VBUS

FB1
FerriteBead_Small

+5V

U1
AMS1117-3.3

+3V3

J1
USB_C_Receptacle

VBUS A4

CC1 A5   cc1   5k1 R1
CC2 B5   cc2

5k1 R2

D- A7
D- B7
D+ A6
D+ B6

D-
D+

D+
D-

U2
SRV05-4

IO3
IO4

IO1
IO2

RX1 B10
RX1+ B11

TX1 A3
TX1+ A2

RX2 A10
RX2+ A11

TX2 B3
TX2+ B2

SBU1 A8
SBU2 B8

SHIELD

GND

S1

A1

C1
10u

3 VI   VO 2

1 GND

C2
10u

Measurements   MCU

Sheet: /Measurements/
File: Measurements.kicad_sch
Title:
Size: A3   Date:
KiCad E.D.A. kicad (6.0.9)
Rev:
Id: 2/3

+5V

Ref

U3
USEQGCDACH4100
V+ 3
REF 2
GAS 4
GND 1

+5V

C4
2u2

U5
TSV991ILT
OUT1

Gas

V-gas

R4
56k

C7
2u2

C8
3n3

R6
1Meg

+5V

C3
2u2

U4
TSV991ILT
OUT2

V-ref

R3
56k

C5
2u2

C6
3n3

R5
1Meg

R7
gain

C9
100n

R9
10k

R10
10k

R8
1Meg

Q1
Q_PJFET_DSG

U6
EC4-1000-H2
REFERENCE
SENSING
COUNTER

U7
TSV991ILT
OUT3

R11
10

REF

R12
10

+5V

C11
2u2

REF

U8
TSV991ILT

C10
100n

R13
10k

REF

+5V

C12
2u2

1.2 V, 0.1 A or 25 mW absolute max
but in practice under 0.7v

+5V

C13
2u2

R14
1k

R15
1k

R16
1k

U9
TSV991ILT

REF

U10
LM4040DBZ-2.0

C14
2u2

DANGER PINS
GPIO_3
GPIO_45
GPIO_46

U11
ESP32-S3-WROOM-1

Pin	Left signal		Right signal	Pin	Net

ESP_BOOT 27 GPIO0/BOOT
ESP_EN   3   EN

GPIO20/U1CTS/ADC2_CH9/CLK_OUT1/USB_D+ 14 D+
GPIO19/U1RTS/ADC2_CH8/CLK_OUT2/USB_D- 13 D-

GPIO_1   39 GPIO1/TOUCH1/ADC1_CH0
GPIO_2   38 GPIO2/TOUCH2/ADC1_CH1
GPIO_3   15 GPIO3/TOUCH3/ADC1_CH2
GPIO_4   4   GPIO4/TOUCH4/ADC1_CH3
GPIO_5   5   GPIO5/TOUCH5/ADC1_CH4
GPIO_6   6   GPIO6/TOUCH6/ADC1_CH5
GPIO_7   7   GPIO7/TOUCH7/ADC1_CH6
GPIO_8   12 GPIO8/TOUCH8/ADC1_CH7/SUBSPICS1
GPIO_9   17 GPIO9/TOUCH9/ADC1_CH8/FSPIHD/SUBSPIHD
GPIO_10 18 GPIO10/TOUCH10/ADC1_CH9/FSPICS0/FSPIIO4/SUBSPICS0
GPIO_11 19 GPIO11/TOUCH11/ADC2_CH0/FSPID/FSPIIO5/SUBSPID
GPIO_12 20 GPIO12/TOUCH12/ADC2_CH1/FSPICLK/FSPIIO6/SUBSPICLK
GPIO_13 21 GPIO13/TOUCH13/ADC2_CH2/FSPIQ/FSPIIO7/SUBSPIQ
GPIO_14 22 GPIO14/TOUCH14/ADC2_CH3/FSPIWP/FSPIDQS/SUBSPIWP
GPIO_15 8   GPIO15/U0RTS/ADC2_CH4/XTAL_32K_P
GPIO_16 9   GPIO16/U0CTS/ADC2_CH5/XTAL_32K_NH5
GPIO_17 10 GPIO17/U1TXD/ADC2_CH6
GPIO_18 11 GPIO18/U1RXD/ADC2_CH7/CLK_OUT3

U0TXD/GPIO43/CLK_OUT1 37 GPIO_43
U0RXD/GPIO44/CLK_OUT2 36 GPIO_44
GPIO21   23 GPIO_21
GPIO45   26 GPIO_45
GPIO46   16 GPIO_46
GPIO48/SPICLK_N/SUBSPICLK_N_DIFF 25 GPIO_48
GPIO47/SPICLK_P/SUBSPICLK_P_DIFF 24 GPIO_47

SPIIO6/GPIO35/FSPID/SUBSPID   28 GPIO_35
SPIIO7/GPIO36/FSPICLK/SUBSPICLK 29 GPIO_36
SPIDQS/GPIO37/FSPIQ/SUBSPIQ   30 GPIO_37
GPIO38/FSPIWP/SUBSPIWP   31 GPIO_38
MTCK/GPIO39/CLK_OUT3/SUBSPICS1   32 GPIO_39
MTDO/GPIO40/CLK_OUT2   33 GPIO_40
MTDI/GPIO41/CLK_OUT1   34 GPIO_41
MTMS/GPIO42   35 GPIO_42

+3V3

2 3V3   GND 1

ESP32-S3-WROOM-1

C15 C16 C17
10u 10u 100n

J2
Micro_SD_Card_Det

+3V3

DATA_2   1 DAT2
DATA_3   2 DAT3/CD
CMD   3 CMD
            4 VDD
CLK   5 CLK
            6 VSS
DATA_0   7 DAT0
DATA_1   8 DAT1
CARD_DETECT 10 DET_A
            9 DET_B
                              SHIELD 11

C18 C19
10u 100n

DATA_0   R17 10 GPIO_42
DATA_1   R18 10 GPIO_41
DATA_2   R19 10 GPIO_1
DATA_3   R20 10 GPIO_2
CMD   R21 10 GPIO_43
CLK   R22 10 GPIO_44
CARD_DETECT R30 10 GPIO_40

+3V3

R23   R24   R25   R26   R27   R28   R29
10k   10k   10k   10k   10k   10k   10k

DATA_0
DATA_1
DATA_2
DATA_3
CMD
CLK
CARD_DETECT