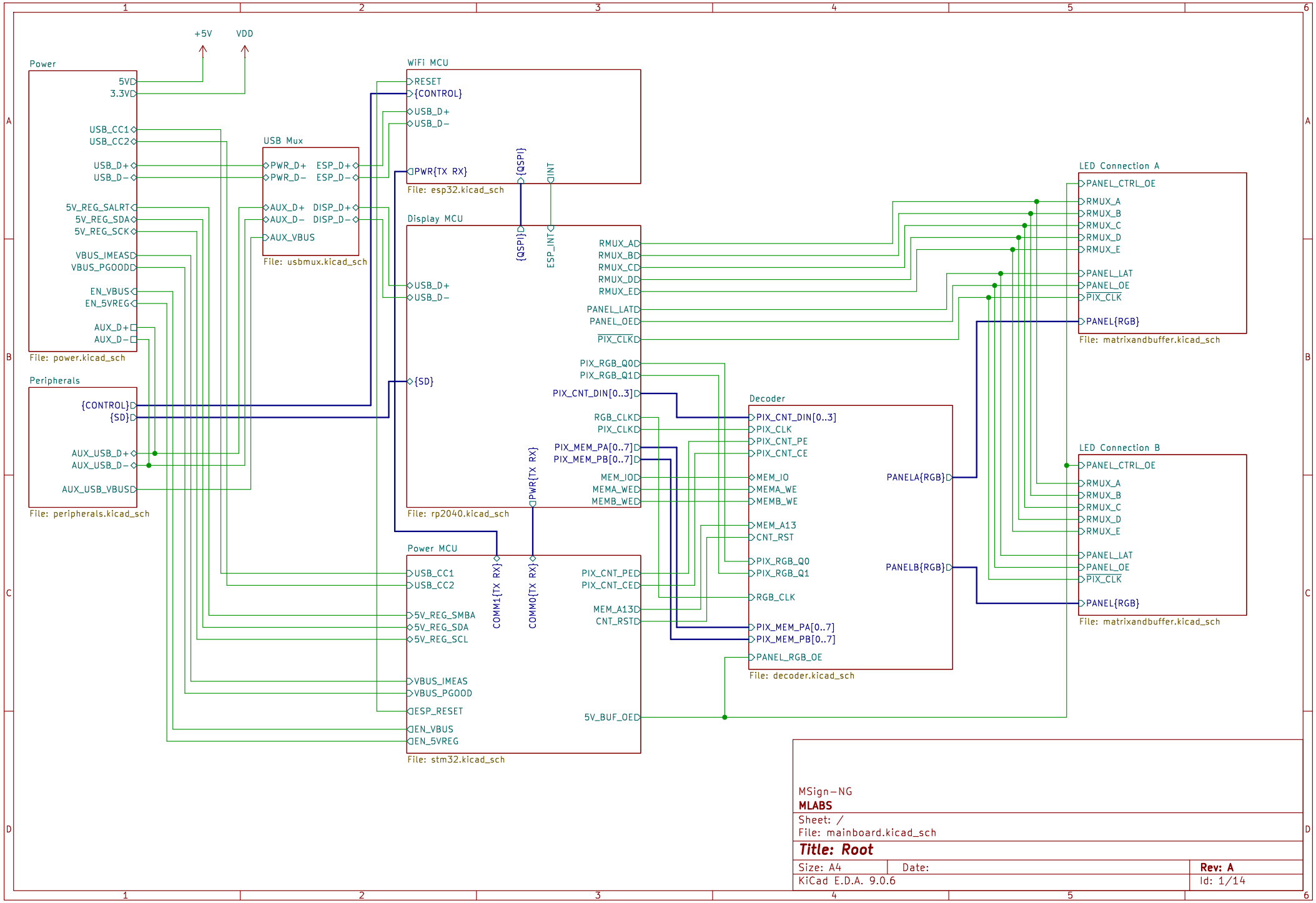
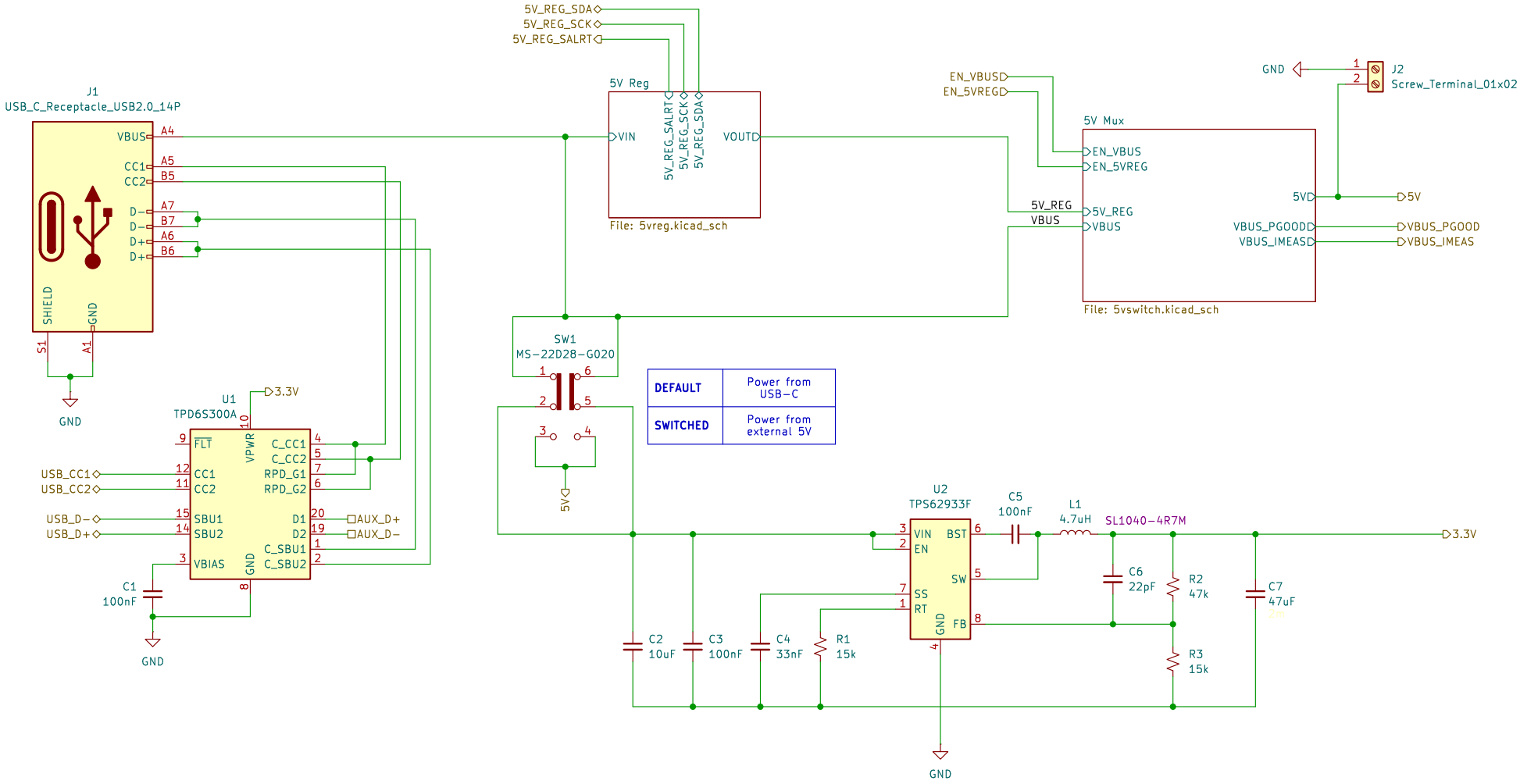
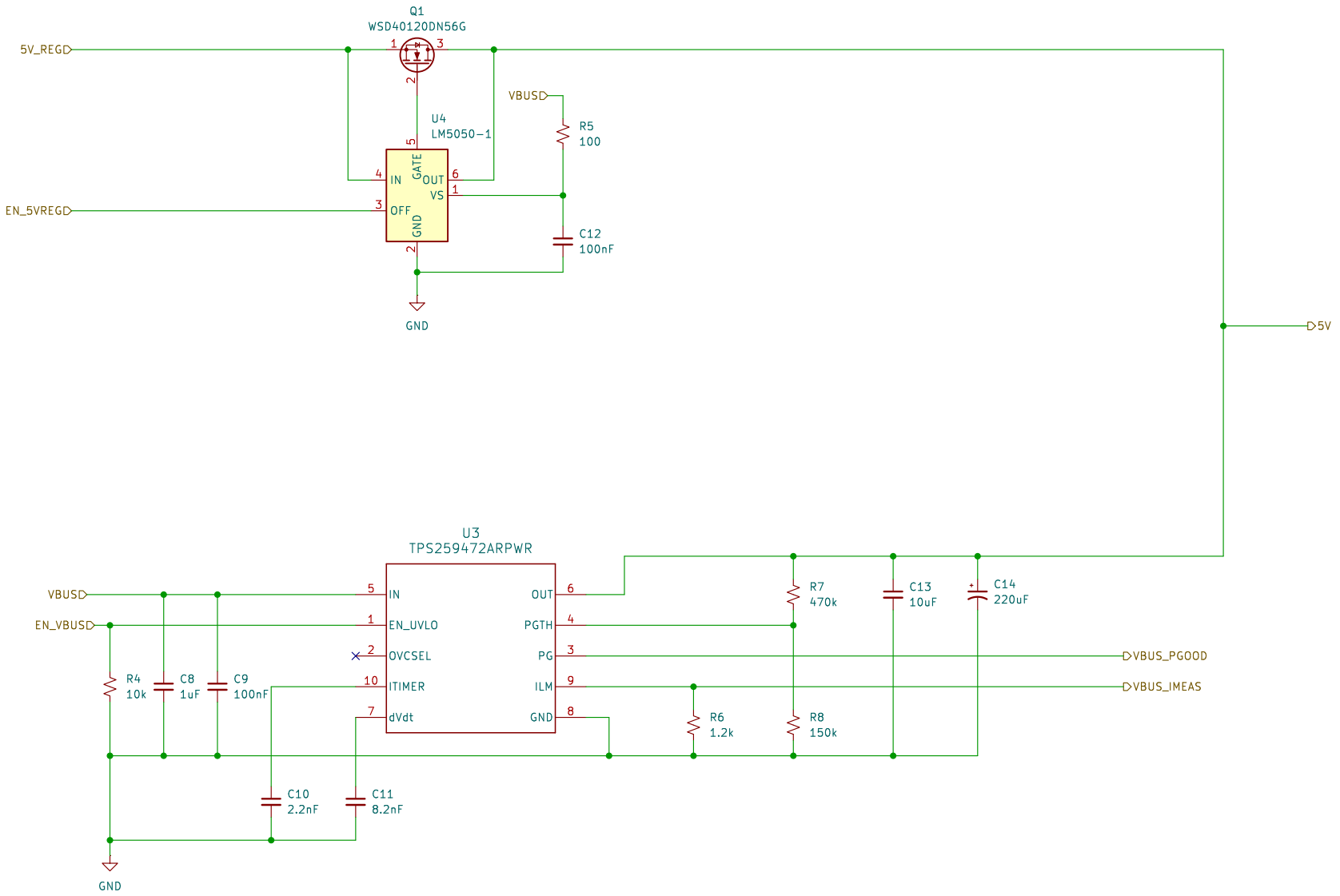

