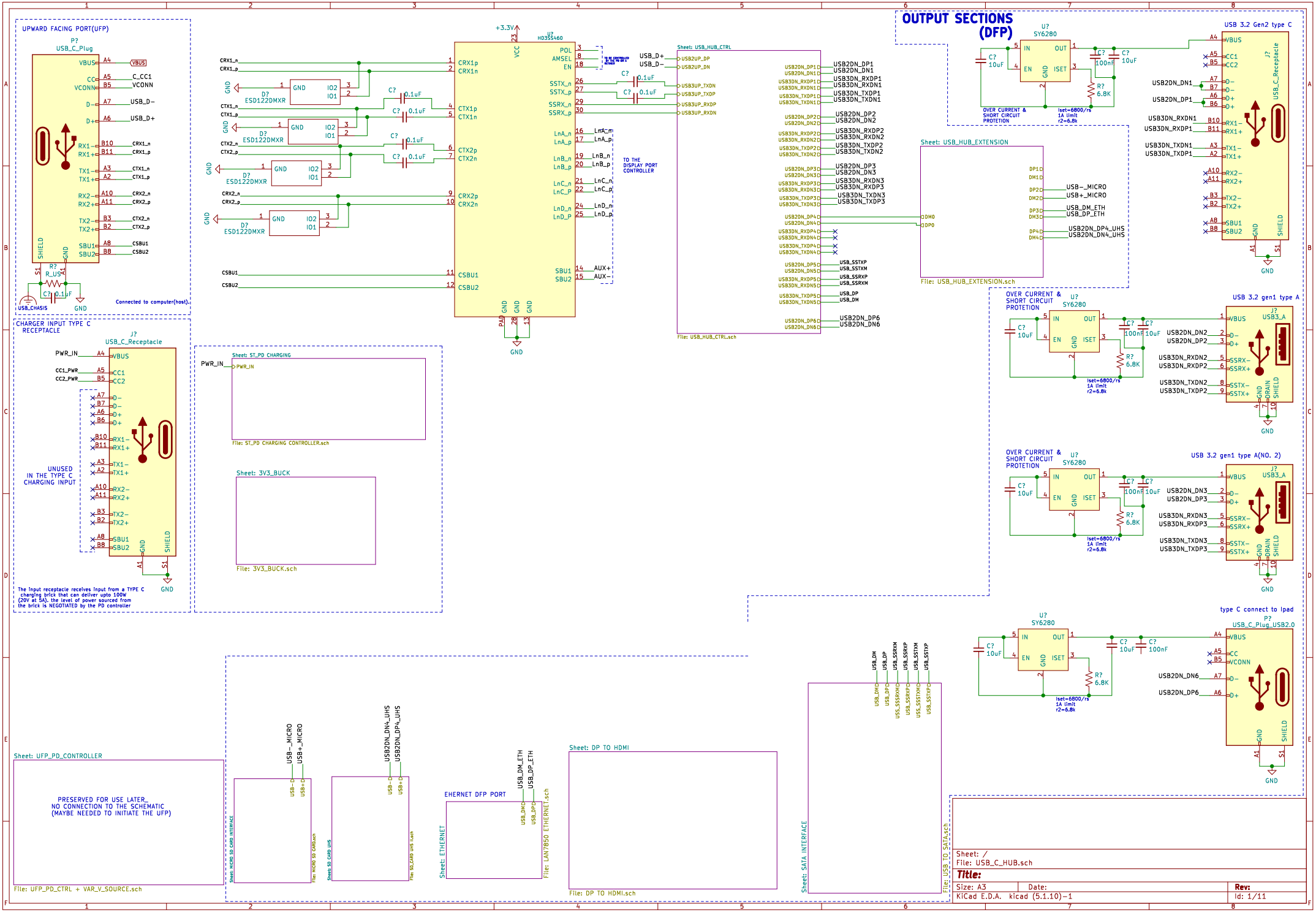
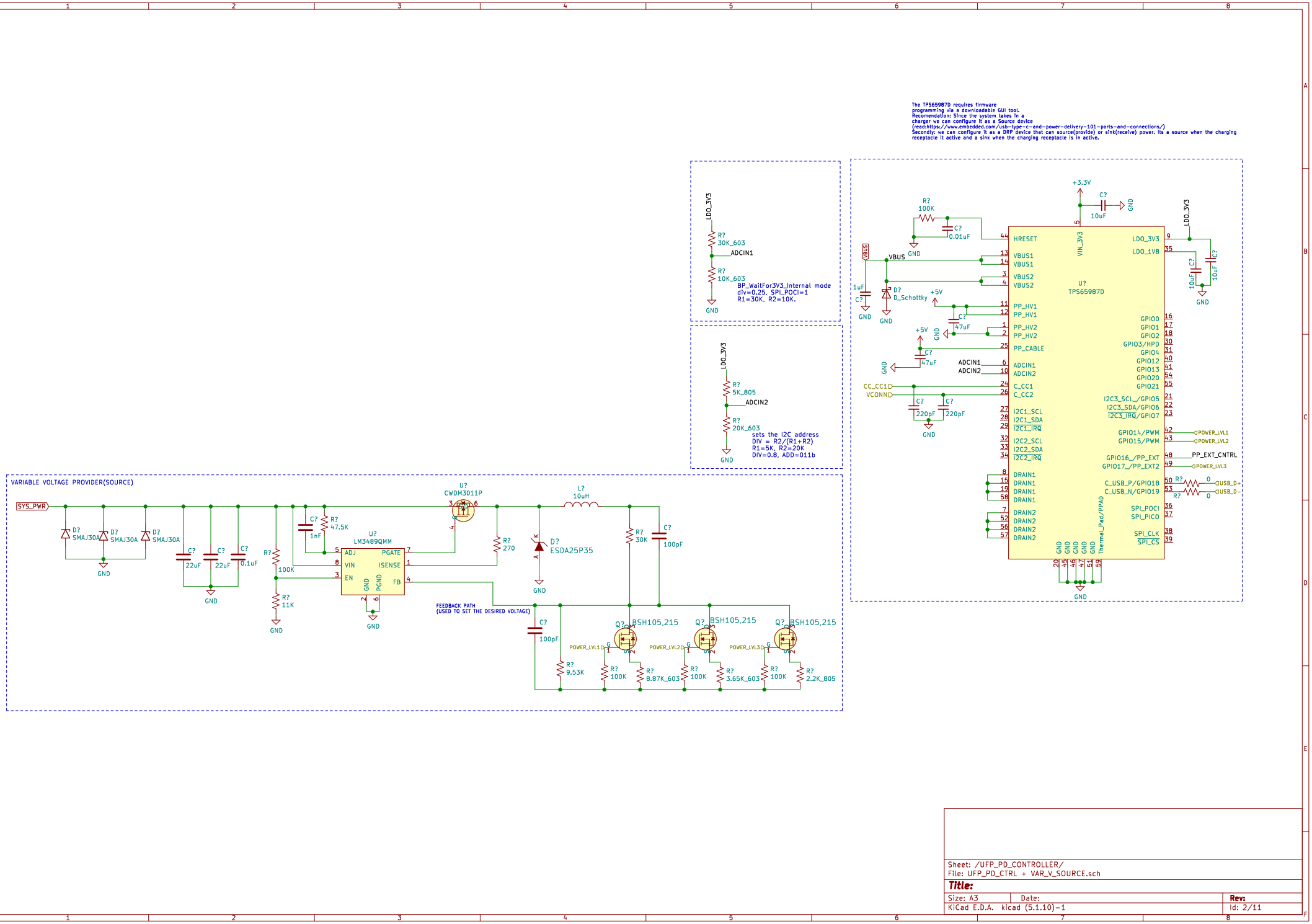
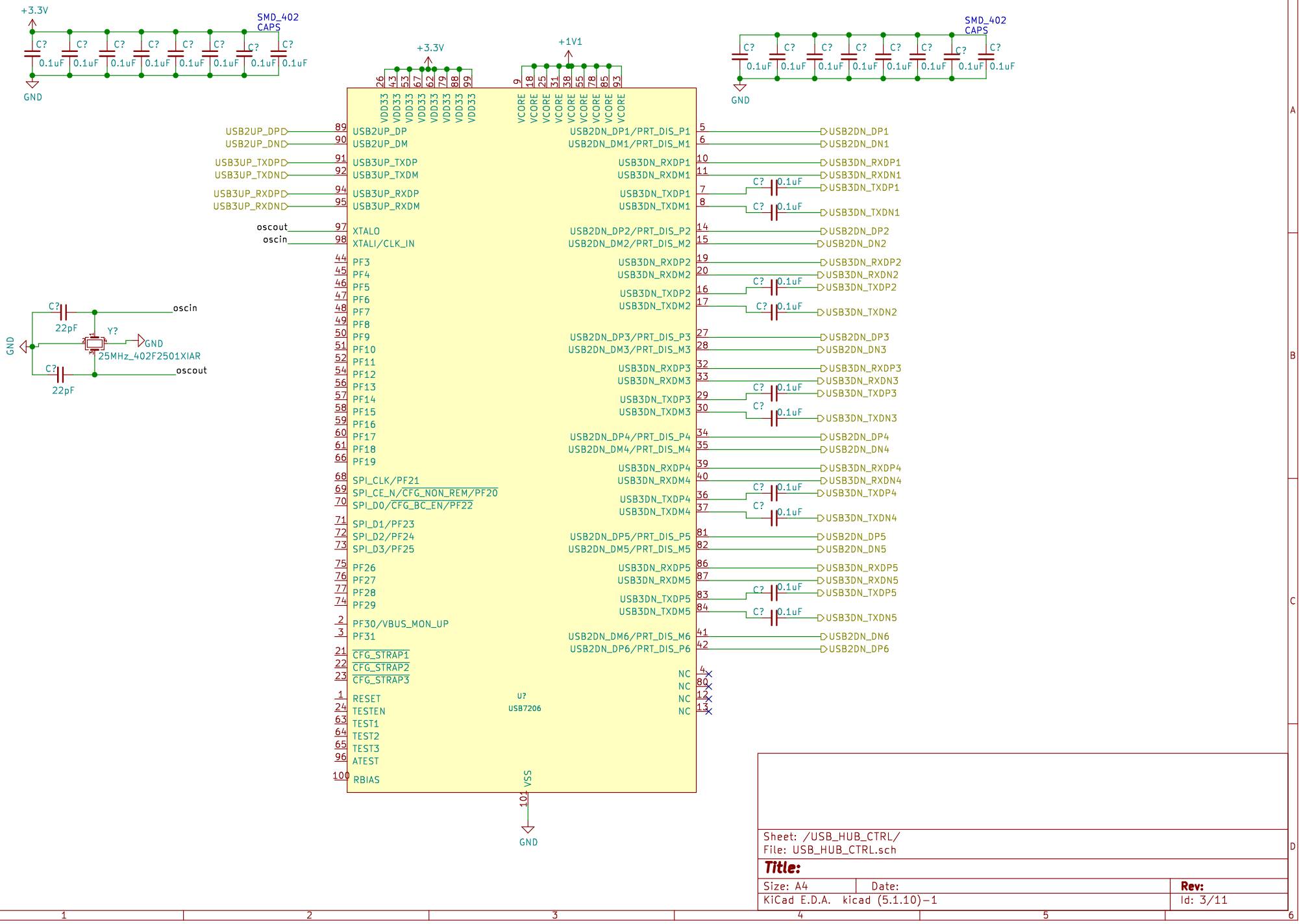
