Schematic: reComputer Robotics J401

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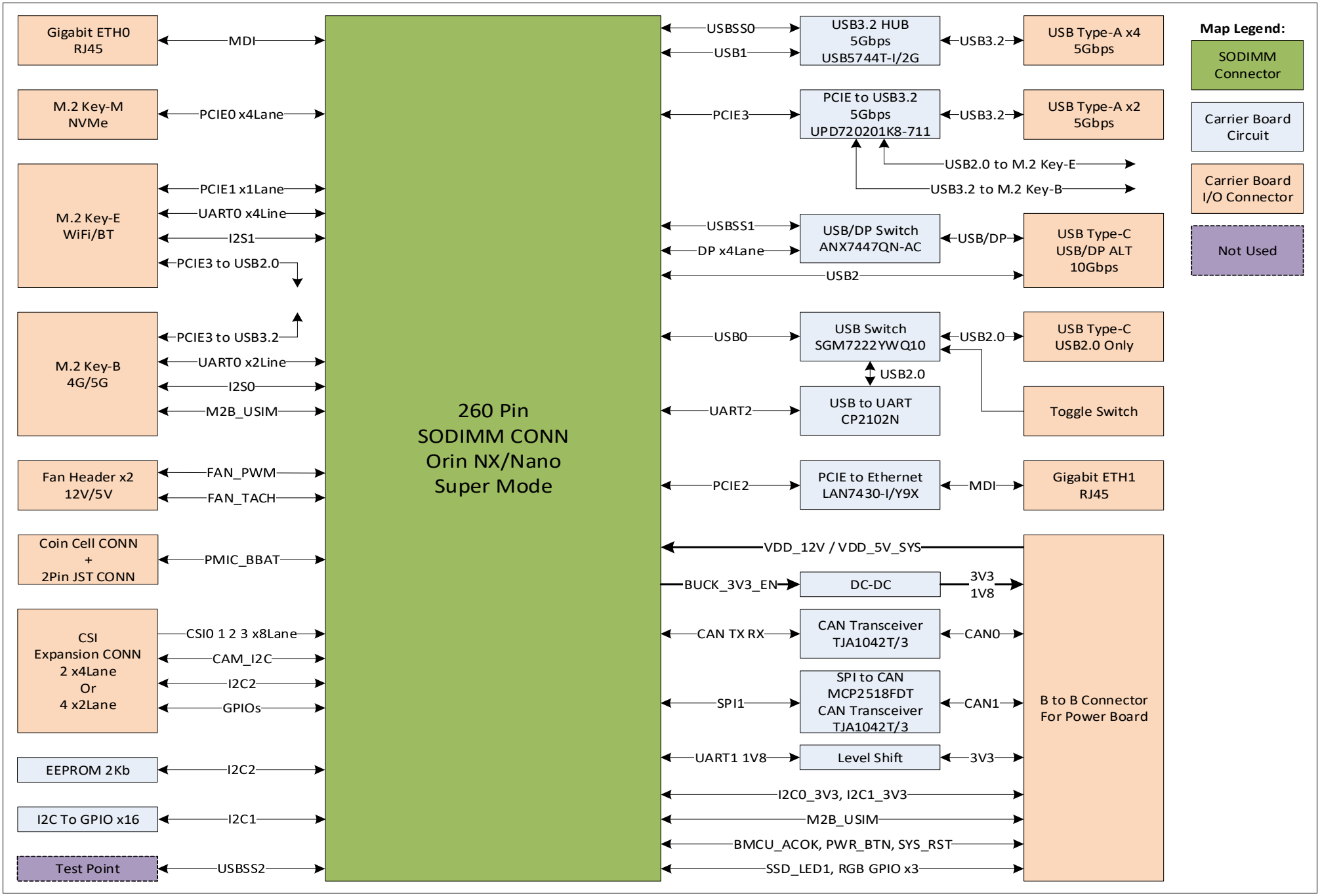
Revision History

VER	DATE	REVISION	DESCRIPTION
V1.0	06/05/2025	reComputer Robotics J401_V1.0_SCH_250605	Initial Version.
V1.0	10/10/2025	reComputer Robotics J401_V1.0_SCH_251010	Updated BOM only: P07: Changed C36 from DNP to 470nF. P16: Changed U30 from SY6280AAC to SY6280AAAC.
V1.0	11/24/2025	reComputer Robotics J401_V1.0_SCH_251124	Updated BOM only: P08: Changed R89 from 2.7R to 2.2R.

