Sheet: history
File: history.sch

Sheet: USB and Power
File: usb_power.sch

CN1

17	SCL	I2C_SCL
16	SDA	I2C_SDA
15	AREF	
14	GND	GND
13	13	SPI_CLK
12	12	SPI_MISO
11	11/PWM	SPI_MOSI
10	10/PWM	SPI_CS_EXT
9	9/PWM	ARDUINO_9
8	8	ARDUINO_8
7	7	ARDUINO_7
6	6/PWM	ARDUINO_6
5	5/PWM	ARDUINO_5
4	4	DAC_2
3	3/PWM	DAC_1
2	2	ARDUINO_2
1	1/TX	EXT_TX
0	0/RX	EXT_RX

18	A5	ADC_5
19	A4	ADC_4
20	A3	ADC_3
21	A2	ADC_2
22	A1	ADC_1
23	A0	ADC_0 VCC

24	VIN	
25	GND	GND
26	GND	
27	5V	
28	3.3V	RESET
29	RESET	
30	IOREF	
31	nc	GND

ARDUINO

R11 0R

+3V3

RESET

+BATT

R20 330k
R21 330k
GND

RESET

Sw1
TAST_VER

Sw2
TAST_VER

GND

RESET

GND

BOOT

BOOT

GND

+3V3
R19 10k
R18 10k
+3V3

U5
ESP32_WROOM_32

39	P_GND	GND
38	GND	SPI_MOSI
37	IO23	I2C_SCL
36	IO22	TX
35	TXD0	RX
34	RXD0	I2C_SDA
33	IO21	
32	NC	SPI_MISO
31	IO19	SPI_CLK
30	IO18	SPI_CS_SD
29	IO5	EXT_TX
28	IO17	EXT_RX
27	IO16	SPI_CS_EXT
26	IO4	
25	IO0	

1	GND	
2	3V3	
3	EN	RESET
4	SENSOR_VP	ADC_4
5	SENSOR_VN	ADC_5
6	IO34	ADC_2
7	IO35	ADC_3
8	IO32	ADC_0
9	IO33	ADC_1
10	IO25	DAC_1
11	IO26	DAC_2
12	IO27	ARDUINO_2
13	IO14	ARDUINO_5
14	IO12	ARDUINO_6

24	IO2	ARDUINO_9
23	IO15	ARDUINO_8
22	SD1	
21	SD0	
20	CLK	
19	CMD	all used for onboard flash
18	SD3	
17	SD2	
16	GND	GND

TX
RX

GND

C11 100n
C10 10u
GND
+3V3

GND

+3V3
R8 10k
C9 100n
GND

RESET

U6
ATECC608BA

1	NC
2	NC
3	NC
7	NC

5	SDA
6	SCL
8	VCC
4	GND

I2C_SDA
I2C_SCL

+3V3
C13 100n
GND

CON1
Micro_SDCard

1	DAT2
2	CD/DAT3
3	CMD
4	VDD
5	CLK
6	VSS
7	DAT0
8	DAT1

+3V3
C8 100n
GND

GND

SPI_CS_SD_R
SPI_MOSI_R
SPI_CLK_R
SPI_MISO_R

R12 100R
R13 100R
R14 100R
R15 100R

SPI_CS_SD
SPI_MOSI
SPI_CLK
SPI_MISO

ARDUINO_2

R2 1k
D2 blue
GND

generationmake

Sheet: /
File: sensornator.sch

Title: Sensornator

| Size: A4 | Date: 2019-04-12 | Rev: 1.1 |
| KiCad E.D.A. kicad 5.0.2-bee76a070ubuntu18.04.1 | | Id: 1/3 |