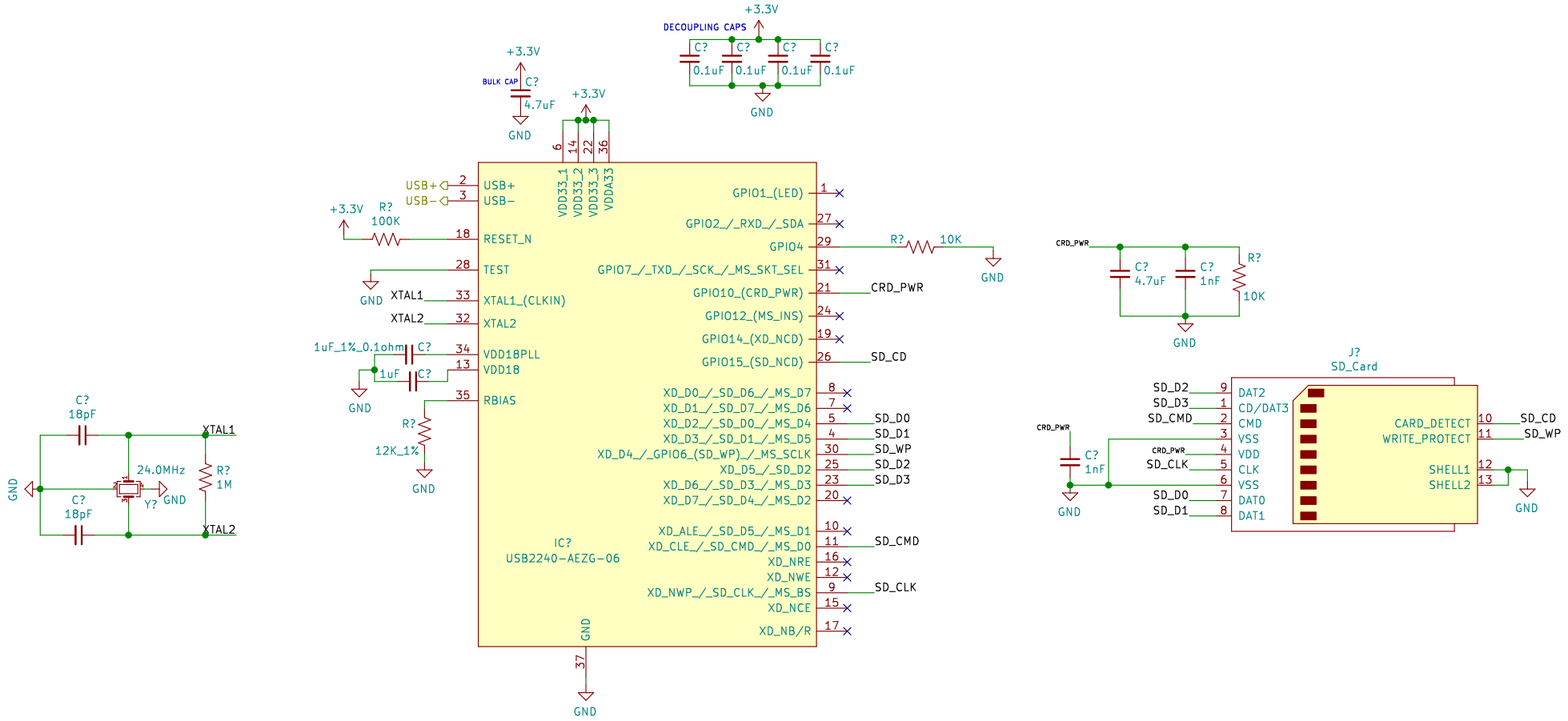
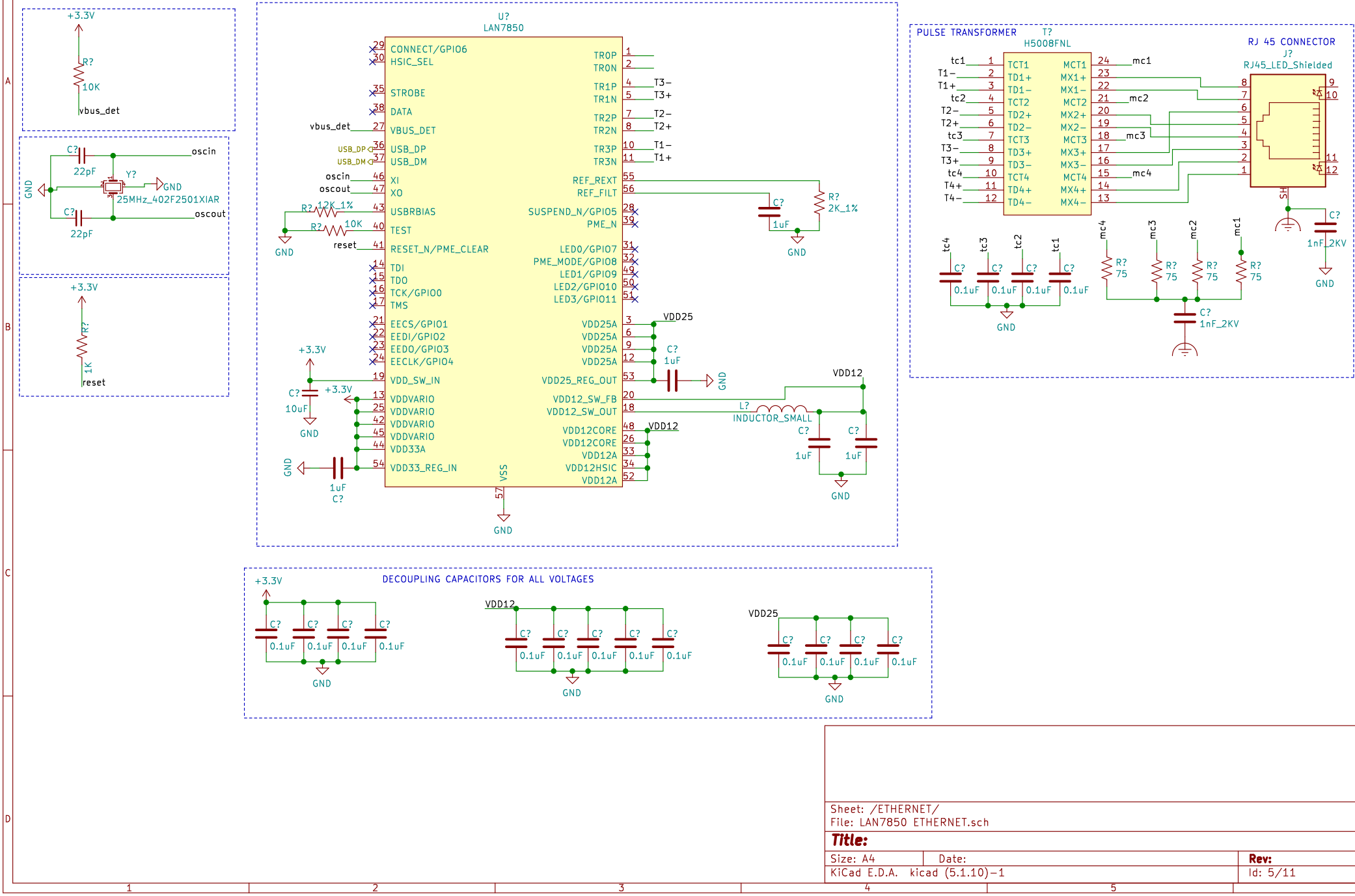

