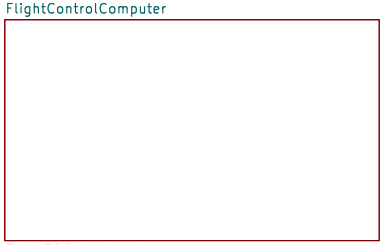
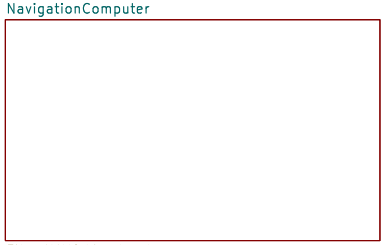
FlightControlComputer



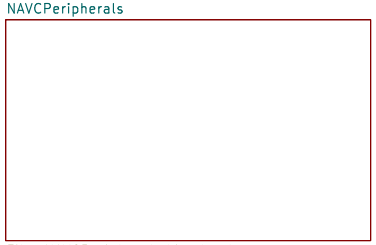
File: FCC.kicad_sch

NavigationComputer



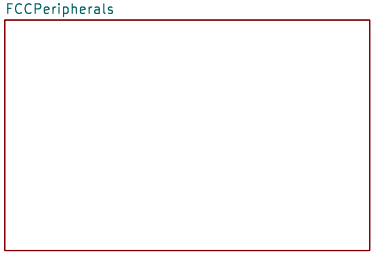
File: NAVC.kicad_sch

NAVCPeripherals



File: NAVCPeripherals.kicad_sch

FCCPeripherals



File: FCCPeripherals.kicad_sch

Connections

File: Connections.kicad_sch

Power

File: Power.kicad_sch

**Shreyash Golam**

Sheet: /
File: Flight_controller_Project.kicad_sch

***Title: Power***

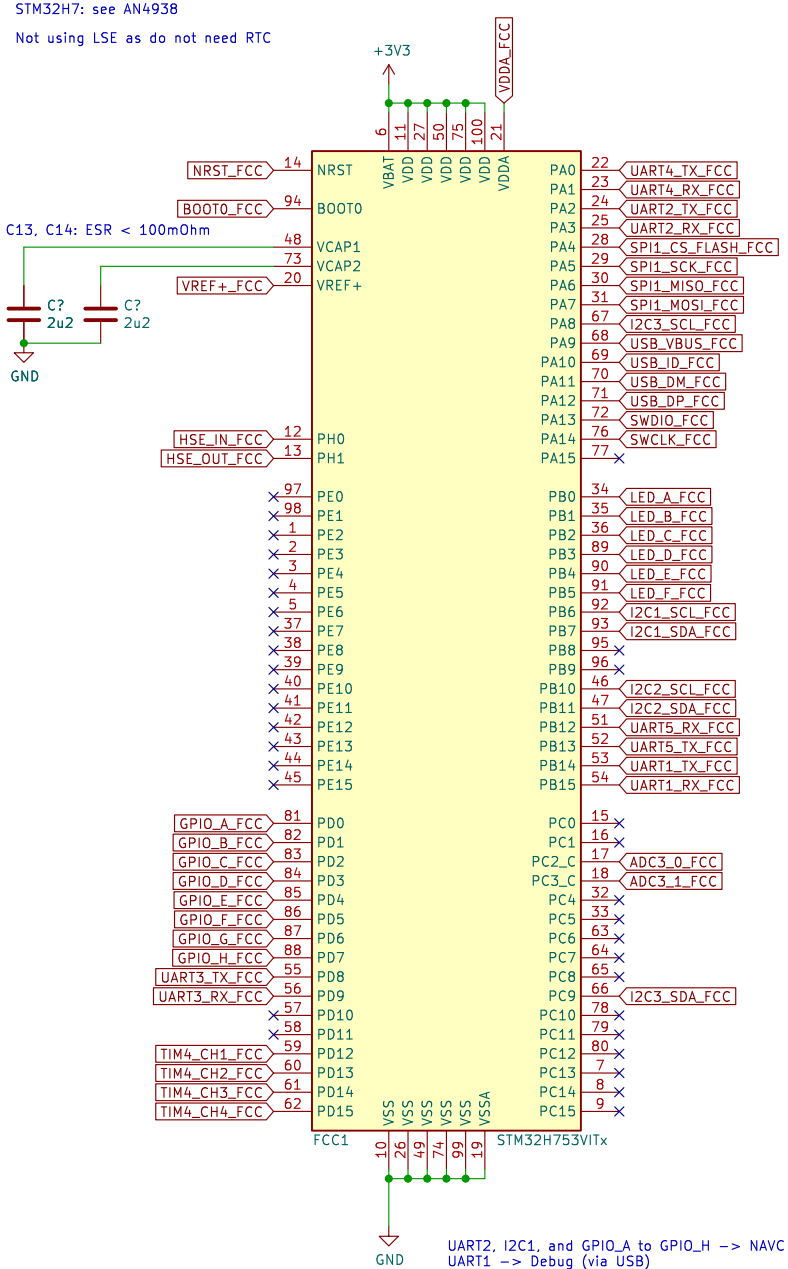
| | | |
|---|---|---|
| Size: A4 | Date: 2025-02-16 | **Rev: 0.1** |
| KiCad E.D.A. 8.0.5 | | Id: 1/7 |

