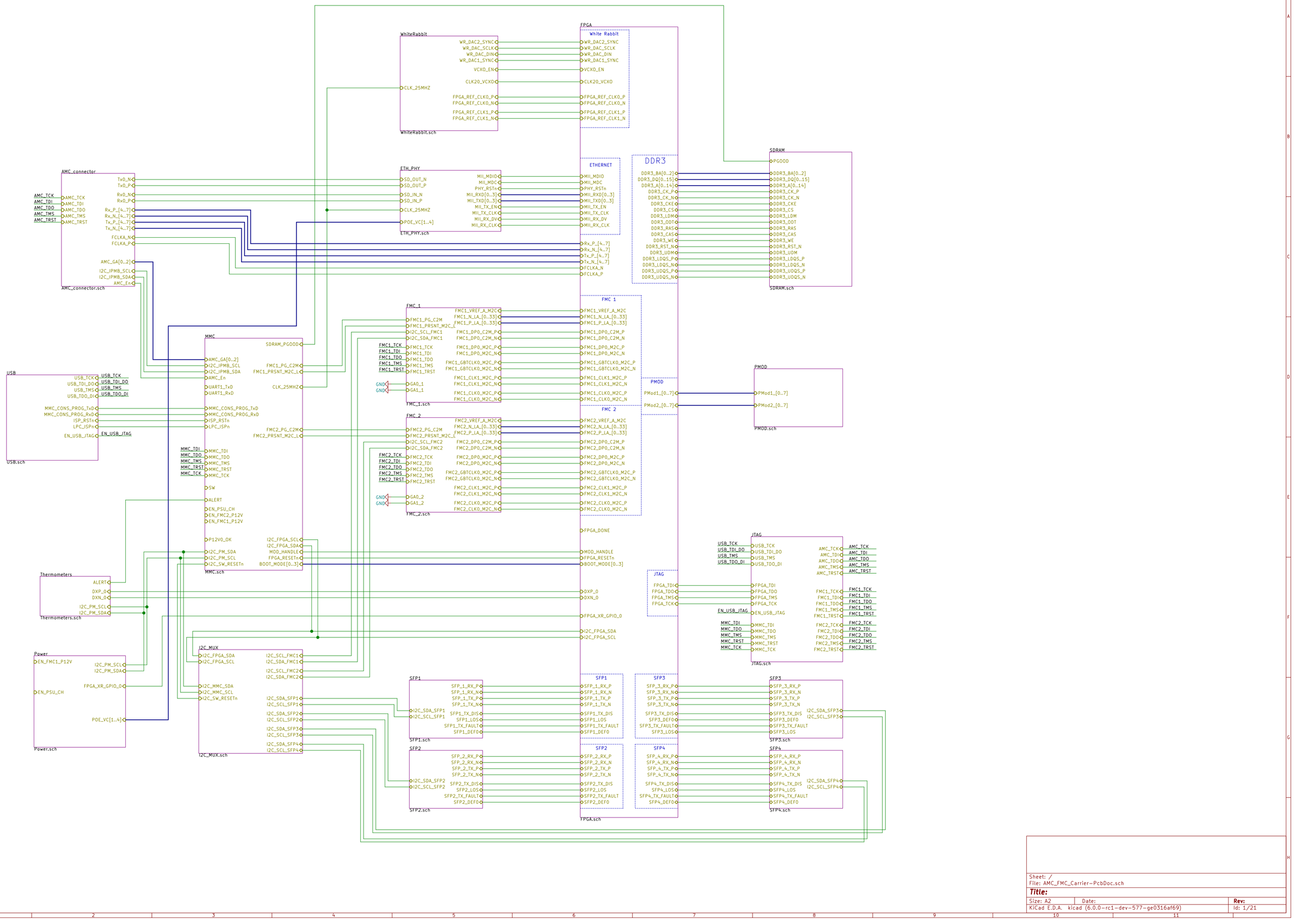

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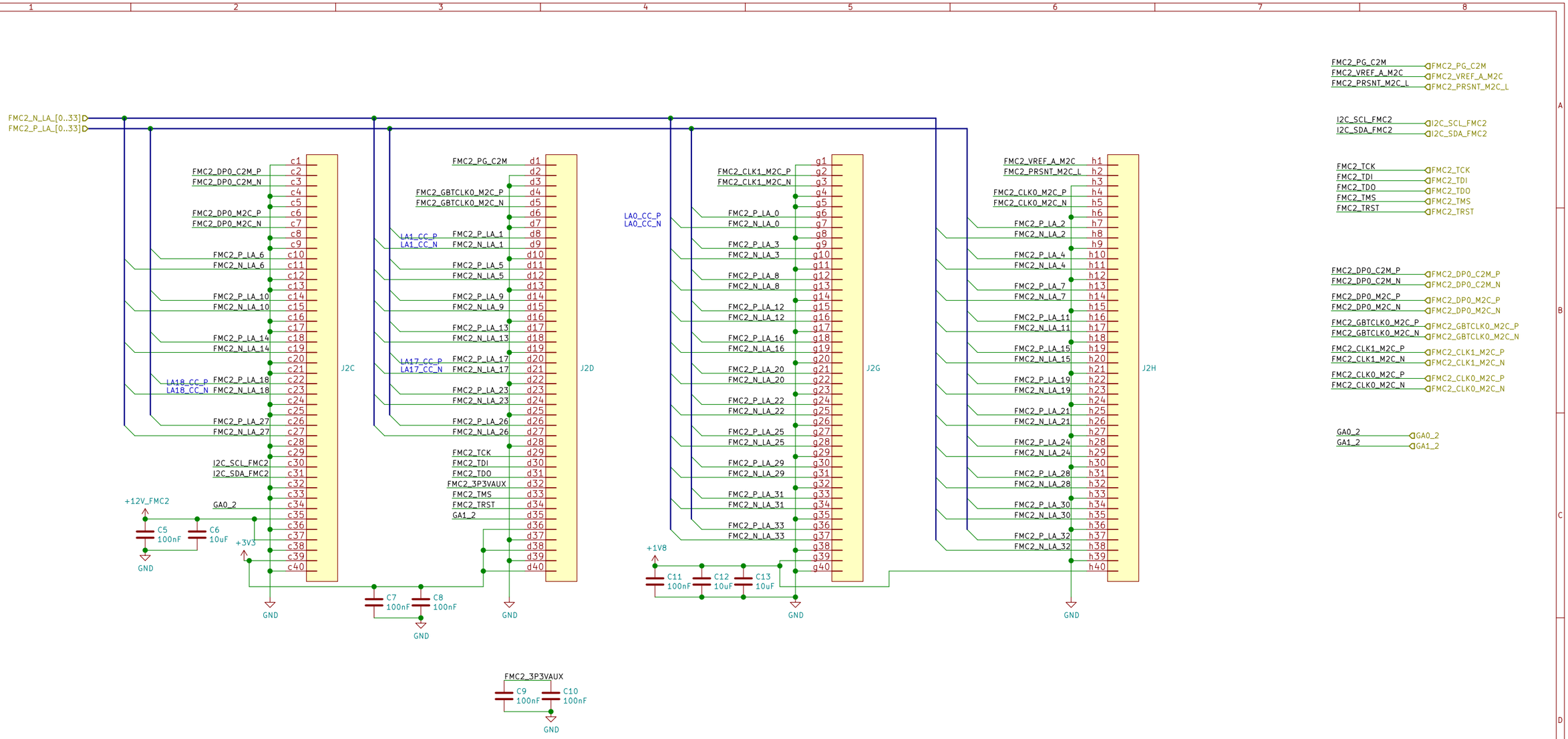
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 1/21



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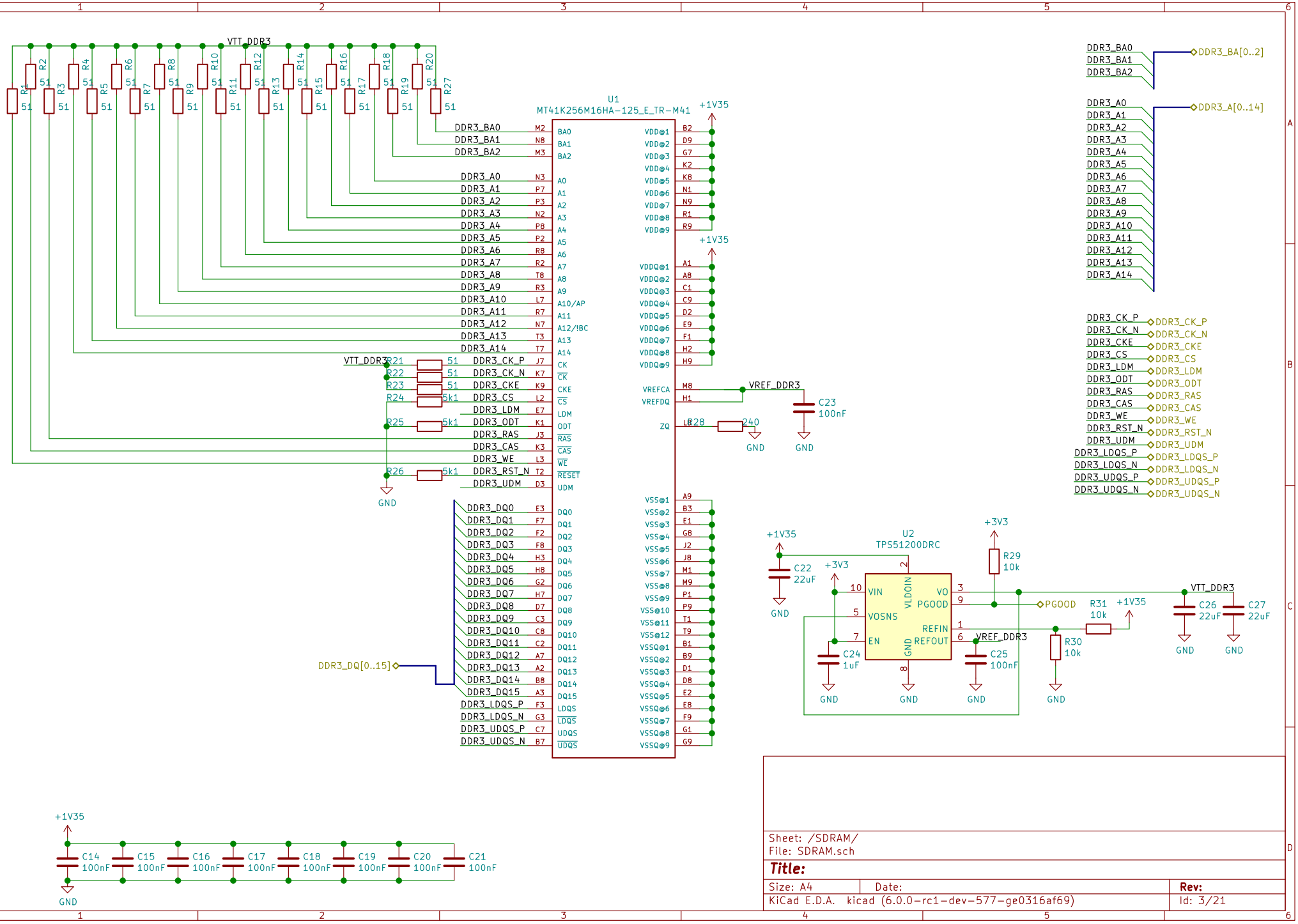
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 2/21


