USB-C CONNECTOR

J1
SS-52400-002

A1	GNDA1	GNDB1	B1
A2	SSTXP1	SSTXP2	B2
A3	SSTXN1	SSTXN2	B3
A4	VBUSA1	VBUSB1	B4
A5	CC1	CC2	B5
A6	DP1	DP2	B6
A7	DN1	DN2	B7
A8	SBU1	SBU2	B8
A9	VBUSA2	VBUSB2	B9
A10	SSRXN2	SSRXN1	B10
A11	SSRXP2	SSRXP1	B11
A12	GNDA2	GNDB2	B12
		GND/SHIELD	G1

GND

R4
5k1
VBUS

USB_DP
USB_DN

VBUS

C1
0.1u

GND

GND

PWR_FLAG

VBUS

R3
5k1

GND

GND

F1
0ZCH0110AF2E
1   2

+5V_USB

USB-C allows for reversible cable insertion.
Both pairs of data pins (DP1,DN1 and DP2,DN2)
are electrically identical but phisically
flipped depending on the cable orientation.

CP2102 only supports USB 2.0
communication via D+ and D-.
so it does not require the
USB 3.x pins.

LIPO BATTERY CHARGER

PWR_FLAG   +5V_USB

C2
0.1u

GND

U1
MCP73871

18	IN	OUT	1	+5V
2	VPCC		
3	SEL	VBAT	14	VBAT
13	PROG1	VBAT_SENSE	16
4	PROG2		
12	PROG3	PG	6
5	THERM	STAT1/LBO	8
9	TE	STAT2	7
17	CE		
10	Vss		

+5V_USB

R5
2K

R6
20K

R2
10K

R1
10K

+5V_USB

GND   PWR_FLAG   GND   +5V_USB   GND

R7
470

R8
470

R9
470

LED3
BLUE

LED1
GREEN

LED2
RED

CHARGED

CHARGING_PWR_GOOD   CHARGING

+5V_USB

LDO VOLTAGE REGULATOR

+5V

VR1
LM1117MPX-3.3_NOPB

+3.3V

C3
0.1u

C4
10u

3	VIN	VOUT_2	2
		VOUT_4	4
		GND	1

C6
10u

C5
0.1u

GND   GND   GND

BATTERY CONNECTOR

J2
B2B-PH-SM4-TB

2   VBAT
1

GND

POWER INDICATOR

+3.3V

POWER
LED4

2   1

PWR_LED   R10
470

GND

ESP32-C3-02

USB_DN   USB_DN
USB_DP   USB_DP
VBUS   VBUS

File: ESP32-C3-02.kicad_sch

USB TO UART BRIDGE MODULE

+3.3V

4F7u C9
0.1u C8
GND

R13 1K

VBUS
R11 22k1
R12 47k5
C7 1u
GND

USB_D−
USB_D+

U4
USBLC6−2SC6
VBUSD
USB_DND
USB_DPD
GND

U3
CP2102N−Axx−xQFN20
9 RST
7 VREGIN
6 VDD
18 TXD / TX_RX
17 RXD / RX_TX
16 RTS / RTS
15 CTS / DTR
8 VBUS
5 D−
4 D+
13 WAKEUP
14 SUSPEND
11 SUSPEND
2 CLK/GPIO.0
1 RS485/GPIO.1
20 TXT/GPIO.2
19 RXT/GPIO.3
3 GND
GND

R15 470
R14 470

LED6 RED
LED5 GREEN
+3.3V

TP1
Test MOSI_DI — MOSI_DI
TP2
Test MISO_DO — MISO_DO
TP3
Test SCLK — SCLK
TP4
Test CS_SD — CS_SD
TP5
Test CS — CS

ESP32 MODULE

+3.3V
C11 C10
0.1u 10u
GND

U2
ESP32−C3−WROOM−02−H4
2 EN
18 IO0 / CS_SD
17 IO1 / PHOTO_C
16 IO2 / MISO_DO
15 IO3 / SCL
3 IO4 / SDA
5 IO5 / MIC_OUT
6 IO6 / SCLK
1 3V3
7 IO7 / MOSI_DI
8 IO8 / GPIO8
9 IO9 / BOOT
10 IO10 / CS
13 IO18 / GPIO18
14 IO19 / GPIO19
12 TXD / RX_TX
11 RXD / TX_RX
GND