+5V
VDD
Power
5VD
3.3VD
USB_CC1
USB_CC2
USB_D+
USB_D−
5V_REG_SALRT
5V_REG_SDA
5V_REG_SCK
VBUS_IMEASD
VBUS_PGOODD
EN_VBUS
EN_5VREG
AUX_D+
AUX_D−
File: power.kicad_sch
Peripherals
{CONTROL}
{SD}
AUX_USB_D+
AUX_USB_D−
AUX_USB_VBUSD
File: peripherals.kicad_sch
USB Mux
PWR_D+
PWR_D−
ESP_D+
ESP_D−
AUX_D+
AUX_D−
DISP_D+
DISP_D−
AUX_VBUS
File: usbmux.kicad_sch
WiFi MCU
RESET
{CONTROL}
USB_D+
USB_D−
PWR{TX RX}
File: esp32.kicad_sch
{QSPI}
INT
Display MCU
USB_D+
USB_D−
{SD}
{QSPI}
ESP_INT
RMUX_AD
RMUX_BD
RMUX_CD
RMUX_DD
RMUX_ED
PANEL_LATD
PANEL_OED
PIX_CLKD
PIX_RGB_Q0D
PIX_RGB_Q1D
PIX_CNT_DIN[0..3]
RGB_CLKD
PIX_CLKD
PIX_MEM_PA[0..7]
PIX_MEM_PB[0..7]
MEM_IOD
MEMA_WED
MEMB_WED
PWR{TX RX}
File: rp2040.kicad_sch
Power MCU
USB_CC1
USB_CC2
5V_REG_SMBA
5V_REG_SDA
5V_REG_SCL
VBUS_IMEAS
VBUS_PGOOD
ESP_RESET
EN_VBUS
EN_5VREG
COMM1{TX RX}
COMM0{TX RX}
PIX_CNT_PED
PIX_CNT_CED
MEM_A13D
CNT_RSTD
5V_BUF_OED
File: stm32.kicad_sch
Decoder
PIX_CNT_DIN[0..3]
PIX_CLK
PIX_CNT_PE
PIX_CNT_CE
MEM_IO
MEMA_WE
MEMB_WE
MEM_A13
CNT_RST
PIX_RGB_Q0
PIX_RGB_Q1
RGB_CLK
PIX_MEM_PA[0..7]
PIX_MEM_PB[0..7]
PANEL_RGB_OE
PANELA{RGB}
PANELB{RGB}
File: decoder.kicad_sch
LED Connection A
PANEL_CTRL_OE
RMUX_A
RMUX_B
RMUX_C
RMUX_D
RMUX_E
PANEL_LAT
PANEL_OE
PIX_CLK
PANEL{RGB}
File: matrixandbuffer.kicad_sch
LED Connection B
PANEL_CTRL_OE
RMUX_A
RMUX_B
RMUX_C
RMUX_D
RMUX_E
PANEL_LAT
PANEL_OE
PIX_CLK
PANEL{RGB}
File: matrixandbuffer.kicad_sch
MSign−NG
MLABS
Sheet: /
File: mainboard.kicad_sch
Title: Root
Size: A4
Date:
Rev: A
KiCad E.D.A. 9.0.6
Id: 1/14


