

Chienpanzée Motor Controller

Moteus-compatible
Moteus FW GitHub

Revision History

File: RevisionHistory.kicad_sch
17

Author: Vincent Nguyen

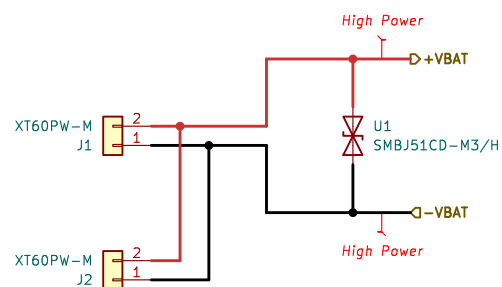
EPFL Xplore

Sheet: /
File: bldc_controller.kicad_sch

Title: Controller Top Level

Size: A4	Date: 2023-10-12
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Do not hot-plug when
powered!

Power Connectors

Author: Vincent Nguyen

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Sheet: /Input Power/

File: PowerConnectors.kicad_sch

Title: Power Connectors

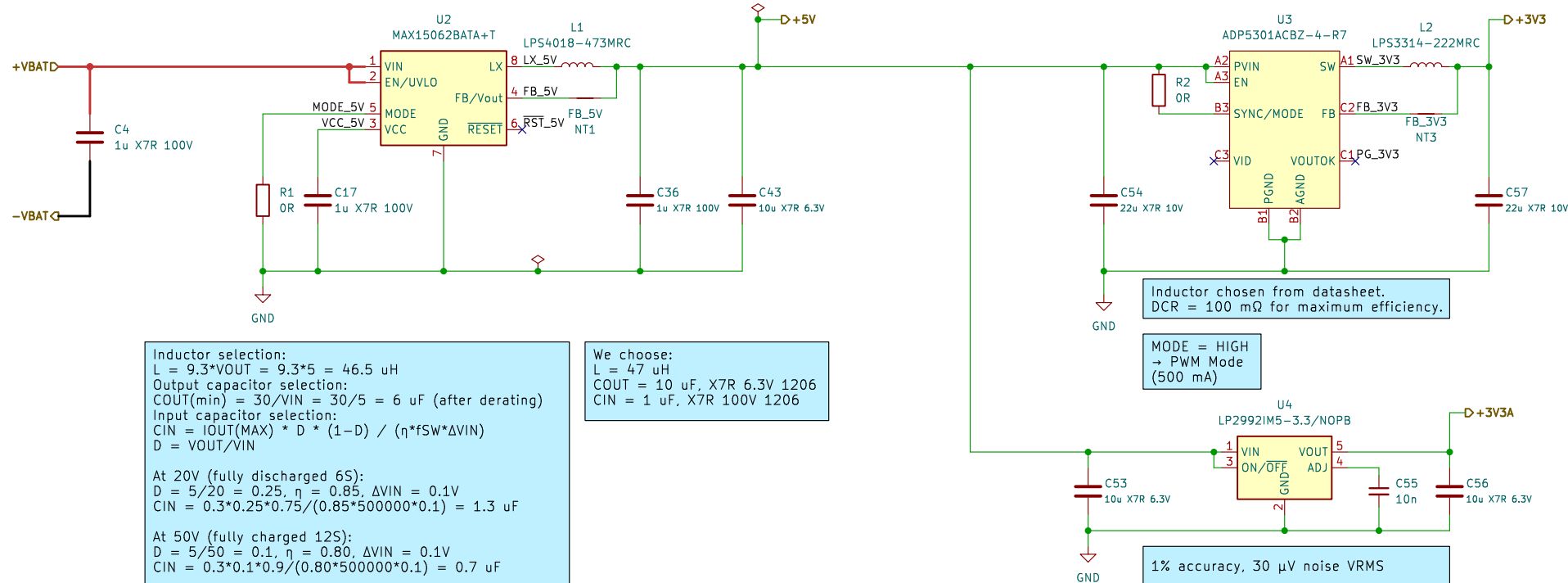
Size: A4

Date: 2023-10-14

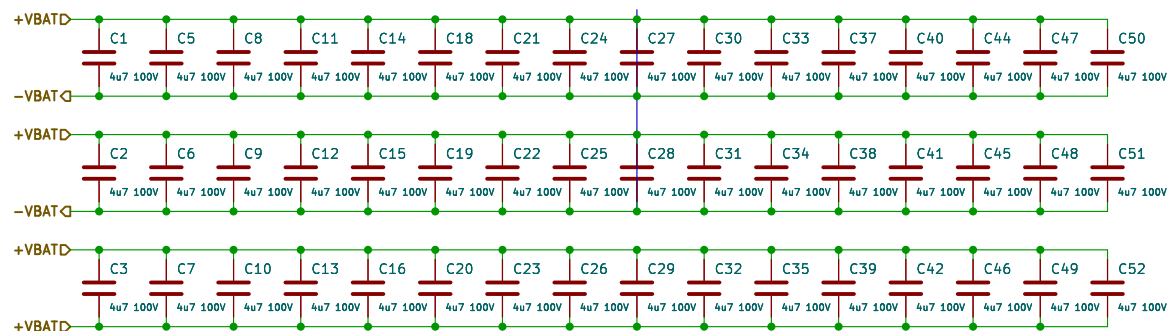
Rev: 1.0

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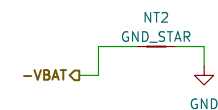