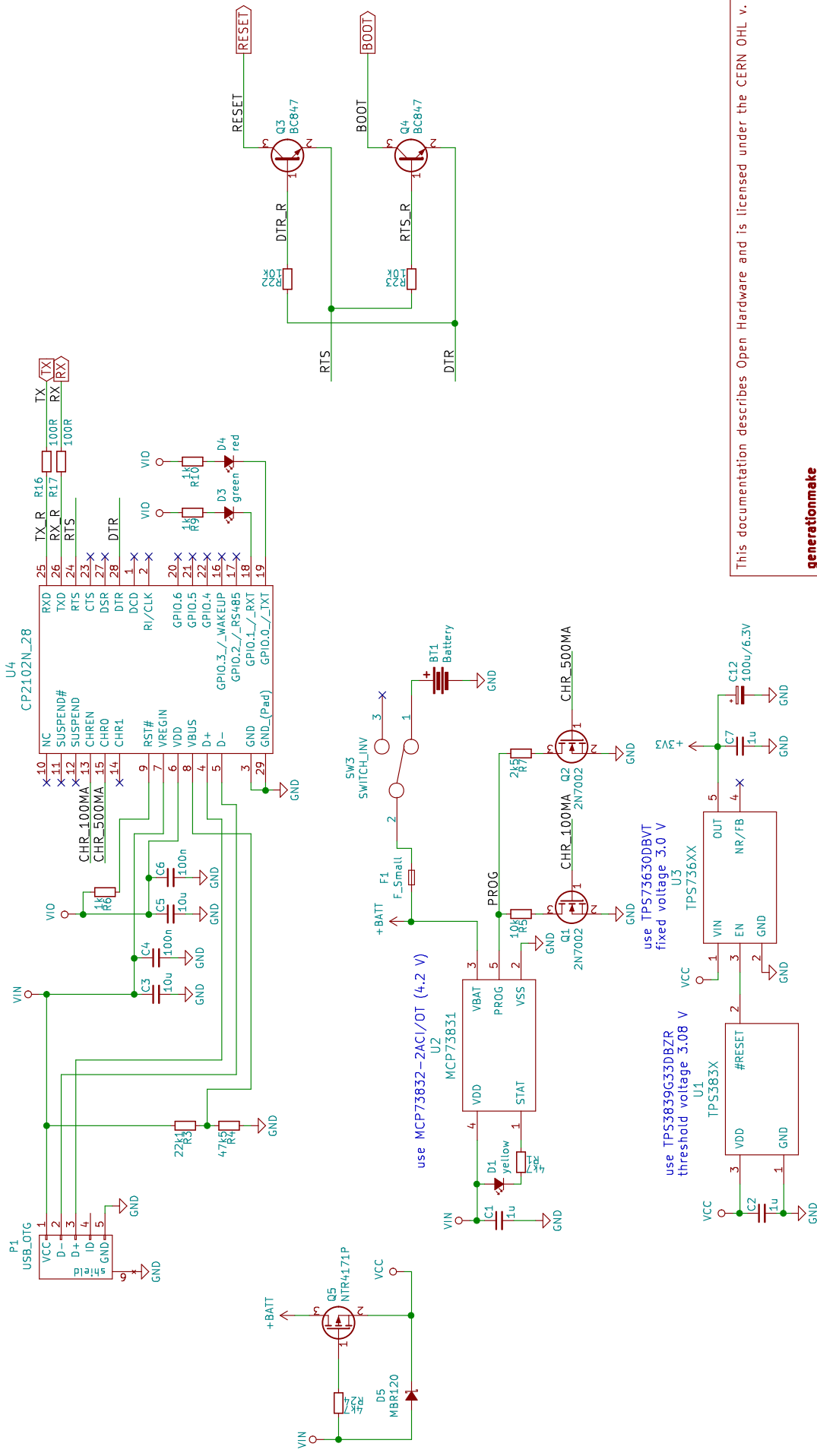| version	date	name	description
1.0	2018-12-12	Bernhard Mayer	initial release
1.1	2019-04-12	Bernhard Mayer	disconnected pin 4 of U3
	2019-04-12	Bernhard Mayer	added ESP32 reset circuit (Q3 and Q4)
	2019-04-12	Bernhard Mayer	changed micro SD card socket to push pull type
	2019-04-12	Bernhard Mayer	added polarized capacitor (C12) to stabilze 3.0 V rail
	2019-04-12	Bernhard Mayer	added switch (Sw3) to cut off battery
	2019-04-12	Bernhard Mayer	added ATECC608A (U6)
	2019-04-12	Bernhard Mayer	added USB battery power bypass circuit (Q5)

generationmake
Sheet: /history/
File: history.sch

Title: Sensornator

Size: A4 | Date: 2019-04-12
KiCad E.D.A. kicad 5.0.2-bee76a070ubuntu18.04.1

Rev: 1.1
Id: 2/3

RESET
BOOT

Q3 BC847
Q4 BC847

DTR_R
RTS_R

RTS
DTR

TX
RX

U4
CP2102N_28

RXD 25   TX_R R16 100R
TXD 26   RX_R R17 100R
RTS 23   RTS
CTS 27
DSR 28   DTR
DTR 1
DCD 2
RI/CLK 20   GPIO.6
GPIO.5 21
GPIO.4 22
16   VIO
17   R10 1k   D4 red
18   GPIO.3_/_WAKEUP   VIO   R9 1k   D3 green
19   GPIO.2_/_RS485
GPIO.1_/_RXT
GPIO.0_/_TXT

NC 10
SUSPEND# 11
SUSPEND 12
CHREN 13
CHR0 15
CHR1 14
RST# 9
VREGIN 7
VDD 6
VBUS 8
D+ 4
D- 5
GND 3
GND_(Pad) 29

CHR_100MA
CHR_500MA

VIO   R6 1k
C6 100n   GND
C5 10u   GND
C4 100n   GND
C3 10u   GND
VIN

R3 22k1
R4 47k5   GND

P1 USB_OTG
VCC 1
D- 2
D+ 3
ID 4
GND 5
shield 6   GND
GND

Q5 NTR4171P   VCC
R24 4k7   D5 MBR120
VIN   +BATT

SW3 SWITCH_INV
3
1
2
BT1 Battery +
GND

F1 F_Small
+BATT

PROG   R7 2k5
CHR_500MA Q2 2N7002   GND
CHR_100MA Q1 2N7002   GND
R5 10k   GND

U2 MCP73831
use MCP73832-2ACI/OT (4.2 V)
VBAT 3
PROG 5
VSS 2
VDD 4
STAT 1
D1 yellow   R11 4k7
C1 1u   GND
VIN

U3 TPS736XX
use TPS73630DBVT
fixed voltage 3.0 V
VIN 1
EN 3
GND 2
OUT 5
NR/FB 4
VCC   +3V3
C7 1u   C12 100u/6.3V   GND
GND

U1 TPS383X
use TPS3839G33DBZR
threshold voltage 3.08 V
VDD 3
GND 1
#RESET 2
VCC   C2 1u   GND