

Connector

File: connector.kicad_sch

SIM7080G

File: peripherals.kicad_sch

MCU

File: mcu.kicad_sch

WMBUS

File: wmbus.kicad_sch

power

File: power.kicad_sch

Approved By: Jones Kisaka
Designed By: Rodney Osodo
Abstract Machines

Sheet: /
File: s0.kicad_sch

Title: IoT Gateway

Size: A4
KiCad E.D.A. 9.0.3

Date: 2024-10-15

Rev: v0.1.0
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Beagle Board Connector

The diagram illustrates the internal connections of the U1 BEAGLEBONEBLACK chip to various external components. The connections are organized into three main sections: Power and Ground, UART and SPI, and I2C and GPIO.

Power and Ground:

- VDD_3V3B, VDD_5V, SYS_5V, VDD_ADC are connected to +3V3 and +5V.
- PWR_BUTTON and SYS_RESET are connected to P9_9 and P9_10.
- AIN0 through AIN6 are connected to P9_39 through P9_35.
- B_UART0_RX and B_UART0_TX are connected to J1_4 and J1_5.
- I2C1_SCL and I2C1_SDA are connected to P9_17 and P9_18.
- I2C2_SCL and I2C2_SDA are connected to P9_19 and P9_20.
- SPI1_CS0, SPI1_D0, SPI1_D1, and SPI1_SCLK are connected to P9_28, P9_29, P9_30, and P9_31.
- EHRPWM1A, EHRPWM1B, EHRPWM2A, and EHRPWM2B are connected to P9_14, P9_16, P8_19, and P8_13.
- GPI00_26 and GPI00_27 are connected to P8_14 and P8_17.
- GPI00_7/GPI03_18, GPI03_19, and GPI03_20 are connected to P9_42, P9_27, and P9_41.
- GPI03_21, GPI02_1, GPI02_6, GPI02_7, GPI02_8, GPI02_9, GPI02_10, GPI02_11, GPI02_12, GPI02_13, GPI01_16, GPI01_17, GPI01_28, GPI01_29, GPI01_30, and GPI01_31 are connected to P8_18, P8_45, P8_46, P8_43, P8_44, P8_41, P8_42, P8_43, P8_39, P8_40, P8_27, P8_28, P8_29, P8_30, J1_8, and P8_20.
- NC and SHIELD are connected to J1_8 and P8_20.
- DGND and GND are connected to P9_34 and GND.

UART and SPI:

- UART1_TXD and UART1_RXD are connected to P9_24 and P9_26.
- UART2_TXD and UART2_RXD are connected to P9_21 and P9_22.
- UART4_TXD and UART4_RXD are connected to P9_13 and P9_11.
- UART5_TXD and UART5_RXD are connected to P8_37 and P8_38.
- UART3_CTSN and UART3_RTSN are connected to P8_36 and P8_34.
- UART4_CTSN and UART4_RTSN are connected to P8_35 and P8_33.
- UART5_CTSN and UART5_RTSN are connected to P8_31 and P8_32.
- TIMER4, TIMER7, TIMER5, and TIMER6 are connected to P8_7, P8_8, P8_9, and P8_10.
- ETH_RST, WMBUS_CS, ETH_INT, and ESP_IO8 are connected to P8_7, P8_8, P8_9, and P8_10.
- ESP_IO15, ESP_IO0, and ESP_IO1 are connected to P8_14, P9_42, and P9_41.
- MTMS, MTDI, ETH_CS, MTCK, MTDO, and SD_CS are connected to P8_45, P8_46, P8_43, P8_44, P8_41, P8_42, P8_43, P8_39, P8_40, P8_27, P8_28, P8_29, P8_30, J1_8, and P8_20.

I2C and GPIO:

- SIM7080G_PWR is connected to P8_19.
- SIM7080G_D+ and SIM7080G_D- are connected to P8_5 and P8_6.
- ESP_IO9 is connected to P8_12.
- SIM7080G_TXD and SIM7080G_RXD are connected to P9_11 and P9_13.
- SIM7080G_D+ and SIM7080G_D- are connected to P8_5 and P8_6.
- ESP_IO15, ESP_IO0, and ESP_IO1 are connected to P8_14, P9_42, and P9_41.
- MTMS, MTDI, ETH_CS, MTCK, MTDO, and SD_CS are connected to P8_45, P8_46, P8_43, P8_44, P8_41, P8_42, P8_43, P8_39, P8_40, P8_27, P8_28, P8_29, P8_30, J1_8, and P8_20.