UPWARD FACING PORT(UFP)
USB_C_Plug
Connected to computer(host).
CHARGER INPUT TYPE C RECEPTACLE
USB_C_Receptacle
UNUSED IN THE TYPE C CHARGING INPUT
The input receptacle receives input from a TYPE C charging brick that can deliver upto 100W (20V at 5A). the level of power sourced from the brick is NEGOTIATED by the PD controller
Sheet: ST_PD CHARGING
File: ST_PD CHARGING CONTROLLER.sch
Sheet: 3V3_BUCK
File: 3V3_BUCK.sch
HD3SS460
TO THE DISPLAY PORT CONTROLLER
Sheet: USB_HUB_CTRL
File: USB_HUB_CTRL.sch
Sheet: USB_HUB_EXTENSION
File: USB_HUB_EXTENSION.sch
OUTPUT SECTIONS (DFP)
SY6280
OVER CURRENT & SHORT CIRCUIT PROTETION
USB 3.2 Gen2 type C
USB 3.2 gen1 type A
USB 3.2 gen1 type A(NO. 2)
type C connect to Ipad
USB_C_Plug_USB2.0
Sheet: UFP_PD_CONTROLLER
PRESERVED FOR USE LATER_
NO CONNECTION TO THE SCHEMATIC
(MAYBE NEEDED TO INITIATE THE UFP)
File: UFP_PD_CTRL + VAR_V_SOURCE.sch
Sheet: MICRO SD CARD INTERFACE
File: MICRO SD CARD.sch
Sheet: SD CARD UHS
File: SD_CARD UHS .sch
Sheet: ETHERNET
EHERNET DFP PORT
File: LAN7850 ETHERNET.sch
Sheet: DP TO HDMI
File: DP TO HDMI.sch
Sheet: SATA INTERFACE
File: USB TO SATA.sch
Sheet: /
File: USB_C_HUB.sch
Title:
Size: A3
Date:
Rev:
KiCad E.D.A. kicad (5.1.10)-1
Id: 1/11

