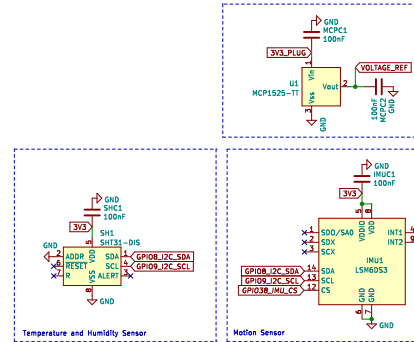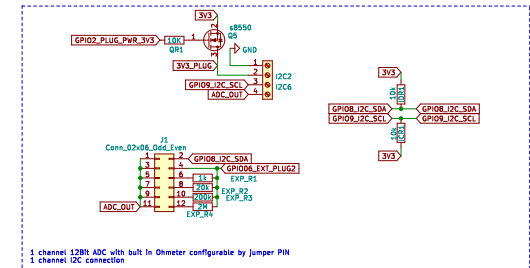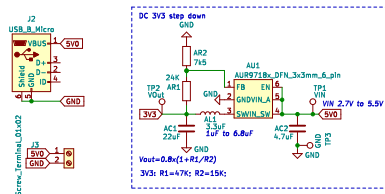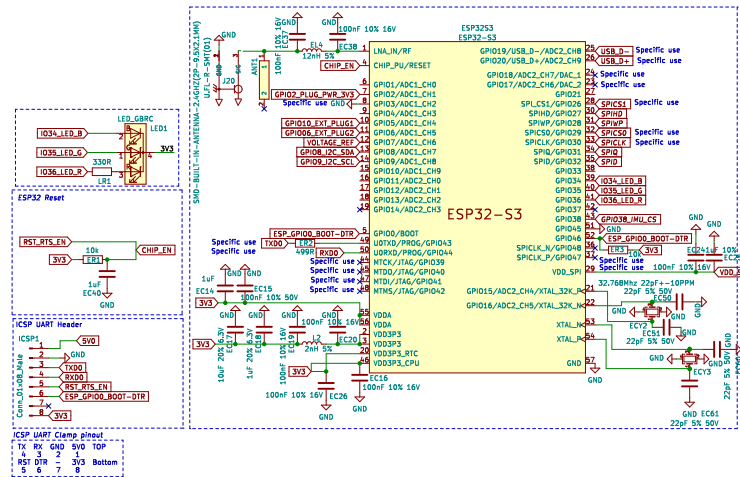# onboard sensors

peripherals

Power Management

MCU ESP32 S3

Storage and Authentication

Onboard sensors

GND
MCPC1
100nF
3V3_PLUG
U1
MCP1525-TT
Vin
Vss
Vout
VOLTAGE_REF
100nF
MCPC2
GND

Temperature and Humidity Sensor

GND
SHC1
100nF
3V3
SH1
SHT31-DIS
SDO/SAO
VDDIO
SDA
SCL
GPIO8_I2C_SDA
GPIO9_I2C_SCL
GND
ADDR
RESET
R
ALERT
VSS
GND

Motion Sensor

GND
IMUC1
100nF
3V3
SDO/SA0
SDX
SCX
INT1
INT2
IMU1
LSM6DS3
GPIO8_I2C_SDA
GPIO9_I2C_SCL
GPIO38_IMU_CS
SDA
SCL
CS
GND

Peripherals

3V3
s8550
Q5
GPIO2_PLUG_PWR_3V3
10K
QR1
GND
3V3_PLUG
GPIO9_I2C_SCL
ADC_OUT
I2C2
I2C6
GPIO8_I2C_SDA
GPIO9_I2C_SCL
3V3
GPIO8_I2C_SDA
GPIO9_I2C_SCL
3V3

Conn_02x06_Odd_Even
J1
GPIO8_I2C_SDA
GPIO6_EXT_PLUG2
EXP_R1
EXP_R2
EXP_R3
ADC_OUT
EXP_R4

1 channel 12Bit ADC with built in Ohmeter configurable by jumper PIN
1 channel i2C connection

Power Management

J2
USB_B_Micro
VBUS
D+
D-
ID
Shield
5V0
GND

DC 3V3 step down
GND
AR2
7k5
AU1
24k
AR1
TP2
VOut
AUR9718x_DFN_3x3mm_6_pin
FB
EN
GND
VIN_SW
SWIN_SW
TP1
VIN
VIN 2.7V to 5.5V
3V3
AL1
3.3uF
1uF to 6.8uF
AC4
22uF
AC2
4.7uF
GND
TP3
J3
5V0
GND
Screw_Terminal_01x02