Legend:

- H1 MountingHole
- H2 MountingHole
- H3 MountingHole
- H4 MountingHole

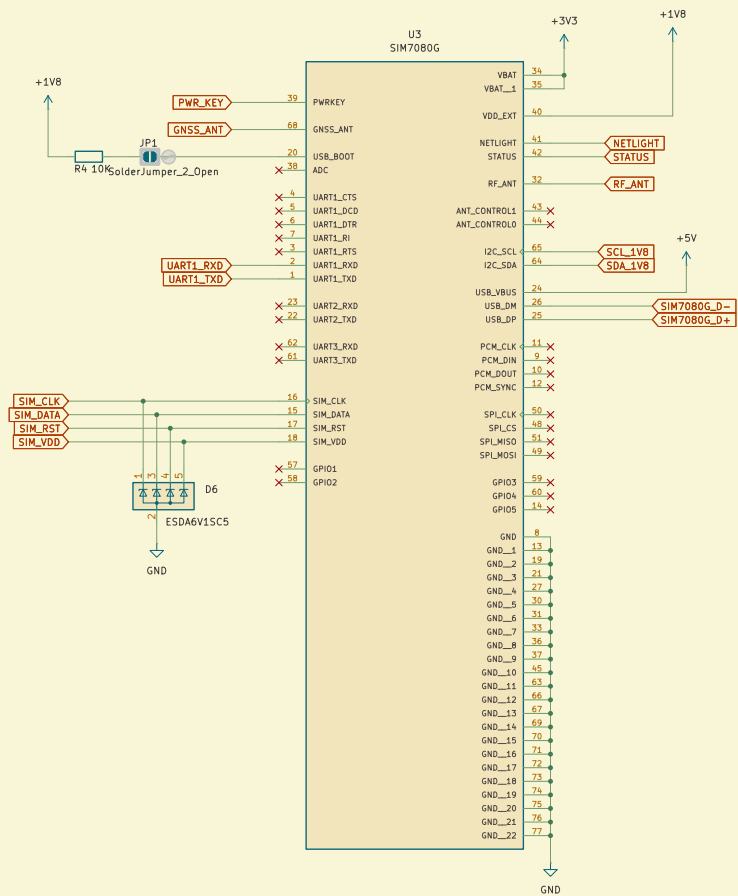
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KiCad E.D.A. 9.0.3	Id: 2/6	

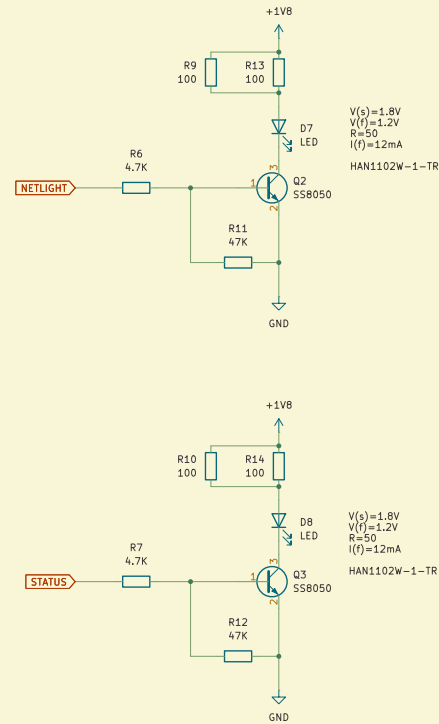
- H1 MountingHole
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- H4 MountingHole

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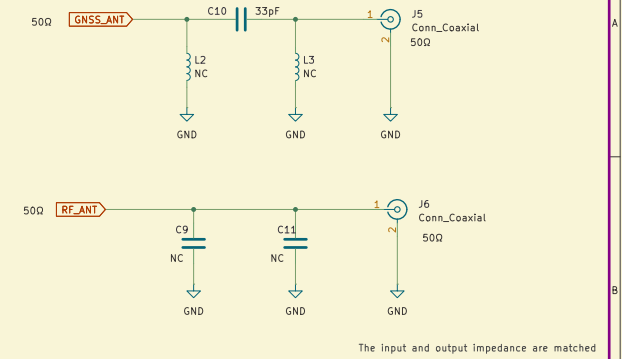
SIM7080G