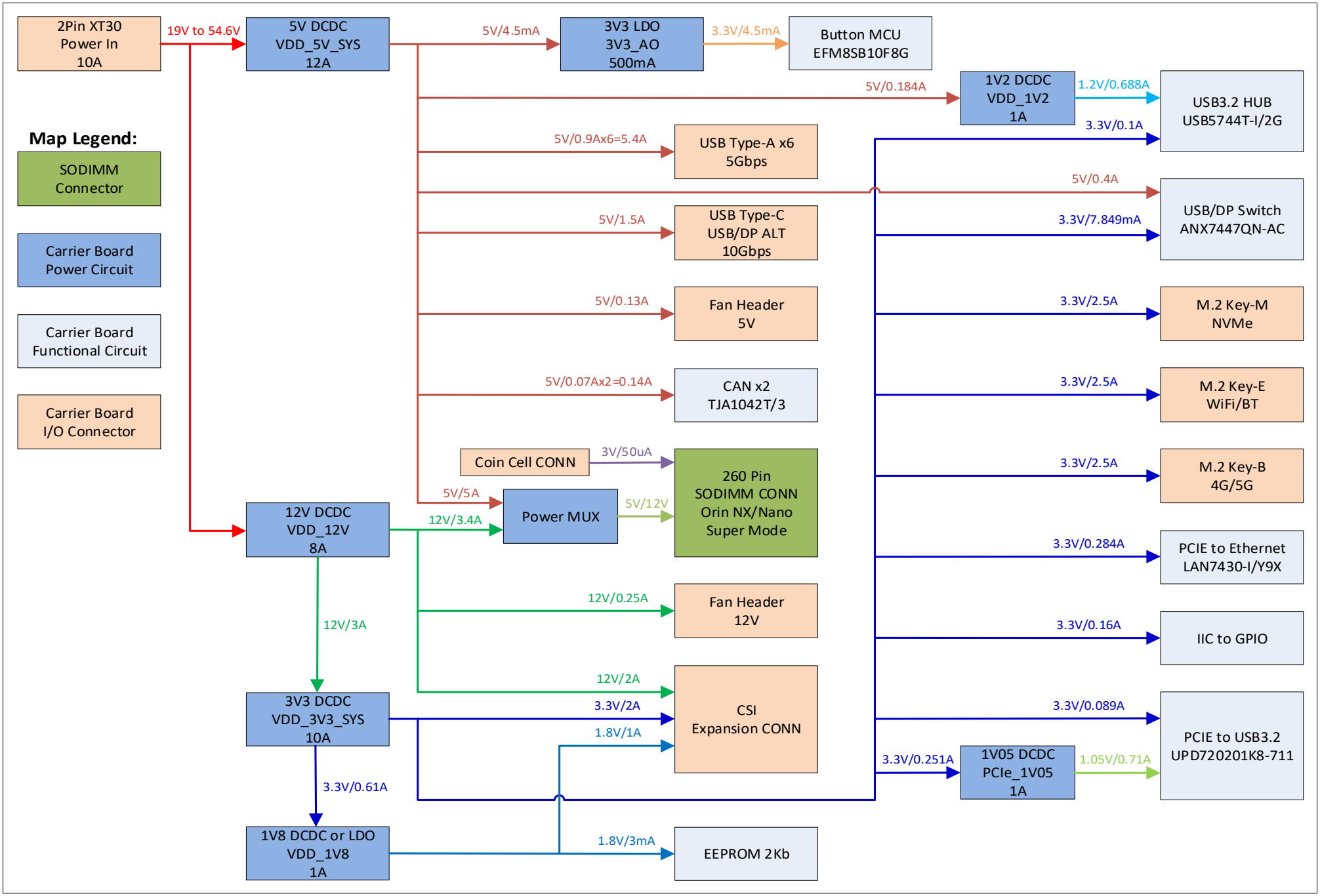
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Title: reComputer Robotics J401