# Flight Control Computer (FCC)

STM32H7: see AN4938

Not using LSE as do not need RTC

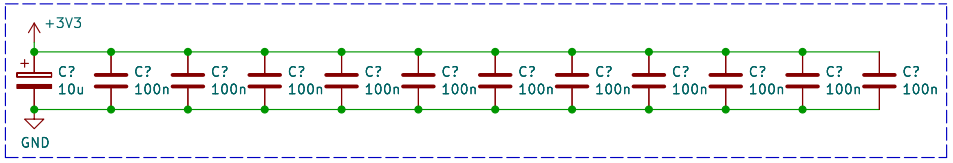
C13, C14: ESR < 100mOhm



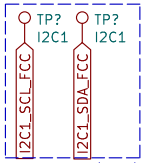

UART2, I2C1, and GPIO_A to GPIO_H -> NAVC
UART1 -> Debug (via USB)
TIM4 -> PWM/PPM input

AN2606 (Bootloaders): USART1 Bootloader (PB14/PB15)

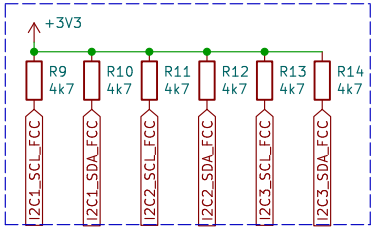
C15, C27, C29 Tantalum



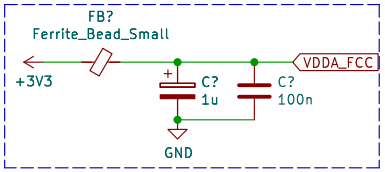

Decoupling Capactors



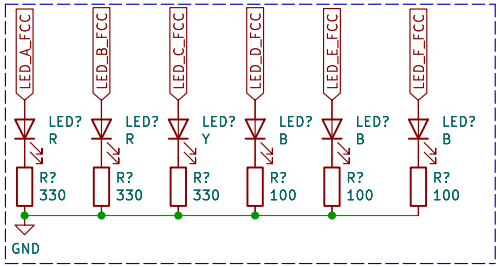

Test Points (I2C2)



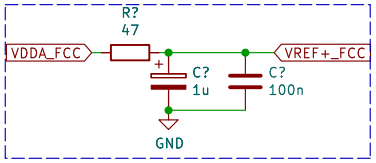

I2C Pull-Up Resistors




VDDA Filter

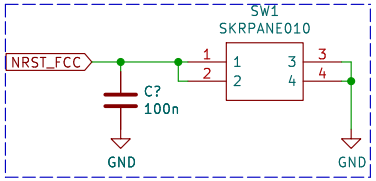



Indicator LEDs



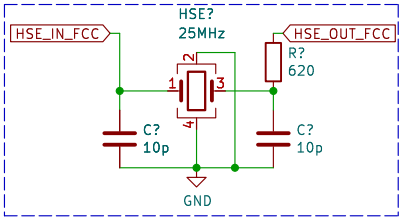

VREF+ Filter

STM32H7 has internal NRST pull-up resistor (40k)




