TODO:
- [ok] fix button siwtch pins, center to boot0 pin
- [ok] fix usb host crystal footprint
- [ok] fix sd detect pins
- [ok] change screen size to larger screen (dual footprint perhaps? not yet)
- [ok] add choice resistor for U.Fl connector or SMD Antenna
- [ok] add missing battery switch charge diode
- change battery connector to vertical (smt?) type [pico blade?]
- [ok] change reset/boot buttons to side mounted

POWER

File: power.kicad_sch

ESP32-S3

File: mcu.kicad_sch

INPUT

File: input.kicad_sch

Display

TODO:
Replace with Larger TFT Display,
1.14" -> 1.44" [DONE]

File: Display.kicad_sch

STORAGE

File: storage.kicad_sch

HostUSB

File: hostUSB.kicad_sch

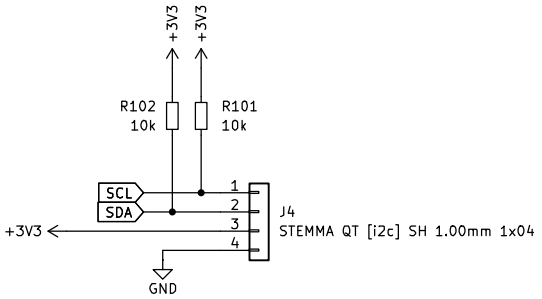
SPEAKER + MIC

File: speaker.kicad_sch

RTC

TBD

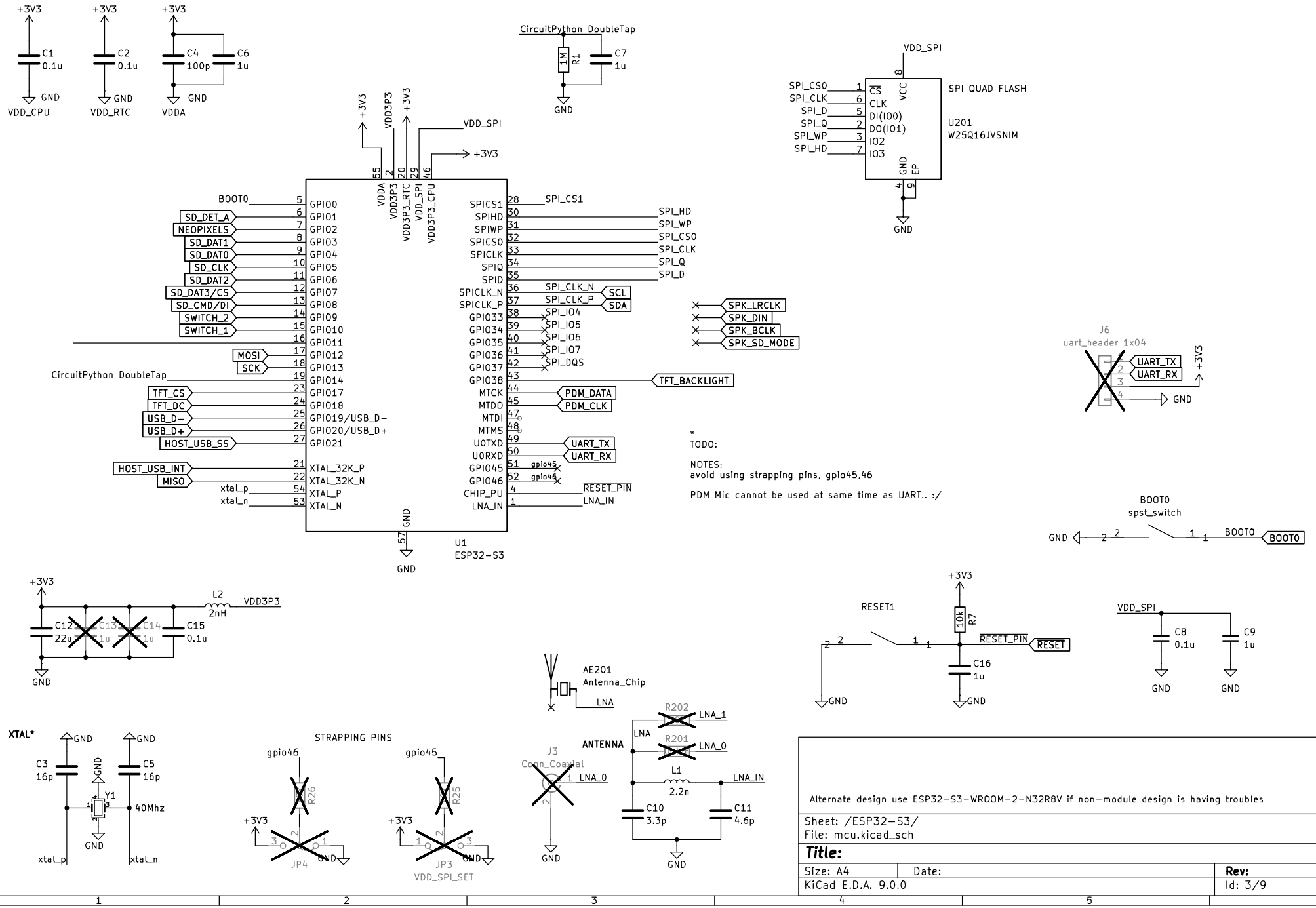
File: rtc.kicad_sch

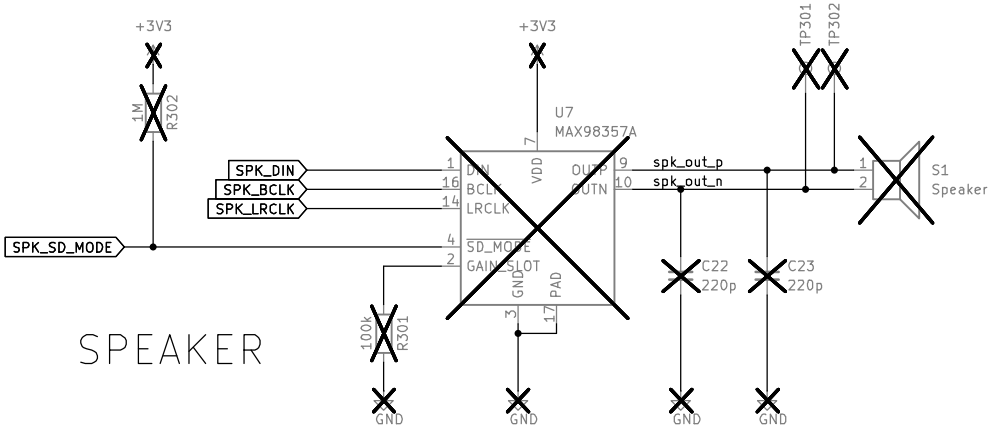


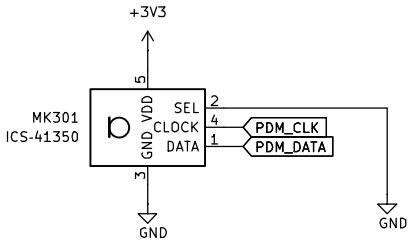
Sheet: /
File: DN_Key_Pro_v0_slim.kicad_sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 1/9


