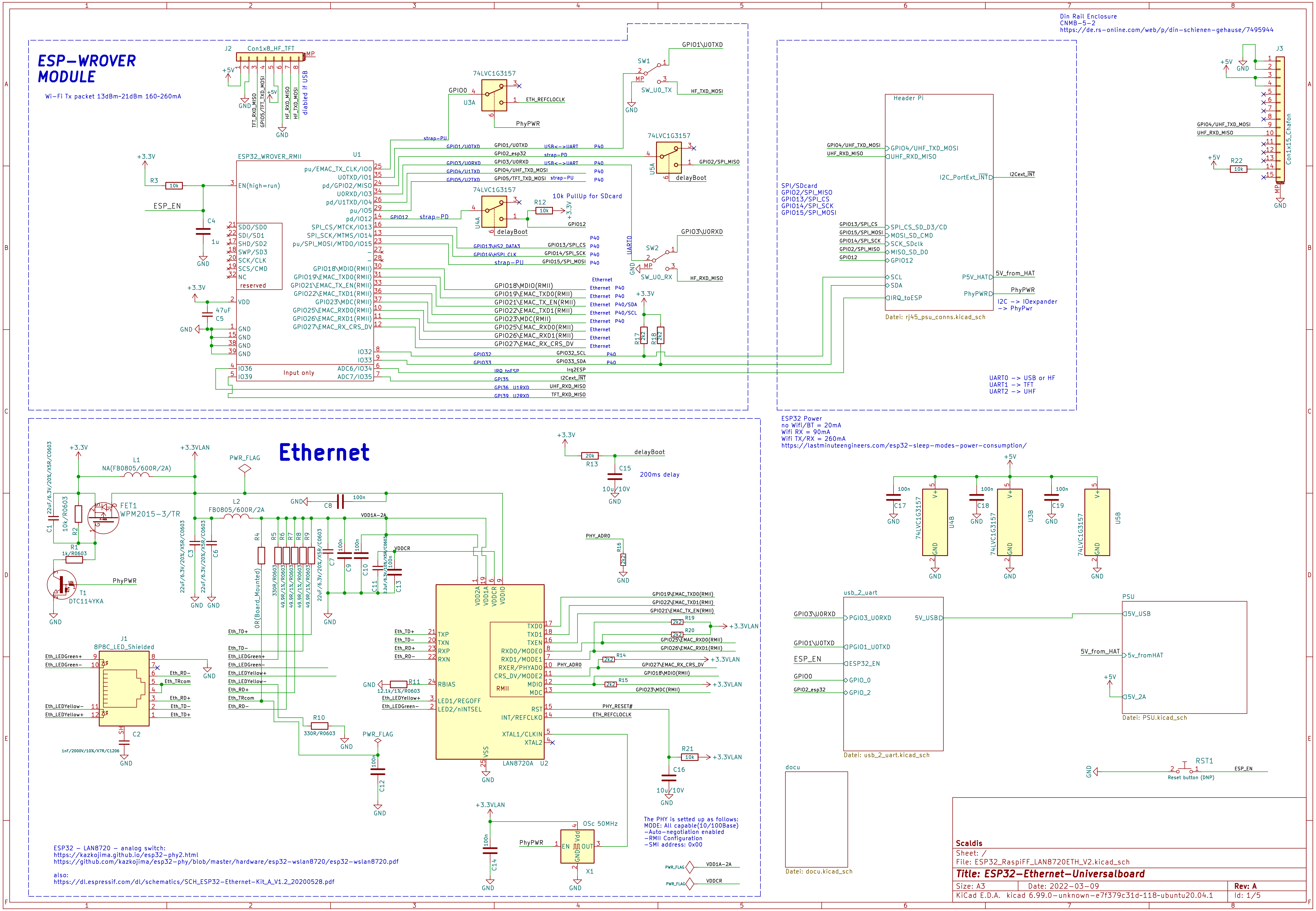
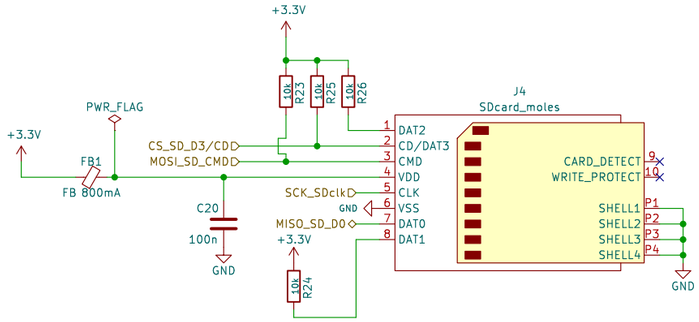
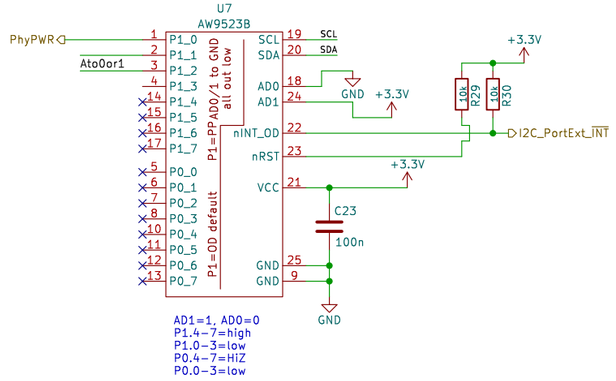
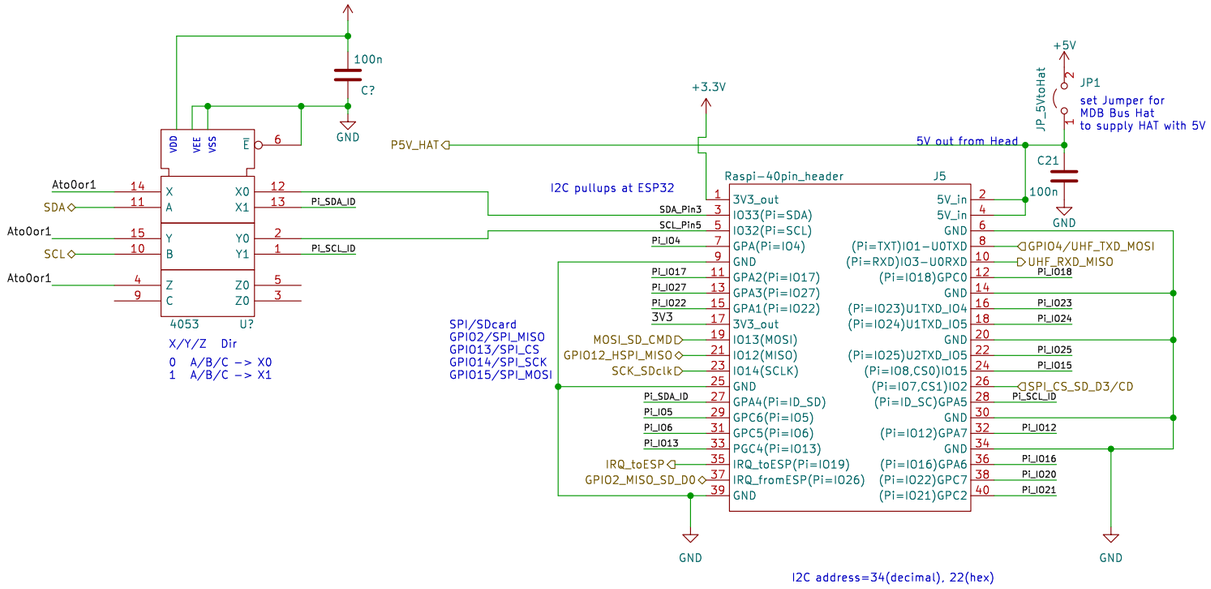
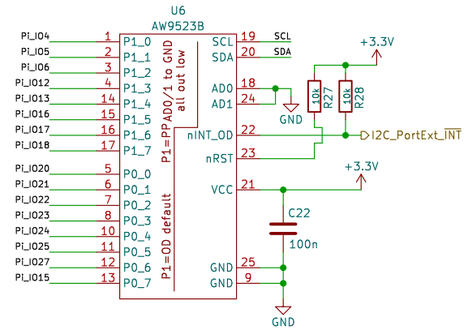