Size: A3	Document Number: 01 Table of Contents	Rev: V1.0
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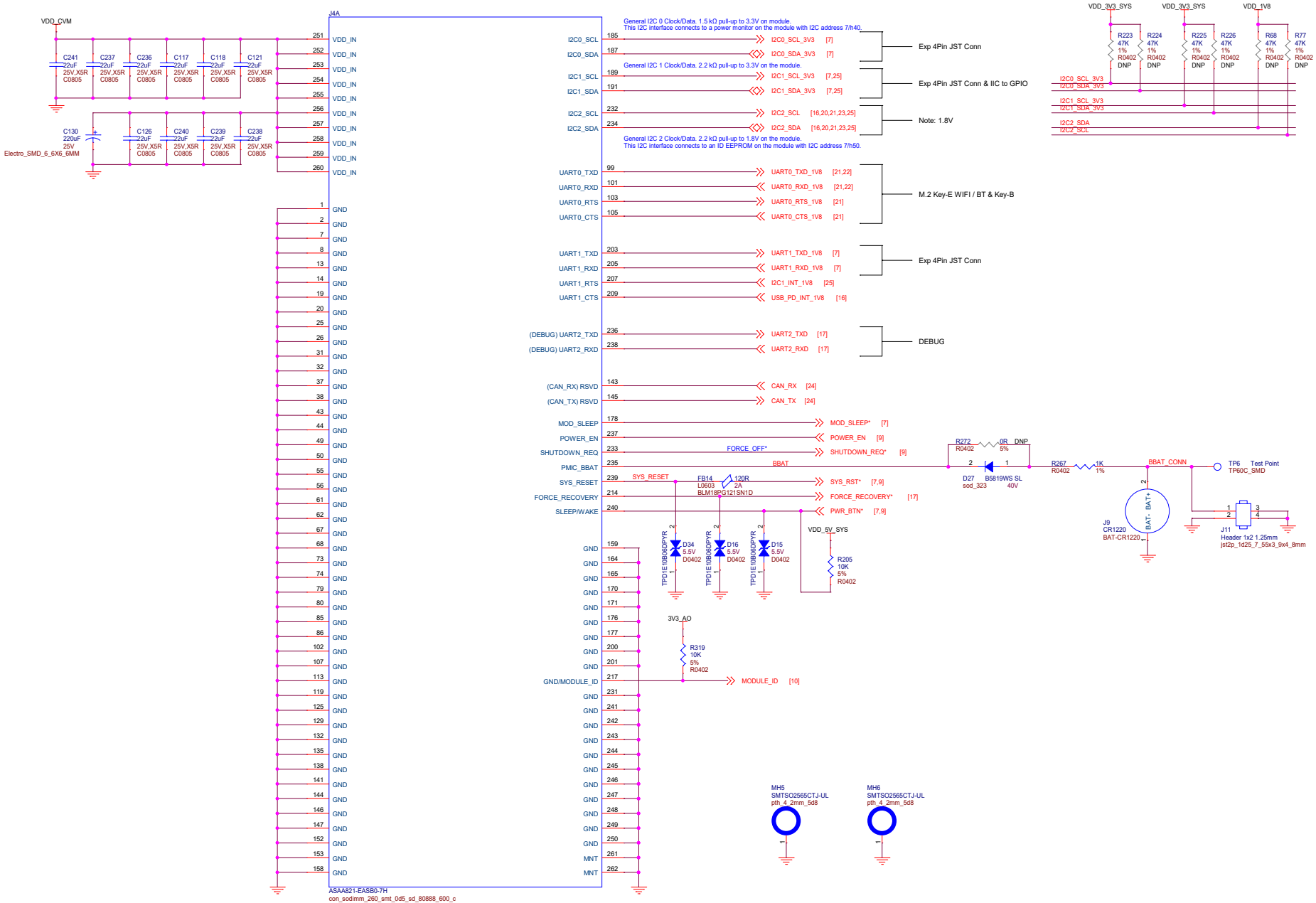


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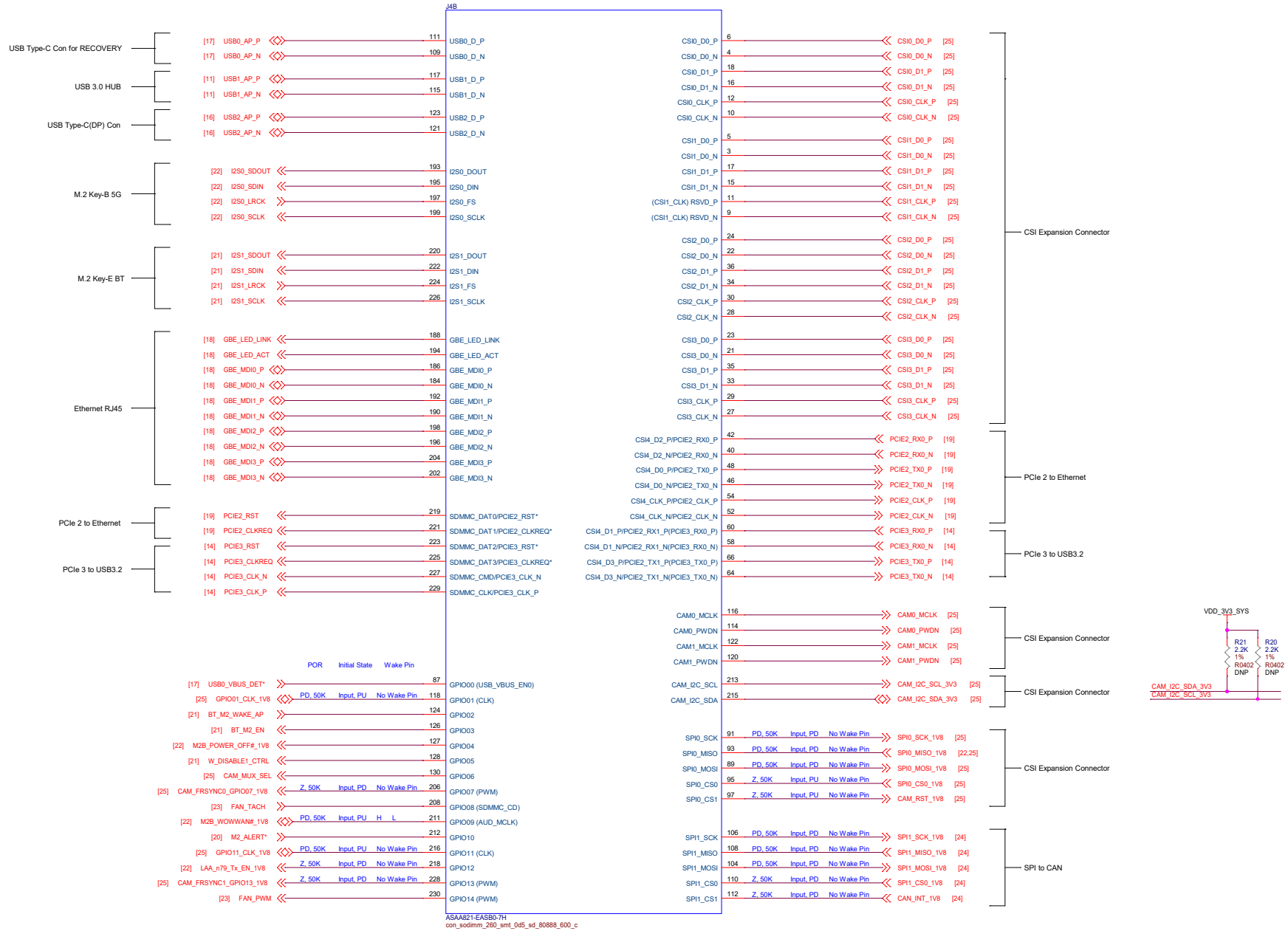
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UART, I2C, CAN and GPIOs