+3V3
C1
0.1u
GND
VDD_CPU
+3V3
C2
0.1u
GND
VDD_RTC
+3V3
C4
100p
C6
1u
GND
VDDA
CircuitPython DoubleTap
1M
R1
C7
1u
GND
VDD_SPI
SPI_CS0
SPI_CLK
SPI_D
SPI_Q
SPI_WP
SPI_HD
CS
CLK
DI(IO0)
DO(IO1)
IO2
IO3
VCC
GND
EP
SPI QUAD FLASH
U201
W25Q16JVSNIM
GND
+3V3
VDD3P3
+3V3
VDD_SPI
+3V3
VDDA
VDD3P3
VDD3P3_RTC
VDD_SPI
VDD3P3_CPU
BOOT0
SD_DET_A
NEOPIXELS
SD_DAT1
SD_DAT0
SD_CLK
SD_DAT2
SD_DAT3/CS
SD_CMD/DI
SWITCH_2
SWITCH_1
MOSI
SCK
CircuitPython DoubleTap
TFT_CS
TFT_DC
USB_D-
USB_D+
HOST_USB_SS
HOST_USB_INT
MISO
xtal_p
xtal_n
GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GPIO12
GPIO13
GPIO14
GPIO17
GPIO18
GPIO19/USB_D-
GPIO20/USB_D+
GPIO21
XTAL_32K_P
XTAL_32K_N
XTAL_P
XTAL_N
SPICS1
SPIHD
SPIWP
SPICS0
SPICLK
SPIQ
SPID
SPICLK_N
SPICLK_P
GPIO33
GPIO34
GPIO35
GPIO36
GPIO37
GPIO38
MTCK
MTDO
MTDI
MTMS
U0TXD
U0RXD
GPIO45
GPIO46
CHIP_PU
LNA_IN
SPI_CS1
SPI_HD
SPI_WP
SPI_CS0
SPI_CLK
SPI_Q
SPI_D
SPI_CLK_N
SPI_CLK_P
SPI_IO4
SPI_IO5
SPI_IO6
SPI_IO7
SPI_DQS
SCL
SDA
TFT_BACKLIGHT
PDM_DATA
PDM_CLK
UART_TX
UART_RX
gpio45
gpio46
RESET_PIN
LNA_IN
GND
U1
ESP32-S3
SPK_LRCLK
SPK_DIN
SPK_BCLK
SPK_SD_MODE
J6
uart_header 1x04
UART_TX
UART_RX
+3V3
GND
*
TODO:
NOTES:
avoid using strapping pins, gpio45,46
PDM Mic cannot be used at same time as UART.. :/
BOOT0
spst_switch
GND
BOOT0
BOOT0
+3V3
L2
2nH
VDD3P3
C12
22u
C13
1u
C14
1u
C15
0.1u
GND
RESET1
10K
R7
RESET_PIN
RESET
C16
1u
GND
GND
VDD_SPI
C8
0.1u
C9
1u
GND
GND
AE201
Antenna_Chip
LNA
R202
LNA_1
LNA
ANTENNA
R201
LNA_0
J3
Conn_Coaxial
LNA_0
L1
2.2n
LNA_IN
C10
3.3p
C11
4.6p
GND
GND
XTAL*
GND
GND
C3
16p
GND
C5
16p
Y1
40Mhz
GND
xtal_p
xtal_n
STRAPPING PINS
gpio46
R26
+3V3
JP4
GND
gpio45
R25
+3V3
JP3
GND
VDD_SPI_SET
Alternate design use ESP32-S3-WROOM-2-N32R8V if non-module design is having troubles
Sheet: /ESP32-S3/
File: mcu.kicad_sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. 9.0.0
Id: 3/9





MIC (PDM for CircuitPython)