ESP-WROVER MODULE
Wi-Fi Tx packet 13dBm~21dBm 160~260mA
J2 Con1x8_HF_TFT
diabled if USB
ESP32_WROVER_RMII U1
74LVC1G3157
10k PullUp for SDcard
SW_U0_TX
SW_U0_RX
Ethernet
Din Rail Enclosure
CNMB-5-2
https://de.rs-online.com/web/p/din-schienen-gehause/7495944
J3 Con1x15_Chafon
Header Pi
SPI/SDcard
GPIO2/SPI_MISO
GPIO13/SPI_CS
GPIO14/SPI_SCK
GPIO15/SPI_MOSI
I2C -> IOexpander
-> PhyPwr
Datei: rj45_psu_conns.kicad_sch
UART0 -> USB or HF
UART1 -> TFT
UART2 -> UHF
ESP32 Power
no Wifi/BT = 20mA
Wifi RX = 90mA
Wifi TX/RX = 260mA
https://lastminuteengineers.com/esp32-sleep-modes-power-consumption/
200ms delay
LAN8720A U2
OSc 50MHz
The PHY is setted up as follows:
MODE: All capable(10/100Base)
-Auto-negotiation enabled
-RMII Configuration
-SMI address: 0x00
usb_2_uart
Datei: usb_2_uart.kicad_sch
PSU
Datei: PSU.kicad_sch
docu
Datei: docu.kicad_sch
RST1
Reset button (DNP)
ESP32 - LAN8720 - analog switch:
https://kazkojima.github.io/esp32-phy2.html
https://github.com/kazkojima/esp32-phy/blob/master/hardware/esp32-wslan8720/esp32-wslan8720.pdf
also:
https://dl.espressif.com/dl/schematics/SCH_ESP32-Ethernet-Kit_A_V1.2_20200528.pdf
Scaldis
Sheet: /
File: ESP32_RaspiFF_LAN8720ETH_V2.kicad_sch
Title: ESP32-Ethernet-Universalboard
Size: A3
Date: 2022-03-09
Rev: A
KiCad E.D.A. kicad 6.99.0-unknown-e7f379c31d~118~ubuntu20.04.1
Id: 1/5