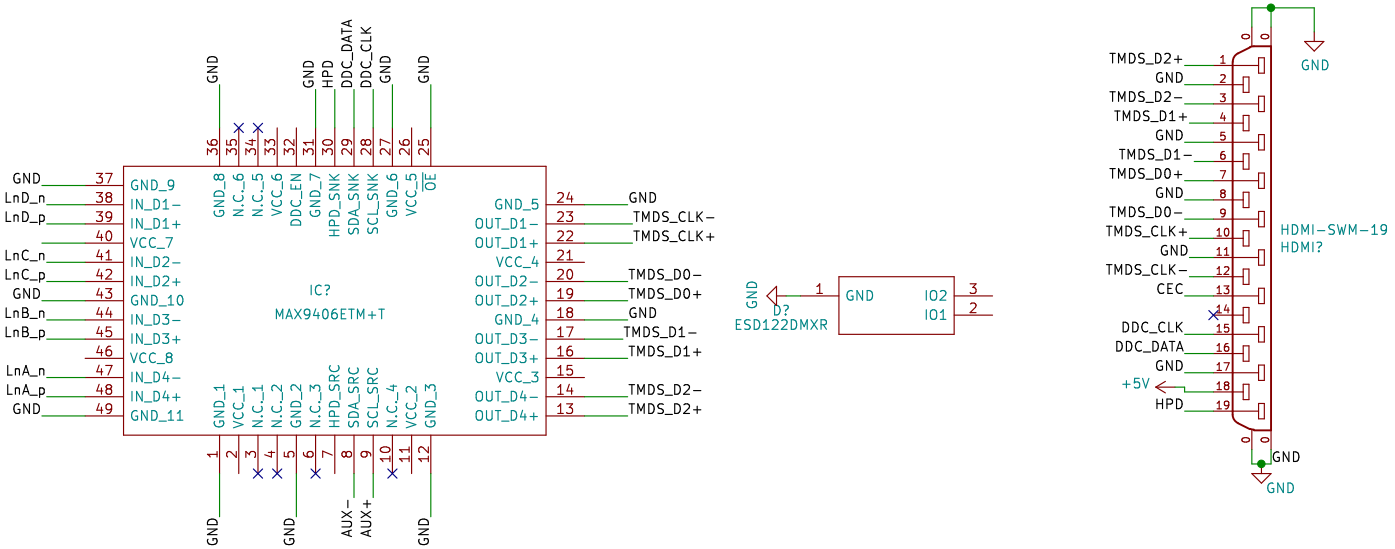

The TPS65987D requires firmware programming via a downloadable GUI tool.
Recomendation: Since the system takes in a charger we can configure it as a Source device (readhttps://www.embedded.com/usb-type-c-and-power-delivery-101-ports-and-connections/)
Secondly: we can configure it as a DRP device that can source(provide) or sink(receive) power. Its a source when the charging receptacle it active and a sink when the charging receptacle is in active.
LDO_3V3
R? 30K_603
ADCIN1
R? 10K_603
BP_WaitFor3V3_Internal mode
div=0.25, SPI_POCI=1
R1=30K, R2=10K.
GND
LDO_3V3
R? 5K_805
ADCIN2
R? 20K_603
sets the I2C address
DIV = R2/(R1+R2)
R1=5K, R2=20K
DIV=0.8, ADD=011b
GND
VARIABLE VOLTAGE PROVIDER(SOURCE)
SYS_PWR
D? SMAJ30A
D? SMAJ30A
D? SMAJ30A
GND
C? 22uF
C? 22uF
C? 0.1uF
GND
R? 100K
R? 11K
GND
C? 1nF
R? 47.5K
U? LM3489QMM
ADJ
VIN
EN
PGATE
ISENSE
GND
PGND
FB
GND
U? CWDM3011P
R? 270
L? 10uH
D? ESDA25P35
GND
R? 30K
C? 100pF
FEEDBACK PATH
(USED TO SET THE DESIRED VOLTAGE)
C? 100pF
R? 9.53K
Q? BSH105,215
Q? BSH105,215
Q? BSH105,215
POWER_LVL1
POWER_LVL2
POWER_LVL3
R? 100K
R? 8.87K_603
R? 100K
R? 3.65K_603
R? 100K
R? 2.2K_805
+3.3V
C? 10uF
GND
R? 100K
C? 0.01uF
GND
VBUS
1uF
C?
GND
D? D_Schottky
GND
+5V
C? 47uF
+5V
GND
C? 47uF
GND
CC_CC1
VCONN
C? 220pF
C? 220pF
GND
U? TPS65987D
HRESET
VBUS1
VBUS1
VBUS2
VBUS2
PP_HV1
PP_HV1
PP_HV2
PP_HV2
PP_CABLE
ADCIN1
ADCIN2
C_CC1
C_CC2
I2C1_SCL
I2C1_SDA
I2C1_IRQ
I2C2_SCL
I2C2_SDA
I2C2_IRQ
DRAIN1
DRAIN1
DRAIN1
DRAIN1
DRAIN2
DRAIN2
DRAIN2
DRAIN2
Thermal_Pad/PPAD
VIN_3V3
LDO_3V3
LDO_1V8
GPIO0
GPIO1
GPIO2
GPIO3/HPD
GPIO4
GPIO12
GPIO13
GPIO20
GPIO21
I2C3_SCL_/GPIO5
I2C3_SDA/GPIO6
I2C3_IRQ/GPIO7
GPIO14/PWM
GPIO15/PWM
GPIO16_/PP_EXT
GPIO17_/PP_EXT2
C_USB_P/GPIO18
C_USB_N/GPIO19
SPI_POCI
SPI_PICO
SPI_CLK
SPI_CS
GND
LDO_3V3
C? 10uF
C? 10uF
GND
POWER_LVL1
POWER_LVL2
PP_EXT_CNTRL
POWER_LVL3
R? 0
R? 0
USB_D+
USB_D-
Sheet: /UFP_PD_CONTROLLER/
File: UFP_PD_CTRL + VAR_V_SOURCE.sch
Title:
Size: A3
Date:
Rev:
KiCad E.D.A. kicad (5.1.10)-1
Id: 2/11