5V_REG_SDA
5V_REG_SCK
5V_REG_SALRT
J1
USB_C_Receptacle_USB2.0_14P
VBUS
CC1
CC2
D−
D−
D+
D+
SHIELD
GND
S1
A1
GND
5V Reg
VIN
VOUT
5V_REG_SALRT
5V_REG_SCK
5V_REG_SDA
File: 5vreg.kicad_sch
EN_VBUS
EN_5VREG
5V Mux
EN_VBUS
EN_5VREG
5V_REG
VBUS
5V_REG
VBUS
5VD
VBUS_PGOODD
VBUS_IMEASD
File: 5vswitch.kicad_sch
GND
J2
Screw_Terminal_01x02
5V
VBUS_PGOOD
VBUS_IMEAS
SW1
MS−22D28−G020
DEFAULT
Power from USB−C
SWITCHED
Power from external 5V
5V
U1
TPD6S300A
3.3V
FLT
VPWR
C_CC1
C_CC2
RPD_G1
RPD_G2
CC1
CC2
SBU1
SBU2
VBIAS
GND
D1
D2
C_SBU1
C_SBU2
USB_CC1
USB_CC2
USB_D−
USB_D+
AUX_D+
AUX_D−
C1
100nF
GND
U2
TPS62933F
VIN
EN
SS
RT
GND
BST
SW
FB
C5
100nF
L1
4.7uH
SL1040−4R7M
3.3V
C6
22pF
R2
47k
R3
15k
C7
47uF
C2
10uF
C3
100nF
C4
33nF
R1
15k
GND
MSign−NG
MLABS
Sheet: /Power/
File: power.kicad_sch
Title: Power Supply (3.3V)
Size: A4
Date:
Rev: A
KiCad E.D.A. 9.0.6
Id: 2/14