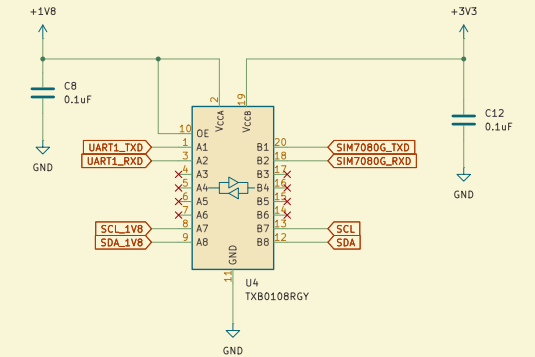
STATUS LEDs



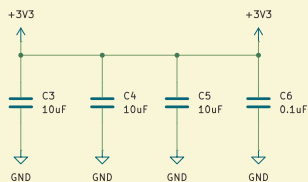
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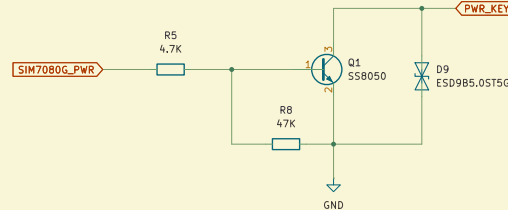
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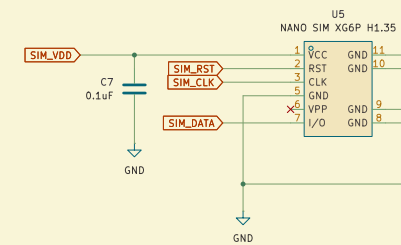
DECOUPLING CAPS



SIM POWER CONTROL



SIM CARD



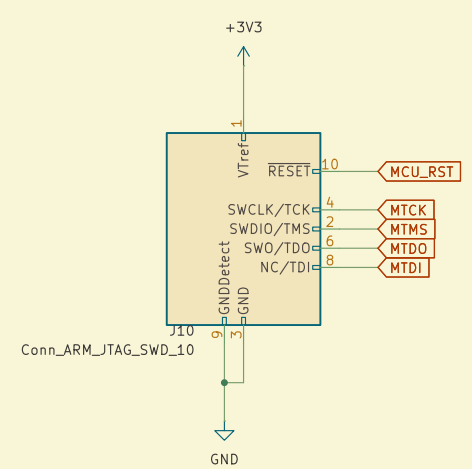
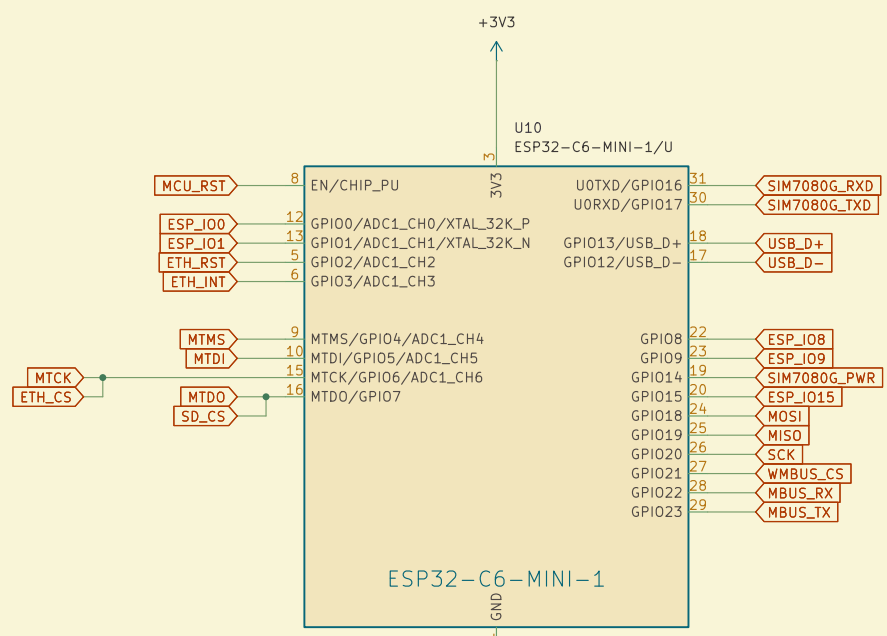
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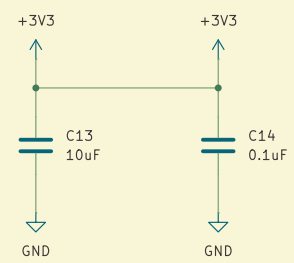
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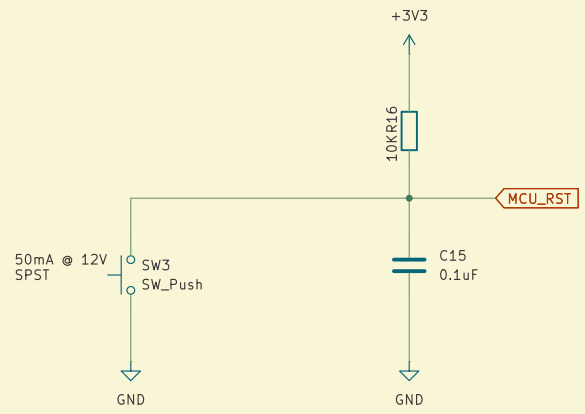
MCU-ESP32-C6-MINI