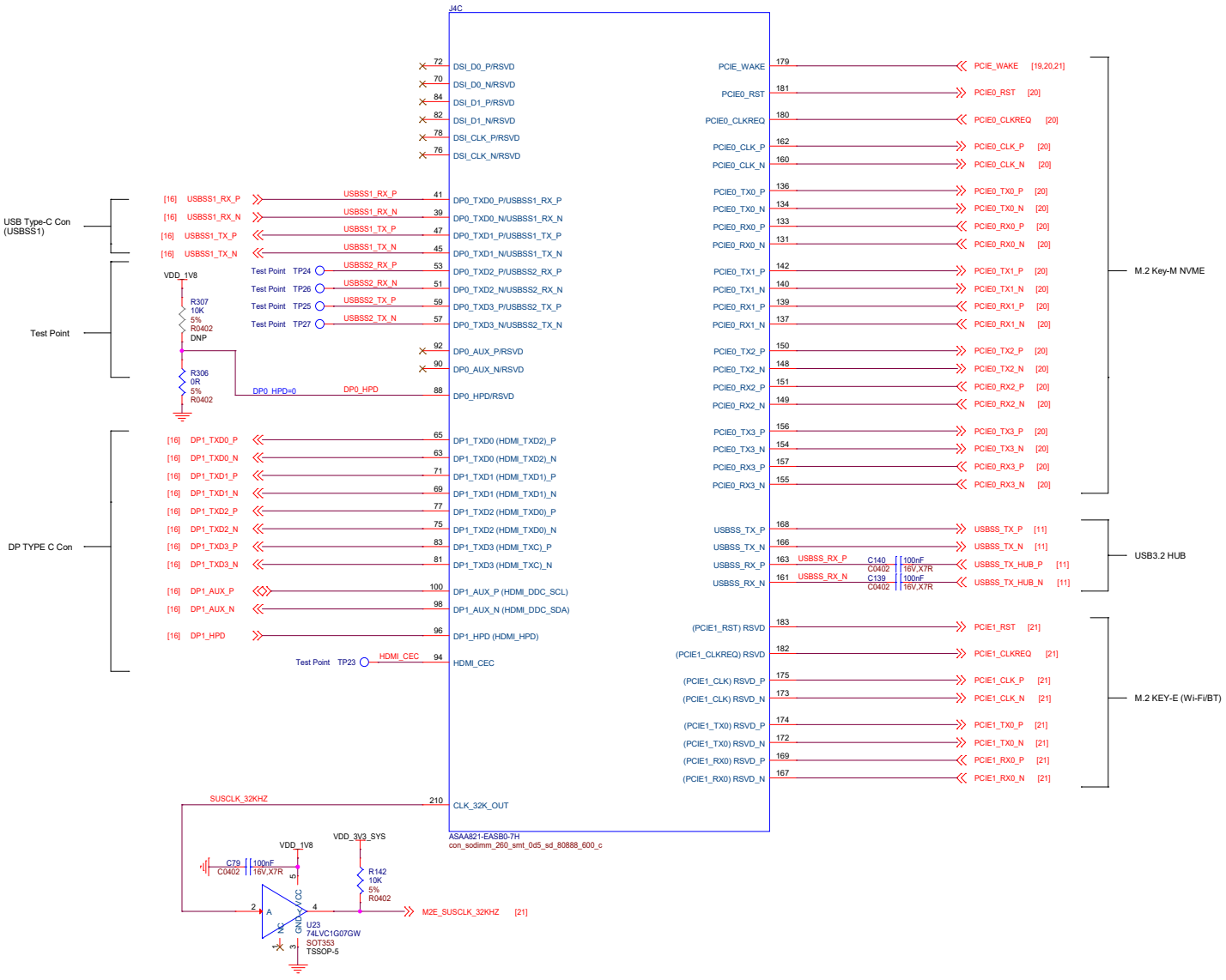
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GPIOs, USB2.0, I2S, SPI, GBe and CSI