VTT_DDR3
R1 51
R2 51
R3 51
R4 51
R5 51
R6 51
R7 51
R8 51
R9 51
R10 51
R11 51
R12 51
R13 51
R14 51
R15 51
R16 51
R17 51
R18 51
R19 51
R20 51
R27 51
U1
MT41K256M16HA-125_E_TR-M41
+1V35
DDR3_BA0 M2
DDR3_BA1 N8
DDR3_BA2 M3
DDR3_A0 N3
DDR3_A1 P7
DDR3_A2 P3
DDR3_A3 N2
DDR3_A4 P8
DDR3_A5 P2
DDR3_A6 R8
DDR3_A7 R2
DDR3_A8 T8
DDR3_A9 R3
DDR3_A10 L7
DDR3_A11 R7
DDR3_A12 N7
DDR3_A13 T3
DDR3_A14 T7
VTT_DDR3
R21 51 DDR3_CK_P J7
R22 51 DDR3_CK_N K7
R23 51 DDR3_CKE K9
R24 5k1 DDR3_CS L2
DDR3_LDM E7
R25 5k1 DDR3_ODT K1
DDR3_RAS J3
DDR3_CAS K3
DDR3_WE L3
R26 5k1 DDR3_RST_N T2
DDR3_UDM D3
GND
DDR3_DQ0 E3
DDR3_DQ1 F7
DDR3_DQ2 F2
DDR3_DQ3 F8
DDR3_DQ4 H3
DDR3_DQ5 H8
DDR3_DQ6 G2
DDR3_DQ7 H7
DDR3_DQ8 D7
DDR3_DQ9 C3
DDR3_DQ10 C8
DDR3_DQ11 C2
DDR3_DQ12 A7
DDR3_DQ13 A2
DDR3_DQ14 B8
DDR3_DQ15 A3
DDR3_LDQS_P F3
DDR3_LDQS_N G3
DDR3_UDQS_P C7
DDR3_UDQS_N B7
DDR3_DQ[0..15]
VDD@1 B2
VDD@2 D9
VDD@3 G7
VDD@4 K2
VDD@5 K8
VDD@6 N1
VDD@7 N9
VDD@8 R1
VDD@9 R9
+1V35
VDDQ@1 A1
VDDQ@2 A8
VDDQ@3 C1
VDDQ@4 C9
VDDQ@5 D2
VDDQ@6 E9
VDDQ@7 F1
VDDQ@8 H2
VDDQ@9 H9
VREFCA M8
VREFDQ H1
VREF_DDR3
C23 100nF
ZQ L8
R28 240
GND
GND
VSS@1 A9
VSS@2 B3
VSS@3 E1
VSS@4 G8
VSS@5 J2
VSS@6 J8
VSS@7 M1
VSS@8 M9
VSS@9 P1
VSS@10 P9
VSS@11 T1
VSS@12 T9
VSSQ@1 B1
VSSQ@2 B9
VSSQ@3 D1
VSSQ@4 D8
VSSQ@5 E2
VSSQ@6 E8
VSSQ@7 F9
VSSQ@8 G1
VSSQ@9 G9
DDR3_BA0
DDR3_BA1
DDR3_BA2
DDR3_BA[0..2]
DDR3_A0
DDR3_A1
DDR3_A2
DDR3_A3
DDR3_A4
DDR3_A5
DDR3_A6
DDR3_A7
DDR3_A8
DDR3_A9
DDR3_A10
DDR3_A11
DDR3_A12
DDR3_A13
DDR3_A14
DDR3_A[0..14]
DDR3_CK_P
DDR3_CK_N
DDR3_CKE
DDR3_CS
DDR3_LDM
DDR3_ODT
DDR3_RAS
DDR3_CAS
DDR3_WE
DDR3_RST_N
DDR3_UDM
DDR3_LDQS_P
DDR3_LDQS_N
DDR3_UDQS_P
DDR3_UDQS_N
+1V35
C22 22uF
GND
+3V3
U2
TPS51200DRC
VIN 10
VOSNS 5
EN 7
VLDOIN 2
PGOOD 9
VO 3
REFIN 1
REFOUT 6
GND 8
C24 1uF
GND
GND
C25 100nF
GND
+3V3
R29 10k
PGOOD
R31 10k
+1V35
R30 10k
GND
VTT_DDR3
C26 22uF
C27 22uF
GND
GND
+1V35
C14 100nF
C15 100nF
C16 100nF
C17 100nF
C18 100nF
C19 100nF
C20 100nF
C21 100nF
GND
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Size: A4
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Rev:
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)
Id: 3/21

Rx0_P
Rx0_N
Tx0_P
Tx0_N

Rx1_P
Rx1_N
Tx1_N
Tx1_P

Rx_P_[4..7]
Rx_N_[4..7]
Tx_N_[4..7]
Tx_P_[4..7]

Rx_P_4
Rx_N_4
Tx_N_4
Tx_P_4
Rx_P_5
Rx_N_5
Tx_N_5
Tx_P_5
Rx_P_6
Rx_N_6
Tx_N_6
Tx_P_6
Rx_P_7
Rx_N_7
Tx_N_7
Tx_P_7

Rx8_P
Rx8_N
Tx8_N
Tx8_P
Rx9_P
Rx9_N
Tx9_N
Tx9_P
Rx10_P
Rx10_N
Tx10_N
Tx10_P
Rx11_P
Rx11_N
Tx11_N
Tx11_P

Rx2_P
Rx2_N
Tx2_N
Tx2_P

Rx3_P
Rx3_N
Tx3_N
Tx3_P

Rx12_N
Rx12_P
Tx12_N
Tx12_P
Rx13_N
Rx13_P
Tx13_N
Tx13_P
Rx14_N
Rx14_P
Tx14_N
Tx14_P
Rx15_N
Rx15_P
Tx15_N
Tx15_P

Rx17_P
Rx17_N
Tx17_N
Tx17_P
Rx18_P
Rx18_N
Tx18_N
Tx18_P
Rx19_P
Rx19_N
Tx19_N
Tx19_P
Rx20_P
Rx20_N
Tx20_N
Tx20_P

TCLKATCLKA_N
TCLKATCLKA_P
TCLKBTCLKB_N
TCLKBTCLKB_P
TCLKDTCLKC_N
TCLKDTCLKC_P
TCLKCTCLKD_N
TCLKCTCLKD_P

FCLKA_N
FCLKA_P

AMC_TCK
AMC_TDI
AMC_TDO
AMC_TMS
AMC_TRST

AMC_GA2
AMC_GA1
AMC_GA0
AMC_GA[0..2]

AMC_En

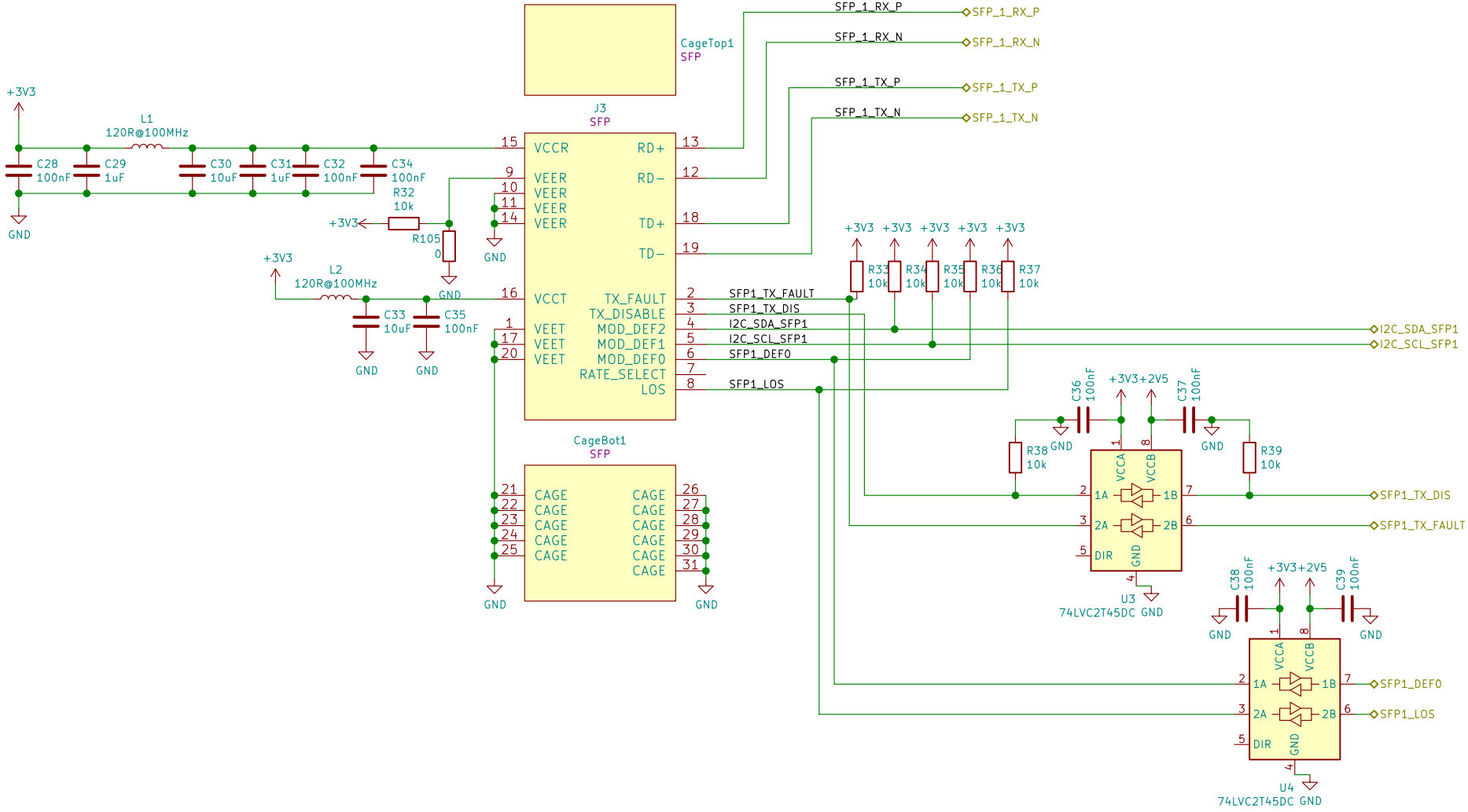
IPMB_SCL
IPMB_SDA

PS0#
D1
SS16
PS1#

+12V
+3V3MP

P1
CMP-0001-00058-2

| | | |



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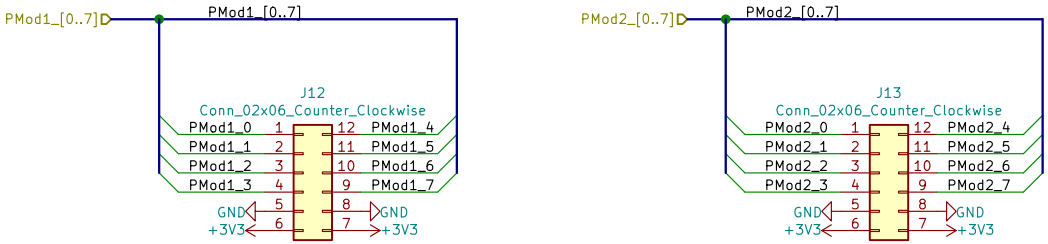
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 5/21