R17 50
R16 50
GND

FLASH MEMORY

+3.3V
U5
W25Q32JVSSIQ
1 CS / CS
6 SCLK / CLK
7 HOLD/RESET(IO3)
5 DI(IO0) / MOSI_DI
2 DO(IO1) / MISO_DO
3 WP(IO2)
8 VCC
4 GND
R20 50
C14 0.1u
GND

SENSORS

PHOTO_C — PHOTO_C
SDA — SDA
SCL — SCL
MIC_OUT — MIC_OUT

File: SENSORS.kicad_sch

USER INTERFACE

SDA — SDA
SCL — SCL
GPIO18 — GPIO18
GPIO19 — GPIO19
GPIO8 — GPIO8
EN — EN
BOOT — BOOT
DTR — DTR
RTS — RTS

File: USER_INTERFACE.kicad_sch

SD CARD MODULE

+3.3V
J3
GSD090012SEU
2 CMD / MOSI_DI
5 CLK / SCLK
CD_IND
WP
4 VDD1
7 DAT0
8 DAT1
9 DAT2
1 CD/DAT3
SHIELD_GND
3 VSS1
6 VSS2
R19 50 — MISO_DO
+3.3V
CS_SD
R18 10K
GND
C13 C12
10u 0.1u
GND

SPI DEVICE

BME280 TEMPERATURE SENSOR

C15
0.1U

+3.3V

GND

U6
BME280

6 VDDIO
8 VDD
5 SDO
4 SCK
3 SDI
2 CSB

1 GND
7 GND

GND

GND

+3.3V

R21
4K7

R22
4K7

SCL

SDA

AMBIENT LIGHT SENSOR

+3.3V

Q1
TEMT6000X01

R23
R

1   3

GND

PHOTO_C
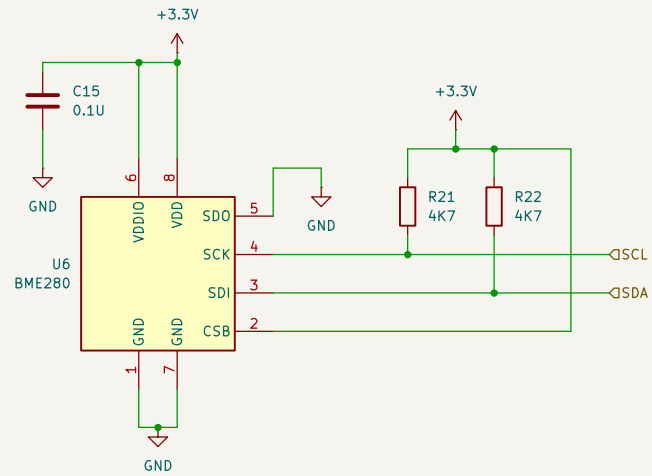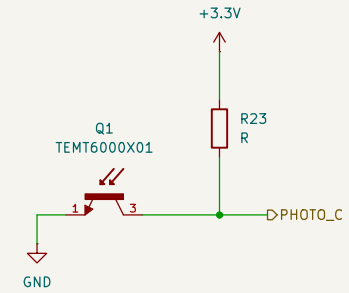
PREAMPLIFIER AND MICROPHONE