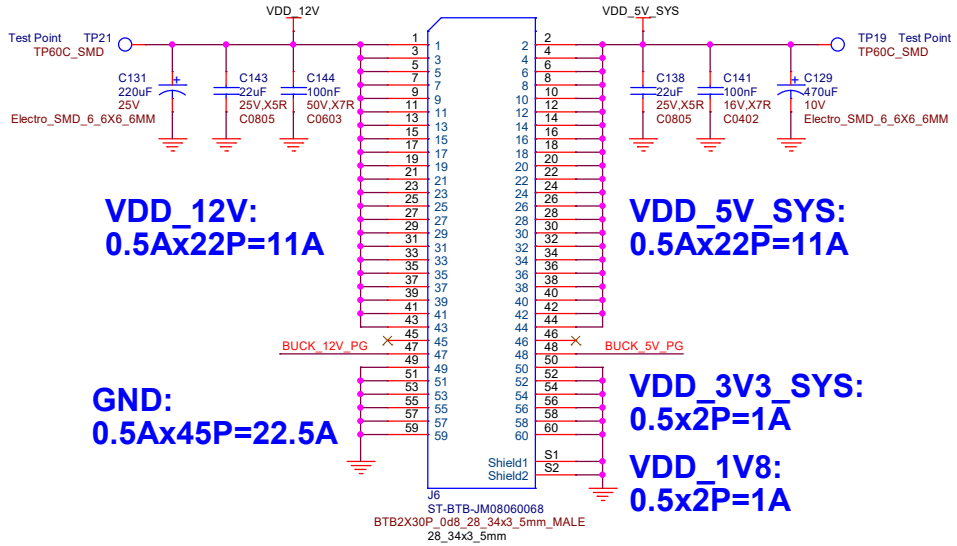


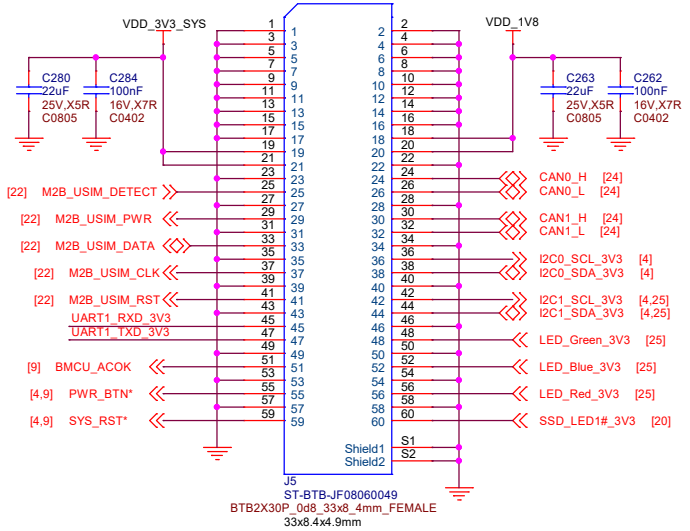
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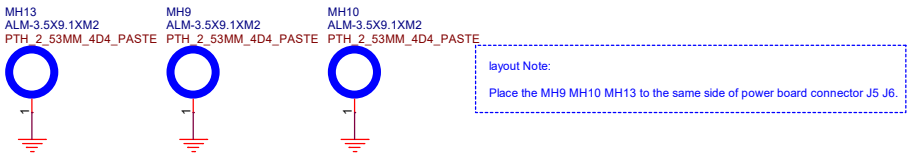
HDMI, DP, DSI, USBSS and PCIe



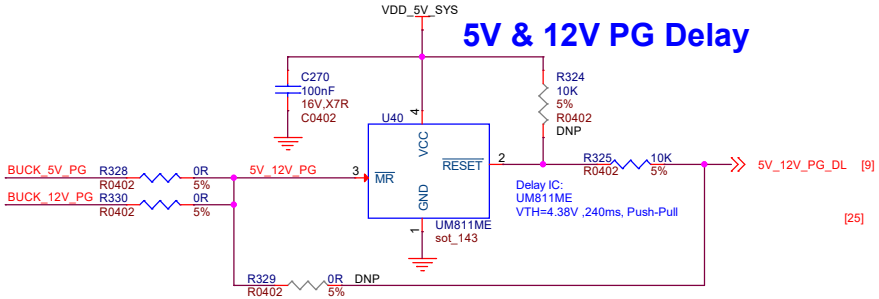
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Size: C	Document Number: 06 SODIMM Connector 3/3	Rev: V1.0
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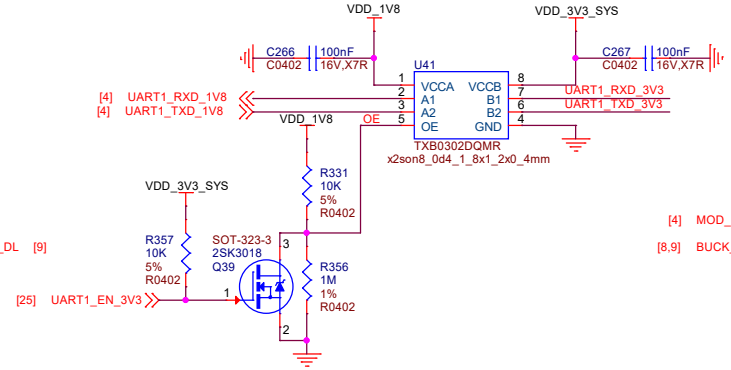


