Xtag Board

POC Illustration of Xtag Operation

Ergsense LLC Oct '18
www.ergsense.com

Integration of all Xtag features, supporting individual module performance.

Supported Modules:
- Xtag-B1
- Xtag-B2
- Xtag-M

Sensors:
- Temperature
- Acceleration
- Vibration
- Pressure
- Flow <DNP>

System Components:
- STM32
- RS-485
- Local Sensors
- Current Loops
- Bluetooth
- Battery

@note no footprint or board design content contained with schematic

Commit: #11F8
Date: 11/19/18

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Design: Tomm Aldridge

Xylem Internal.

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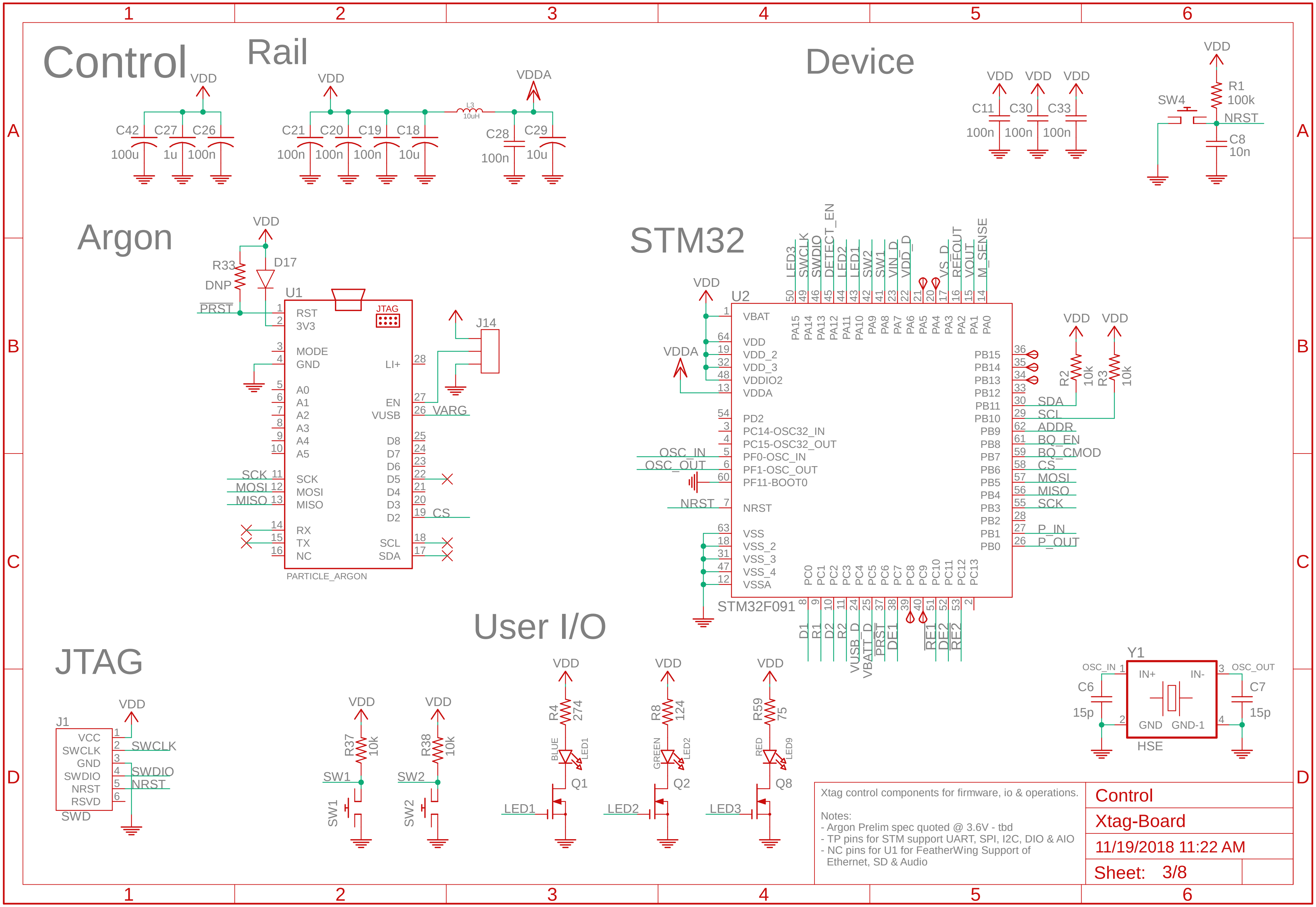

Xtag control components for firmware, io & operations.