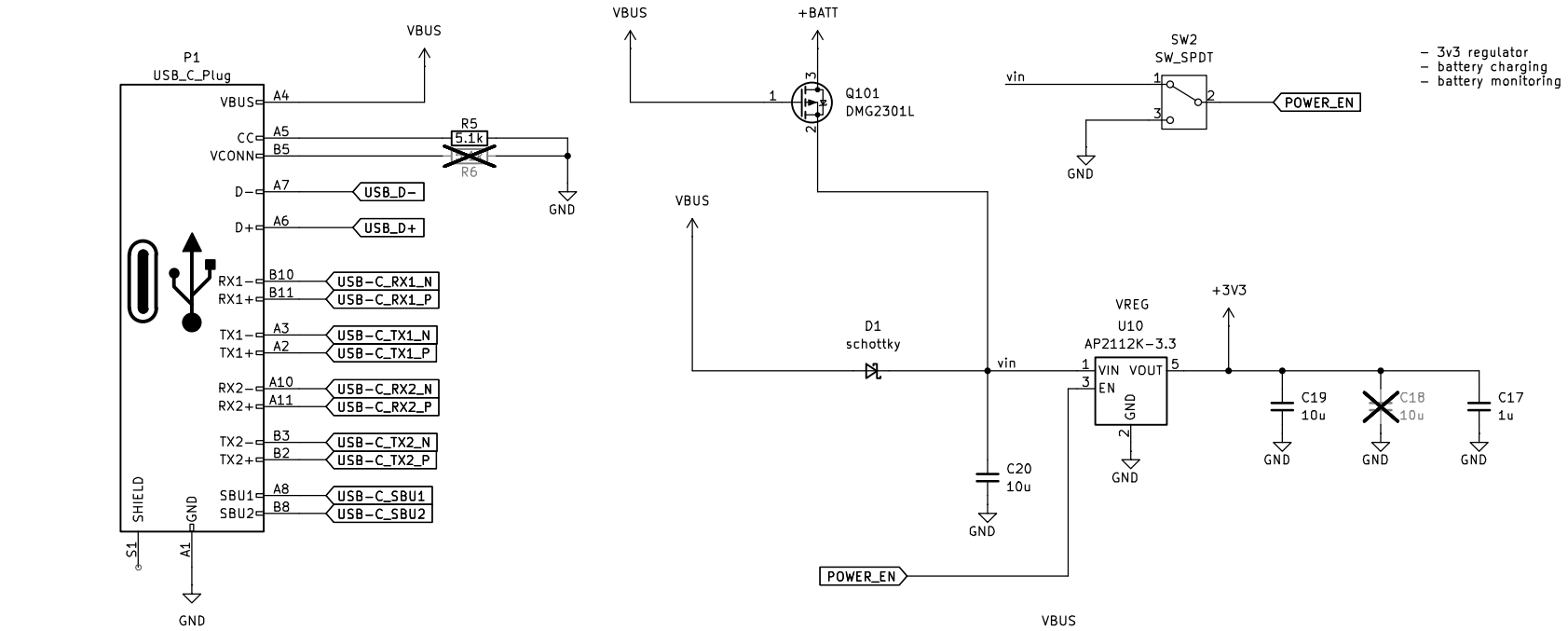
Pin Description

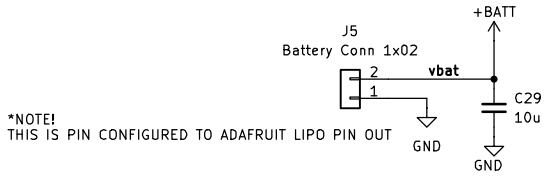
PIN		NAME	FUNCTION
WLP	TQFN		
A1	4	$\overline{SD_MODE}$	Shutdown and Channel Select. Pull $\overline{SD_MODE}$ low to place the device in shutdown. In I²S or LJ mode, $\overline{SD_MODE}$ selects the data channel (Table 5). In TDM mode, $\overline{SD_MODE}$ and GAIN_SLOT are both used for channel selection (Table 7).
A2	7, 8	V_{DD}	Power-Supply Input
A3	9	OUTP	Positive Speaker Amplifier Output
B1	1	DIN	Digital Input Signal
B2	2	GAIN_ SLOT	Gain and Channel Selection. In I²S and LJ mode determines amplifier output gain (Table 8) In TDM mode, used for channel selection with $\overline{SD_MODE}$ (Table 7). In TDM mode, gain is fixed at 12dB.
B3	10	OUTN	Negative Speaker Amplifier Output
C1	16	BCLK	Bit Clock Input
C2	3, 11, 15	GND	Ground
C3	14	LRCLK	Frame Clock. Left/right clock for I²S and LJ mode. Sync clock for TDM mode.
—	5, 6, 12, 13	N.C.	No Connection
—	—	EP	Exposed Pad. The exposed pad is not internally connected. Connect the exposed page to a solid ground plane for thermal dissipation.

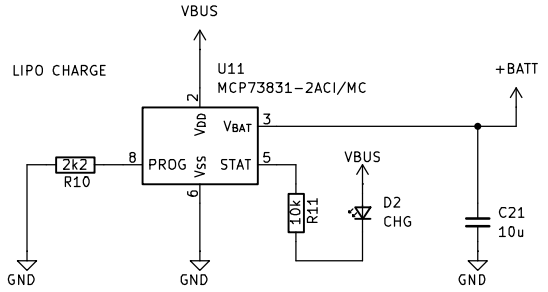
Sheet: /SPEAKER + MIC/
File: speaker.kicad_sch