Reset Switch

ABM8G-25.000MHZ-4Y-T3

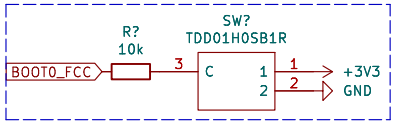



High Speed External Crystal

C32 = C33 = 2 * (CL - Cstray)
Cstray = {2pF, 5pf}

Rext = 1/(2*pi*f*CL2)

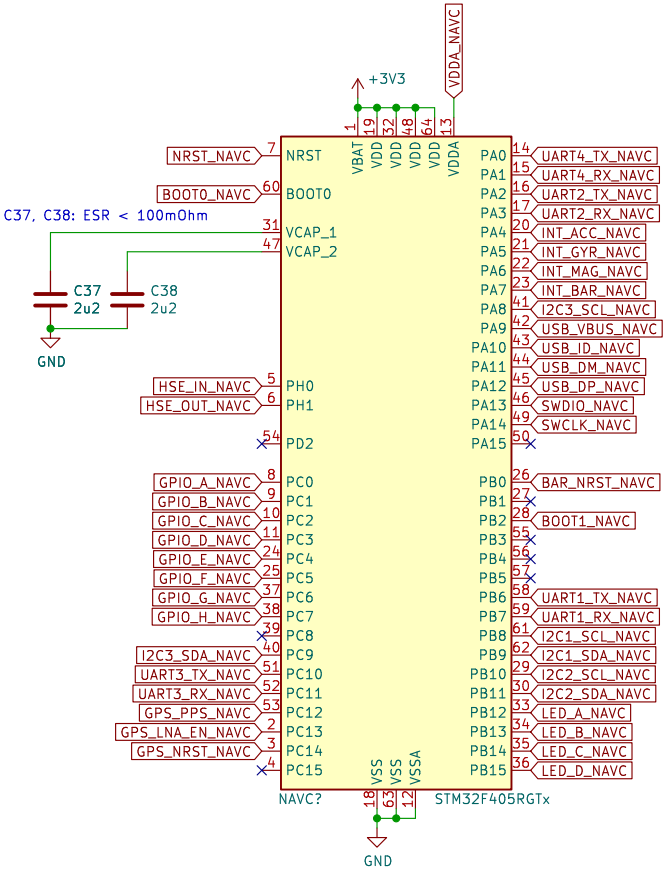
TDD01H0SB1R = SPDT




Bootmode Switch

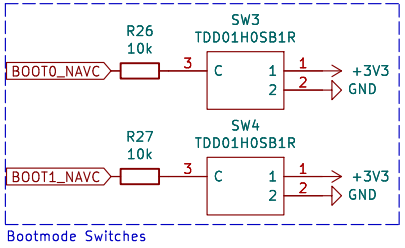
| | | |
|---|---|---|
| Sheet: /FlightControlComputer/ | | |
| File: FCC.kicad_sch | | |
| **Title: Flight Control Computer** | | |
| Size: A4 | Date: 2025-02-04 | **Rev: 0.1** |
| KiCad E.D.A. 8.0.5 | | Id: 2/7 |

# Navigation Computer (NAVC)



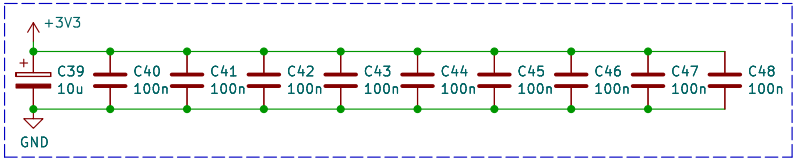

UART2, I2C2, and GPIO_A to GPIO_H -> FCC
UART3 -> Debug (via USB)