Notes:
- Argon Prelim spec quoted @ 3.6V - tbd
- TP pins for STM support UART, SPI, I2C, DIO & AIO
- NC pins for U1 for FeatherWing Support of Ethernet, SD & Audio

Control
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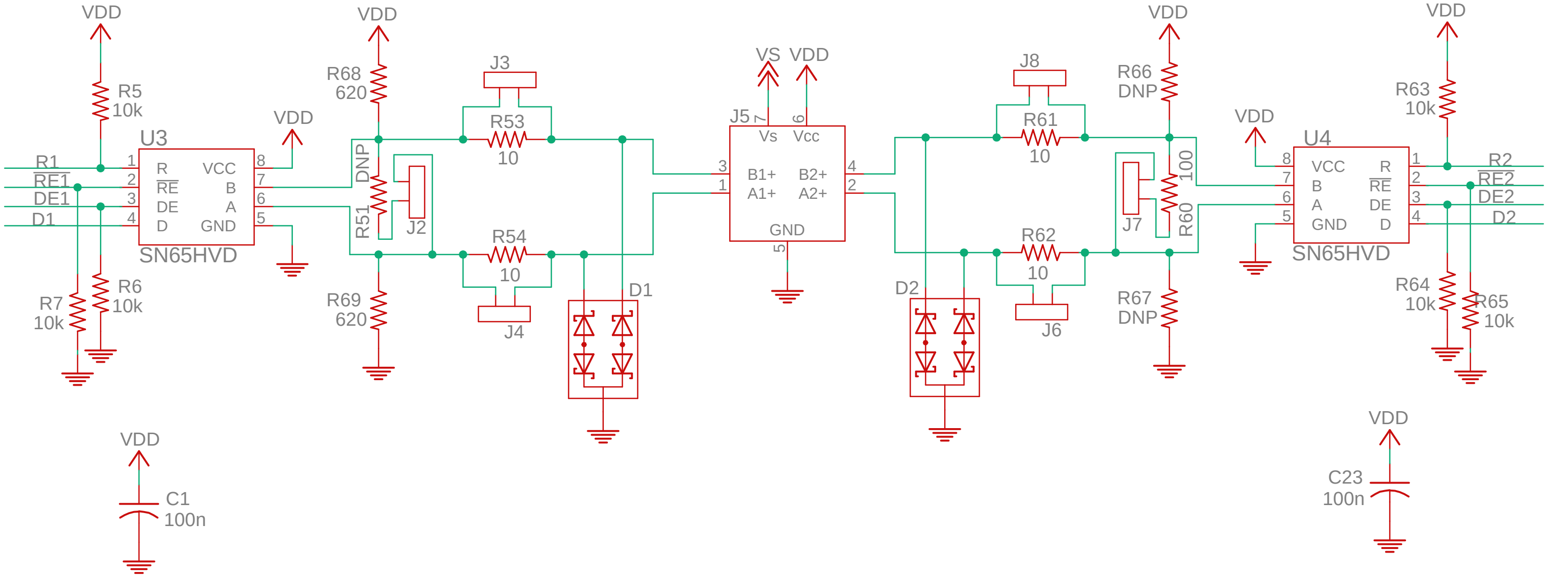
Communications

RS-485 (Master)

RS-485 (Slave)