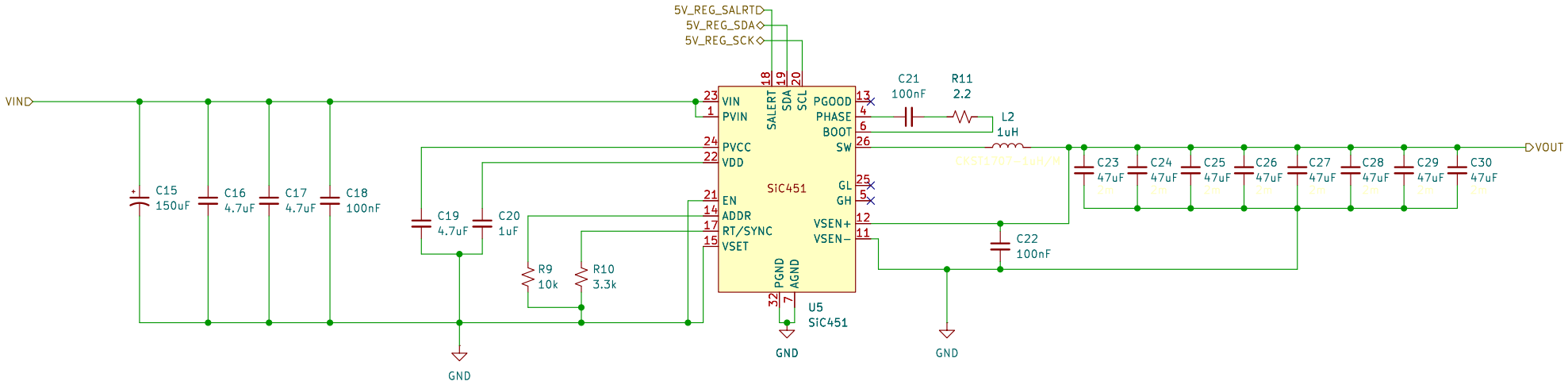



MSign-NG
**MLABS**

Sheet: /Power/5V Mux/
File: 5vswitch.kicad_sch

***Title: 5V Multiplexer***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 3/14 |

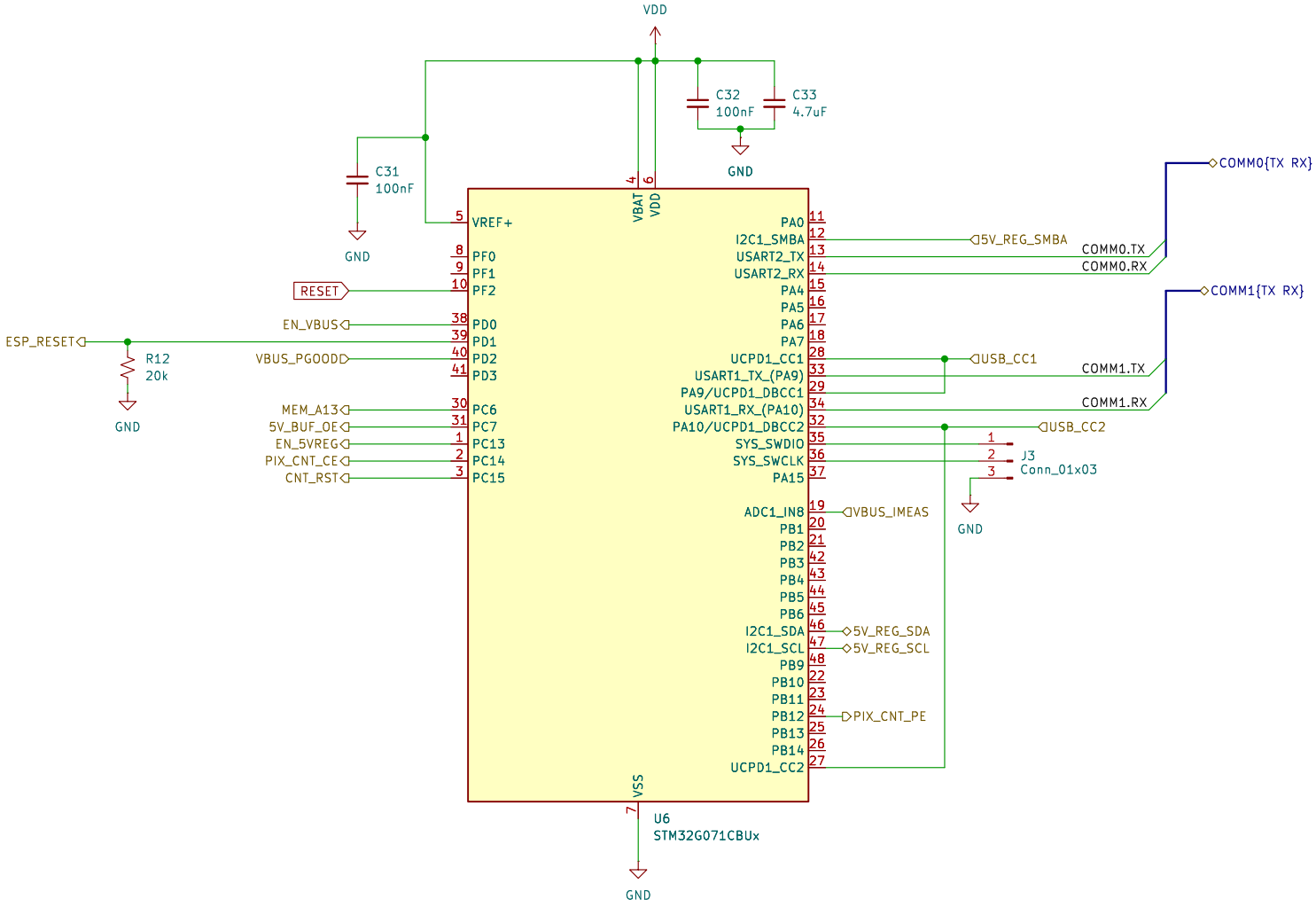



MSign-NG
**MLABS**

Sheet: /Power/5V Reg/
File: 5vreg.kicad_sch

***Title: USB PD 5V Regulator***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 4/14 |

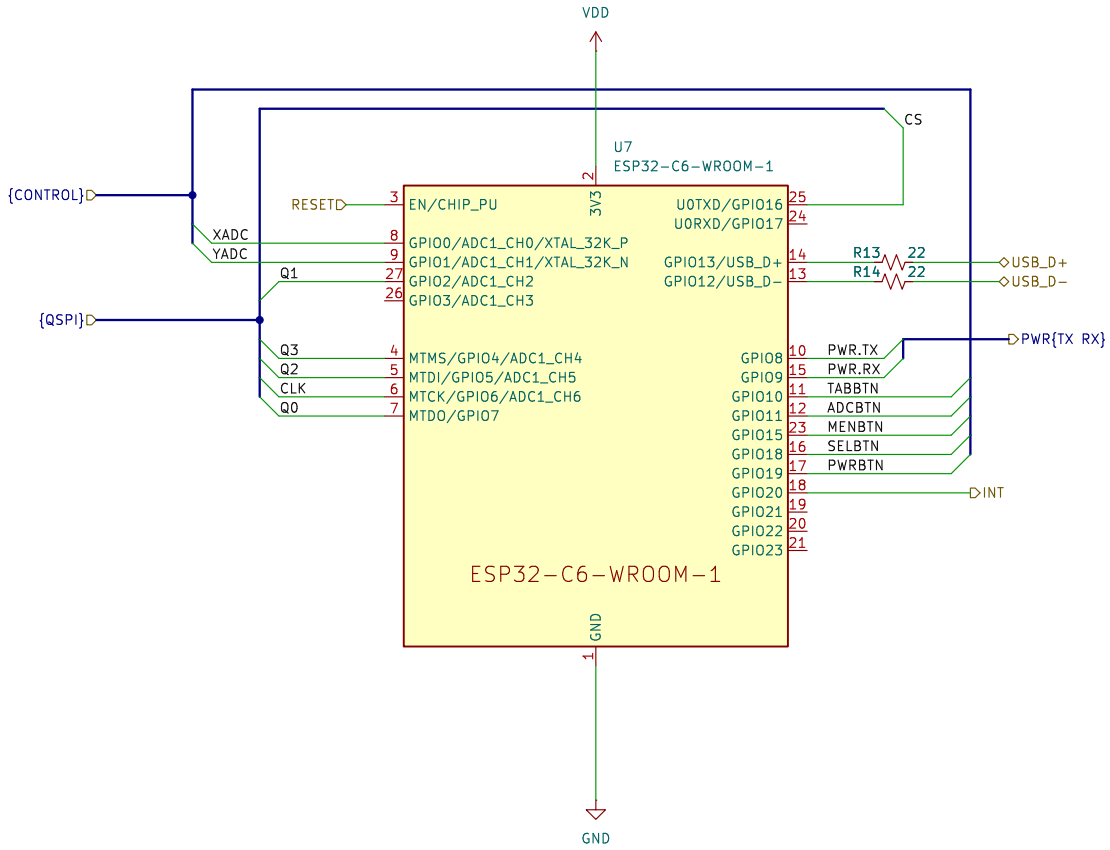



MSign-NG
**MLABS**

Sheet: /Power MCU/
File: stm32.kicad_sch