AN2606 (Bootloaders): USART3 Bootloader PC10/PC11



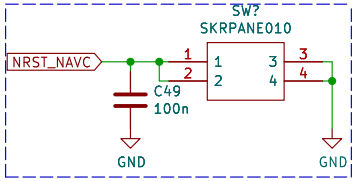

Bootmode Switches

C39, C50 Tantalum

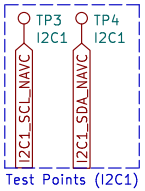



Decoupling Capacitors

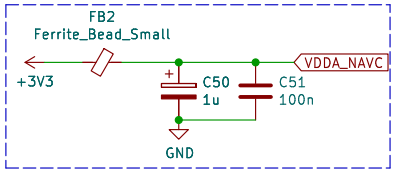
STM32F4 has internal
NRST pull-up resistor (40k)



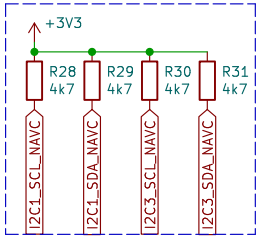

Reset Switch




Test Points (I2C1)



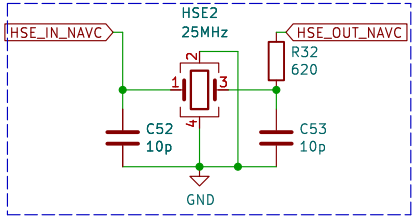

VDDA Filter




I2C Pull-Up Resistors

I2C2_NAVC already pulled up by I2C1_FCC resistors!

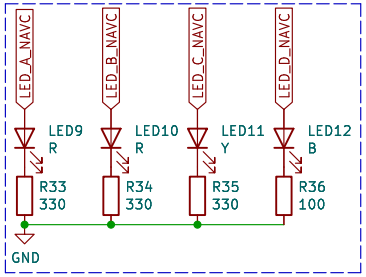
ABM8G-25.000MHZ-4Y-T3




High Speed External Crystal

C52 = C53 = 2 * (CL - Cstray)
Cstray = {2pF, 5pf}

Rext = 1/(2*pi*f*CL2)



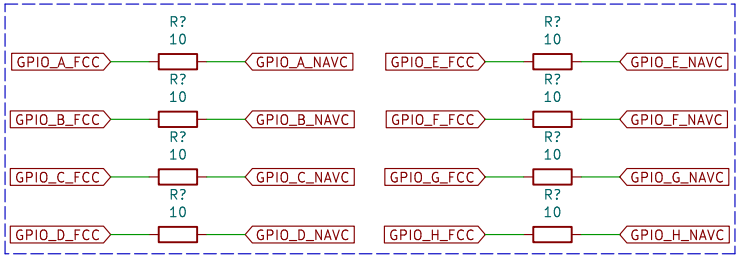

Indicator LEDs

Sheet: /NavigationComputer/
File: NAVC.kicad_sch

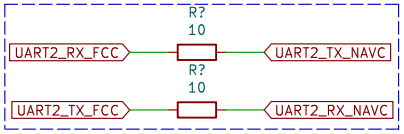
**Title: Navigation Computer**

| Size: A4 | Date: 2025-02-04 | **Rev: 0.1** |
|---|---|---|
| KiCad E.D.A. 8.0.5 | | Id: 3/7 |

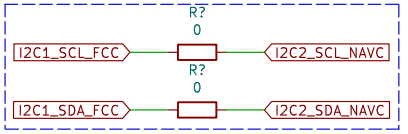
# Connections (FCC <-> NAVC)