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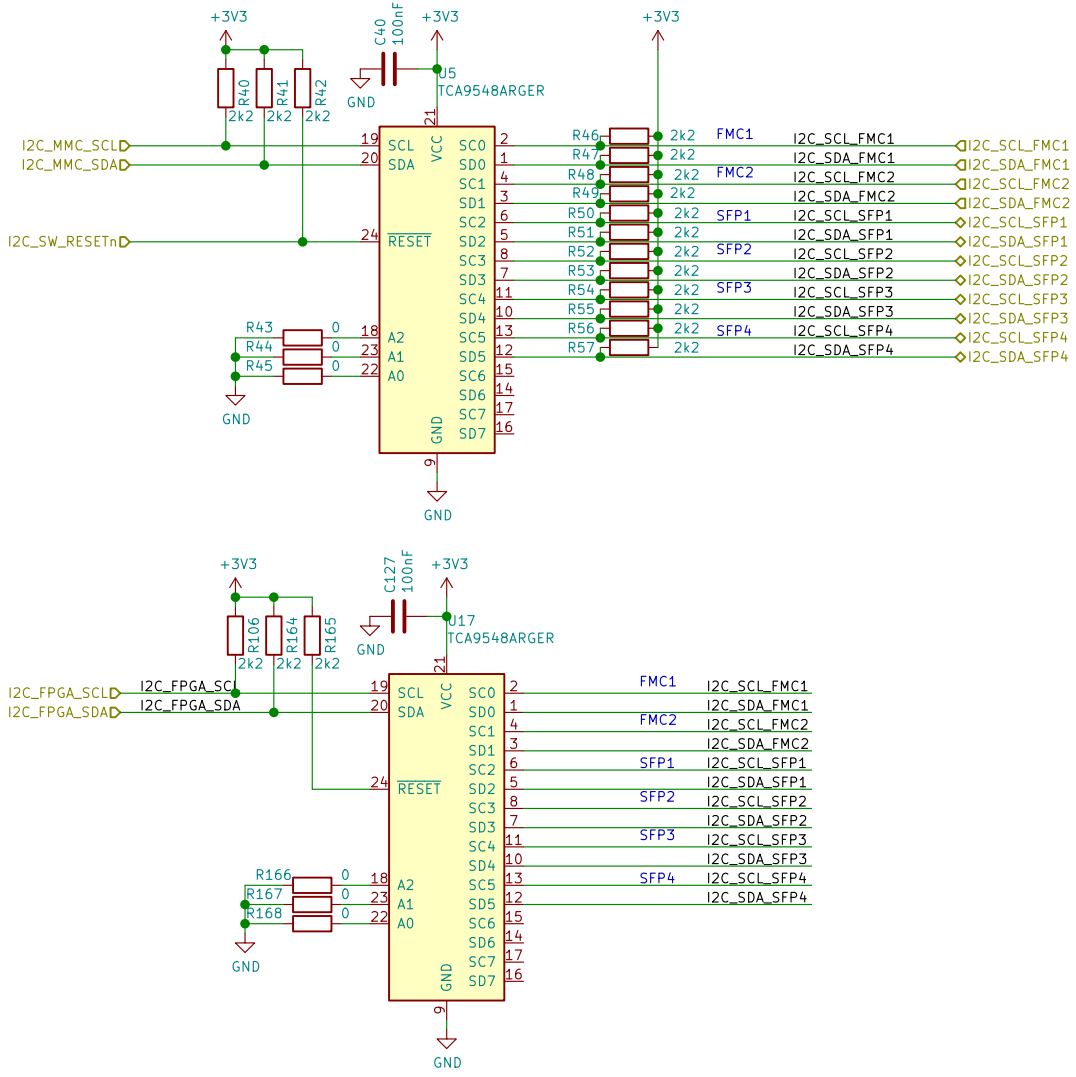

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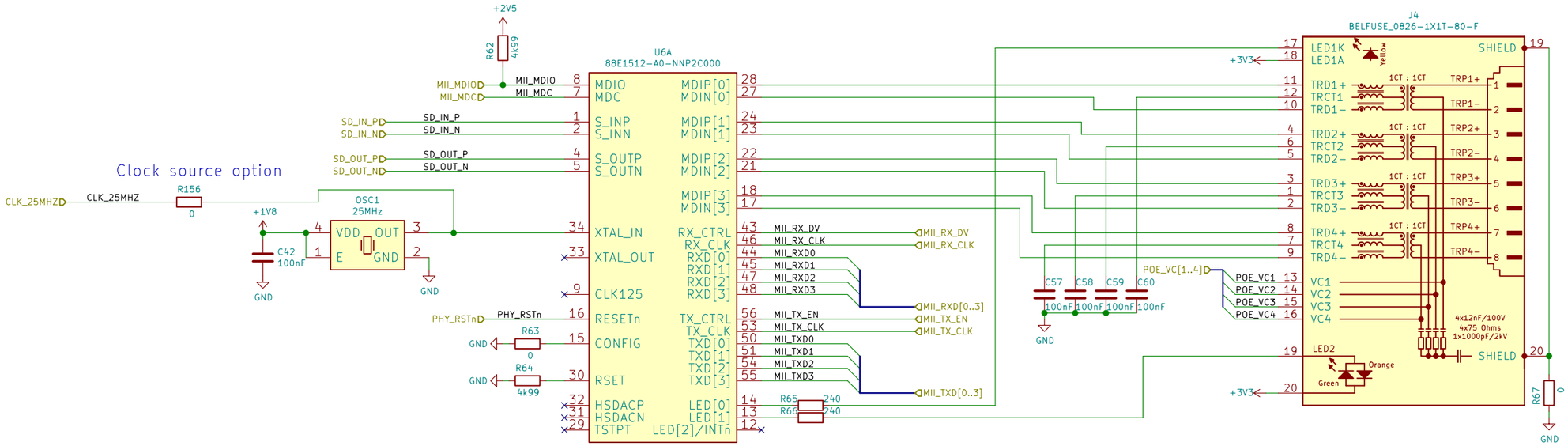

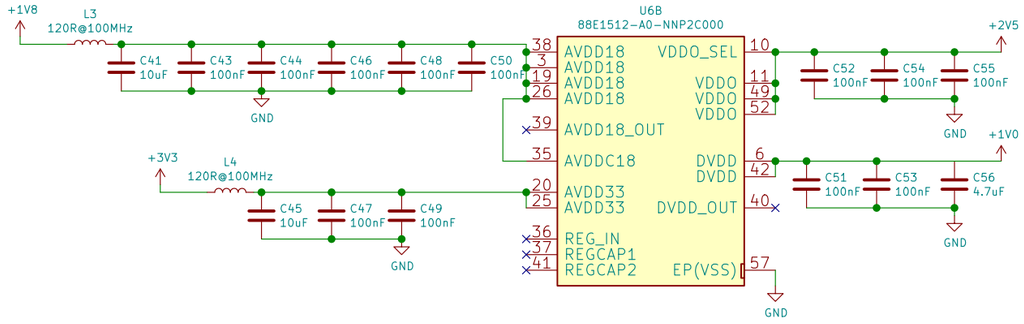

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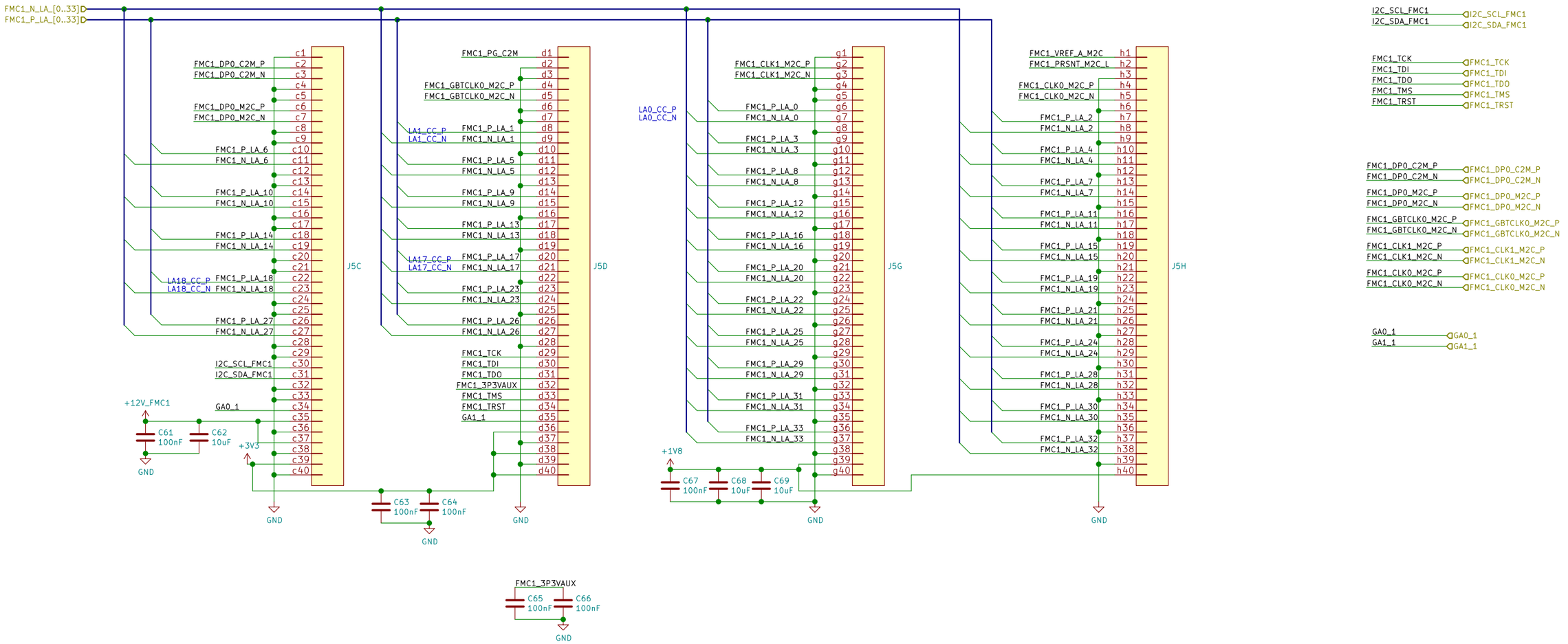
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 8/21