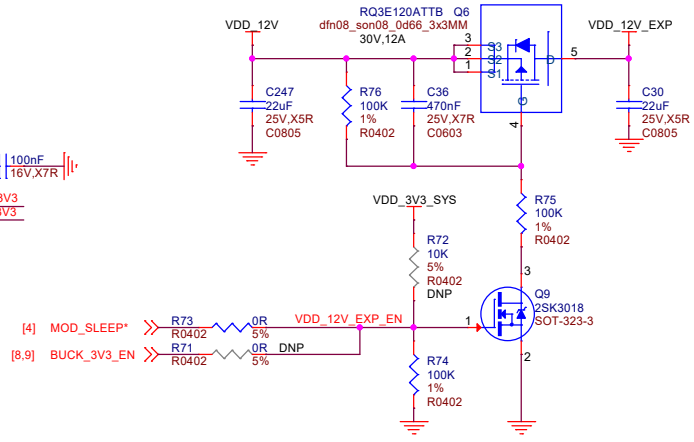


5V & 12V PG Delay

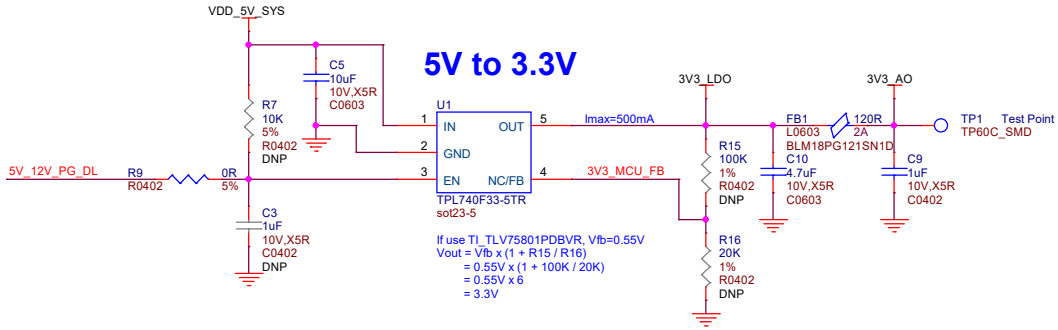


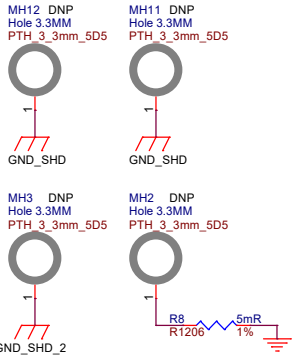
