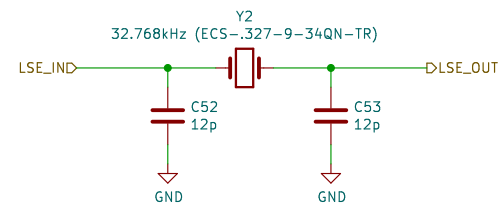


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|---|-------|-----------|
| Author: LF  |       |           |
| Sheet: /VMS/MCU/Caps/<br>File: MCU_Caps.kicad_sch |       |           |
| Title:  |       |           |
| Size: A4  | Date: | Rev:      |
| KiCad E.D.A. kicad (6.0.4-0)                      |       | Id: 20/22 |



$$C_{Load} = 2 * (C_{LOAD\_CRYSTAL} - C_{PARASITIC})$$

$$= 2 * (9pF - 2pF \text{ (or less)}) = 14pF \text{ (or less)}$$



Author: LF

Sheet: /VMS/MCU/Crystals/  
File: MCU\_Crystals.kicad\_sch

**Title:**

Size: A4 Date:  
KiCad E.D.A. kicad (6.0.4-0)

**Rev:**  
Id: 21/22