Notes
- Master provides bias, slave termination

Opens
- Consider D1/D6 merge

Communications
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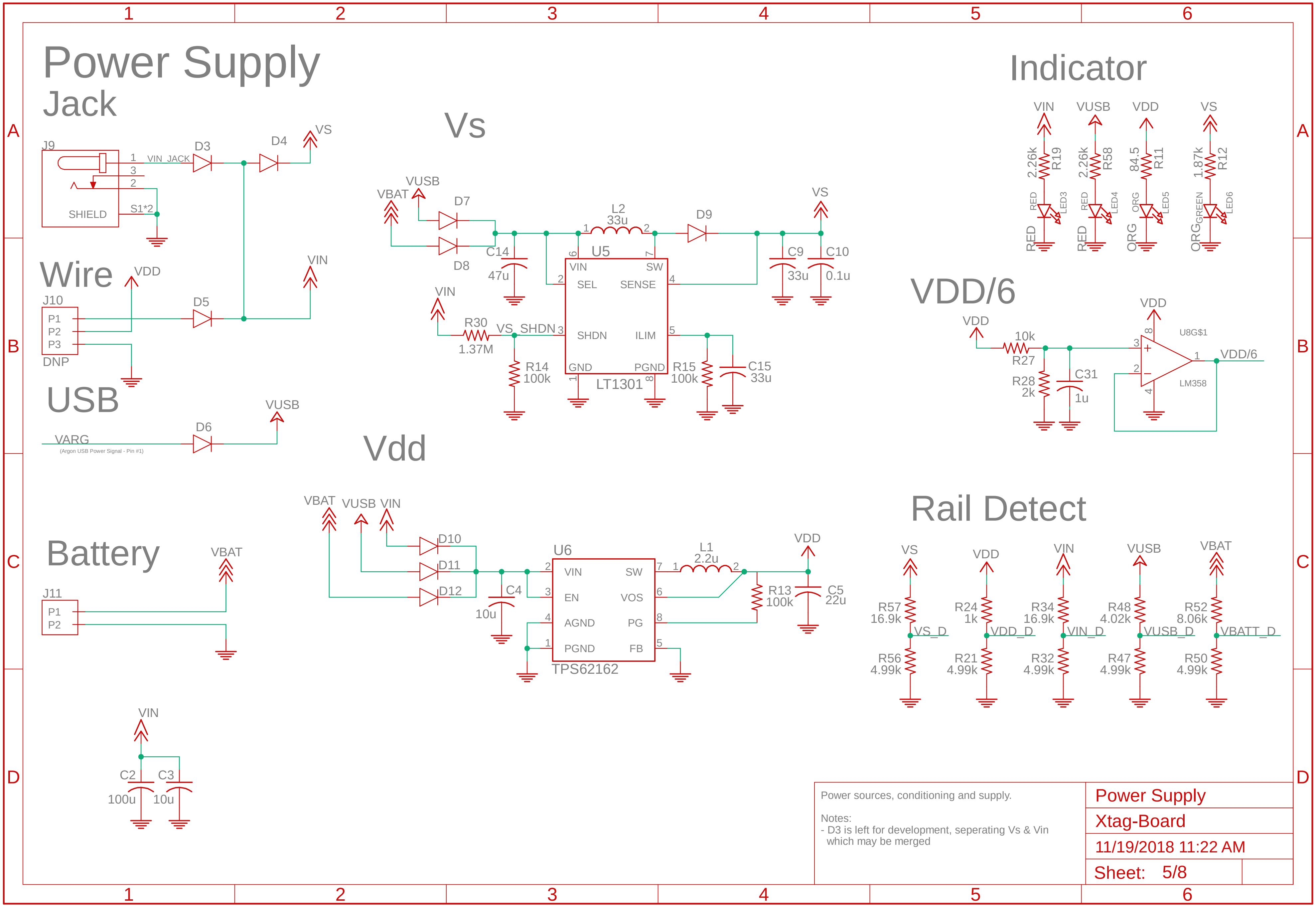

Power sources, conditioning and supply.