Vout=0.8x(1+R1/R2)
3V3: R1=47k; R2=15k;

MCU ESP32 S3

ESP32S3
ESP32-S3
LNA_IN/RF
CHIP_PU/RESET
GPIO1/ADC1_CH0
GPIO2/ADC1_CH1
GPIO3/ADC1_CH2
GPIO4/ADC1_CH3
GPIO5/ADC1_CH4
GPIO6/ADC1_CH5
GPIO7/ADC1_CH6
GPIO8/ADC1_CH7
GPIO9/ADC1_CH8
GPIO10/ADC1_CH9
GPIO11/ADC2_CH0
GPIO12/ADC2_CH1
GPIO13/ADC2_CH2
GPIO14/ADC2_CH3
GPIO0/BOOT
U0TXD/PROG/GPIO43
U0RXD/PROG/GPIO44
MTCK/JTAG/GPIO39
MTDO/JTAG/GPIO40
MTDI/JTAG/GPIO41
MTMS/JTAG/GPIO42
GPIO15/ADC2_CH4/XTAL_32K_P
GPIO16/ADC2_CH5/XTAL_32K_N
VDDA
VDDA
VDD3P3
VDD3P3
VDD3P3_RTC
VDD3P3_CPU

GPIO19/USB_D-/ADC2_CH8
GPIO20/USB_D+/ADC2_CH9
GPIO1B/ADC2_CH7/DAC_1
GPIO17/ADC2_CH6/DAC_2
GPIO21
SPI_CS1/GPIO26
SPIHD/GPIO27
SPIWP/GPIO28
SPICS0/GPIO29
SPICLK/GPIO30
SPIQ/GPIO31
SPID/GPIO32
GPIO33
GPIO34
GPIO35
GPIO36
GPIO37
GPIO38
GPIO45
GPIO46
SPICLK_N/GPIO48
SPICLK_P/GPIO47
VDD_SPI

ESP32-S3

USB_D-
USB_D+
SPICS1
SPIHD
SPIWP
SPICLK
SPIQ
SPID
IO34_LED_B
IO35_LED_G
IO36_LED_R
ESP_GPIO0_BOOT-DTR
VDD_SPI

CHIP_EN
GPIO2_PLUG_PWR_3V3
GPIO10_EXT_PLUG1
GPIO6_EXT_PLUG2
VOLTAGE_REF
GPIO8_I2C_SDA
GPIO9_I2C_SCL

ANT1
U.FL-R-SMT(01)
L40
J20
EL4
12nH 5%
CHIP_EN
100nF 10X 16V
EC39

LED_GBRC
LED1
IO34_LED_B
IO35_LED_G
IO36_LED_R
330R
LR1
3V3

ESP32 Reset
RST_RTS_EN
10k
ER11
CHIP_EN
3V3
1uF
EC40
GND

ICSP UART Header
Conn_01x08_Male
ICSP1
5V0
TXD0
RXD0
RST_RTS_EN
ESP_GPIO00_BOOT-DTR
3V3

ESP_GPIO0_BOOT-DTR
499R
ER2
RXD0
1uF
EC14
EC15
100nF 10X 50V
10nF 10X 16V
100nF 10X 16V
GND
VDDA
VDDA
VDD3P3
VDD3P3
3V3
EC16
100nF 10X 16V
EC26
100nF 10X 16V

32.768Mhz 22pF+-10PPM
22pF 5% 50V
EC50
ECY2
EC51
22pF 5% 50V
XTAL_1K
XTAL_1K
3V3
ECY3
40Mhz 22pF+-10PPM
GND
EC61
22pF 5% 50V
GND

ICSP UART Clamp pinout
TX RX GND 5V0 TOP
1 2 3 4
RST DTR 3V3 Bottom
5 6 7 8

Storage and Authentication

Authentication & Security
U2
ATSHA204A-MAHDA-T
100nF
AUC1
GPIO9_I2C_SCL
GPIO8_I2C_SDA
SCL
SDA
VCC
EXP
GND

ESP32 Flash Memory
ESP_FLASH1
W25Q128JVS
VDD_SPI
100nF
AUC1
GND
SPICS0
SPICLK
CS
CLK
DI(IO0)
DO(IO1)
IO2
IO3
SPID
SPIQ
SPIWP
SPIHD

VDD_SPI
EPS1
ESP32-PSRAM_LY68L6400S
VCC
SCLK
SIO3
SIO2
SIO1
SIO0
CE
VSS
SPICS1
SPICLK
SPIHD
SPIWP
SPIQ
SPID
GND