DECOUPLING CAPS



RESET



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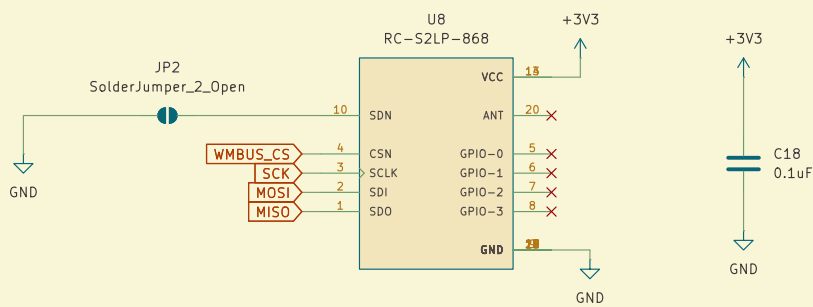
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KiCad E.D.A. 9.0.3

Date: 2024-10-15

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RC-S2LP-868 WMBUS



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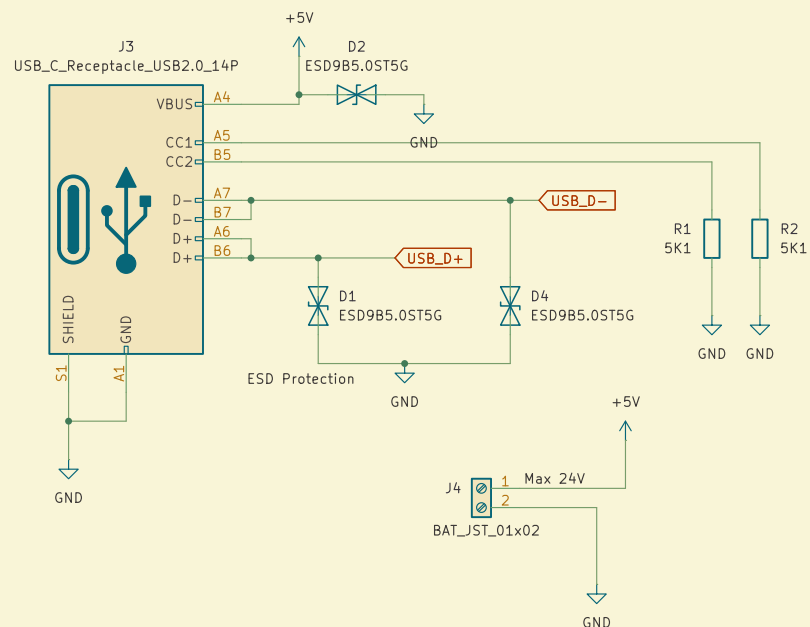
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USBC & BAT



Capacitors

33pF
 - +/- 10%
 - 50V
 - GMC10CG330K50NT

0.1uF

- +/- 5%
 - 50V
 - 0603B104J500XD

10uF

- CL21A106K0QNNNE
 - C1713
 - X5R +/-10%

1uF

- +/- 10%
 - 10V
 - 0603B105K100XD

100uF

- +/- 10%
 - 6.3V
 - GMC31X5R107K6R3NT

Resistors

0
 - RC0603JR-070RL

100

- +/- 1%
 - 0.1W
 - ERJ-3EKF1000V

1k

- +/- 1%
 - 0.1W
 - RC0603FR-071KL

4.7k

- +/- 0.1%
 - 0.1W
 - RC0603FR-074K7L

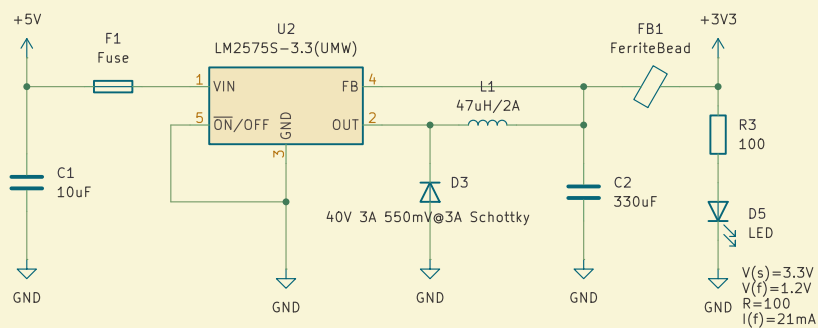
10k

- +/- 1%
 - 0.1W
 - RC0603FR-0710KL

47k

- +/- 0.1%
 - 0.1W
 - ERA-3AEB473V

BUCK-CONVERTOR



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