Notes:
- D3 is left for development, seperating Vs & Vin
  which may be merged

Power Supply
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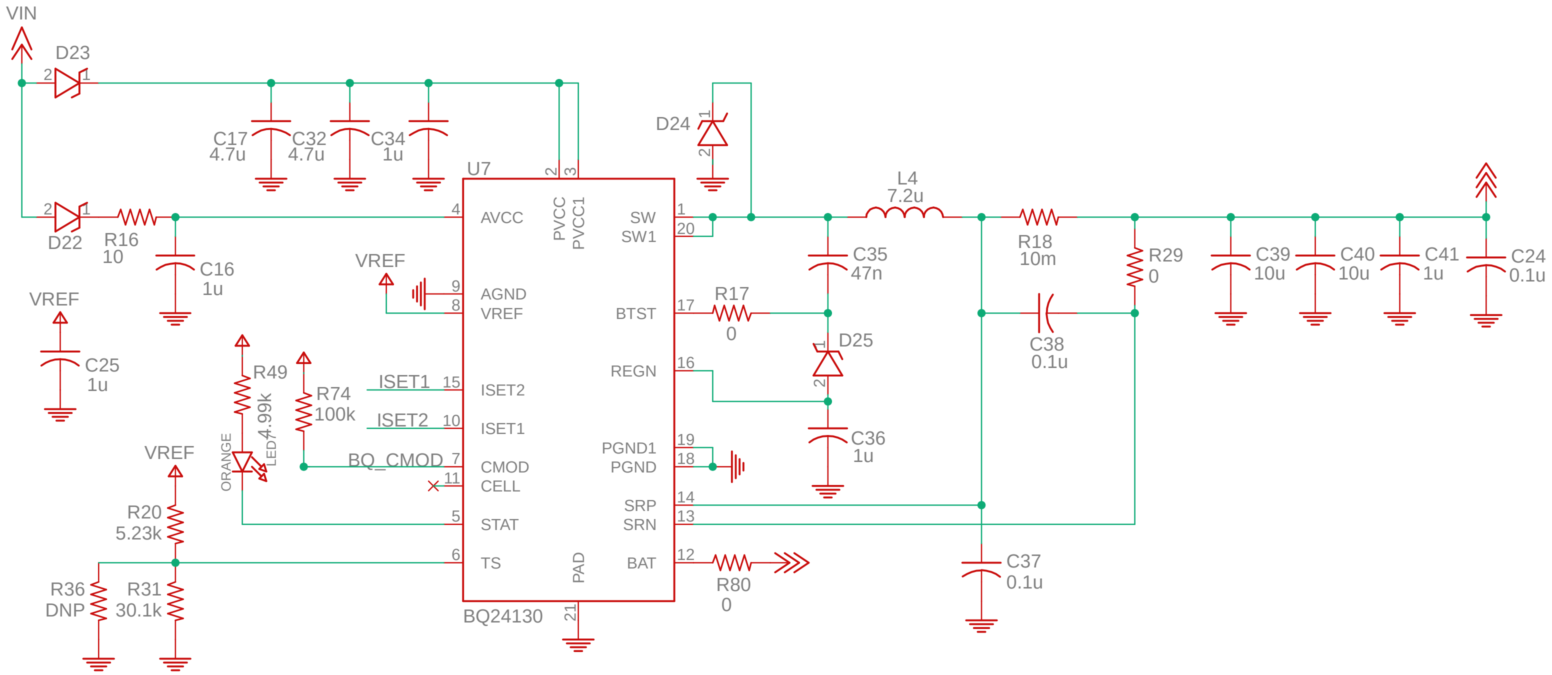
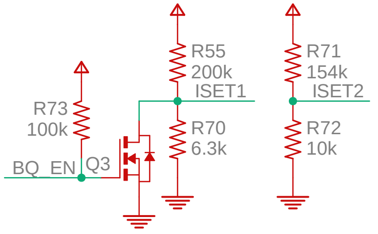
Battery Charge