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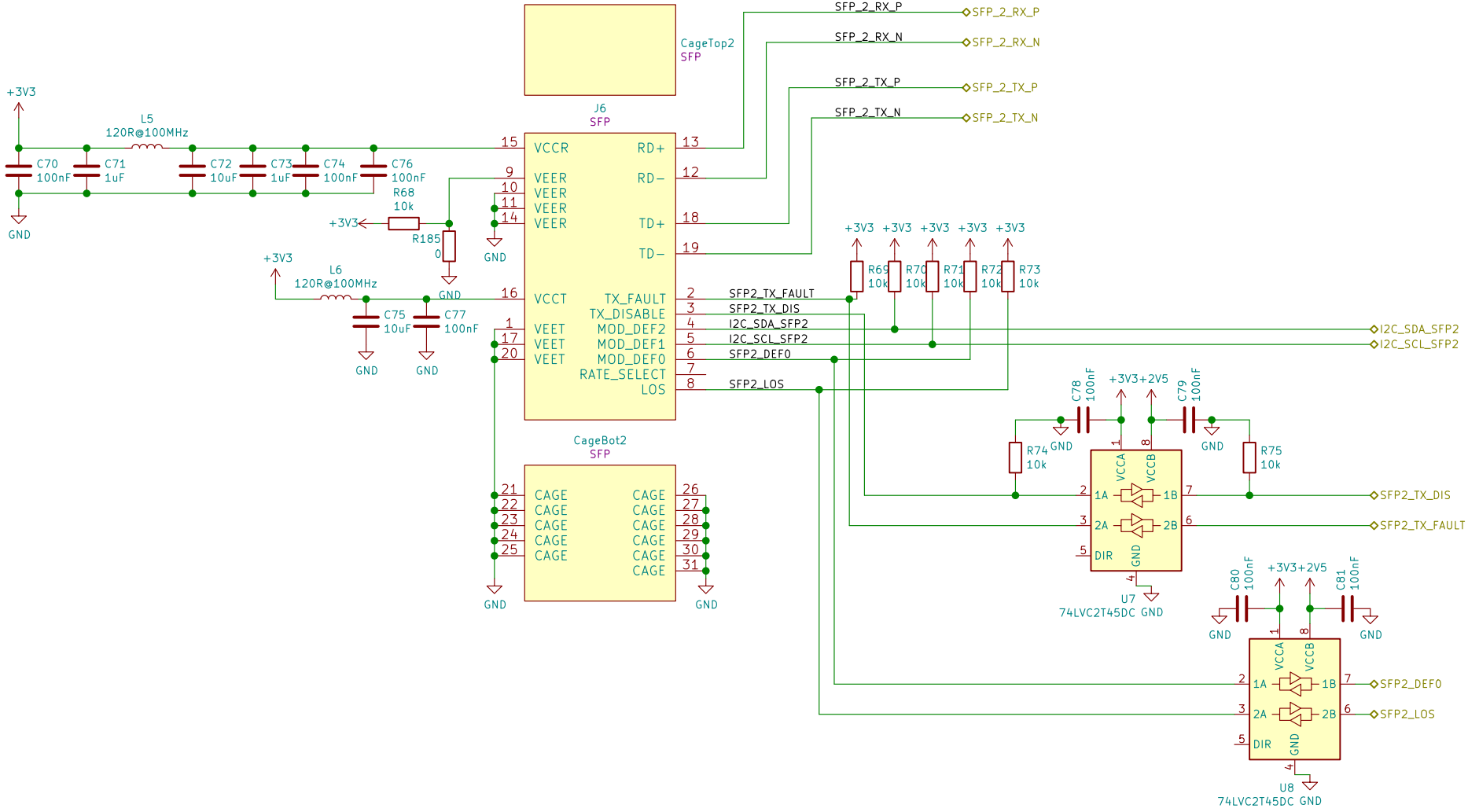
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 9/21



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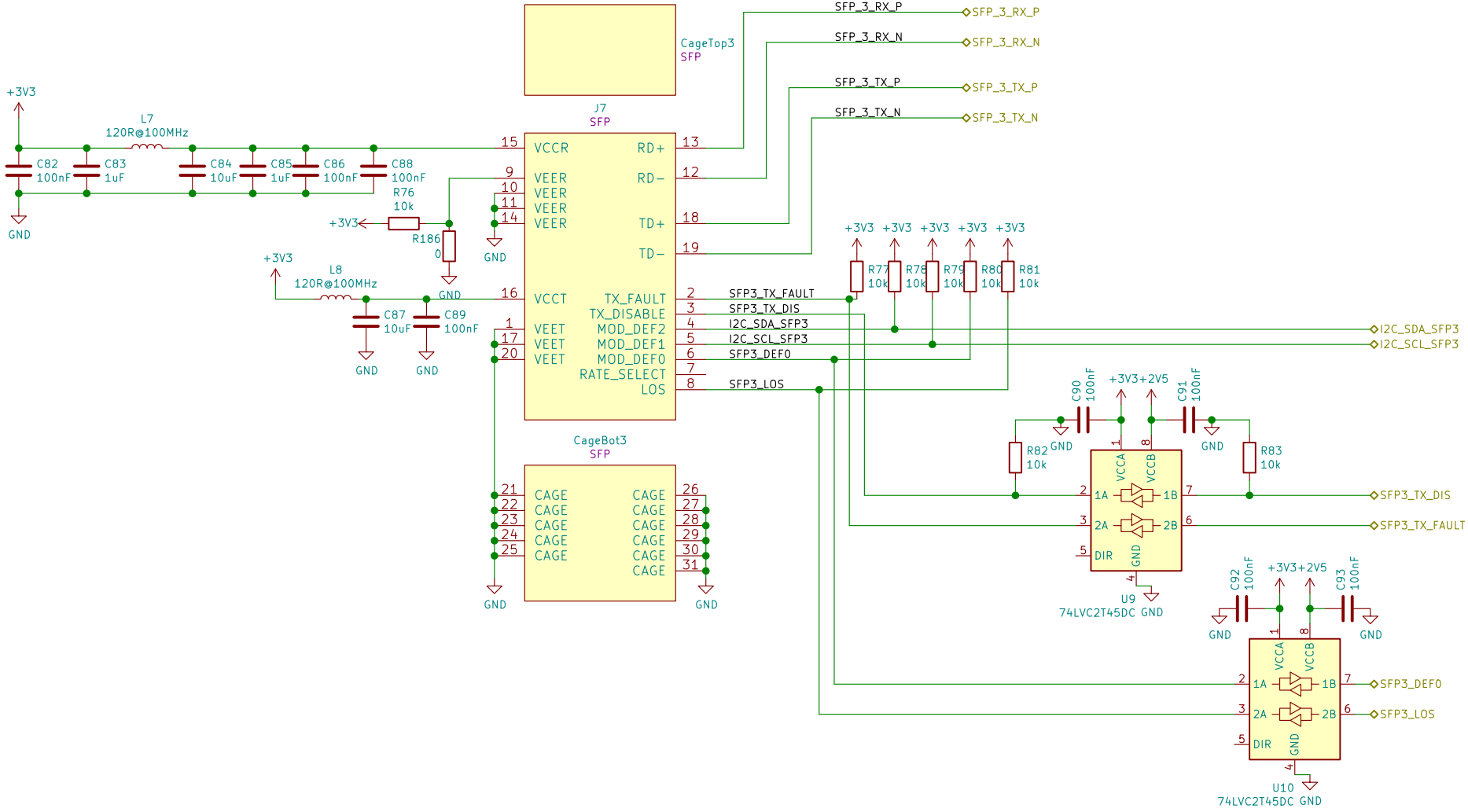

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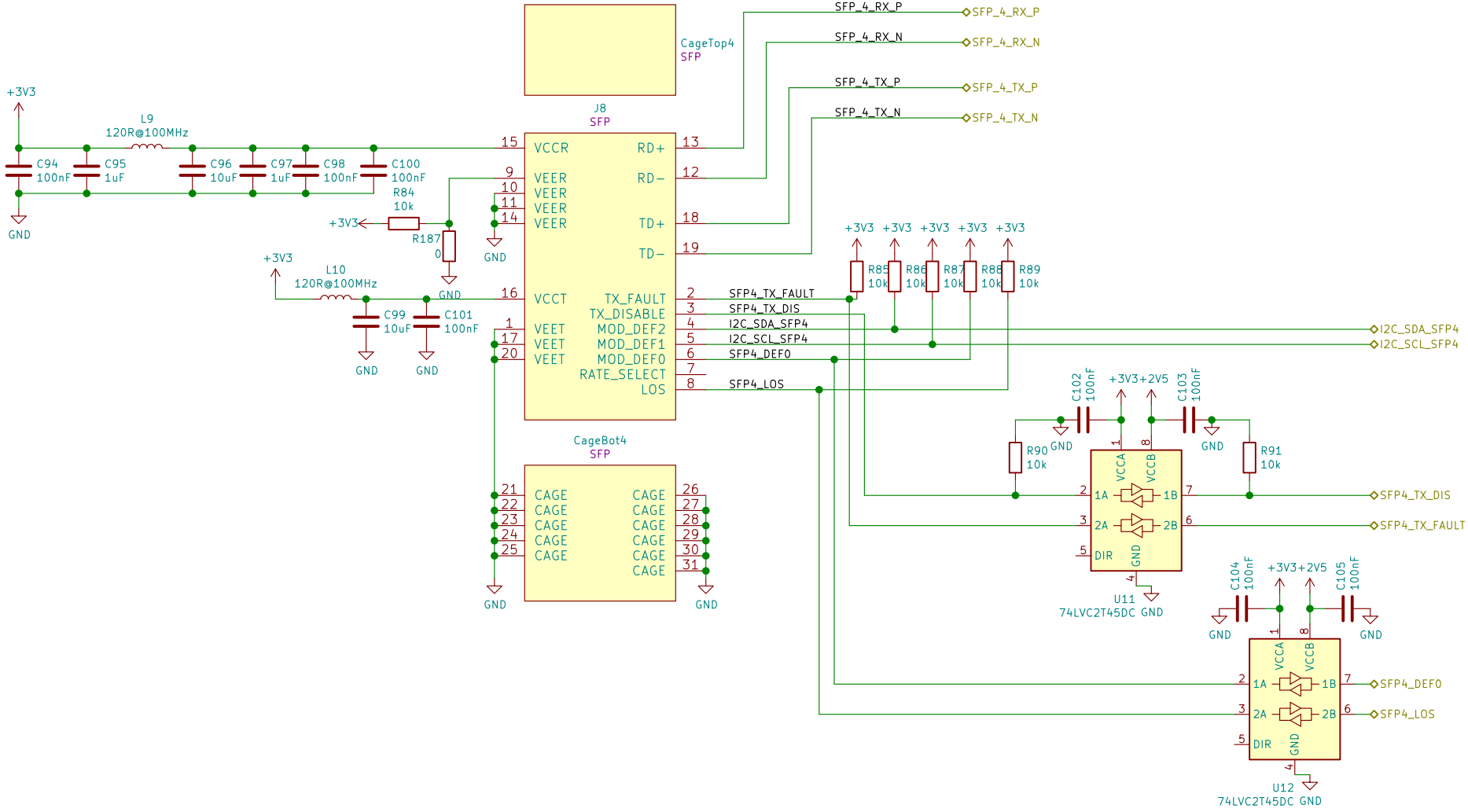