***Title: Power Supply (+aux Decoder IO) Microcontroller***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 5/14 |

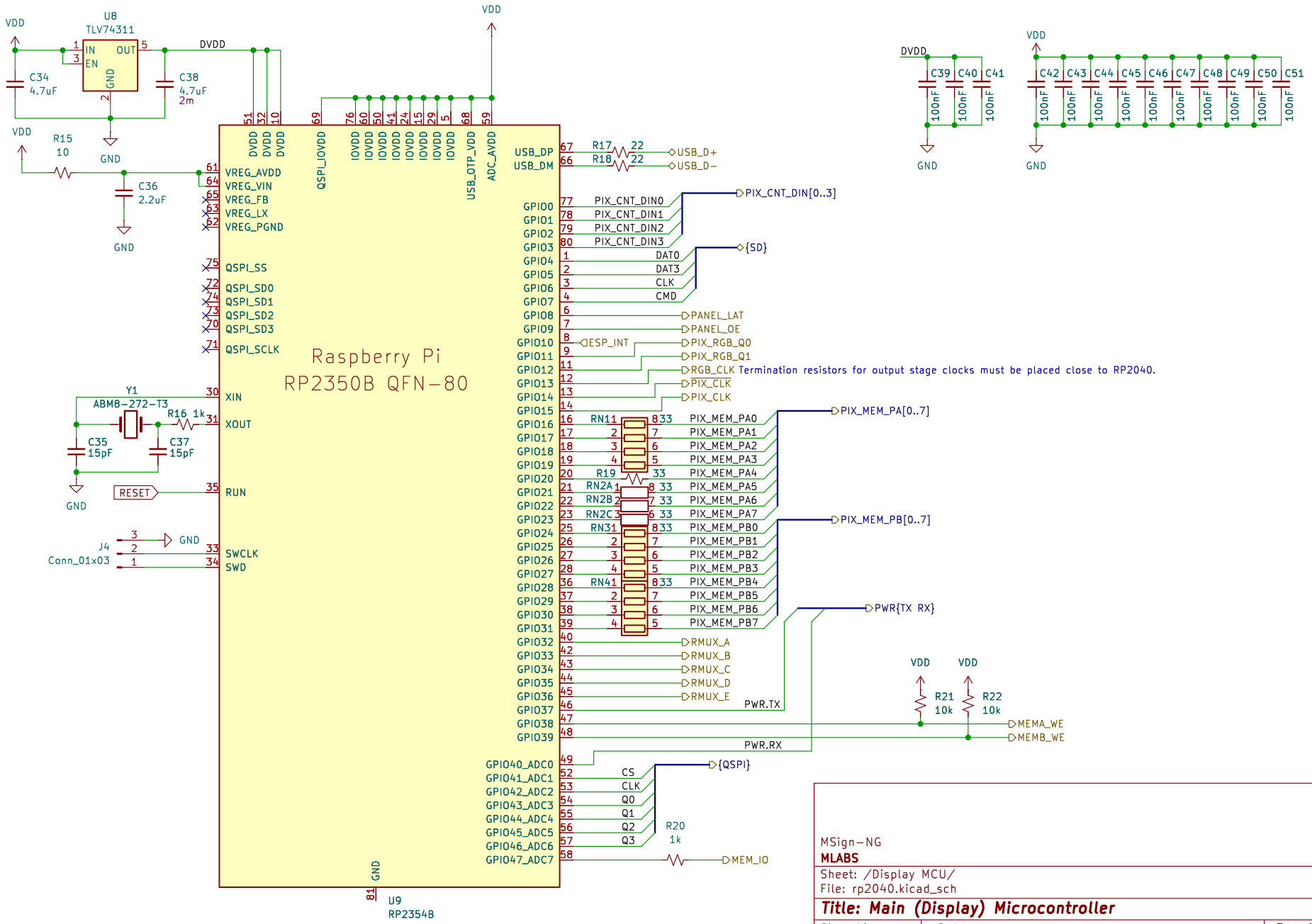



MSign-NG
**MLABS**

Sheet: /WiFi MCU/
File: esp32.kicad_sch

***Title: WiFi Microcontroller***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 6/14 |

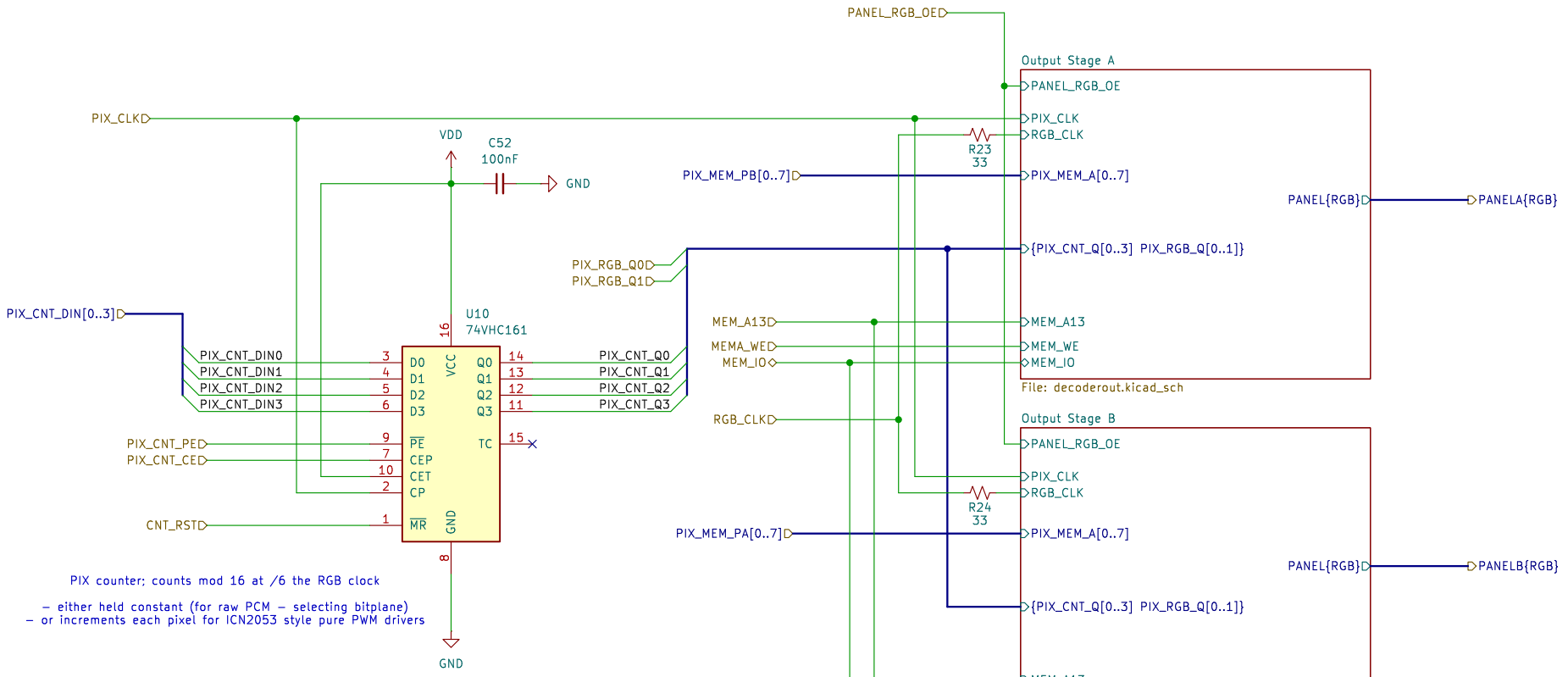



MSign-NG
**MLABS**

Sheet: /Display MCU/
File: rp2040.kicad_sch

**Title: Main (Display) Microcontroller**

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 7/14 |

