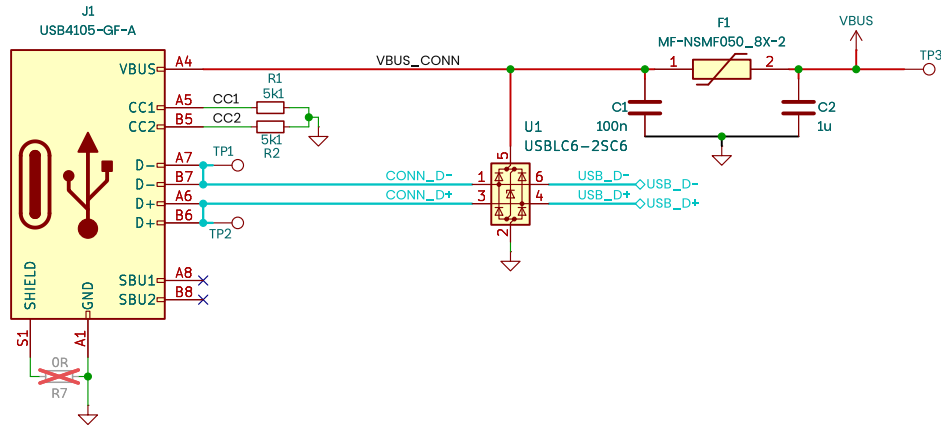


USB Connector



USB Specification [RP2350]

- USB Full Speed [USB 1.1]
- 5V VBUS
- 500mA Max Current
- 2.5W P_{MAX}

VBUS Specifications [Fuse]

- $I_{Hold} = 500mA$
- $I_{Trip} = 1000mA$
- $R_{Fuse} = \sim 150m\Omega_{[Min]}$
- $P_{Fuse} = \sim 37.5mW_{[Min]}$

PCB Specifications:

Trace Width = 0.1509mm
Trace Spacing = 0.375mm

Via Drill Hole = 0.254mm
Via Spacing = 1.524mm

Opt:
Ref Plane Opening [H] = 1.016mm
Ref Plane Opening [W] = 1.575mm

Conceptualised and Design in Zambia

Designed By K Mumba

Yolk Workshop

Sheet: /USB Connector/

File: USB.kicad_sch

Title:

Size: A5

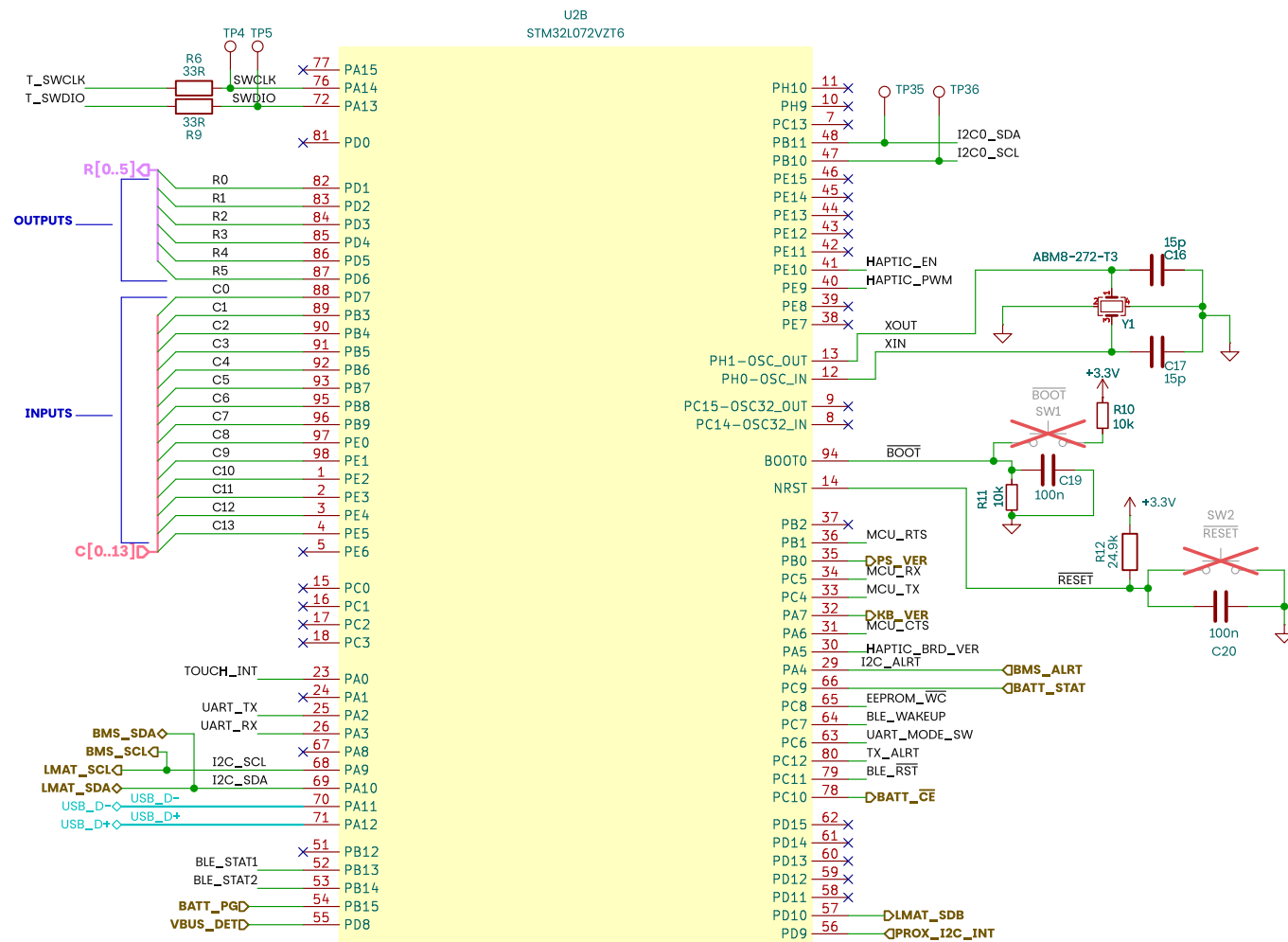
Date: 2025-02-08

KiCad E.D.A. 8.0.8

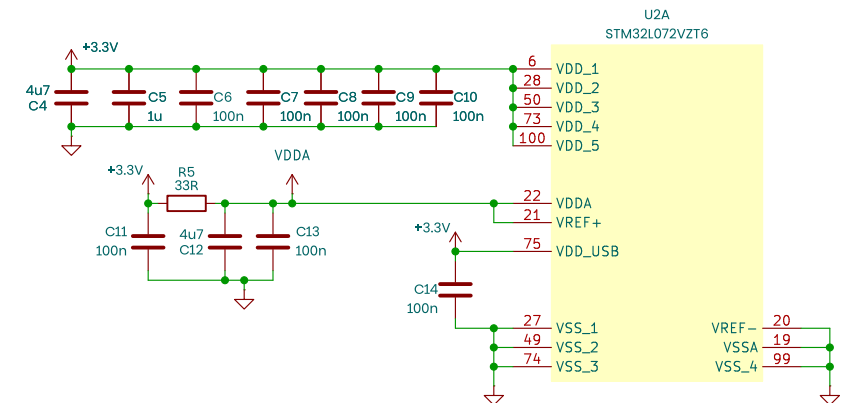
Rev: 2

Id: 2/5

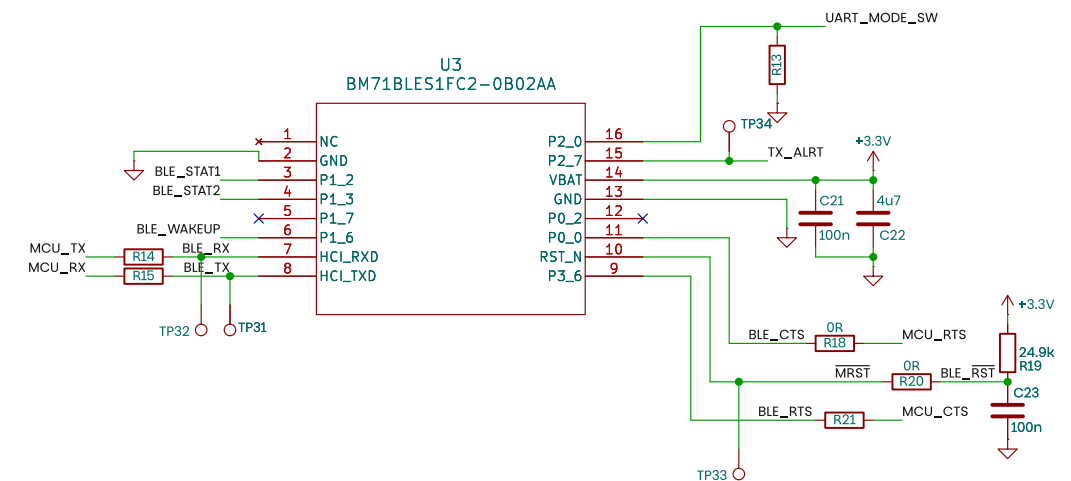
STM32L072VZ MCU



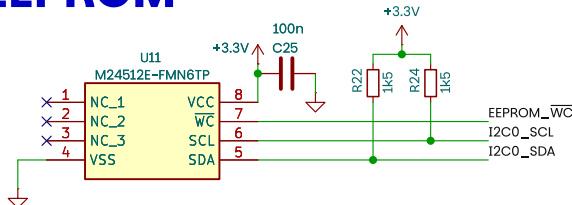
STM32L072VZ Power



Bluetooth Low Energy Module BM71

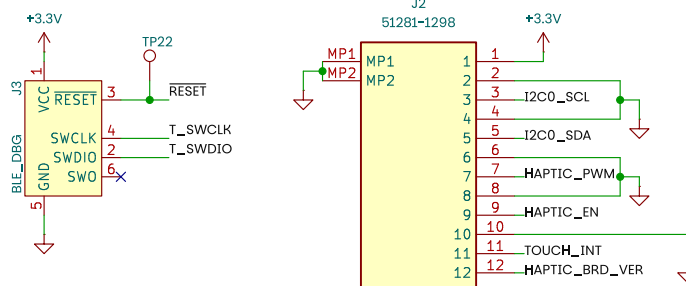


EEPROM



Default Address [EEPROM]:
- Factory default is 0xA0 for write operations (last bit: 0 for write, 1 for read).
Configurable Device Address (CDA):
Address configurable using bits C2, C1, C0.
Up to 8 addresses can be set:
- C2, C1, C0 = 000 Address: 0xA0
- C2, C1, C0 = 001 Address: 0xA2
- C2, C1, C0 = 010 Address: 0xA4
- C2, C1, C0 = 111 Address: 0xAF

Connectors



General I2C line
Specifications:
Desired $FREQ_{I2C} = 400kHz$
 $T_{rise} < 400ns$
Murphy's Busline Capacitance $\approx 100pF$
Assuming Worst case capacitance
 $R_{pullup} : (400-40)ns/100pF \approx 3k\Omega$
 $I_{bus} : (3.3V/3.6k) \approx 0.92\mu A$
 $P_{bus} : (0.92\mu A) * 3.6k \approx 3.03mW$

EEPROM I2C
Specifications:
Desired $FREQ_{I2C} = 1MHz$
 $T_{rise} < 150ns$
Murphy's Busline Capacitance $\approx 100pF$
Assuming Worst case capacitance
 $R_{pullup} : 150ns/100pF \approx 1k\Omega$
 $I_{bus} : (3.3V/1.5k) \approx 2.2mA$
 $P_{bus} : 2.2mA * 1500 \approx 7.26mW$