+3.3V
SMD_402
CAPS
C?
0.1uF
GND
+1V1
USB2UP_DP
USB2UP_DN
USB3UP_TXDP
USB3UP_TXDN
USB3UP_RXDP
USB3UP_RXDN
oscout
oscin
XTALO
XTALI/CLK_IN
22pF
Y?
25MHz_402F2501XIAR
USB2DN_DP1
USB2DN_DN1
USB3DN_RXDP1
USB3DN_RXDN1
USB3DN_TXDP1
USB3DN_TXDN1
USB2DN_DP2
USB2DN_DN2
USB3DN_RXDP2
USB3DN_RXDN2
USB3DN_TXDP2
USB3DN_TXDN2
USB2DN_DP3
USB2DN_DN3
USB3DN_RXDP3
USB3DN_RXDN3
USB3DN_TXDP3
USB3DN_TXDN3
USB2DN_DP4
USB2DN_DN4
USB3DN_RXDP4
USB3DN_RXDN4
USB3DN_TXDP4
USB3DN_TXDN4
USB2DN_DP5
USB2DN_DN5
USB3DN_RXDP5
USB3DN_RXDN5
USB3DN_TXDP5
USB3DN_TXDN5
USB2DN_DN6
USB2DN_DP6
NC
U?
USB7206
VDD33
VCORE
VSS
RESET
TESTEN
TEST1
TEST2
TEST3
ATEST
RBIAS
Sheet: /USB_HUB_CTRL/
File: USB_HUB_CTRL.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.10)-1
Id: 3/11



Sheet: /SD CARD UHS/		
File: SD_CARD UHS II.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.10)-1		Id: 4/11

