

[illegible]

This diagram illustrates the hardware design for a GAVESHA BUS interface, divided into four main functional blocks: ESP32 System, Power Sub System, GAVESHA BUS INTERFACE, and SENSORS.

ESP32 System

The ESP32-WROOM-32D microcontroller is the central component. It is powered by a +3V0 supply through a 10k resistor (R4) and a 1nF capacitor (C8). The PWR_FLAG pin is connected to a 22uF capacitor (C11) and a 0.1uF capacitor (C12) to GND. The ESP32_I00 pin is connected to a push button (SW1) and a 100nF capacitor (C2). The ESP23_EN pin is connected to a push button (SW2). The SYS_BUTTON pin is connected to a push button (SW3) and a 3.6k resistor (R24). The SYS_LED pin is connected to an LED (D1) and a 3.3k resistor (R1). The GND pin is connected to GND.

Power Sub System

The Power Sub System includes a BQ25601 battery charger (U1) and a TLV1117LV30DCYR voltage regulator (U4). The BQ25601 is powered by VBUS and provides VOUT. The TLV1117LV30DCYR is powered by VOUT and provides +3V0. The PWR_FLAG pin is connected to a 330R resistor (R7) and a 330R resistor (R8). The +5V pin is connected to +5V.

GAVESHA BUS INTERFACE

The GAVESHA BUS INTERFACE block shows the connection between the ESP32 and the GAVESHA BUS. The GAVESHA BUS signals are connected to the ESP32 pins as follows:

- GBUS.RESET to ESP32_I00
- GBUS.DETECT to ESP23_EN
- GBUS.INT to ESP_RXD0
- GBUS.SDA to ESP_TXD0
- GBUS.SCL to ESP_TXD0
- GBUS.MOSI to ESP_TXD0
- GBUS.MISO to ESP_TXD0
- GBUS.CLK to ESP_TXD0

SENSORS

The SENSORS block shows the connection between the ESP32 and the sensors. The sensors are connected to the ESP32 pins as follows:

- I2C_SDA to I2C_SDA
- I2C_SCL to I2C_SCL
- RTC_INT to RTC_INT



Power Sub System

Charging Unit

BQ25601 battery charger
I2C Address --> 0x6B8

3V Regulator

5V Booster
Generate 5V output

Environment Sensors

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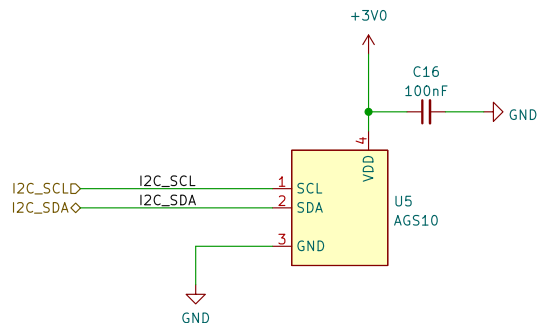
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Rev:
Id: 1/3