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Regulators for +5V (300mA), +3V3 (500mA) and low-noise +3V3 (250mA) generation



DC-Link Bulk Capacitors. $38 \times 4.7 \mu\text{F} = 178.6 \mu\text{F}$



Ground star connection point

Author: Vincent Nguyen

EPFL Xplore

Sheet: /Power Generation/
 File: PowerGeneration.kicad_sch

Title: Power Generation

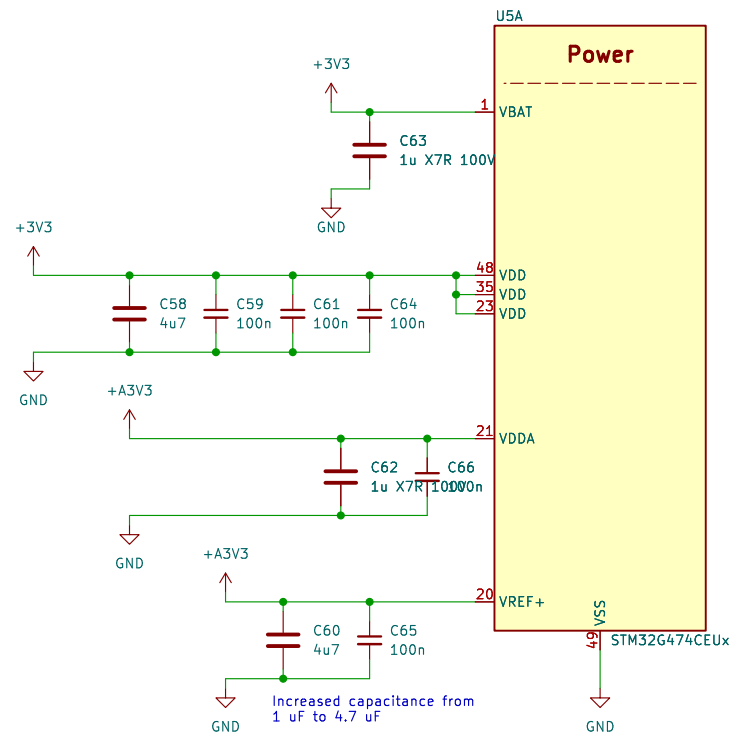
Size: A4 Date: 2023-10-21

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Ressources:

[AN5346](#)

[STM32G474 Datasheet p.81](#)

[J. Pieper ADC performance investigation](#)

Microcontroller Power Supply Scheme.

Author: Vincent Nguyen

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Sheet: /Microcontroller Power/
File: MCU_PowerDomain.kicad_sch