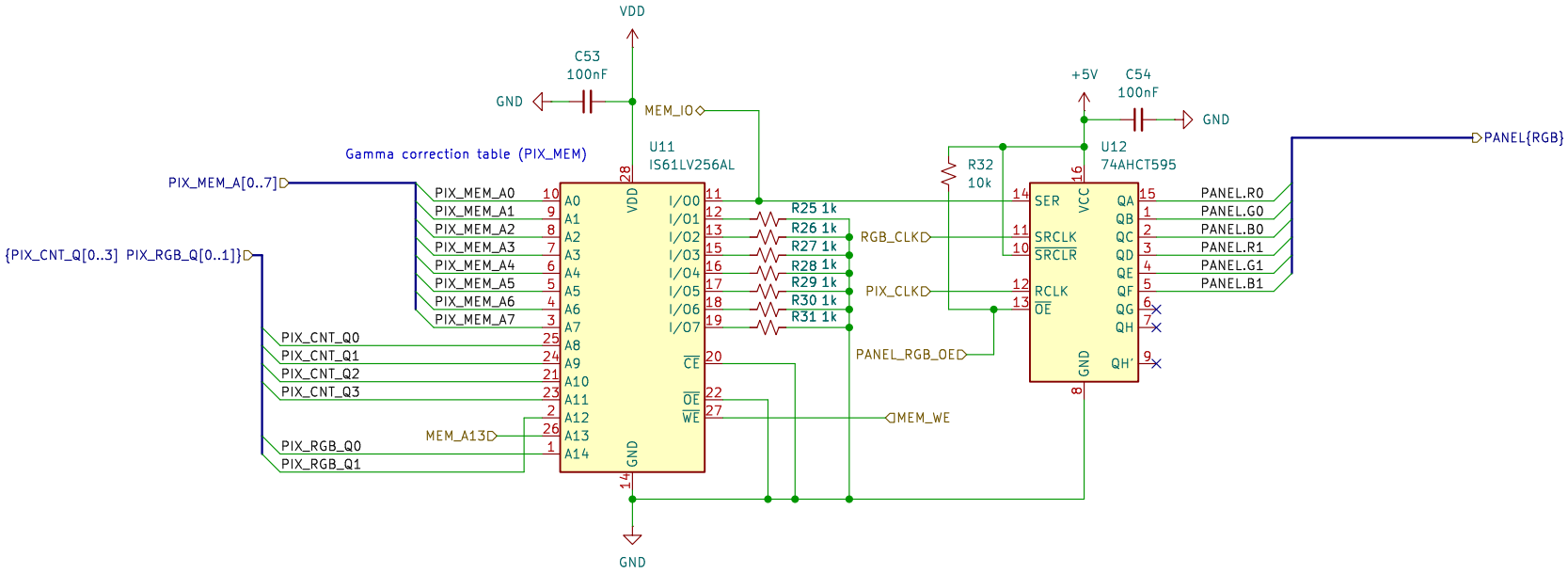



MSign–NG
**MLABS**

Sheet: /Decoder/
File: decoder.kicad_sch

***Title: LED Bitstream Generator (common half)***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 8/14 |

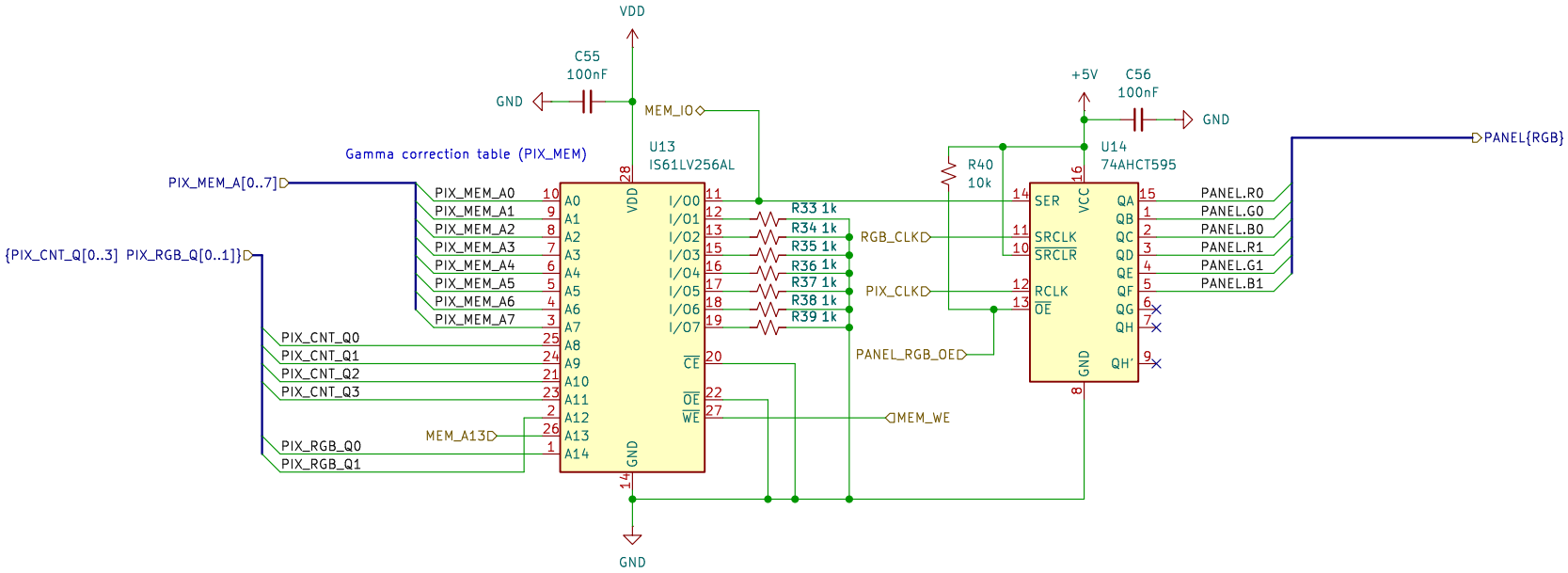



MSign-NG
**MLABS**

Sheet: /Decoder/Output Stage A/
File: decoderout.kicad_sch

***Title: LED Bitstream Generator (gamma LUT + shifter)***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 9/14 |

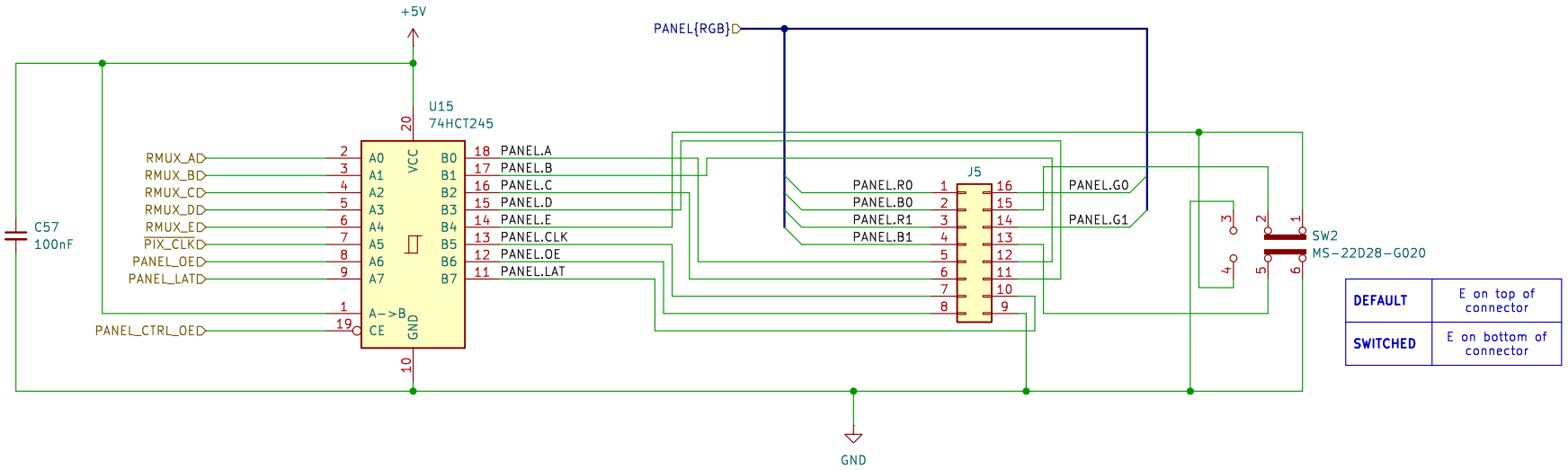



MSign-NG
**MLABS**

Sheet: /Decoder/Output Stage B/