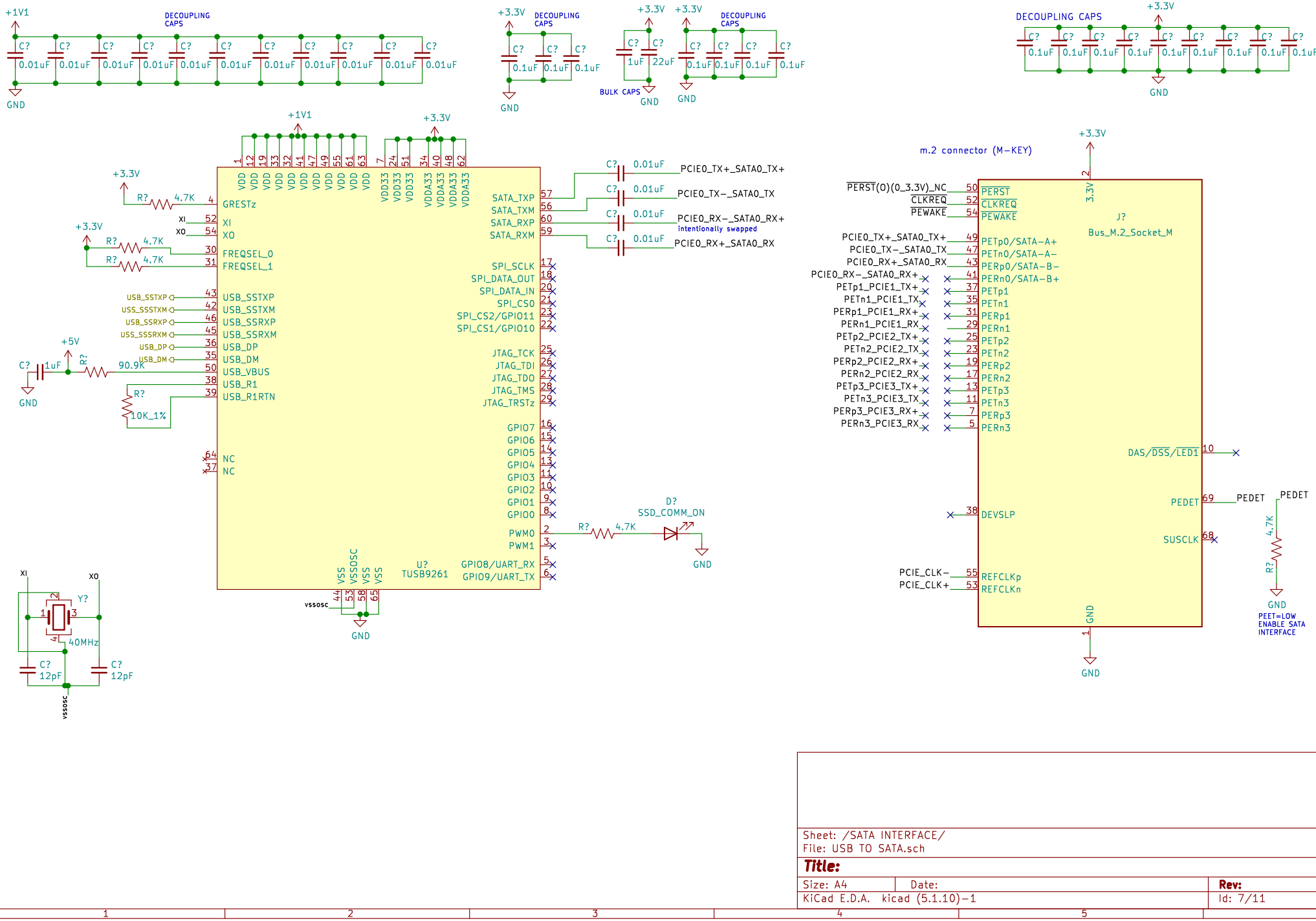

+3.3V
R?
10K
vbus_det
C?
22pF
oscin
Y?
GND
25MHz_402F2501XIAR
oscout
22pF
+3.3V
R?
1K
reset
U?
LAN7850
CONNECT/GPIO6
HSIC_SEL
STROBE
DATA
VBUS_DET
USB_DP
USB_DM
XI
XO
USBRBIAS
TEST
RESET_N/PME_CLEAR
TDI
TDO
TCK/GPIO0
TMS
EECS/GPIO1
EEDI/GPIO2
EEDO/GPIO3
EECLK/GPIO4
VDD_SW_IN
VDDVARIO
VDDVARIO
VDDVARIO
VDDVARIO
VDD33A
VDD33_REG_IN
TR0P
TR0N
TR1P
TR1N
TR2P
TR2N
TR3P
TR3N
REF_REXT
REF_FILT
SUSPEND_N/GPIO5
PME_N
LED0/GPIO7
PME_MODE/GPIO8
LED1/GPIO9
LED2/GPIO10
LED3/GPIO11
VDD25A
VDD25A
VDD25A
VDD25A
VDD25_REG_OUT
VDD12_SW_FB
VDD12_SW_OUT
VDD12CORE
VDD12CORE
VDD12A
VDD12HSIC
VDD12A
VSS
T3−
T3+
T2−
T2+
T1−
T1+
vbus_det
USB_DP
USB_DM
oscin
oscout
R? 12K_1%
R? 10K
reset
R? 2K_1%
C? 1uF
VDD25
C? 1uF
VDD12
L? INDUCTOR_SMALL
C? 1uF
C? 1uF
C? 10uF
C? 1uF
PULSE TRANSFORMER
T?
H5008FNL
TCT1
TD1+
TD1−
TCT2
TD2+
TD2−
TCT3
TD3+
TD3−
TCT4
TD4+
TD4−
MCT1
MX1+
MX1−
MCT2
MX2+
MX2−
MCT3
MX3+
MX3−
MCT4
MX4+
MX4−
tc1
T1−
T1+
tc2
T2−
T2+
tc3
T3−
T3+
tc4
T4+
T4−
mc1
mc2
mc3
mc4
RJ 45 CONNECTOR
J?
RJ45_LED_Shielded
SH
C? 1nF_2KV
C? 0.1uF
R? 75
C? 1nF_2KV
DECOUPLING CAPACITORS FOR ALL VOLTAGES
+3.3V
VDD12
VDD25
C? 0.1uF
GND
Sheet: /ETHERNET/
File: LAN7850 ETHERNET.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.10)−1
Id: 5/11