Title: STM32G474 Power Domain

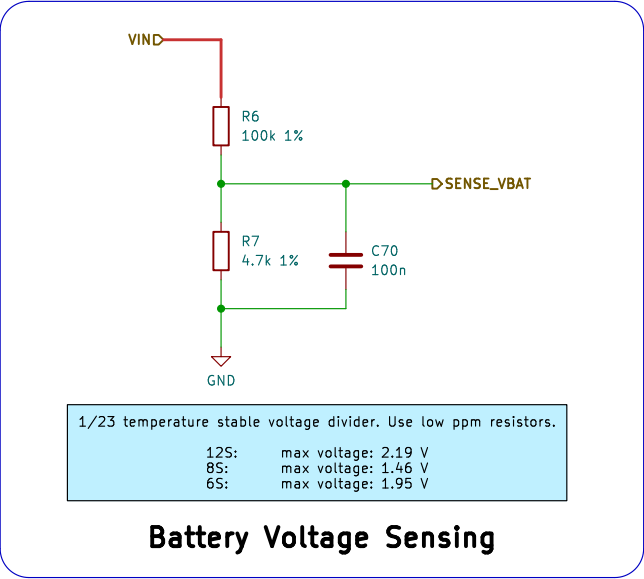
Size: A4 Date: 2023-10-14

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Sheet: /Battery Sensing/
File: BatterySensing.kicad_sch