File: decoderout.kicad_sch

***Title: LED Bitstream Generator (gamma LUT + shifter)***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 10/14 |



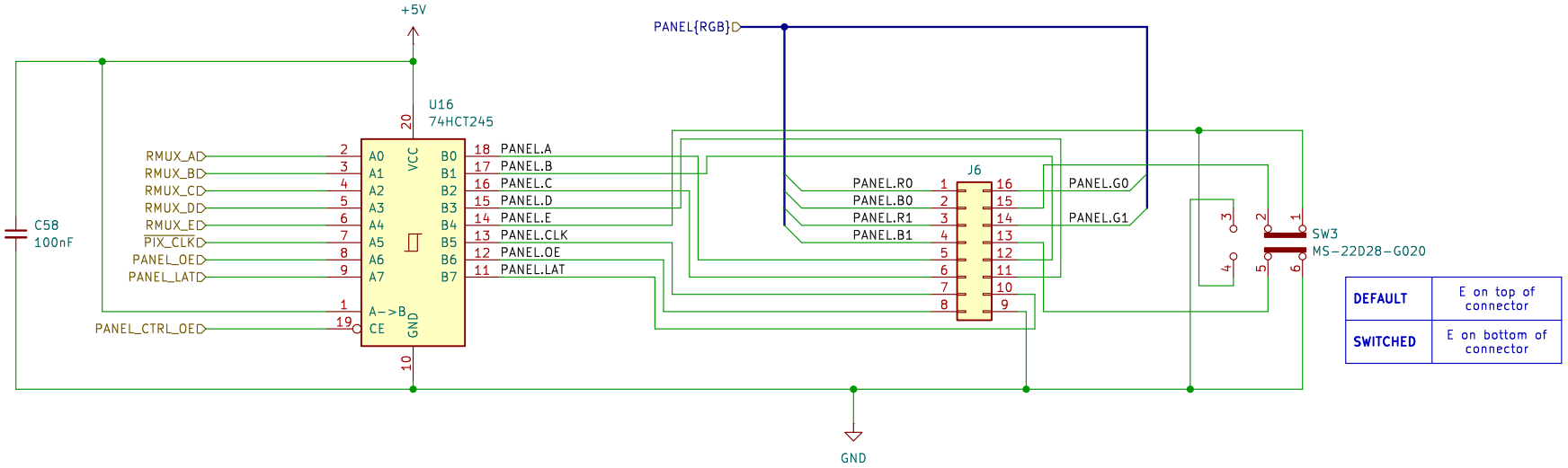

| | |
|---|---|
| **DEFAULT** | E on top of connector |
| **SWITCHED** | E on bottom of connector |

MSign-NG
**MLABS**

Sheet: /LED Connection A/
File: matrixandbuffer.kicad_sch

***Title: LED Level Shifter + Socket***

| | | |
|---|---|---|
| Size: A4 | Date: | **Rev: A** |
| KiCad E.D.A. 9.0.6 | | Id: 11/14 |