GPIO Connections

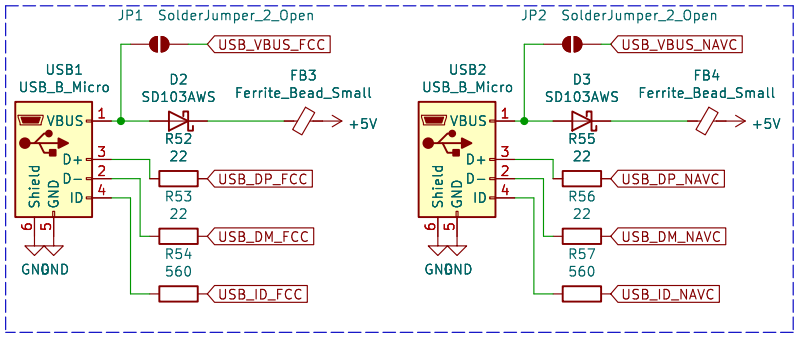


UART Connections

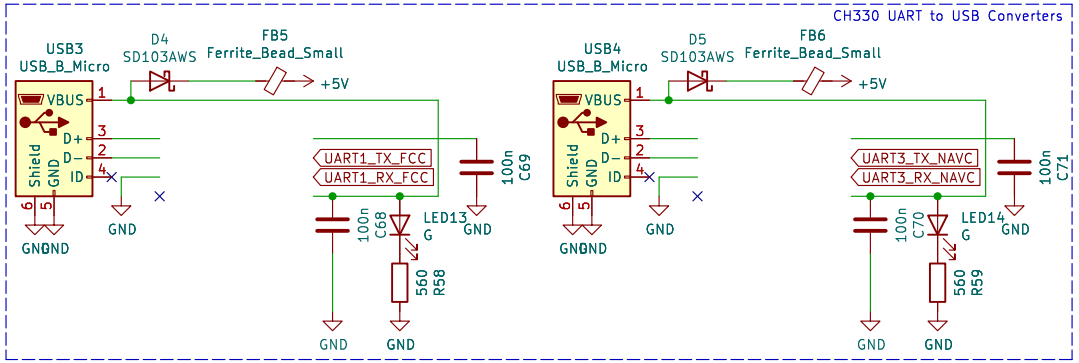


I2C Connections

# Connectors (Programming & Debug)

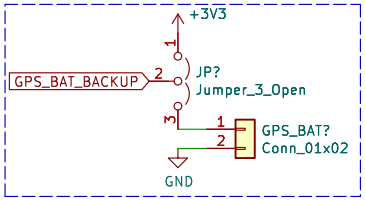


USB Programming

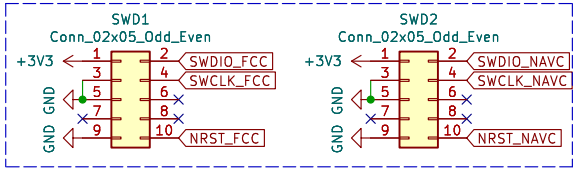


USB Debug

# GPS Backup Battery



GPS Backup Battery Jumper and Connector



Serial Wire Debug

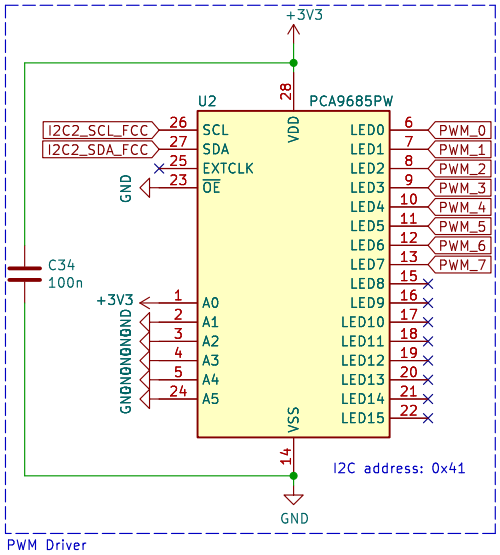
Connector: M50-3600542R

Sheet: /Connections/
File: Connections.kicad_sch

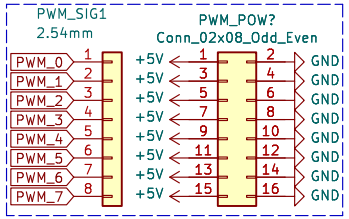
**Title: Connections**

| Size: A4 | Date: 2025-02-04 | **Rev: 0.1** |
|---|---|---|
| KiCad E.D.A. 8.0.5 | | Id: 4/7 |