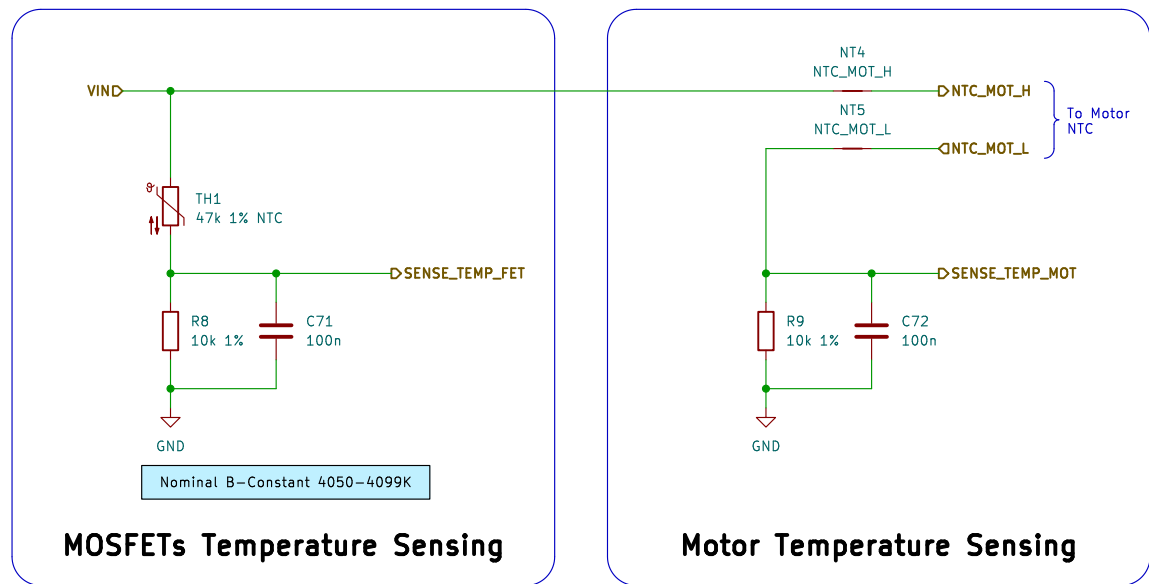
Title: Battery Sensing Voltage Divider

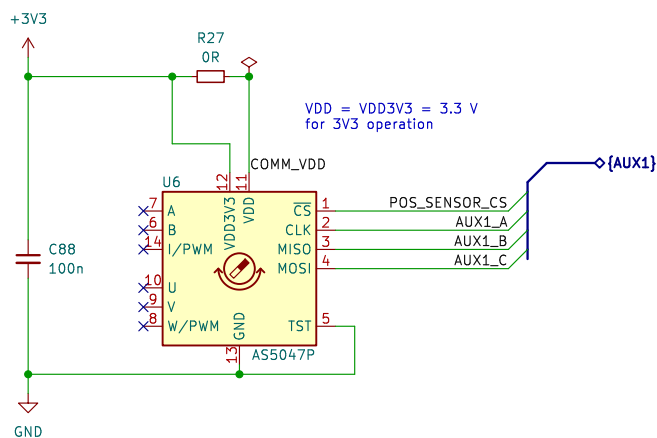
Size: A4 Date: 2023-10-14

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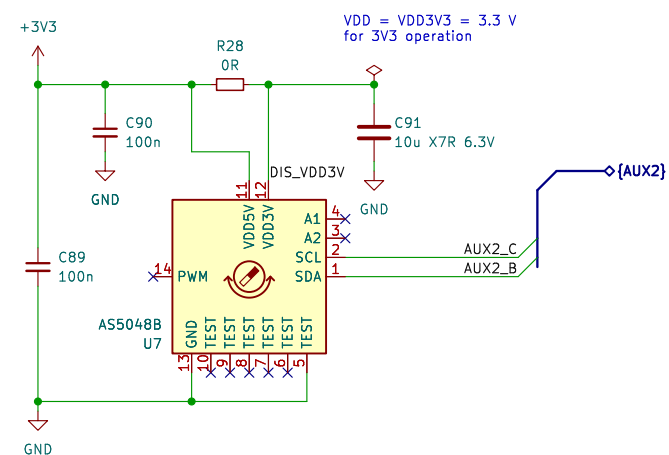
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14–Bit On–Axis Magnetic Rotary Position Sensor (commutation)



14–Bit On–Axis Magnetic Rotary Position Sensor (disambiguation)

AS5047P senses magnet mounted on planetary sun gear, for commutation.
AS5048B senses magnet mounted on shaft with same reduction factor as planetary gearbox for disambiguation.

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Sheet: /Position Sensors/
File: PositionSensors.kicad_sch

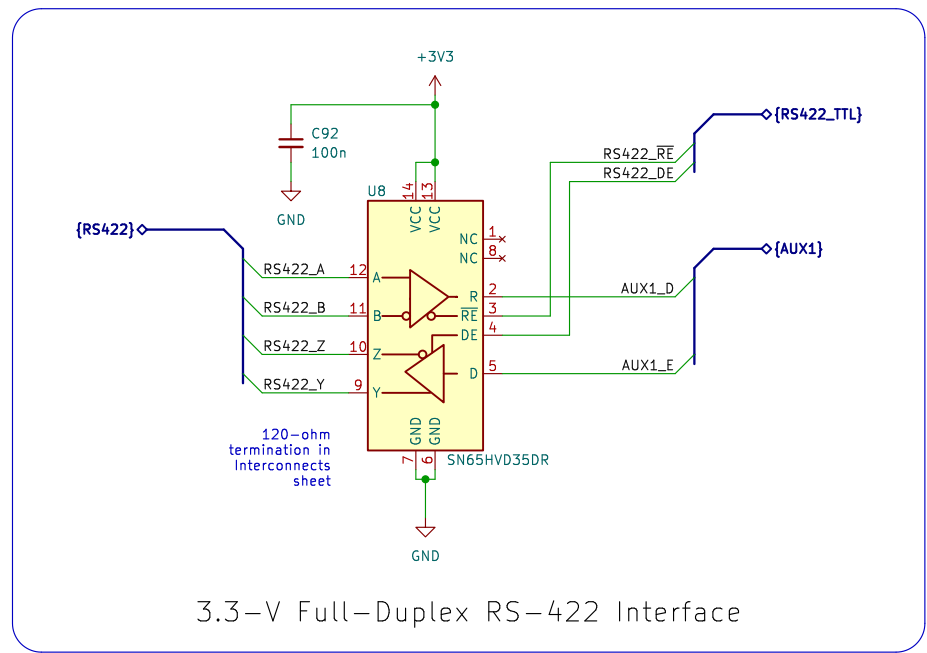
Title: Onboard Position Sensors

Size: A4 Date: 2023–10–14

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Sheet: /RS-422 Interface/
File: RS422Interface.kicad_sch