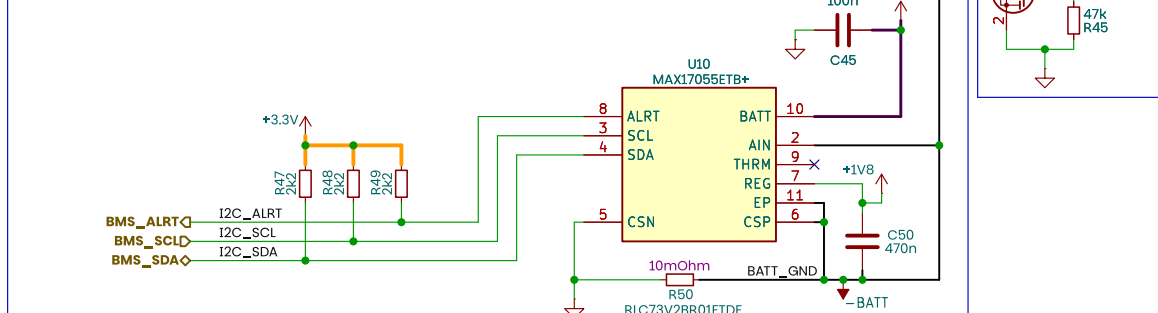
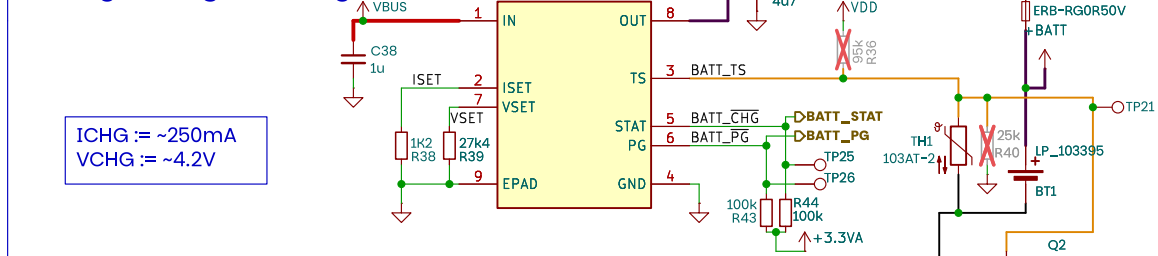
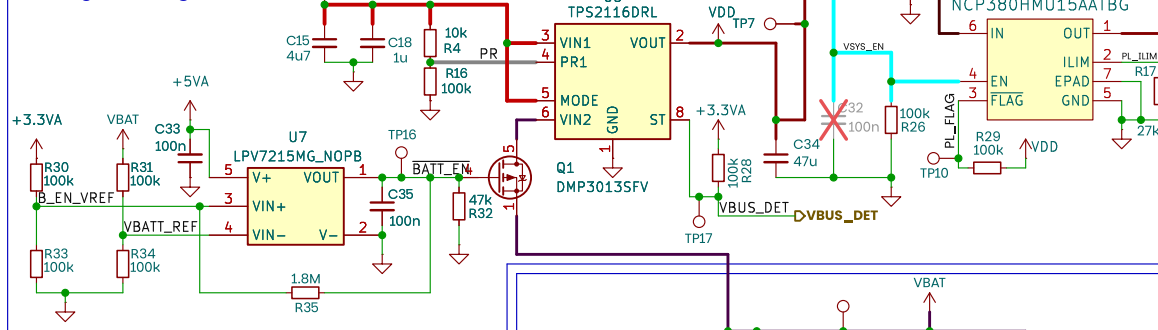
Conceptualised and Design in Zambia
Designed By K Mumba
Yolk Workshop
Sheet: /Controller/
File: MCU.kicad_sch

Title:

Size: A3
KiCad E.D.A. 8.0.8

Date: 2025-02-08

Rev: 2
Id: 3/5



Resistor Tolerance - $\pm 1\%$
Resistor Temperature Coeff

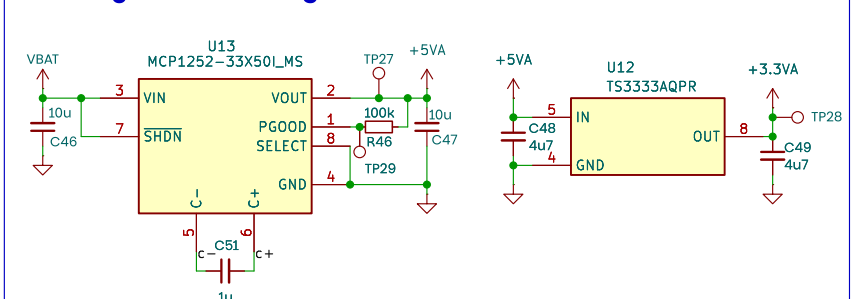
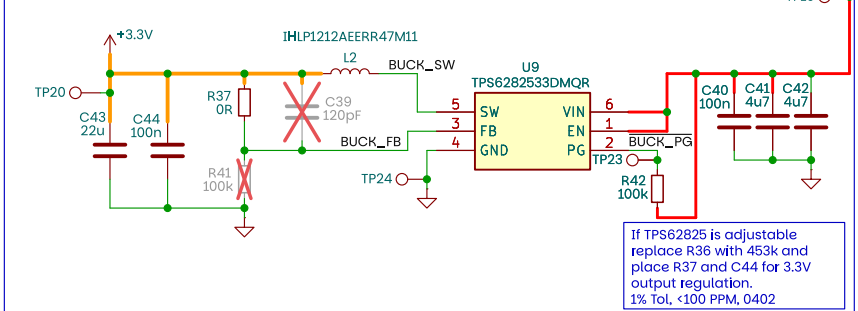
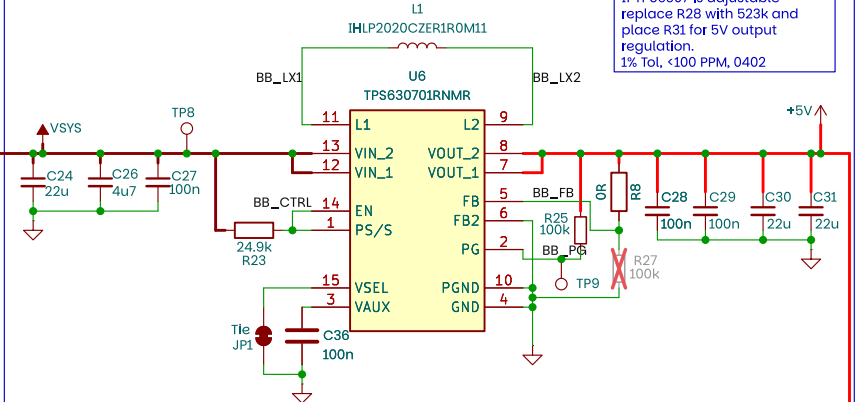
MAX17055
I2C Address:= 0x36

Buck Efficiency

$$\text{EstEff}_{\text{MIN}} := \sim 96\% \text{ at } 200\text{mA}$$

Buck-Boost Efficiency

EstEff _{MIN} [3.2V]:	~86.516% at 1mA
EstEff _{MIN} [4.1V]:	~88.846% at 1mA
EstEff _{MIN} [5.0V]:	~90.562% at 1mA
EstEff [3.2V]:	~92.314% at 100mA
EstEff [4.1V]:	~95.032% at 100mA
EstEff [5.0V]:	~96.832% at 100mA
EstEff [3.2V]:	~93.535% at 400mA
EstEff [4.1V]:	~95.427% at 400mA
EstEff [5.0V]:	~96.89% at 400mA



MAX17055 User Guide

Conceptualised and Design in Zambia
Designed By K Mumba

Yolk Workshop

Sheet: /Power Supply/
File: PSU.kicad_sch

Title: Power Supply and BMS

Size: A4	Date: 2025-02-08
----------	------------------

KiCad E.D.A. 8.0.8

If TPS6307 is adjustable
replace R28 with 523k and
place R31 for 5V output
regulation.
1% Tol, <100 PPM, 0402

If TPS62825 is adjustable
replace R36 with 453k and
place R37 and C44 for 3.3V
output regulation.
1% Tol, <100 PPM, 0402