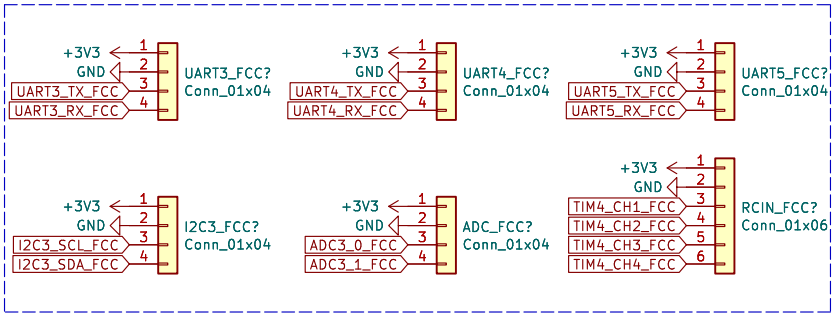
# FCC Peripherals



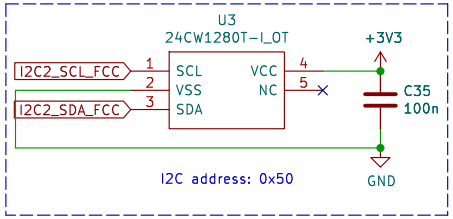

PWM Driver



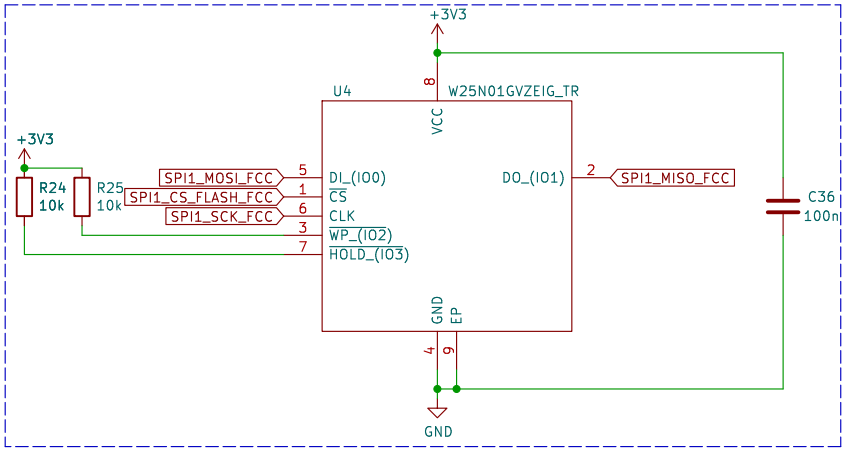

Servo Connector
(3 Rows, 8 Cols, 2.54mm Pitch)




Board To Wire Connectors
(Molex PicoBlade)




EEPROM




FLASH Memory

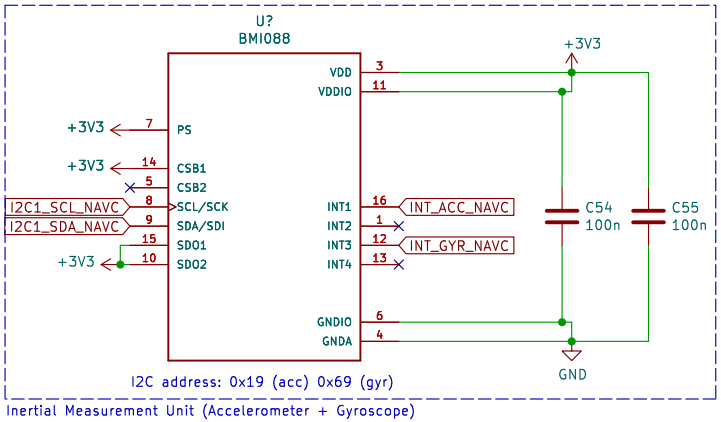
Sheet: /FCCPeripherals/
File: FCCPeripherals.kicad_sch

**Title: FCC Peripherals**

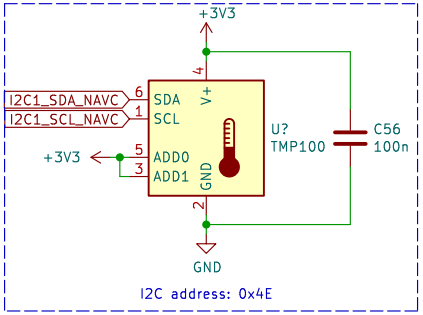
| Size: A4 | Date: 2025-02-04 | **Rev: 0.1** |
|---|---|---|
| KiCad E.D.A. 8.0.5 | | Id: 5/7 |