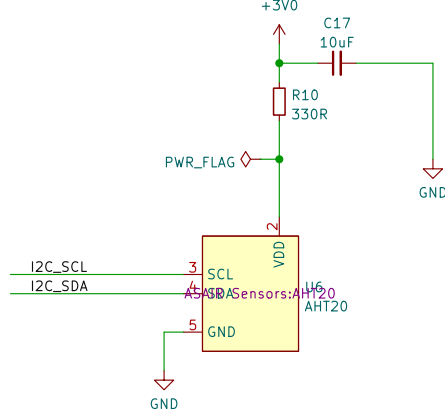
VOC sensor

Sensor --> AGS10
Communication Interface --> I2C
I2C address --> 0x1A



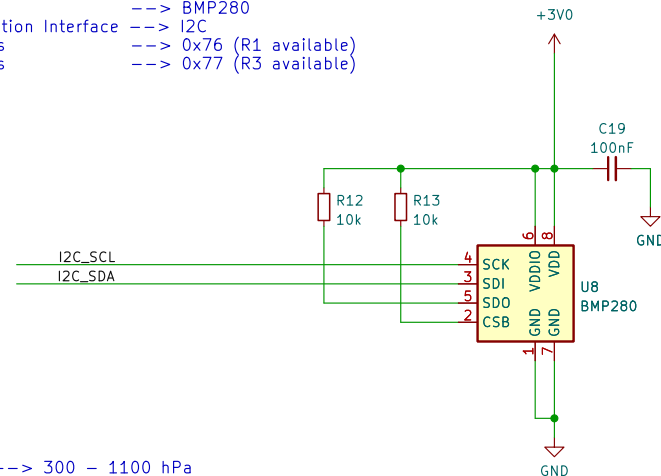
RH and Temp Sensor

Sensor --> AHT20
Communication Interface --> I2C
I2C address --> 0x38



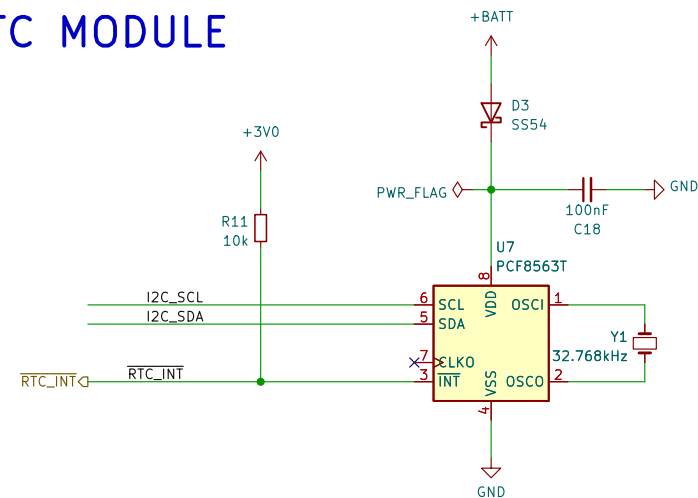
Absolute Pressure Sensor

Sensor --> BMP280
Communication Interface --> I2C
I2C address --> 0x76 (R1 available)
I2C address --> 0x77 (R3 available)



Range --> 300 - 1100 hPa
(-500m and +9000m from Sea Level)

RTC MODULE



Sheet: /Environment Sensors/
File: Sensors.kicad_sch

Title:

Size: A4

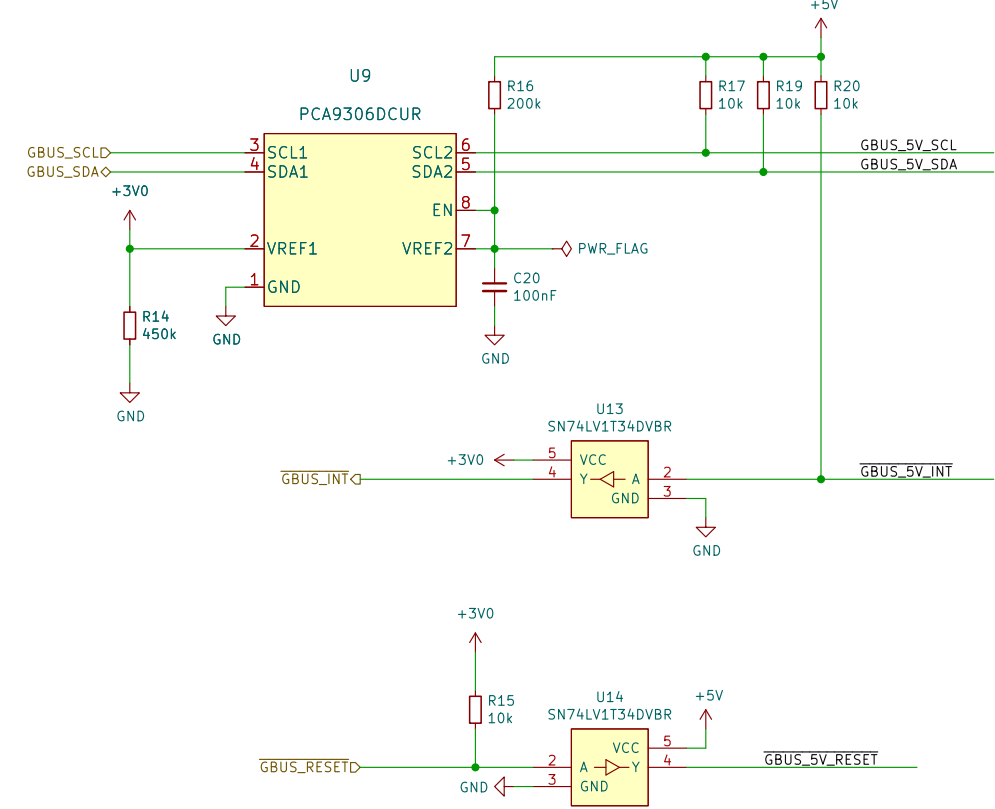
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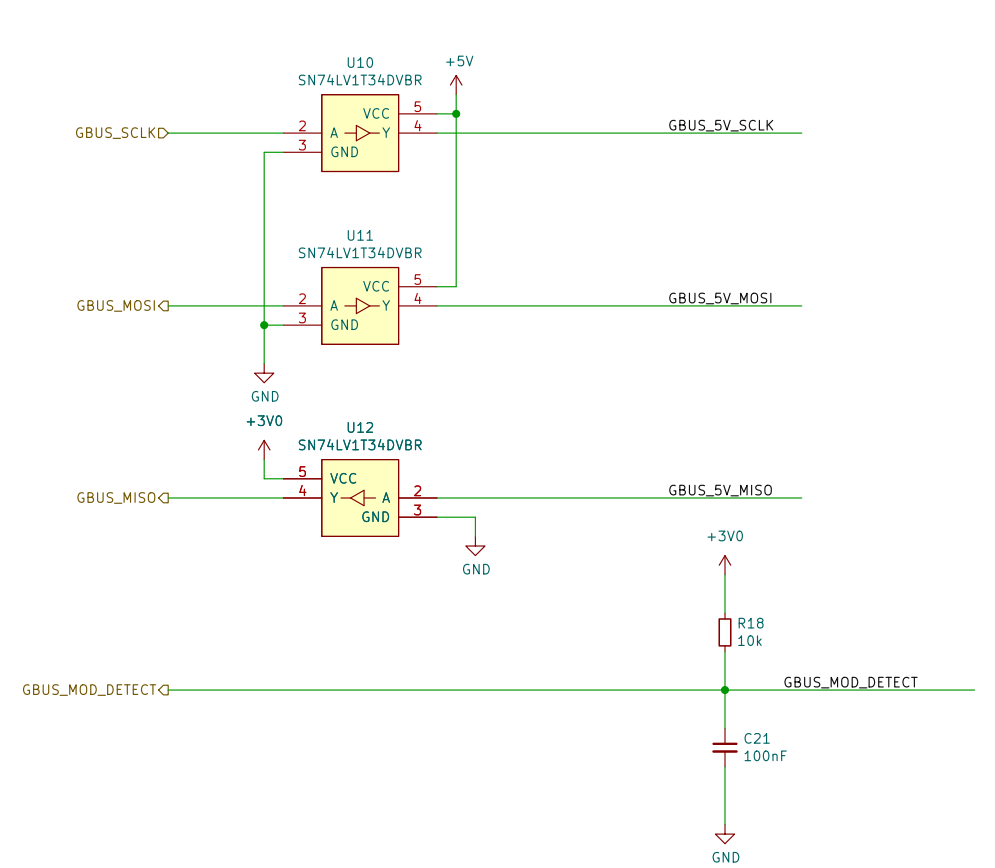
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GAVESHA BUS I2C INTERFACE



GAVESHA BUS SPI INTERFACE



GAVESHA BUS RIGHT EXPANSION

PCIe 1x female (straddle) Connector