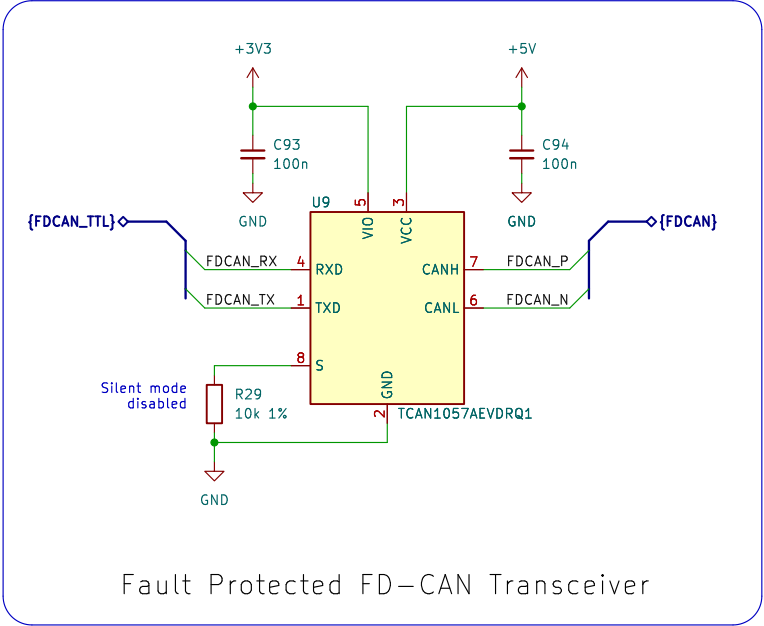
Title: RS-422 Interface

Size: A4 Date: 2023-10-15

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Sheet: /FDCAN Transceiver/
File: FDCANTransceiver.kicad_sch