40 pin male Header
on ESP32 board

Scaldis		
Sheet: /Header Pi/		
File: rj45_psu_conns.kicad_sch		
Title: ESP32-Eternet-UniBoard		
Size: A3	Date: 2021-07-03	**Rev: A**
KiCad E.D.A. kicad 6.99.0-unknown-e7f379c31d-118-ubuntu20.04.1		Id: 2/5

Software Selectable Pins

Interface	Signal	Pin
EMAC	EMAC_MDC_out EMAC_MDI_in EMAC_MDO_out EMAC_CRS_out EMAC_COL_out	Any GPIO
I2C	I2CEXT0_SCL_in I2CEXT0_SDA_in I2CEXT1_SCL_in I2CEXT1_SDA_in I2CEXT0_SCL_out I2CEXT0_SDA_out I2CEXT1_SCL_out I2CEXT1_SDA_out	Any GPIO
General Purpose SPI	HSPIQ_in/_out HSPID_in/_out HSPICLK_in/_out HSPI_CS0_in/_out HSPI_CS1_out HSPI_CS2_out VSPIQ_in/_out VSPID_in/_out VSPICLK_in/_out VSPI_CS0_in/_out VSPI_CS1_out VSPI_CS2_out	Any GPIO

For more information refer to esp_wroom_32_datasheet_en.pdf.