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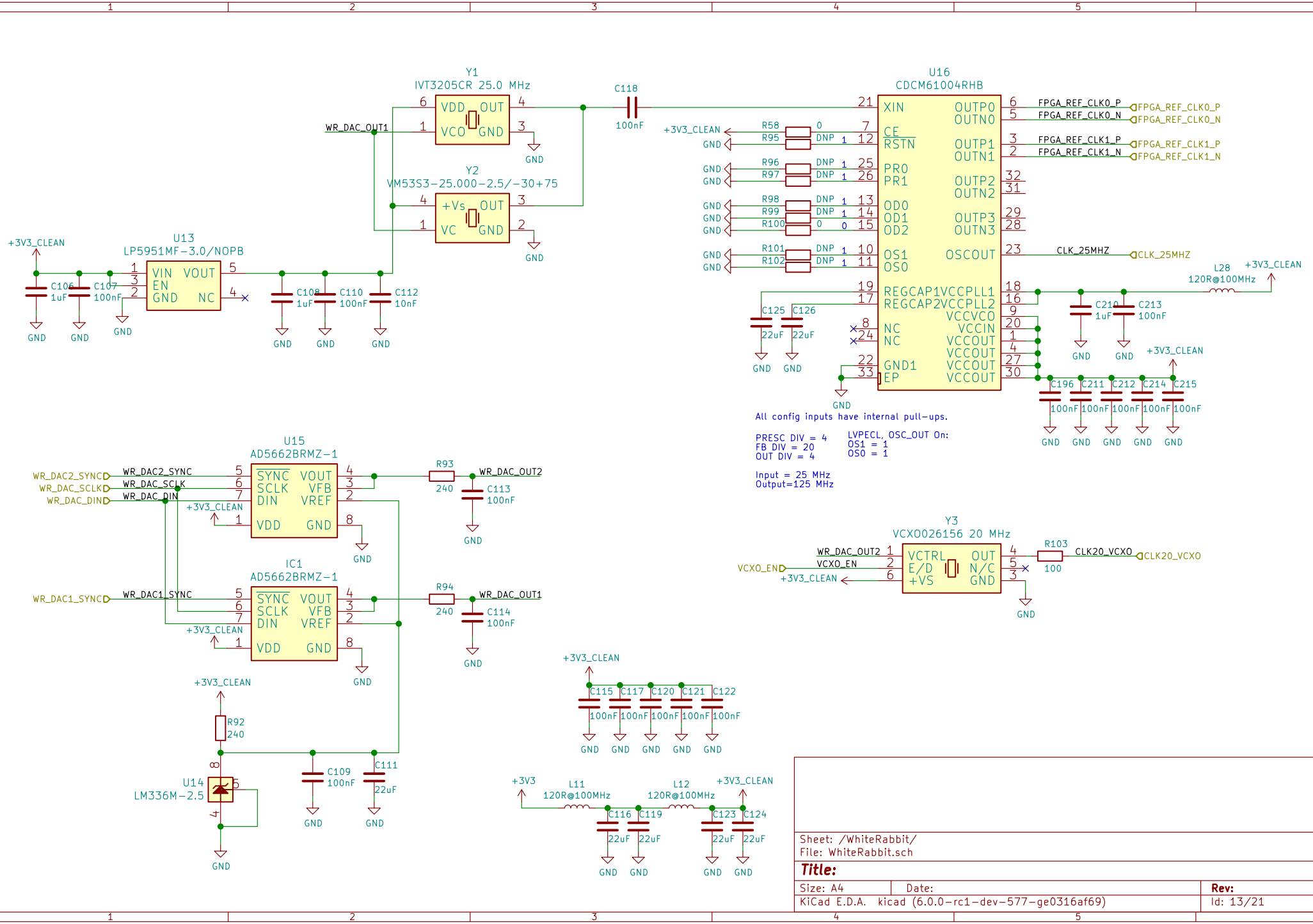
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 12/21


Y1
IVT3205CR 25.0 MHz
WR_DAC_OUT1
C118
100nF
Y2
VM53S3-25.000-2.5/-30+75
U16
CDCM61004RHB
XIN
CE
RSTN
PR0
PR1
OD0
OD1
OD2
OS1
OS0
REGCAP1
REGCAP2
NC
NC
GND1
EP
OUTP0
OUTN0
OUTP1
OUTN1
OUTP2
OUTN2
OUTP3
OUTN3
OSCOUT
VCCPLL1
VCCPLL2
VCCVCO
VCCIN
VCCOUT
VCCOUT
VCCOUT
VCCOUT
FPGA_REF_CLK0_P
FPGA_REF_CLK0_N
FPGA_REF_CLK1_P
FPGA_REF_CLK1_N
CLK_25MHZ
+3V3_CLEAN
R58
R95
R96
R97
R98
R99
R100
R101
R102
DNP
C125
C126
22uF
C210
C213
1uF
100nF
L28
120R@100MHz
C196
C211
C212
C214
C215
All config inputs have internal pull-ups.
PRESC DIV = 4
FB DIV = 20
OUT DIV = 4
Input = 25 MHz
Output=125 MHz
LVPECL, OSC_OUT On:
OS1 = 1
OS0 = 1
U13
LP5951MF-3.0/NOPB
VIN
VOUT
EN
GND
NC
C106
C107
C108
C110
C112
U15
AD5662BRMZ-1
SYNC
SCLK
DIN
VOUT
VFB
VREF
VDD
GND
WR_DAC2_SYNC
WR_DAC_SCLK
WR_DAC_DIN
WR_DAC1_SYNC
R93
R94
240
WR_DAC_OUT2
WR_DAC_OUT1
C113
C114
100nF
IC1
U14
LM336M-2.5
R92
240
C109
C111
22uF
Y3
VCXO026156 20 MHz
VCTRL
E/D
+VS
OUT
N/C
VCXO_EN
R103
100
CLK20_VCXO
C115
C117
C120
C121
C122
L11
L12
120R@100MHz
C116
C119
C123
C124
Sheet: /WhiteRabbit/
File: WhiteRabbit.sch
Title:
Size: A4
Date:
Rev:
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)
Id: 13/21

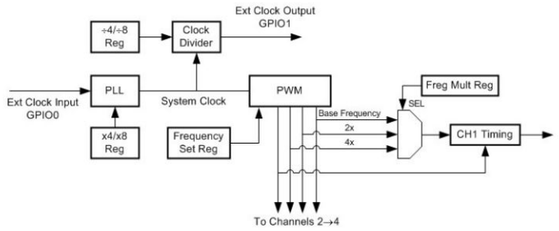
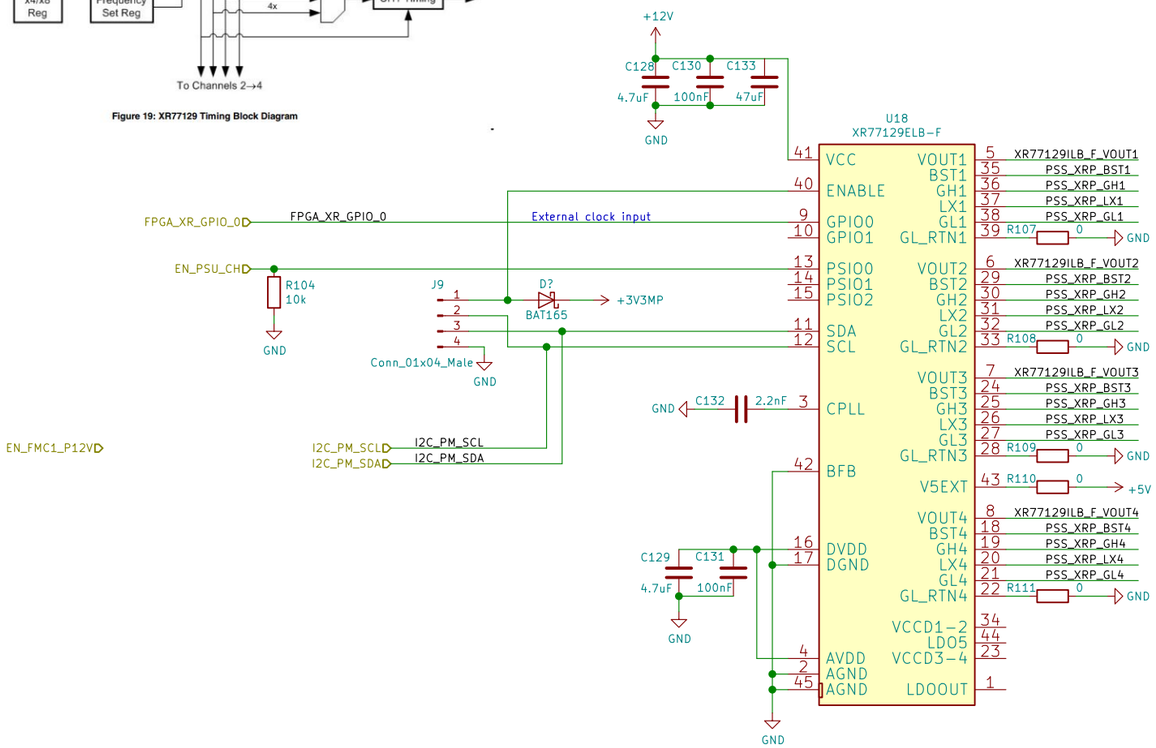
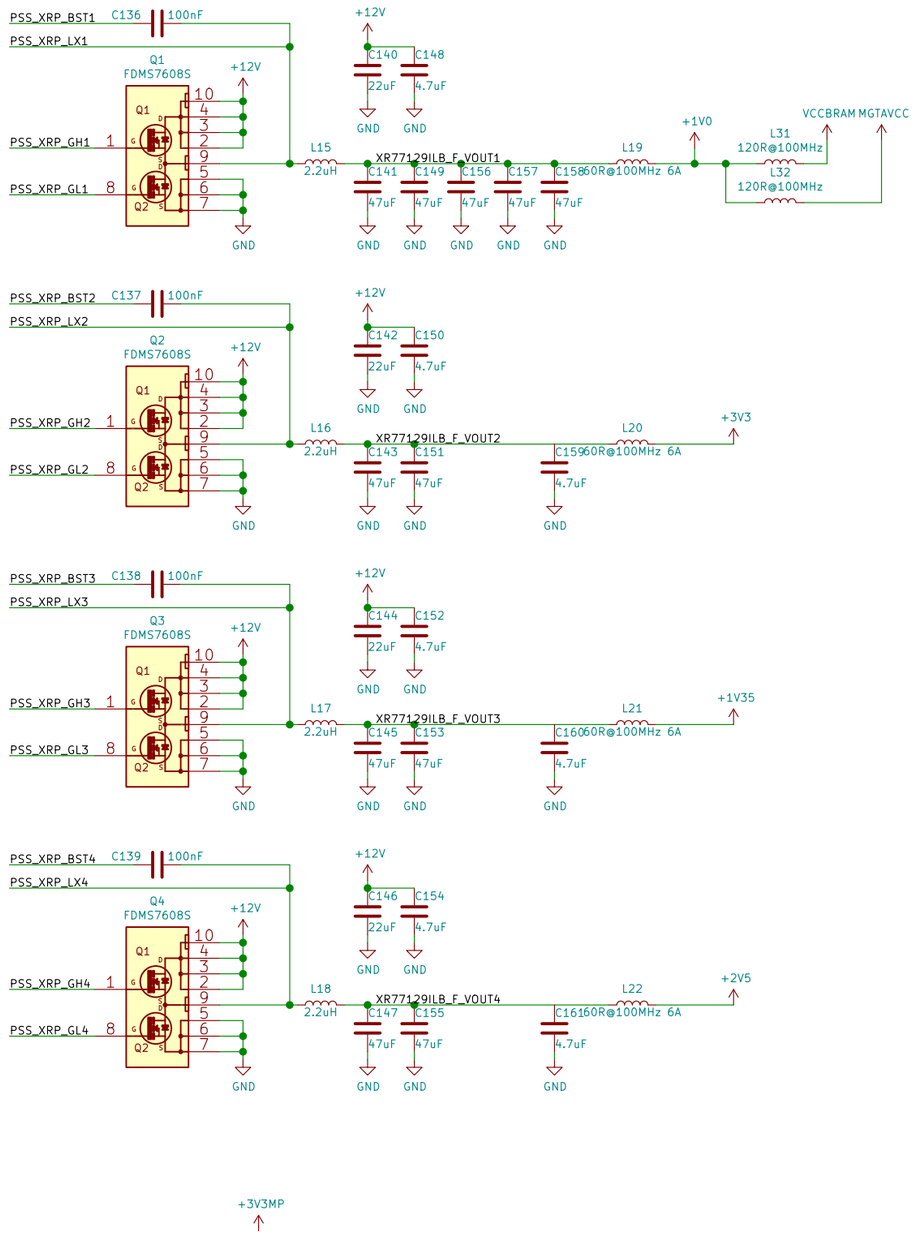
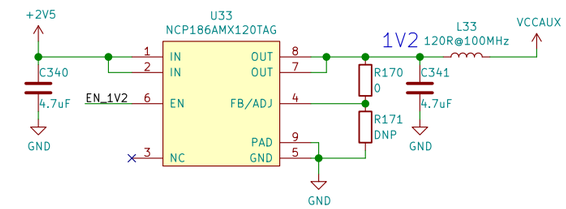
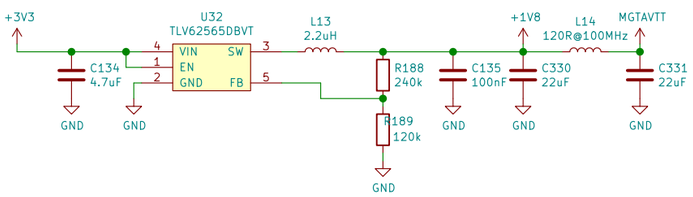