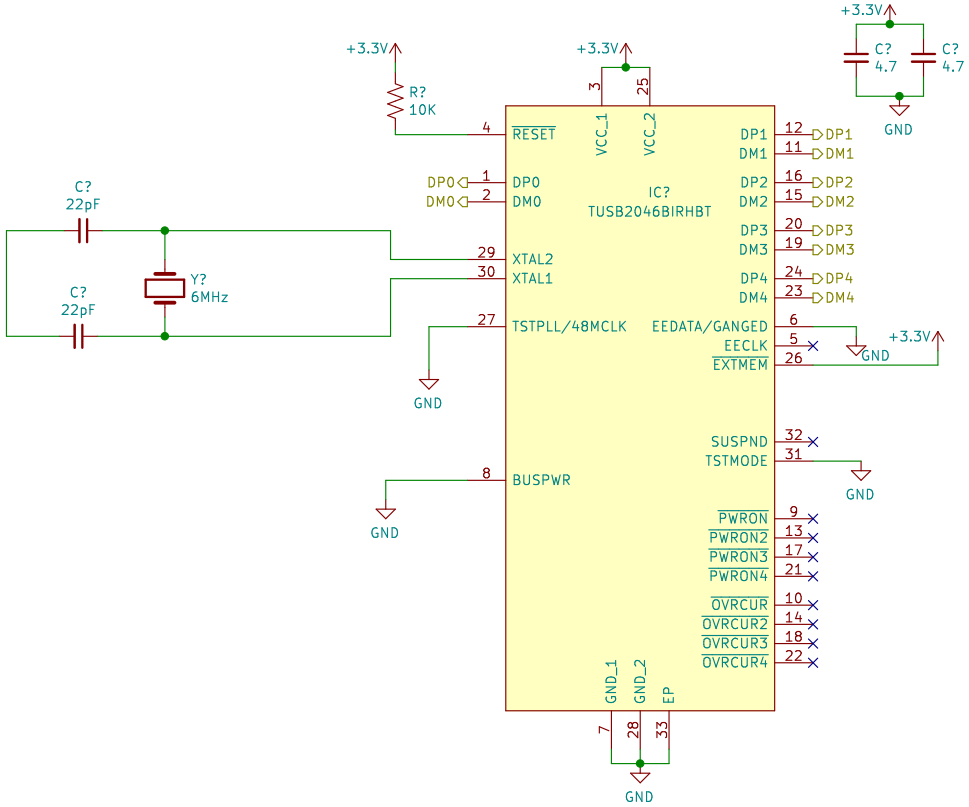


Sheet: /DP TO HDMI/
File: DP TO HDMI.sch

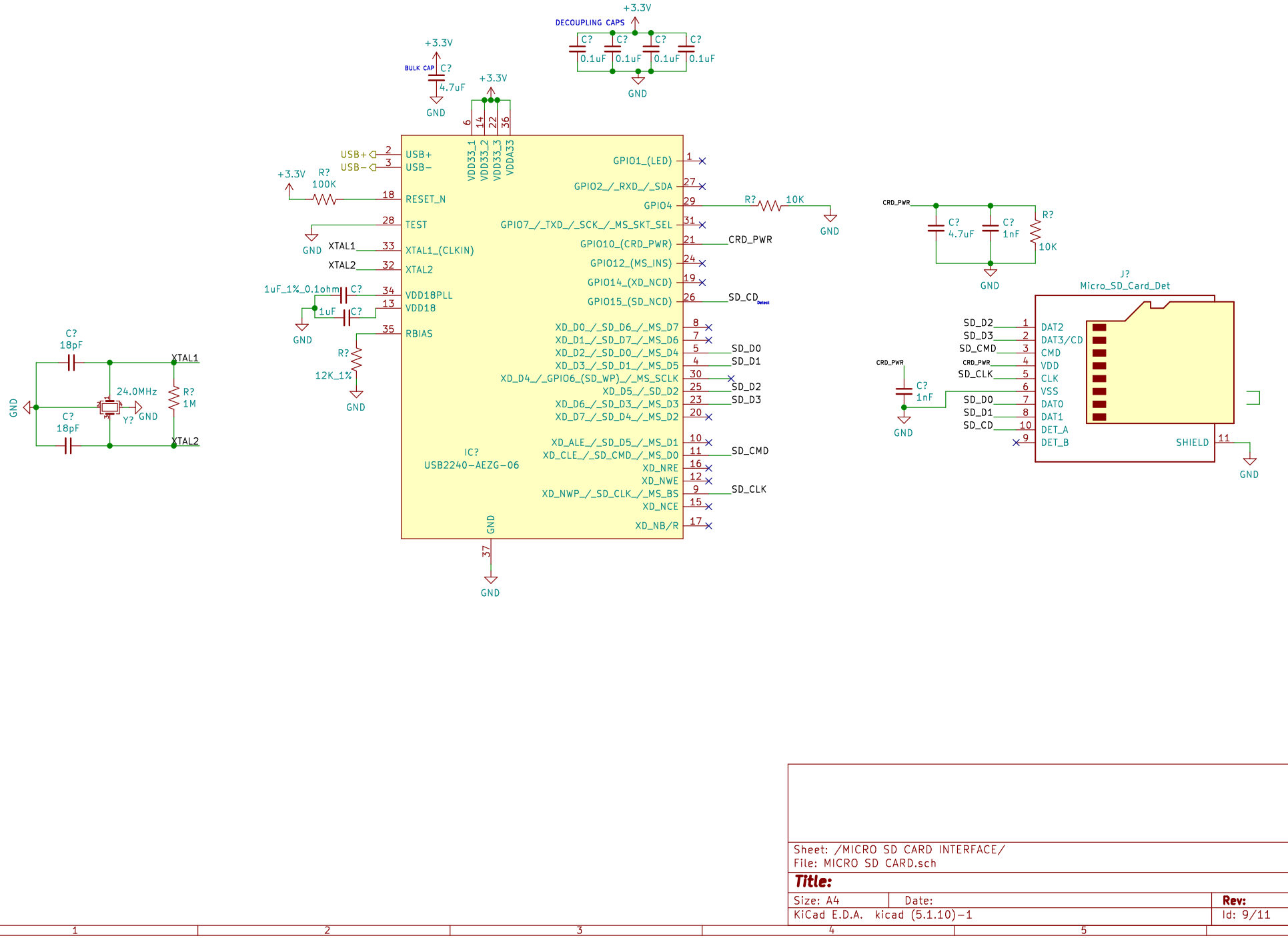
Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.10)−1		Id: 6/11


+1V1
DECOUPLING CAPS
C? 0.01uF
GND
+3.3V
C? 0.1uF
C? 1uF
C? 22uF
BULK CAPS
U? TUSB9261
VDD
VDD33
VDDA33
GRESTz
XI
XO
FREQSEL_0
FREQSEL_1
USB_SSTXP
USS_SSSTXM
USB_SSRXP
USS_SSSRXM
USB_DP
USB_DM
USB_VBUS
USB_R1
USB_R1RTN
NC
SATA_TXP
SATA_TXM
SATA_RXP
SATA_RXM
PCIE0_TX+_SATA0_TX+
PCIE0_TX-_SATA0_TX
PCIE0_RX-_SATA0_RX+
intentionally swapped
PCIE0_RX+_SATA0_RX
SPI_SCLK
SPI_DATA_OUT
SPI_DATA_IN
SPI_CS0
SPI_CS2/GPIO11
SPI_CS1/GPIO10
JTAG_TCK
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_TRSTz
GPIO7
GPIO6
GPIO5
GPIO4
GPIO3
GPIO2
GPIO1
GPIO0
PWM0
PWM1
GPIO8/UART_RX
GPIO9/UART_TX
VSS
VSSOSC
vssosc
R? 4.7K
R? 90.9K
R? 10K_1%
+5V
D? SSD_COMM_ON
Y? 40MHz
C? 12pF
m.2 connector (M-KEY)
J? Bus_M.2_Socket_M
PERST(0)(0_3.3V)_NC
CLKREQ
PEWAKE
PETp0/SATA-A+
PETn0/SATA-A-
PERp0/SATA-B-
PERn0/SATA-B+
PETp1
PETn1
PERp1
PERn1
PETp2
PETn2
PERp2
PERn2
PETp3
PETn3
PERp3
PERn3
DAS/DSS/LED1
PEDET
DEVSLP
SUSCLK
PCIE_CLK-
PCIE_CLK+
REFCLKp
REFCLKn
PEET=LOW ENABLE SATA INTERFACE
Sheet: /SATA INTERFACE/
File: USB TO SATA.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.10)-1
Id: 7/11



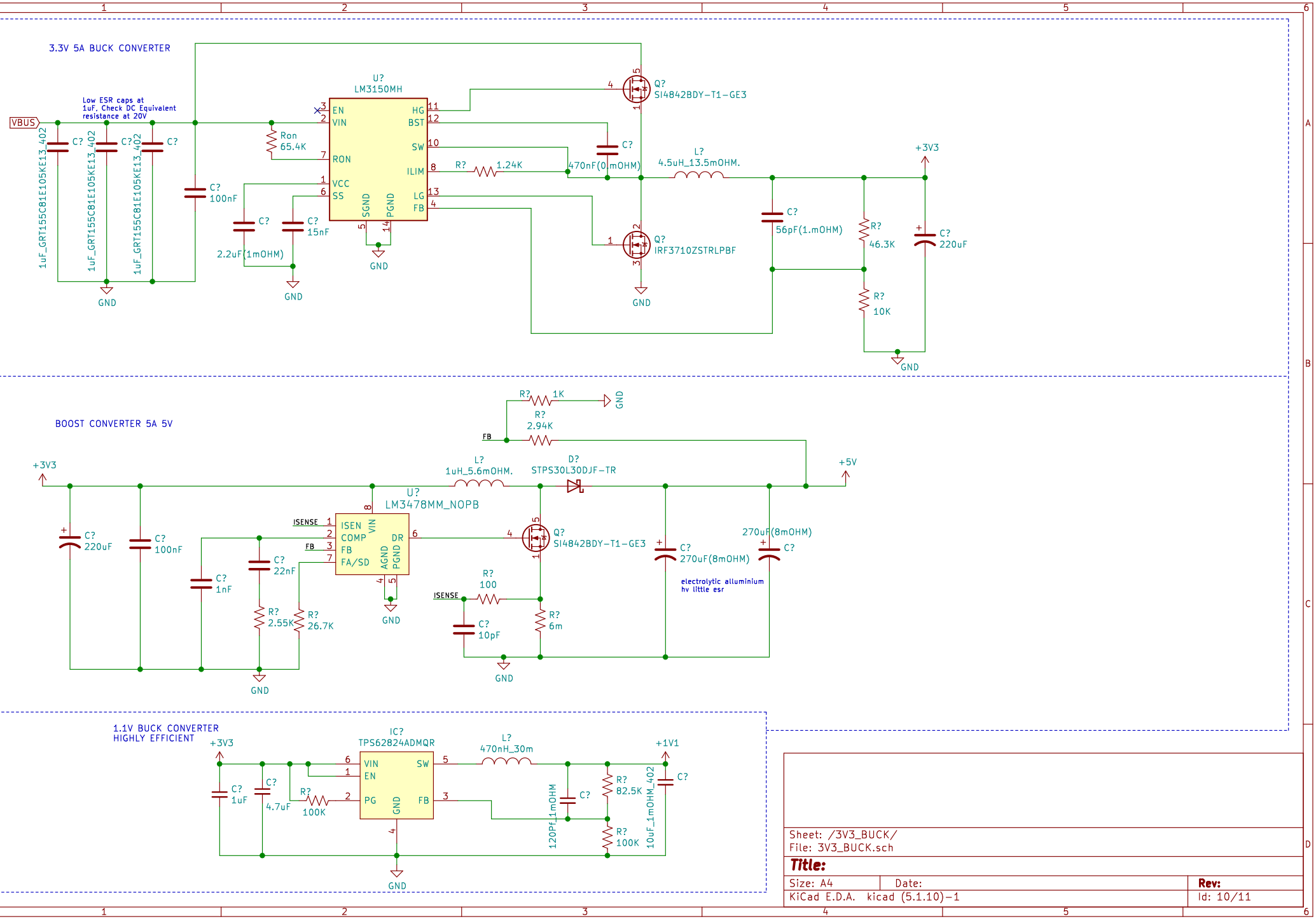
Sheet: /USB_HUB_EXTENSION/ File: USB_HUB_EXTENSION.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.10)-1		Id: 8/11