# NAVC Peripherals

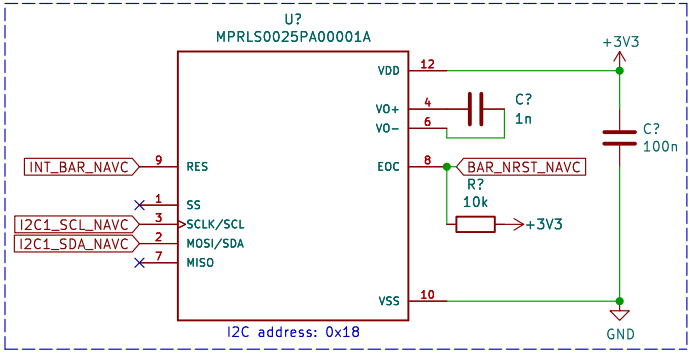
RESET AND INTERRUPT PINS ARE MIXED UP!!!!!




Inertial Measurement Unit (Accelerometer + Gyroscope)

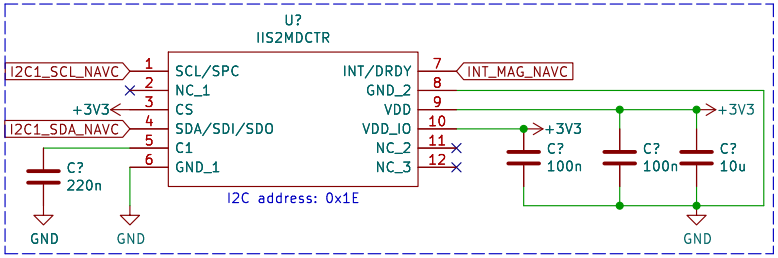



Temperature Sensor

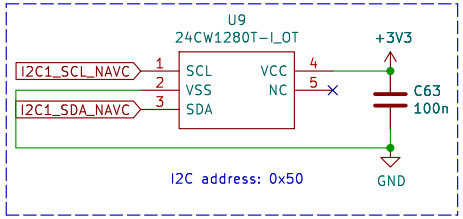



Absolute Pressure Sensor

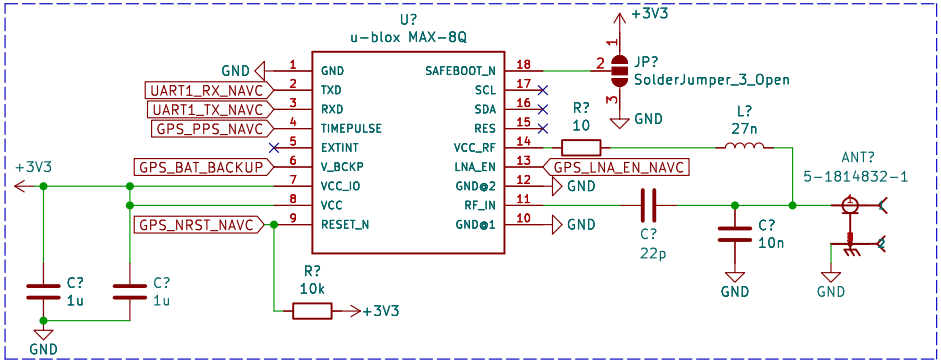
C59 ESR < 200mOhm



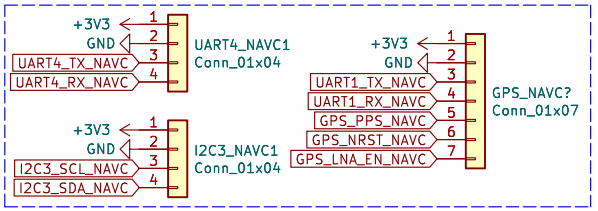

Magnetometer




EEPROM




GPS Receiver and SMA Antenna Connector

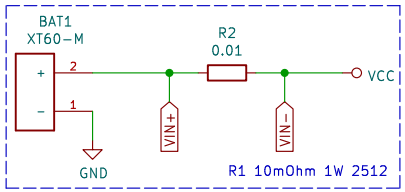



Board To Wire Connectors
(Molex PicoBlade)