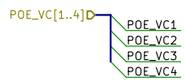
Figure 19: XR77129 Timing Block Diagram











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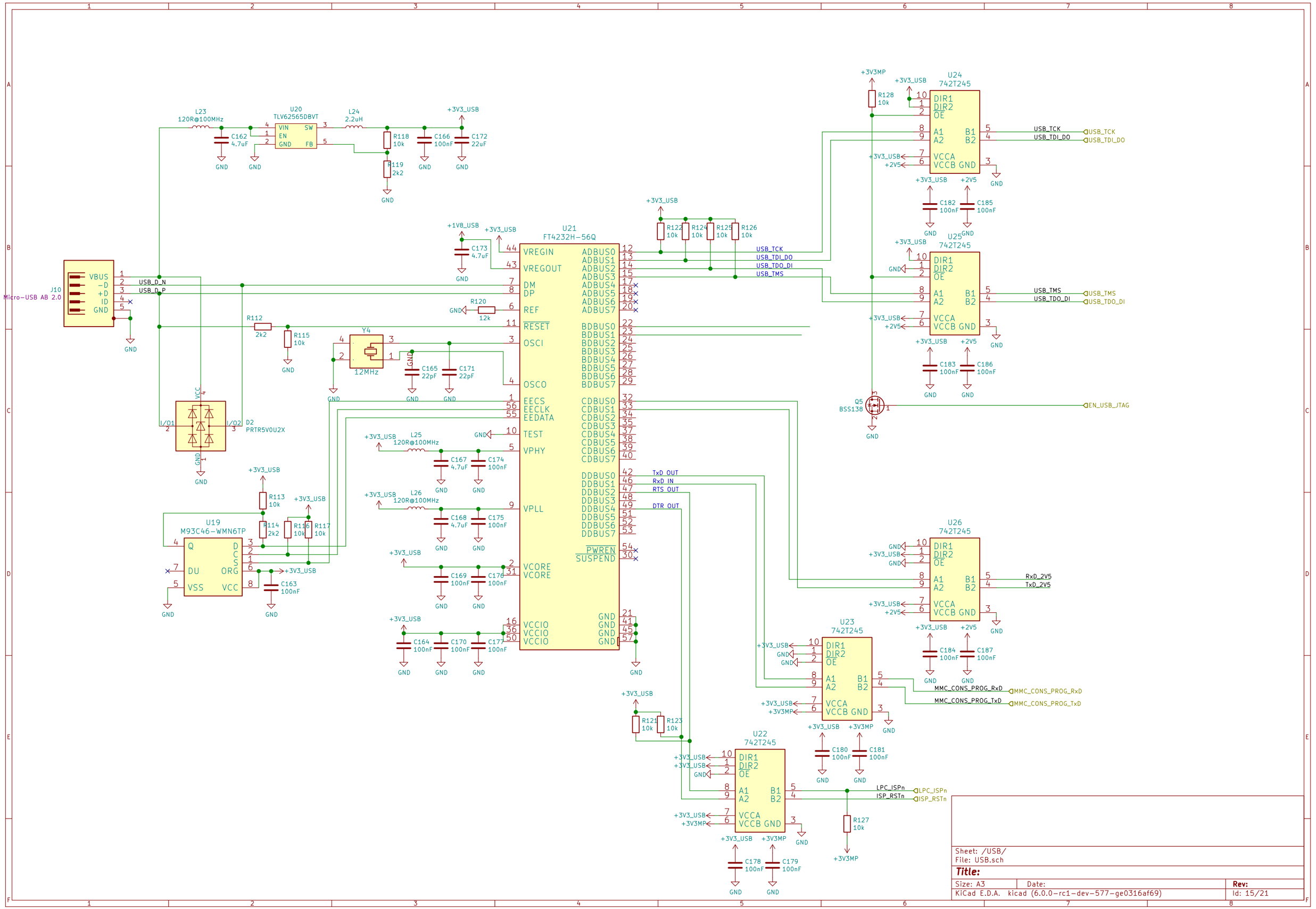
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 14/21


J10
Micro-USB AB 2.0
VBUS
-D
+D
ID
GND
USB_D_N
USB_D_P
R112
2k2
R115
10k
D2
PRTR5V0U2X
U19
M93C46-WMN6TP
R113
10k
R114
2k2
R116
10k
R117
10k
C163
100nF
L23
120R@100MHz
C162
4.7uF
U20
TLV62565DBVT
VIN
EN
GND
SW
FB
L24
2.2uH
R118
10k
R119
2k2
C166
100nF
C172
22uF
+3V3_USB
GND
+1V8_USB
C173
4.7uF
U21
FT4232H-56Q
VREGIN
VREGOUT
DM
DP
REF
RESET
OSCI
OSCO
EECS
EECLK
EEDATA
TEST
VPHY
VPLL
VCORE
VCCIO
ADBUS0
ADBUS1
ADBUS2
ADBUS3
ADBUS4
ADBUS5
ADBUS6
ADBUS7
BDBUS0
BDBUS1
BDBUS2
BDBUS3
BDBUS4
BDBUS5
BDBUS6
BDBUS7
CDBUS0
CDBUS1
CDBUS2
CDBUS3
CDBUS4
CDBUS5
CDBUS6
CDBUS7
DDBUS0
DDBUS1
DDBUS2
DDBUS3
DDBUS4
DDBUS5
DDBUS6
DDBUS7
PWREN
SUSPEND
R120
12k
Y4
12MHz
C165
22pF
C171
22pF
L25
120R@100MHz
C167
4.7uF
C174
100nF
L26
120R@100MHz
C168
4.7uF
C175
100nF
C169
100nF
C176
100nF
C164
100nF
C170
100nF
C177
100nF
TxD_OUT
RxD_IN
RTS_OUT
DTR_OUT
R122
10k
R124
10k
R125
10k
R126
10k
USB_TCK
USB_TDI_DO
USB_TDO_DI
USB_TMS
U24
742T245
U25
742T245
R128
10k
C182
100nF
C185
100nF
C183
100nF
C186
100nF
Q5
BSS138
EN_USB_JTAG
U26
742T245
RxD_2V5
TxD_2V5
C184
100nF
C187
100nF
MMC_CONS_PROG_RxD
MMC_CONS_PROG_TxD
U23
742T245
C180
100nF
C181
100nF
R121
10k
R123
10k
U22
742T245
LPC_ISPn
ISP_RSTn
R127
10k
C178
100nF
C179
100nF
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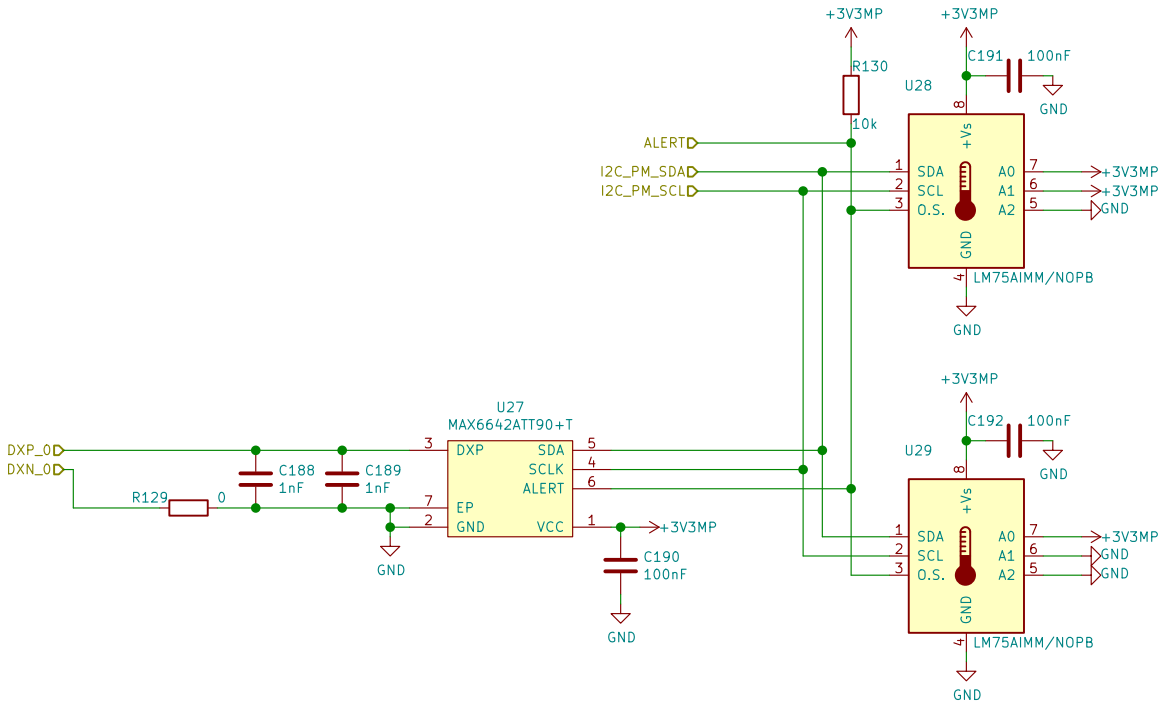
File: USB.sch
Title:
Size: A3
Date:
Rev:
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)
Id: 15/21



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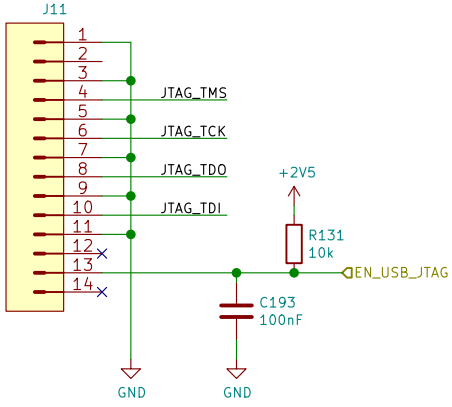
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 16/21