+3.3V

R28
1M

R29
1M

R26
1M

C18
0.1U

GND

MK1
CMC-5042PF-AC

OUT

GND

C22
10n

R27
1M

R25
10K

C21
1u

GND

U7
MAX4466EXK

1 IN+
3 IN−

5 VCC
4 OUT
2 GND

R24
100K

C17
0.1U

+3.3V

C16
0.1U

GND

MIC_OUT
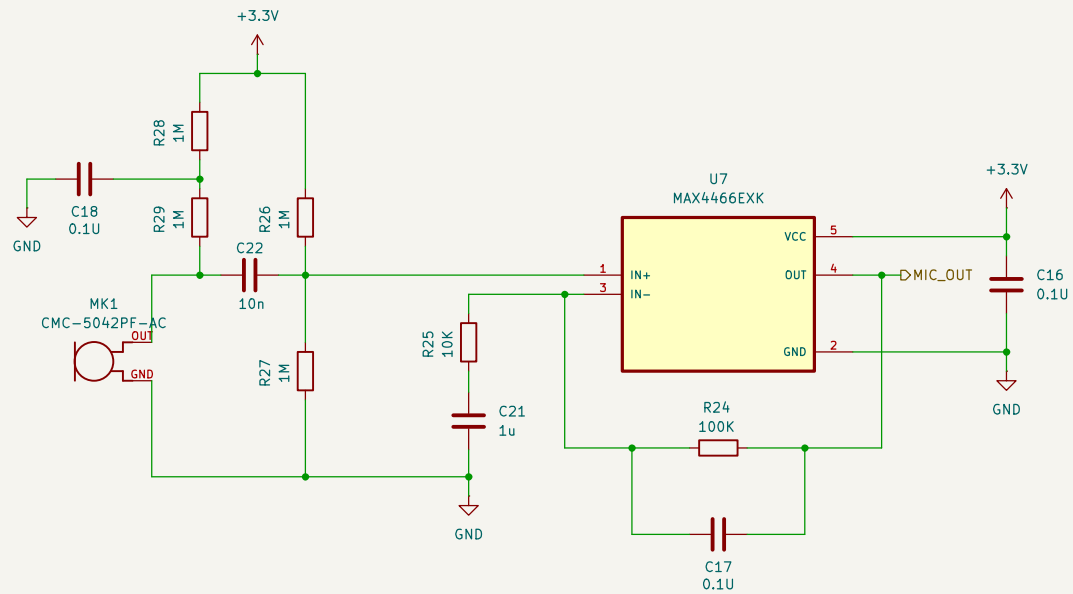
OLED DISPLAY/I2C BREAKOUT

+3.3V

J4
Conn_01x04_Pin
1
SDA 2
SCL 3
4

GND

GPIO BREAKOUT

+3.3V

J5
Conn_01x05_Pin
1
GPIO8 2
GPIO18 3
GPIO19 4
5

GND

BOOT AND RESET

S1
BOOT

1 T1 T2 2
3 T3 T4 4

BOOTD

GND

C19
0.1u

debouncing

GND

+3.3V

R32
10K

S2
RESET

1 T1 T2 2
3 T3 T4 4

GND

EN

C20
0.1u

debouncing

GND

R30
10K

Q2
BC817

EN

DTR

R31
10K

Q3
BC817

RTS
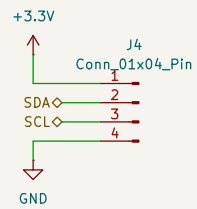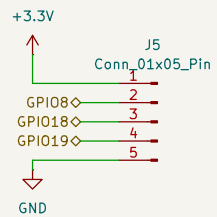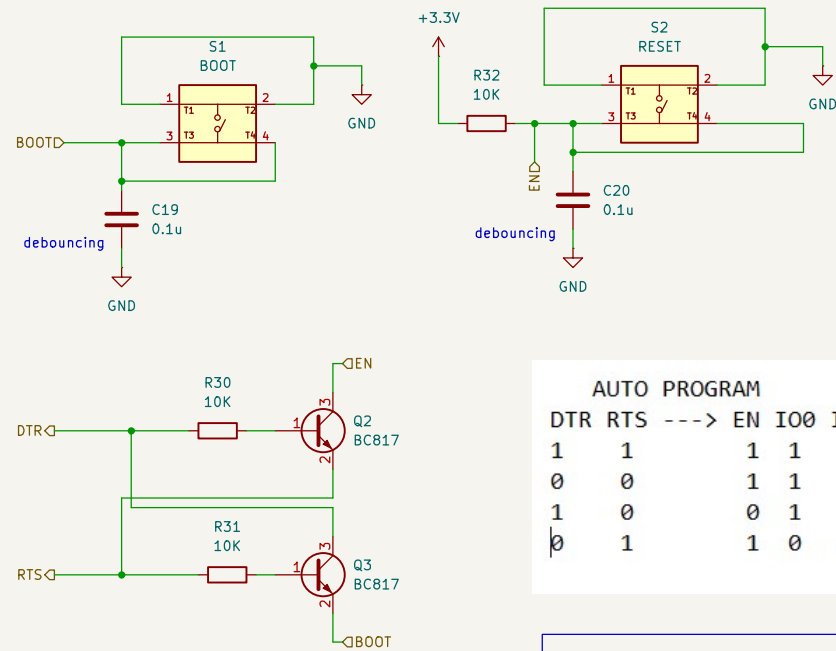
BOOT

```
     AUTO PROGRAM
DTR RTS ---> EN IO0 IO2
 1   1       1   1   1
 0   0       1   1   1
 1   0       0   1   1
 0   1       1   0   0
```

more about the boot mode of ESP32
go to texplo.re/esp32boot