Bootstrapping Pins Settings

Voltage of Internal LDO(VDD_SDIO)

Pin	Default	3.3V	1.8V
GPIO12/MTDI	Pull-Down	0	1

Booting Mode

Pin	Default	SPI Flash Boot	Download Boot
GPIO0	Pull-Up	1	0
GPIO2/HS2_D0	Pull-Down	Don't-care	0

Debugging Log on U0TXD During Booting

Pin	Default	U0TXD Toggling	U0TXD Silent
GPIO15/MTDO	Pull-Up	1	0

Timing of SDIO Slave

Pin	Default	Falling-edge:Output	Falling-edge:Input Rising-edge:Output	Rising-edge:Input Falling-edge:Output	Rising-edge:Input Rising-edge:Output
GPIO15/MTDO	Pull-Up	0	0	1	1
GPIO5/SPI_CS	Pull-Up	0	1	0	1

Internal Bootstrapping Resistors

MTDI/GPIO12:	Pull-Down
GPIO0:	Pull-Up
GPIO2:	Pull-Down
GPIO4:	Pull-Down
MTDO/GPIO15:	Pull-Up
GPIO5\PHY_PWR:	Pull-Up

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		21	22	23	25	26	27	32	33	34	35	36	39
Ethernet						x													x	x	x		x	x	x	x	x	x						
UART_0			x		x																												
UART_1																x																	x
UART_2																														x		x	
I2C0																													x	x		x	
RaspiExt		x	x	x	x	x							x	x	x	x			x	x		x	x	x				x	x	x			
FLASH							x	x	x	x	x																						

Ethernet, Uart 0,1,2, I2C, GPIO 12, 13, 14, 15, 16, 34, GPI 35, 36, 39

RasPi full, I2C, Uart 0,1,2

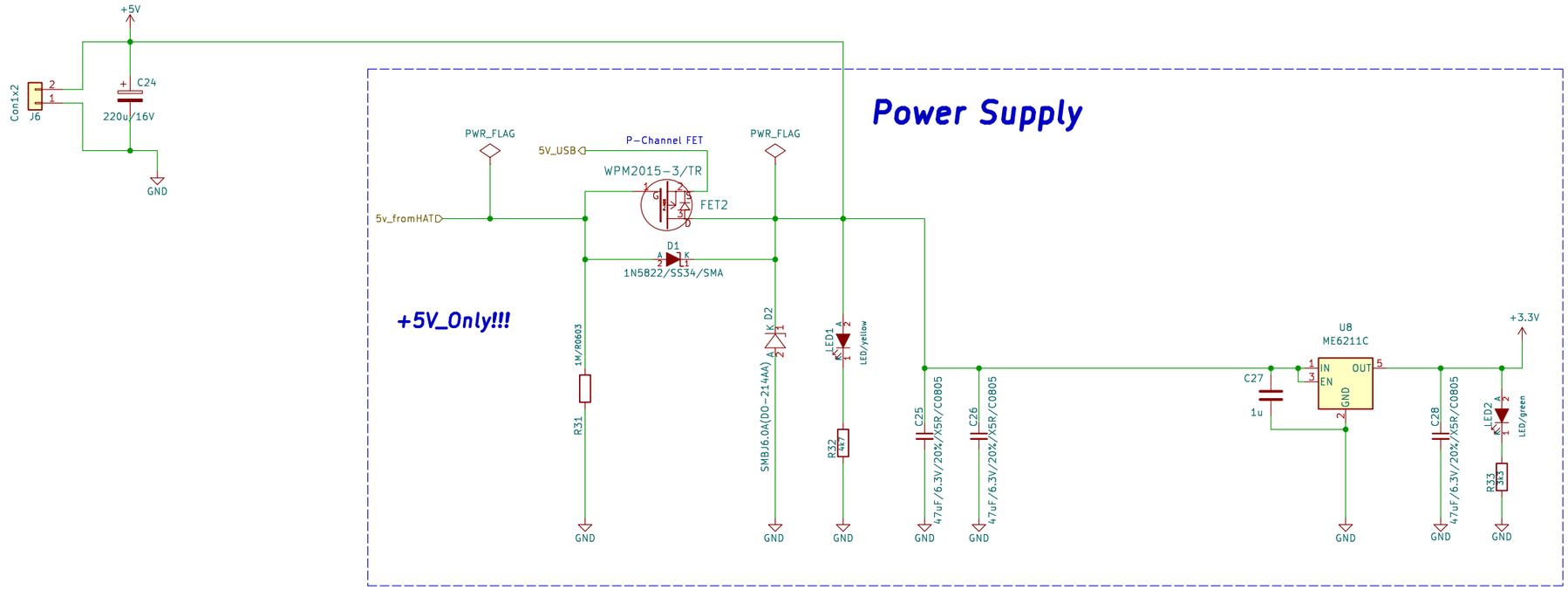
2 x UART(4 pin)
1 x RS485(4 pin)
1 x I2C (2 pin)
1 x LED (1 pin)
1 x BTN (1 pin)