Config



Battery Charging Circuit & Control
- Leave CELL floating for 2-cell

Control:
- BQ_CMOD: Select Charge Mode
- BQ_EN: Enable Charging Mode

Battery Charge
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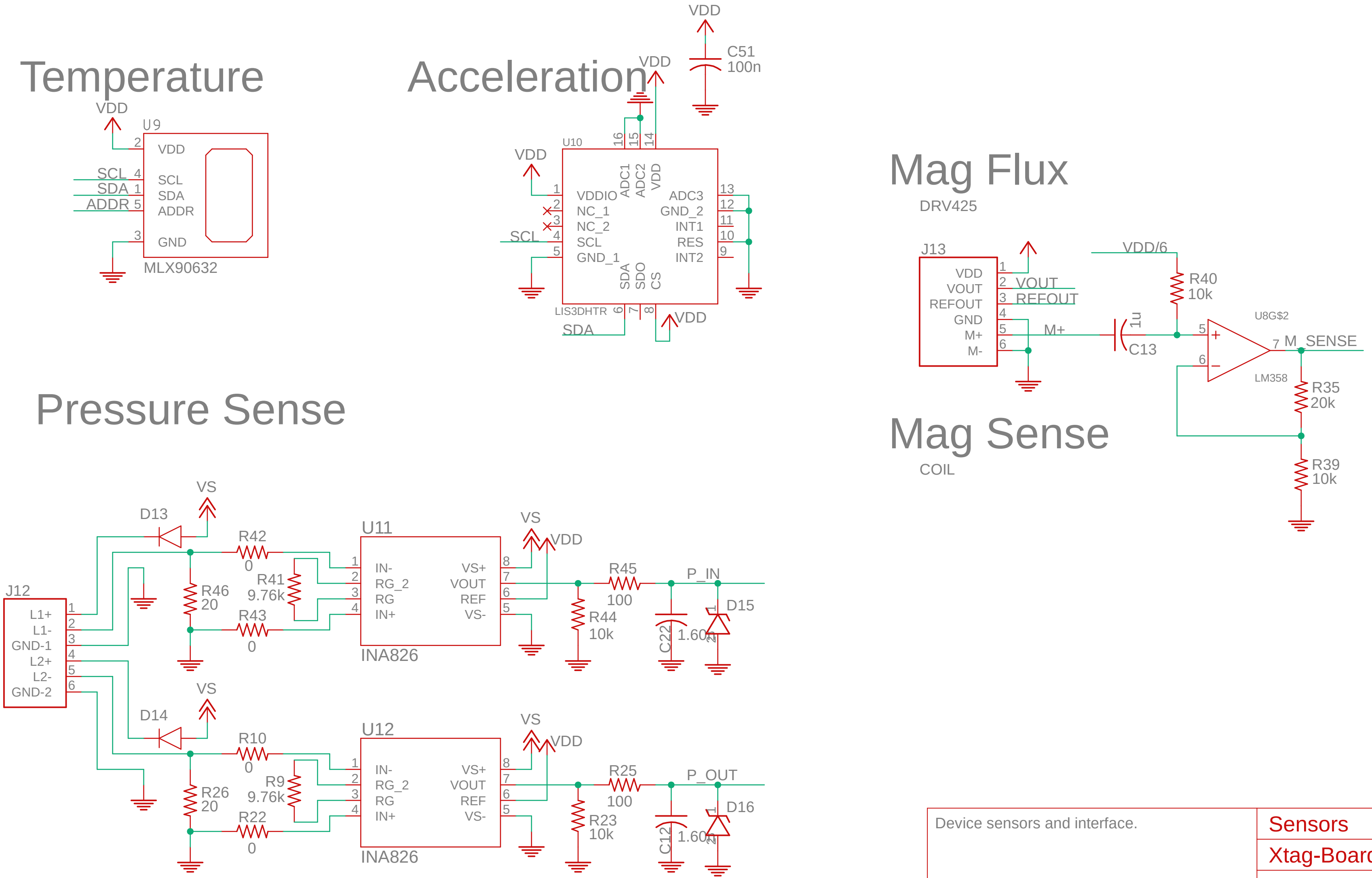
Sensors



Device sensors and interface.

Sensors
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Glossary

Battery Selection

- CDR: 170mA (Pk: 470mA)
- Sel: Lithium 18650 - (2) 3.6V Cells
  - *Panasonic NCR18650BF
  - *3,200 mAh @ 650mA
- Config: Series (6.0-7.2V)
- Design: PCB mounted or directly into casing

Design Notes

- +3.3V Voltage Supplies can be left unnamed
- RC time constant of 1ms used as general rule, with R = 100k when possible
- Switches are recommended for replacement with test points if needed

Connector Description

ID	Description
J2	STM32 JTAG Connection
J4	RS-485 Slave Connection
J7	5.5mm/2.1mm OD 36*VDC
J8	Power Hooks
J9	Battery Connection
J10	External Coil Sense
J13	Magnetic Flux Sensor
J11	Inlet Pump Pressure
J12	Outlet Pump Pressure

Optional Components

- Q3 + LED2 + SW2
- Y1

Post POC

- Modbus power isoliation research with design confirmation

Design Opens

- D6/D7 to one module (Bourns CDSOT23)
- Full R/L/C/D component specification to BOM
- Level indication support to BOM
- Component Spec Validation (IVP-BOM)

Rail Description

The following symbols are used for rail description:

⤊ VBAT - Battery output [6.0-7.2V]

↑ VDD - System power [3.3V]

⇑ VDDA - Analog stm32 power [3.3V]

⇑ VIN - input power connection [12V]

⇑ VS - Sensor supply power [12V]

↑ VUSB - USB Power [5V]

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