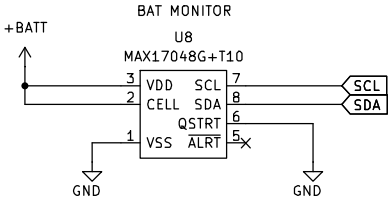
Title:

Size: A4 | Date: | **Rev:**
KiCad E.D.A. 9.0.0 | Id: 3/9

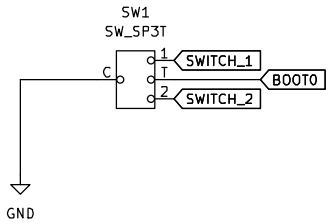




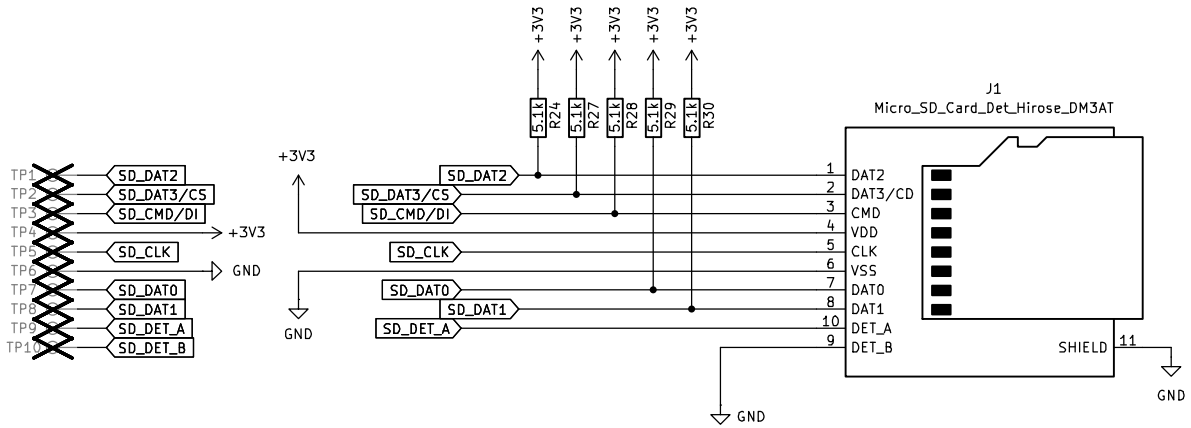




Sheet: /POWER/		
File: power.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 4/9