USB_TCK — USB_TCK
USB_TDI_DO — USB_TDI_DO
USB_TMS — USB_TMS
USB_TDO_DI — USB_TDO_DI

MMC_TDI — MMC_TDI
MMC_TDO — MMC_TDO
MMC_TMS — MMC_TMS
MMC_TRST — MMC_TRST
MMC_TCK — MMC_TCK

AMC_TCK — AMC_TCK
AMC_TDI — AMC_TDI
AMC_TDO — AMC_TDO
AMC_TMS — AMC_TMS
AMC_TRST — AMC_TRST

FMC1_TCK — FMC1_TCK
FMC1_TDI — FMC1_TDI
FMC1_TDO — FMC1_TDO
FMC1_TMS — FMC1_TMS
FMC1_TRST — FMC1_TRST

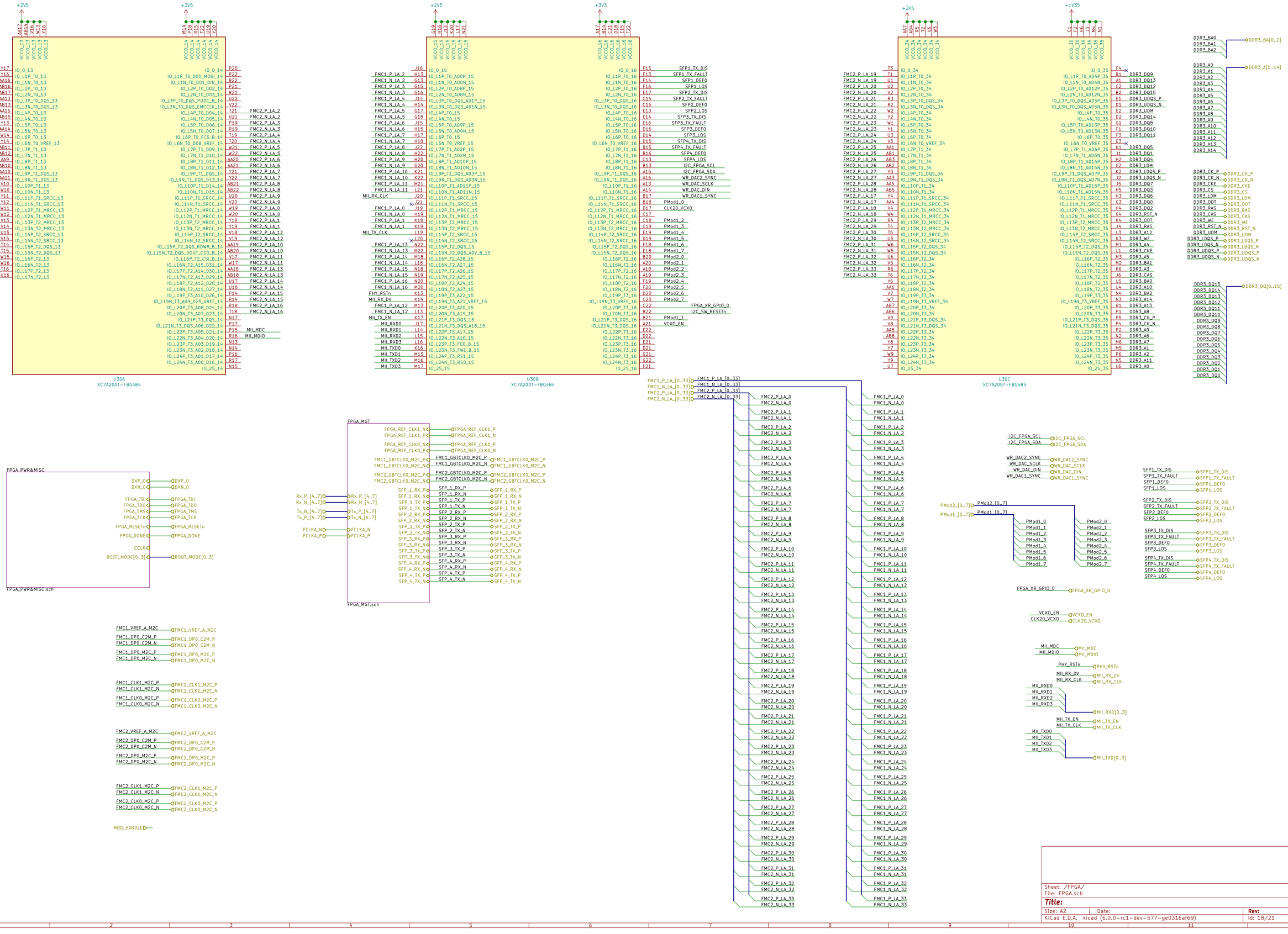
FMC2_TCK — FMC2_TCK
FMC2_TDI — FMC2_TDI
FMC2_TDO — FMC2_TDO
FMC2_TMS — FMC2_TMS
FMC2_TRST — FMC2_TRST

FPGA_TDI — FPGA_TDI
FPGA_TDO — FPGA_TDO
FPGA_TMS — FPGA_TMS
FPGA_TCK — FPGA_TCK

Sheet: /JTAG/
File: JTAG.sch

Title:

Size: A4	Date:	**Rev:**
KiCad E.D.A. kicad (6.0.0-rc1-dev-577-ge0316af69)		Id: 17/21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VCCO_15
VCCO_16
VCCO_34
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+3V3
+1V35
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XC7A200T-FBG484
U30B
XC7A200T-FBG484
U30C
XC7A200T-FBG484
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IO_L1P_T0_13
IO_L1N_T0_13
IO_L2P_T0_13
IO_L2N_T0_13
IO_L3P_T0_DQS_13
IO_L3N_T0_DQS_13
IO_L4P_T0_13
IO_L4N_T0_13
IO_L5P_T0_13
IO_L5N_T0_13
IO_L6P_T0_13
IO_L6N_T0_VREF_13
IO_L7P_T1_13
IO_L7N_T1_13
IO_L8P_T1_13
IO_L8N_T1_13
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IO_L9N_T1_DQS_13
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IO_L10N_T1_13
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IO_L11N_T1_SRCC_13
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IO_L12N_T1_MRCC_13
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IO_L14N_T2_SRCC_13
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IO_L15N_T2_DQS_13
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IO_L16N_T2_A15_D31_14
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I2C_FPGA_SCL
I2C_FPGA_SDA
WR_DAC_SCLK
WR_DAC_DIN
WR_DAC1_SYNC
PMod1_0
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PMod1_2
PMod1_3
PMod1_4
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PMod1_6
PMod1_7
PMod2_0
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PMod2_2
PMod2_3
PMod2_4
PMod2_5
PMod2_6
PMod2_7
CLK20_VCXO
FPGA_XR_GPIO_0
I2C_SW_RESETn
VCXO_EN
WR_DAC2_SYNC
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DDR3_BA1
DDR3_BA2
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DDR3_A4
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DDR3_A6
DDR3_A7
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DDR3_A12
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DDR3_A14
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DDR3_DQ3
DDR3_DQ4
DDR3_DQ5
DDR3_DQ6
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DDR3_BA[0..2]
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FPGA_REF_CLK1_P
FPGA_REF_CLK0_N
FPGA_REF_CLK0_P
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SFP_2_TX_N
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SFP_3_RX_N
SFP_3_TX_P
SFP_3_TX_N
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SFP_4_RX_N
SFP_4_TX_P
SFP_4_TX_N
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Rx_N_[4..7]
Tx_N_[4..7]
Tx_P_[4..7]
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FCLKA_P
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FPGA_PWR&MISC
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DXN_0
FPGA_TDI
FPGA_TDO
FPGA_TMS
FPGA_TCK
FPGA_RESETn
FPGA_DONE
CCLK
BOOT_MODE[0..3]
FPGA_PWR&MISC.sch
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FMC1_DP0_C2M_N
FMC1_DP0_M2C_P
FMC1_DP0_M2C_N
FMC1_CLK1_M2C_P
FMC1_CLK1_M2C_N
FMC1_CLK0_M2C_P
FMC1_CLK0_M2C_N
FMC2_VREF_A_M2C
FMC2_DP0_C2M_P
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MII_MDC
MII_MDIO
PHY_RSTn
MII_RX_DV
MII_RX_CLK
MII_RXD0
MII_RXD1
MII_RXD2
MII_RXD3
MII_RXD[0..3]
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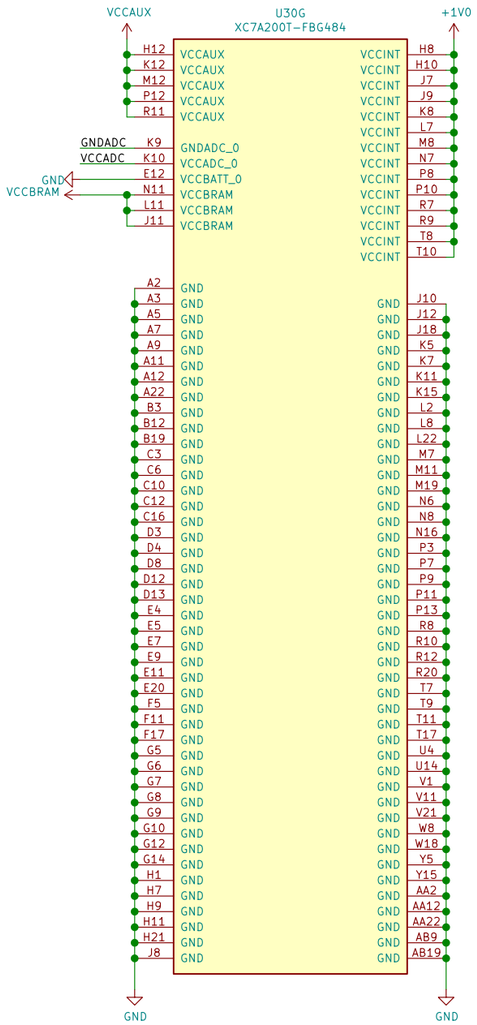