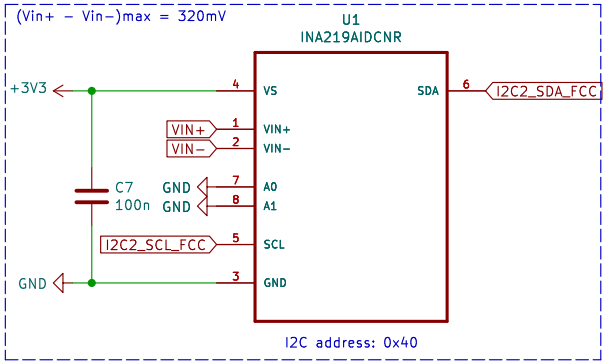
| | | |
|---|---|---|
| Sheet: /NAVCPeripherals/ | | |
| File: NAVCPeripherals.kicad_sch | | |
| **Title: NAVC Peripherals** | | |
| Size: A4 | Date: 2025-02-04 | **Rev: 0.1** |
| KiCad E.D.A. 8.0.5 | | Id: 6/7 |

# Power

Maximum input voltage: 26V

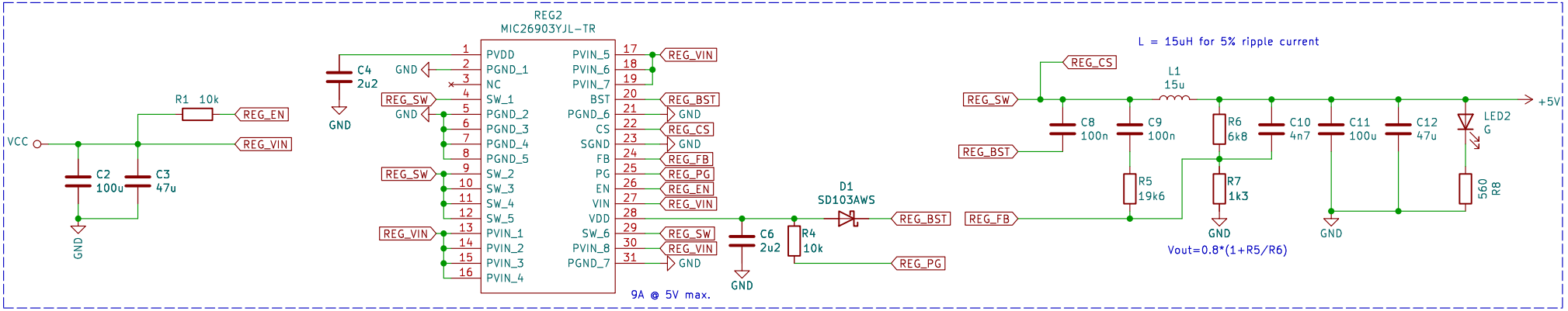



Battery Input and
Current Sense Resistor

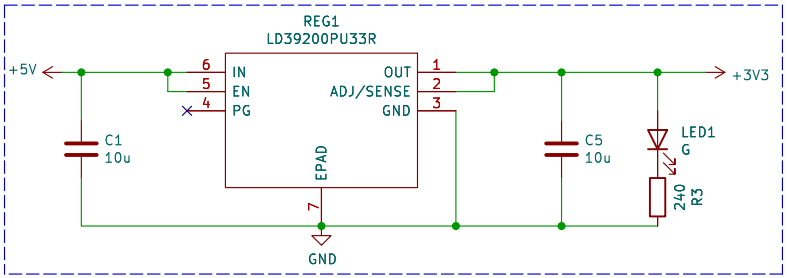



Voltage/Current/Power Sense IC

C1, C8 are Al Electrolytics
C2, C9 are 1210 ceramics
C1, C2 rated at >= 35V




Keep SGND and PGND separate – connect only at one location!




3.3V 2A Regulator (MCUs and Sensors)

| | | |
|---|---|---|
| Sheet: /Power/ | | |
| File: Power.kicad_sch | | |
| **Title:** | | |
| Size: A4 | Date: 2025-02-04 | **Rev:** |
| KiCad E.D.A. 8.0.5 | | Id: 7/7 |