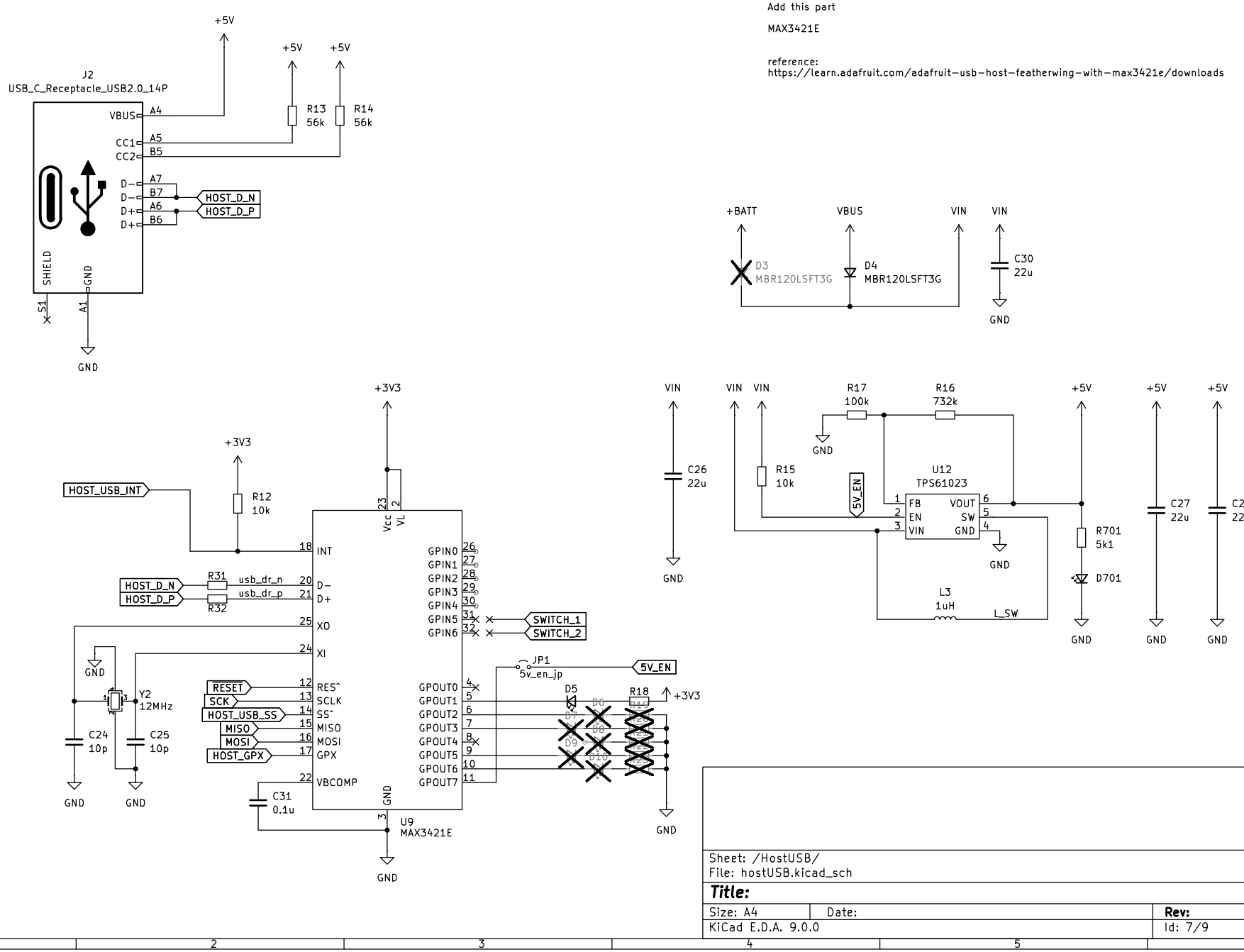
Sheet: /INPUT/		
File: input.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 5/9



Note:
SD DET_A and DET_B are to complete a circuit like two poles of a switch.
Connect DET_B to GND
Connect DET_A to GPIO as input with pullup.

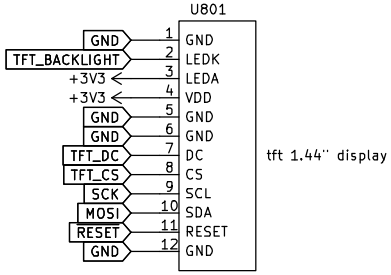
For SPI Only:
pin2 = CS [dat3/cd]
pin3 = DI [cmd]
pin4 = VDD
pin5 = SCLK [clk]
pin6 = VSS
pin7 = DO [d0]

Sheet: /STORAGE/ File: storage.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 6/9

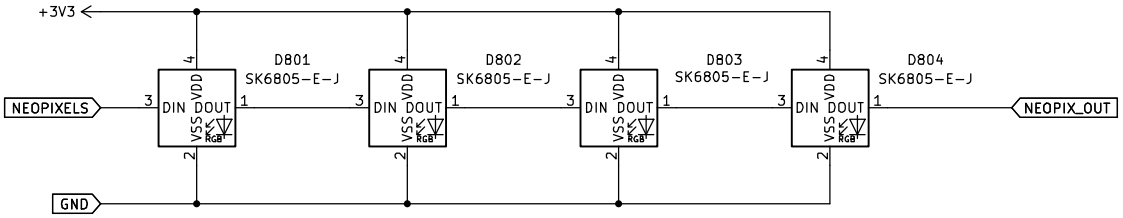


Sheet: /HostUSB/		
File: hostUSB.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 7/9

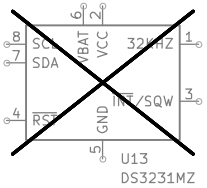
1.47" TFT Display
SPI 320 x 172



Four corner LEDs



Sheet: /Display/		
File: Display.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 8/9



Sheet: /RTC/ File: rtc.kicad_sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. 9.0.0		Id: 9/9