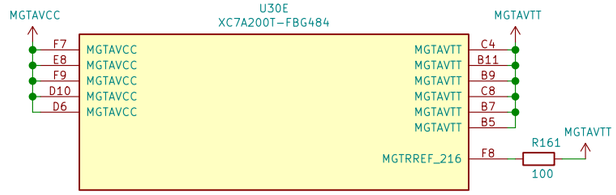

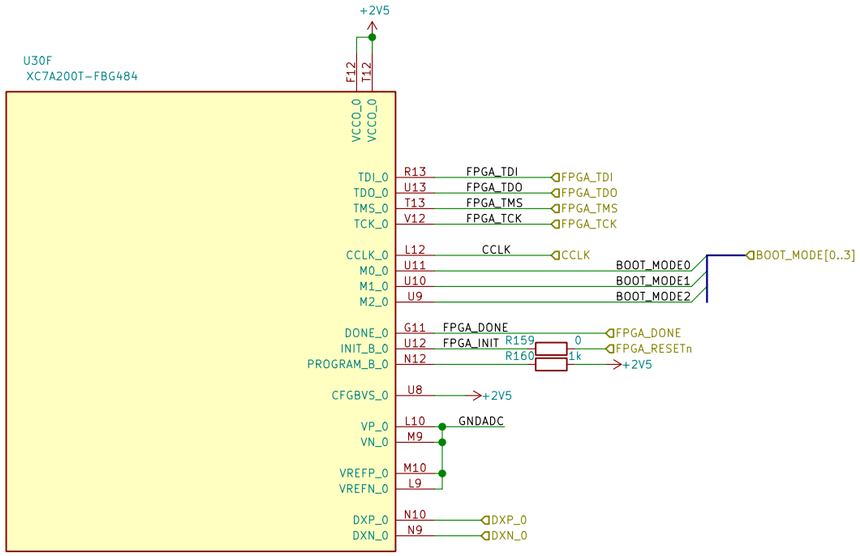

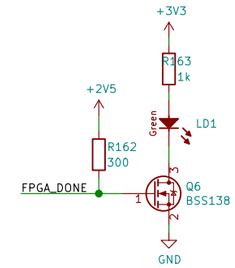

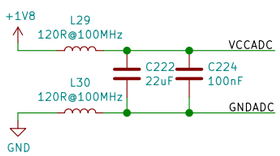

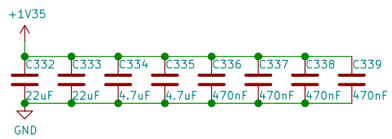

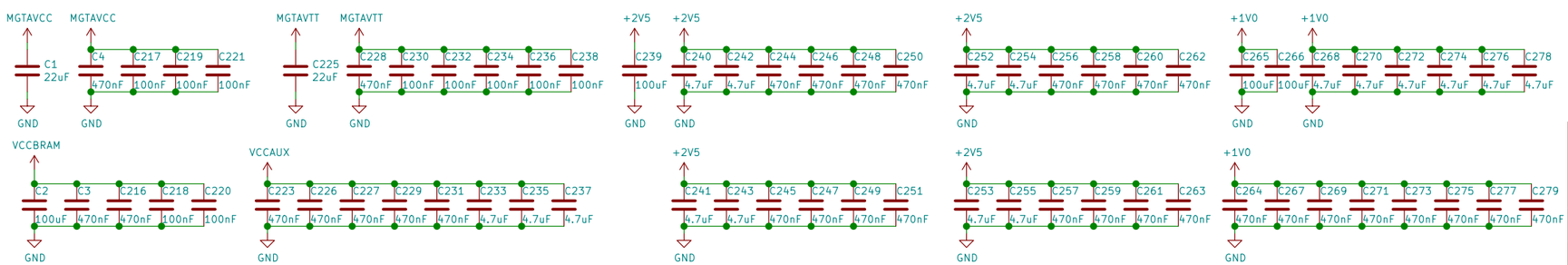

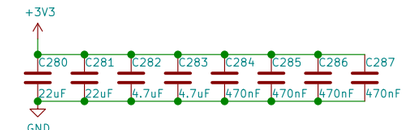

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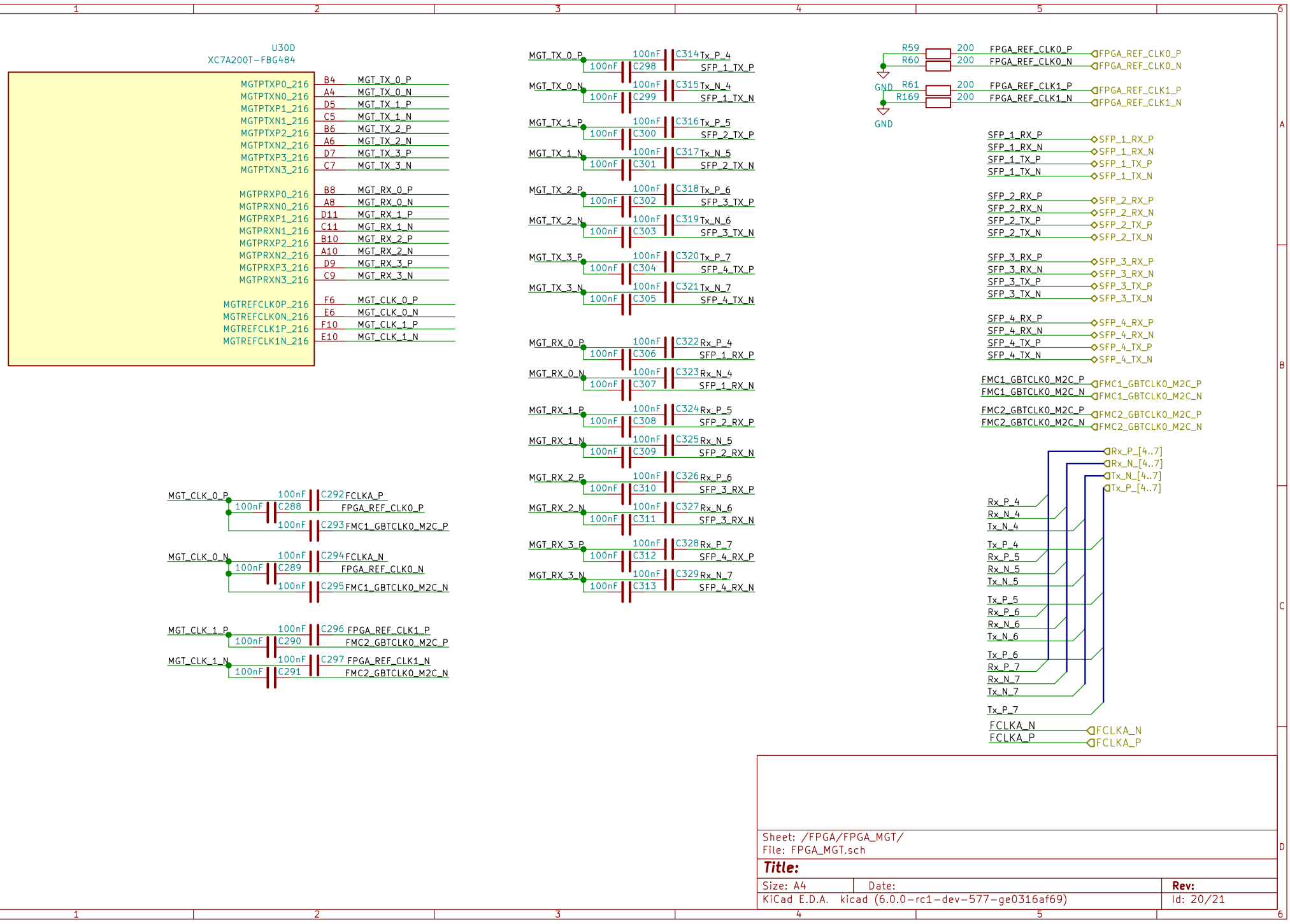
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MGTPTXP3_216 D7 MGT_TX_3_P
MGTPTXN3_216 C7 MGT_TX_3_N
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MGTPRXN1_216 C11 MGT_RX_1_N
MGTPRXP2_216 B10 MGT_RX_2_P
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MGTPRXN3_216 C9 MGT_RX_3_N
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R60 200 FPGA_REF_CLK0_N FPGA_REF_CLK0_N
GND
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R169 200 FPGA_REF_CLK1_N FPGA_REF_CLK1_N
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SFP_1_TX_N SFP_1_TX_N
SFP_2_RX_P SFP_2_RX_P
SFP_2_RX_N SFP_2_RX_N
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Rx_N_[4..7]
Tx_N_[4..7]
Tx_P_[4..7]
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Tx_N_4
Tx_P_4
Rx_P_5
Rx_N_5
Tx_N_5
Tx_P_5
Rx_P_6
Rx_N_6
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FCLKA_P FCLKA_P
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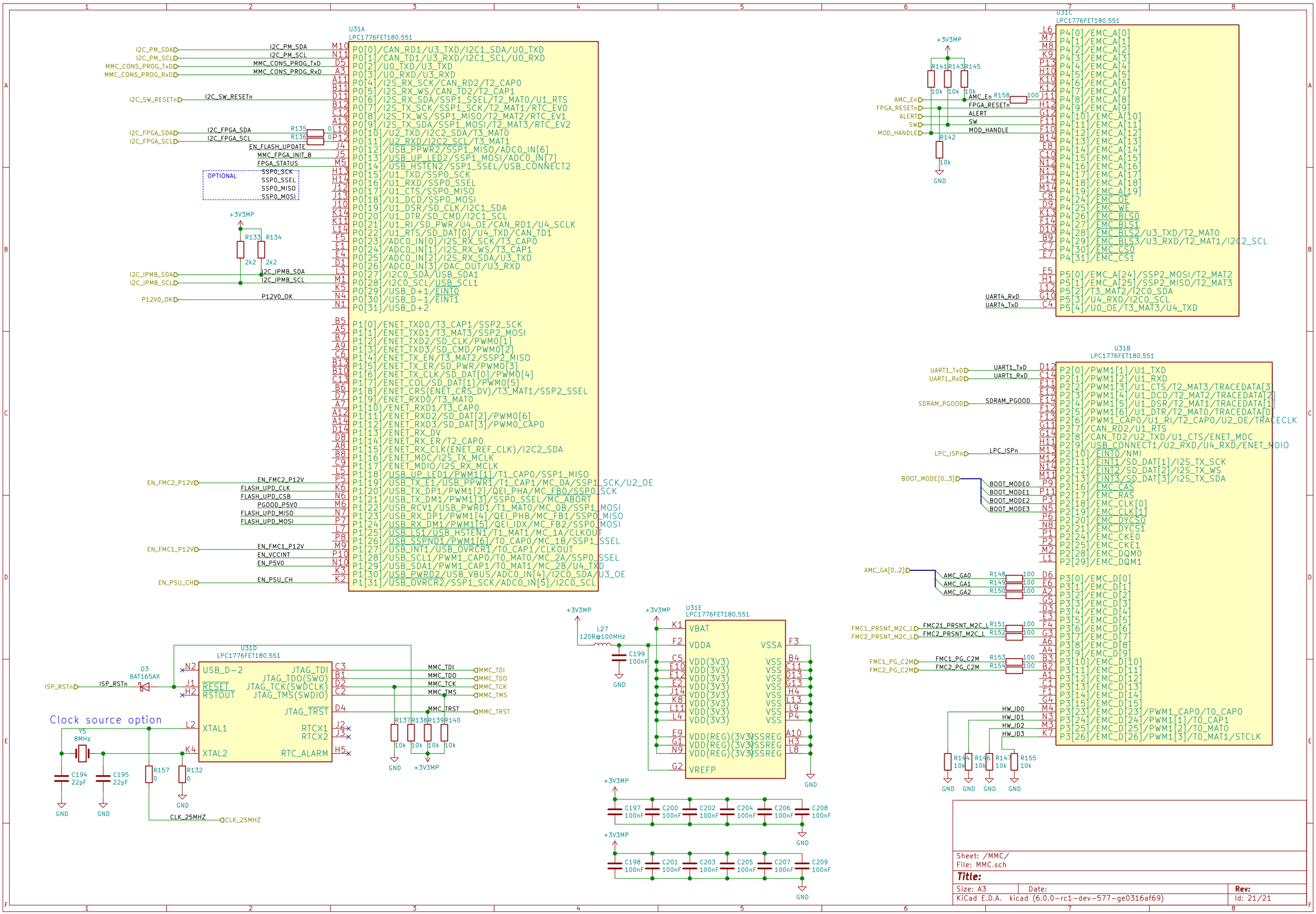

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