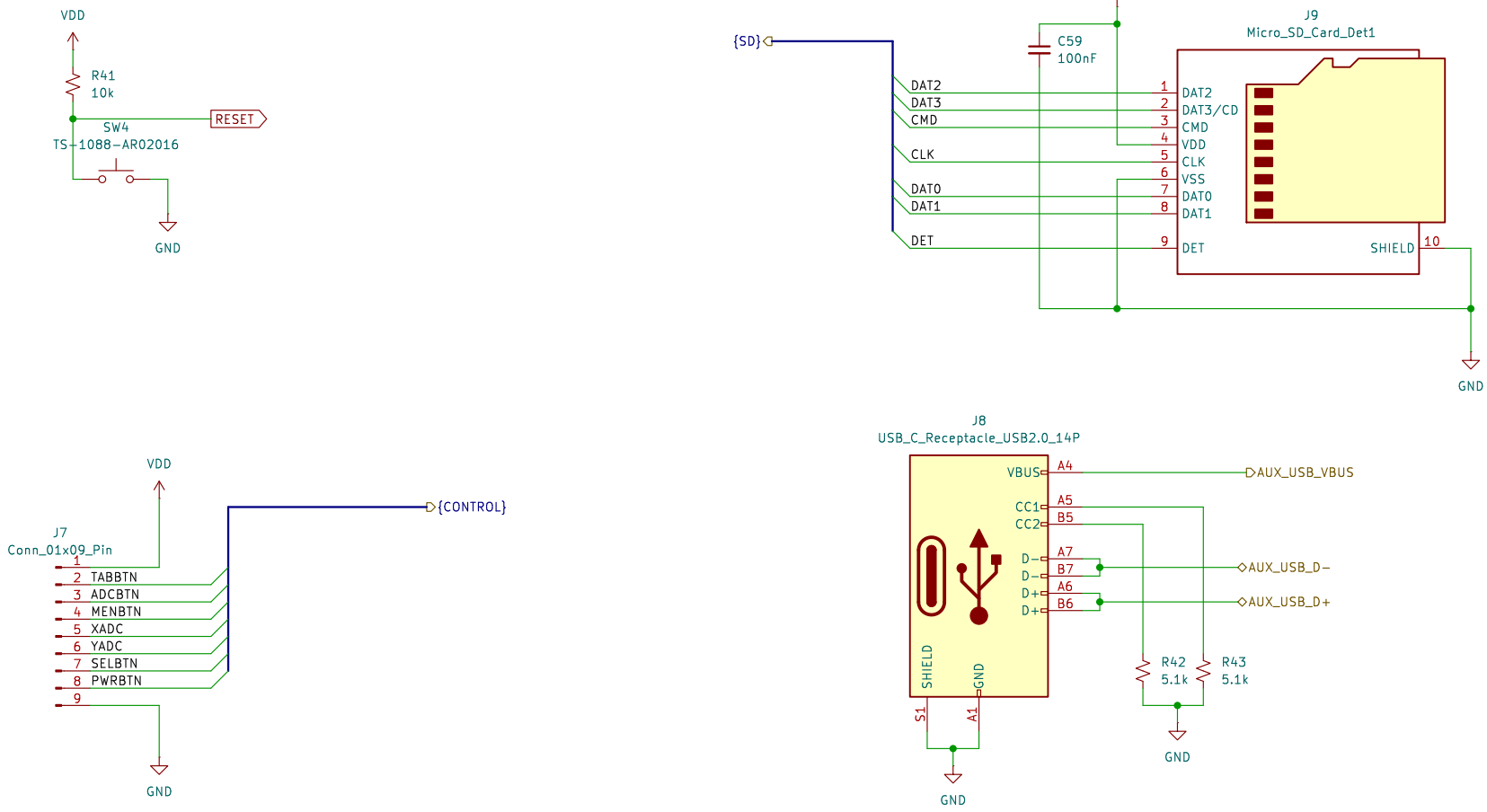

| | |
|---|---|
| **DEFAULT** | E on top of connector |
| **SWITCHED** | E on bottom of connector |

MSign-NG
**MLABS**

Sheet: /LED Connection B/
File: matrixandbuffer.kicad_sch

***Title: LED Level Shifter + Socket***

| | | |
|---|---|---|
| Size: A4 | Date: | **Rev: A** |
| KiCad E.D.A. 9.0.6 | | Id: 12/14 |

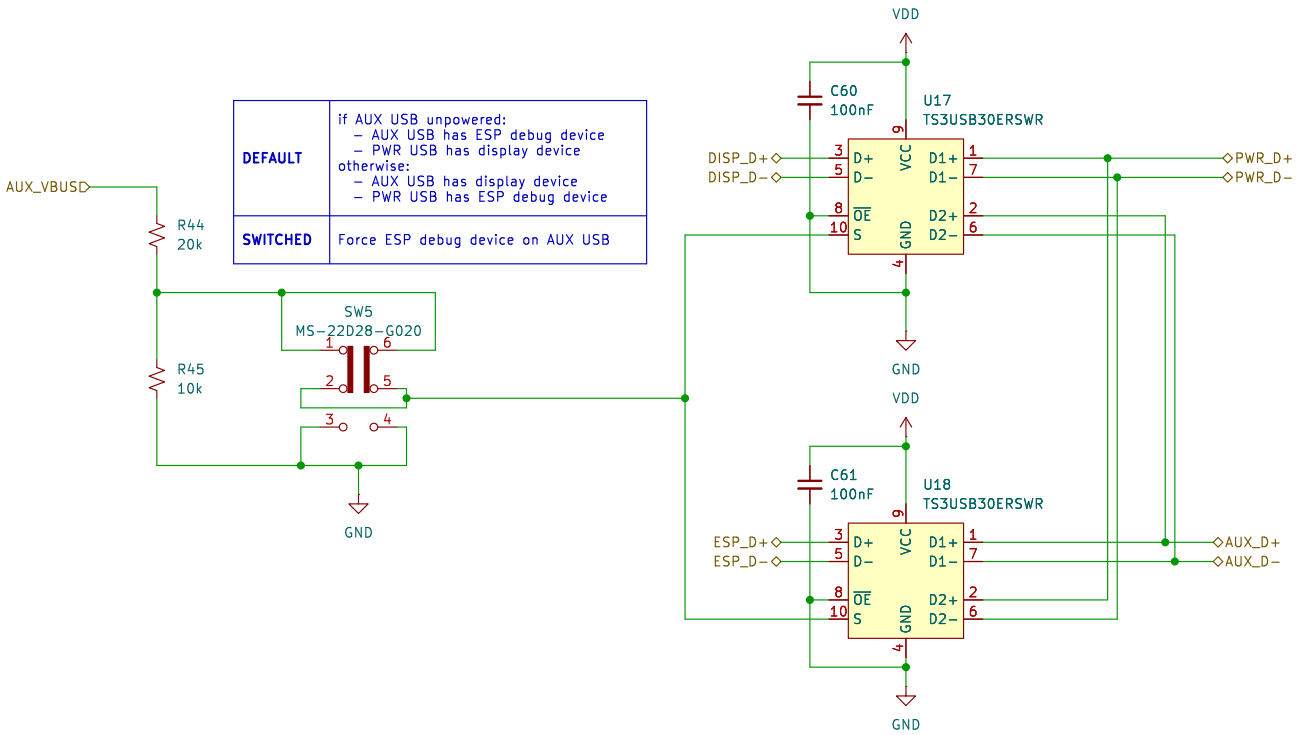



MSign-NG
**MLABS**

Sheet: /Peripherals/
File: peripherals.kicad_sch

***Title: Misc. External Connectors***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 13/14 |




MSign–NG
**MLABS**

Sheet: /USB Mux/
File: usbmux.kicad_sch

***Title: USB Port Crosspoint Switch***

| Size: A4 | Date: | **Rev: A** |
|---|---|---|
| KiCad E.D.A. 9.0.6 | | Id: 14/14 |