3V3 UART1

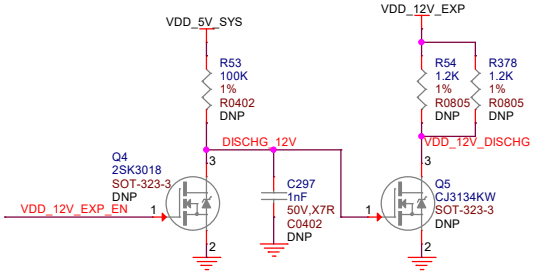




5V to 3.3V

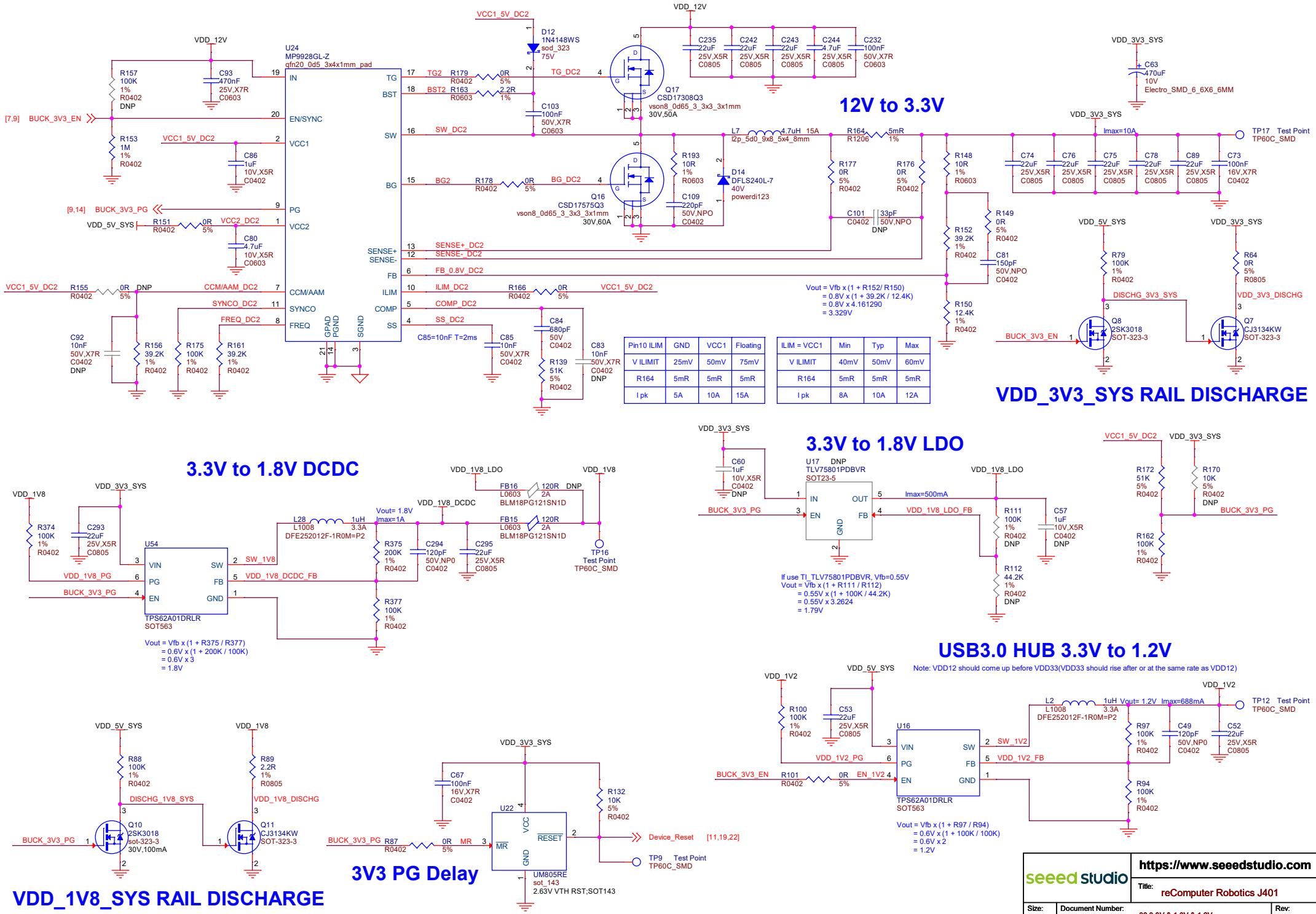




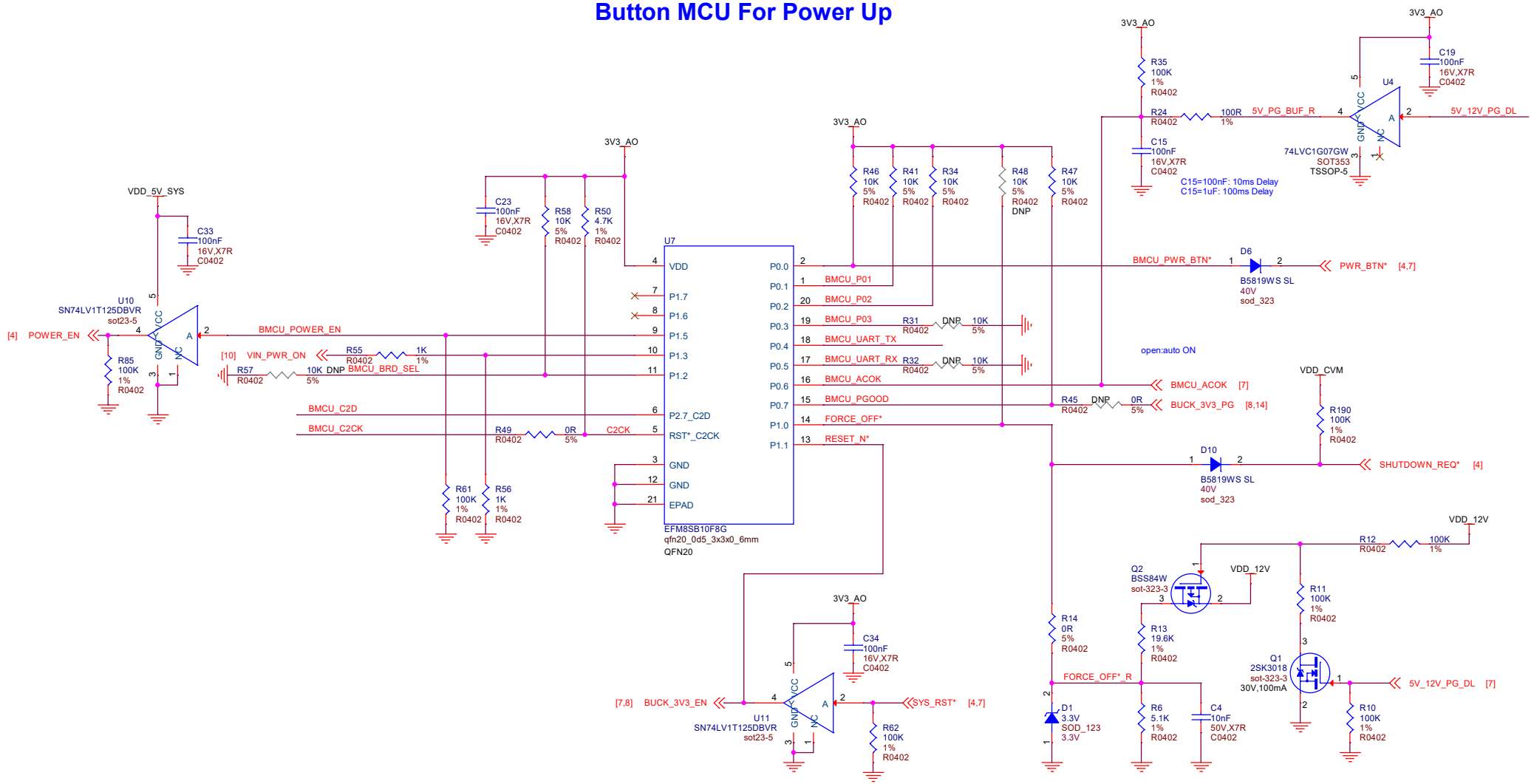