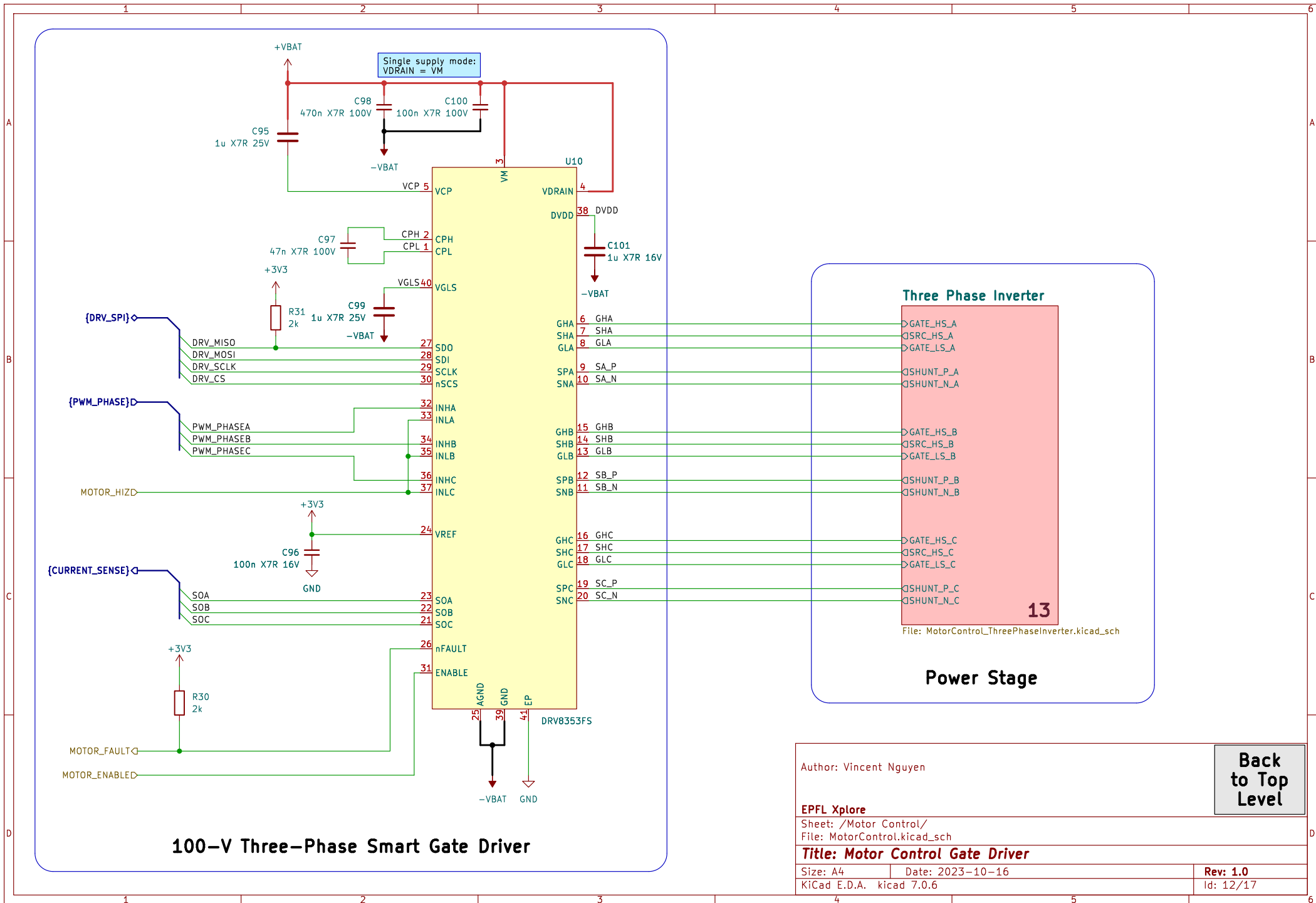
Title: **FD-CAN Transceiver**

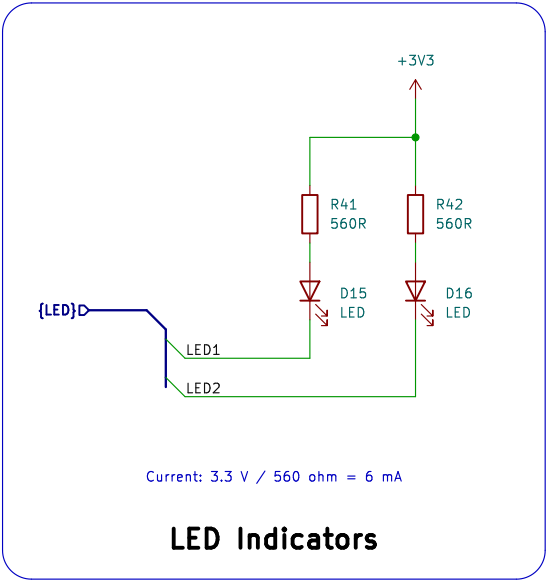
Size: A4 Date: 2023-10-15

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Sheet: /LED Indicators/
File: LEDIndicators.kicad_sch

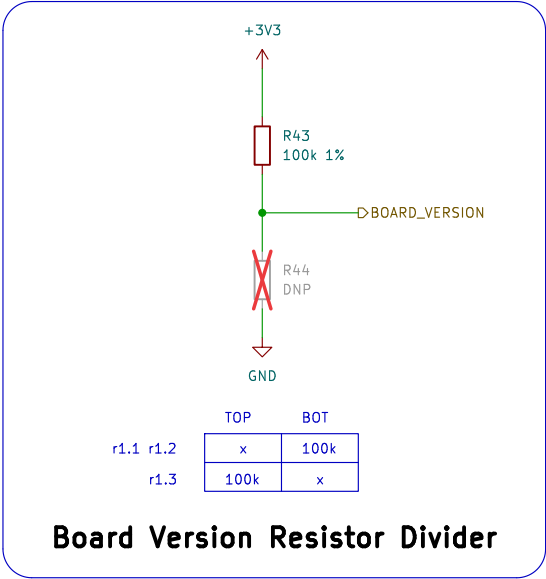
Title: LED Indicators

Size: A4 Date: 2023-10-15

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Author: Vincent Nguyen

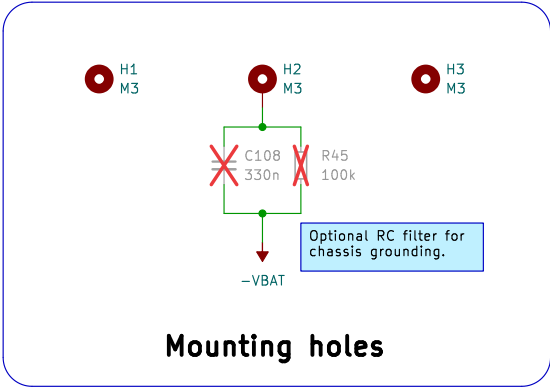
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Sheet: /Board Version Divider/
File: BoardVersionDivider.kicad_sch

Title: Board Version Resistor Divider

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Sheet: /Mechanical/
File: Mechanical.kicad_sch

Title: Mechanical Parts

Size: A4 Date: 2023-10-22

Rev: 1.0

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Revision History

Rev 1.0

- Changed CPH-CPL capacitor to 47nF (gate driver)
- Added TVS protection and termination switch to FD-CAN
- Added 5V 500mA connector for external fan
- Added LDO for analog supply
- Use of standard 1.27mm pitch connector for SWD
- Changed input power TVS diode to bidirectional
- Changed low-side Gate-Source diode to TVS diode (gate driver)
- Moved SOx low-pass filter to MCU section.
Should be placed near MCU to avoid noise coupling into ADC lines.
- Added second onboard I2C magnetic encoder for disambiguation.

Author: Vincent Nguyen

EPFL Xplore

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