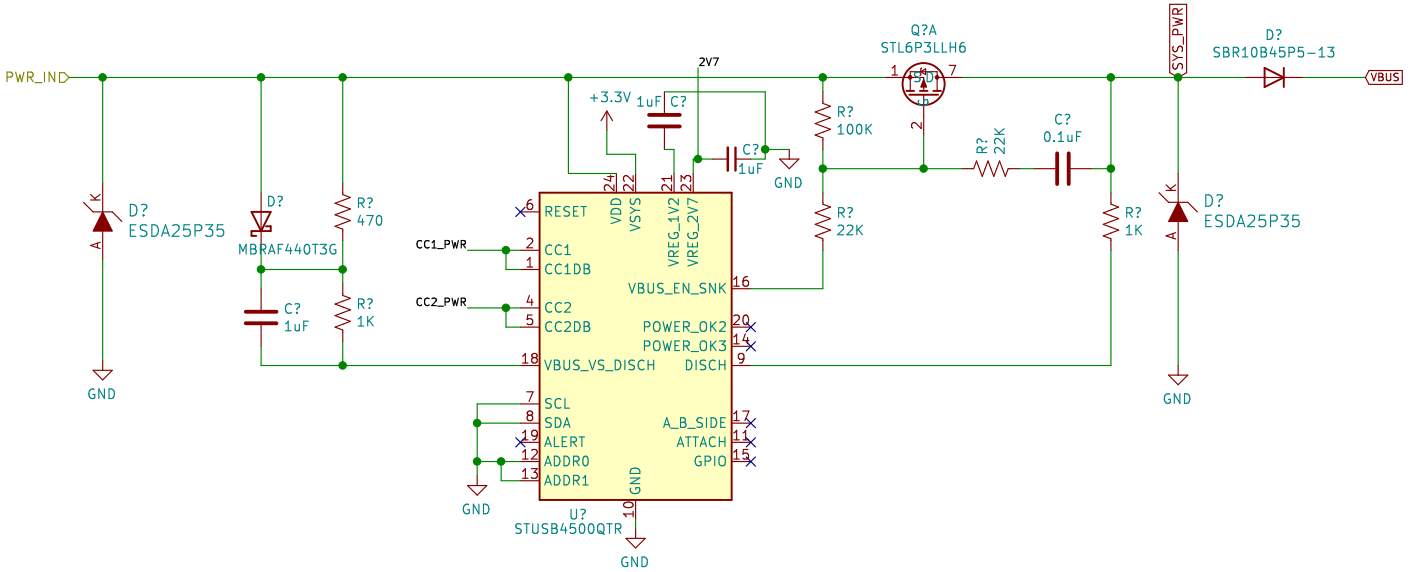


Sheet: /MICRO SD CARD INTERFACE/
File: MICRO SD CARD.sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.10)-1		Id: 9/11


3.3V 5A BUCK CONVERTER
Low ESR caps at 1uF, Check DC Equivalent resistance at 20V
VBUS
U?
LM3150MH
EN
VIN
RON
VCC
SS
SGND
PGND
HG
BST
SW
ILIM
LG
FB
Ron 65.4K
R? 1.24K
470nF(0 mOHM)
Q? SI4842BDY-T1-GE3
Q? IRF3710ZSTRLPBF
L? 4.5uH_13.5mOHM.
C? 56pF(1.mOHM)
R? 46.3K
R? 10K
C? 220uF
+3V3
GND
1uF_GRT155C81E105KE13_402
C? 100nF
C? 2.2uF(1mOHM)
C? 15nF
BOOST CONVERTER 5A 5V
R? 1K
R? 2.94K
FB
L? 1uH_5.6mOHM.
D? STPS30L30DJF-TR
+5V
U? LM3478MM_NOPB
ISEN
COMP
FB
FA/SD
VIN
DR
AGND
PGND
C? 220uF
C? 100nF
C? 1nF
C? 22nF
R? 2.55K
R? 26.7K
R? 100
C? 10pF
R? 6m
C? 270uF(8mOHM)
270uF(8mOHM)
electrolytic alluminium hv little esr
1.1V BUCK CONVERTER HIGHLY EFFICIENT
IC? TPS62824ADMQR
VIN
EN
PG
GND
SW
FB
L? 470nH_30m
+1V1
C? 1uF
C? 4.7uF
R? 100K
120Pf_1mOHM
R? 82.5K
R? 100K
10uF_1mOHM_402
Sheet: /3V3_BUCK/
File: 3V3_BUCK.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (5.1.10)-1
Id: 10/11



Sheet: /ST_PD CHARGING/		
File: ST_PD CHARGING CONTROLLER.sch		
Title:		
Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (5.1.10)-1		Id: 11/11