Scaladis

Sheet: /docu/
File: docu.kicad_sch

Title: ESP32 uniBoard docu

Size: A3	Date: 2021-08-16	**Rev: A**
KiCad E.D.A. kicad 6.99.0-unknown-e7f379c31d-118~ubuntu20.04.1		Id: 3/5



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Size: A3	Date:	**Rev:**
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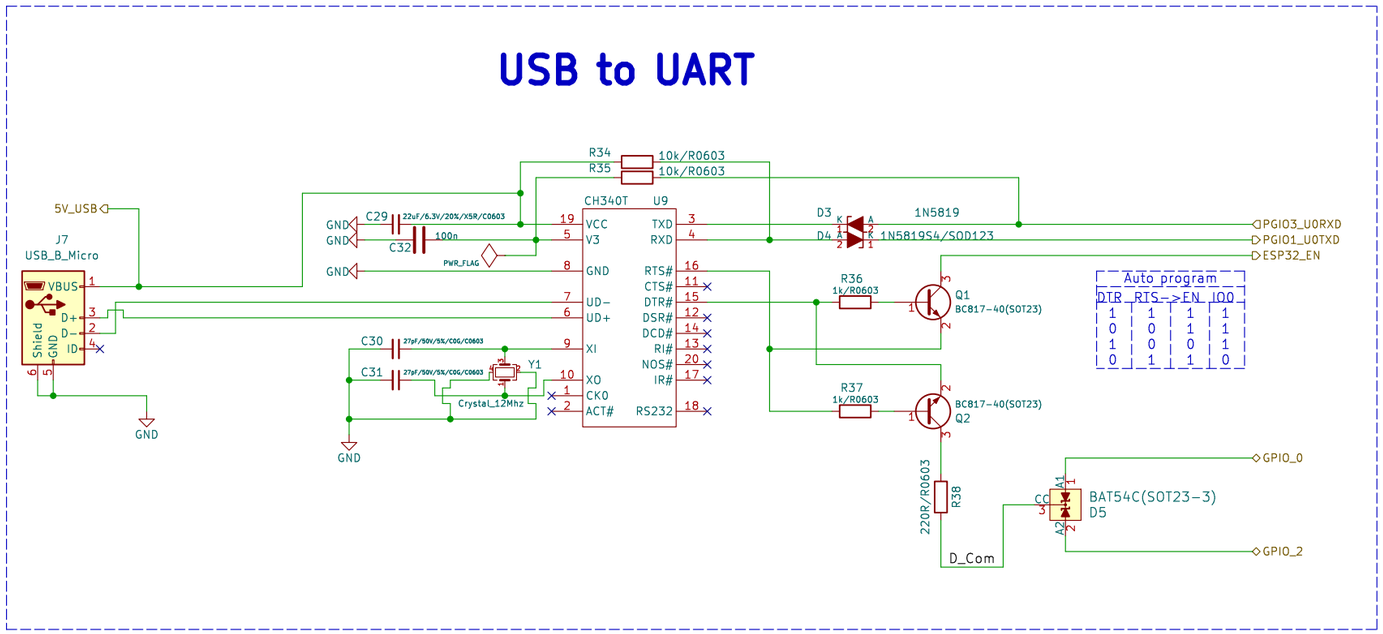
USB to UART



J8
ToolingHole

J9
ToolingHole

J10
ToolingHole

Mounting Holes

MH1
MountingHole

MH2
MountingHole

MH3
MountingHole

MH4
MountingHole

Sheet: /usb_2_uart/
File: usb_2_uart.kicad_sch

Title:

Size: A3	Date:	**Rev:**
KiCad E.D.A. kicad 6.99.0-unknown-e7f379c31d-118~ubuntu20.04.1		Id: 5/5