VDD_12V_EXP RAIL DISCHARGE

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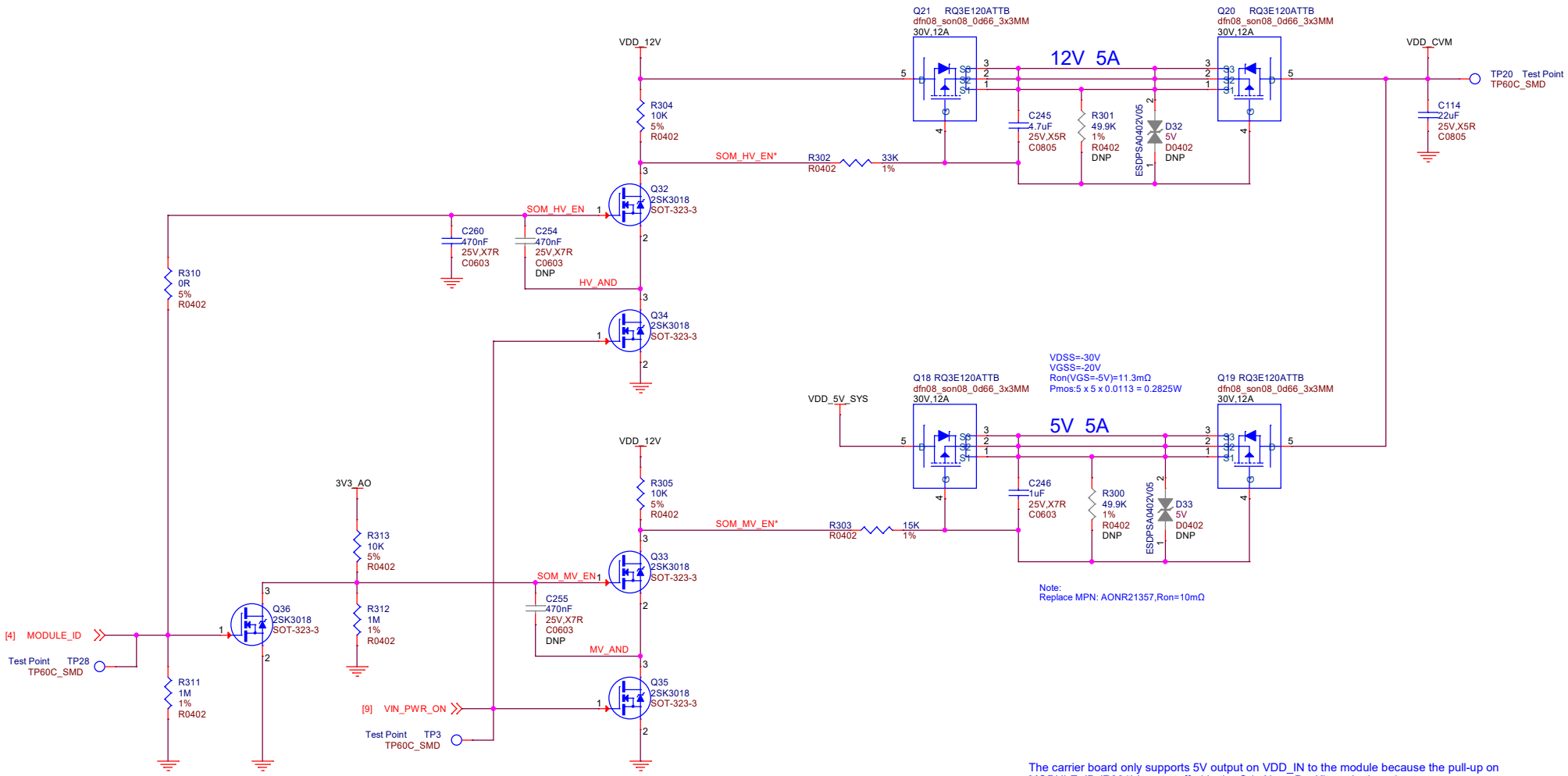

12V to 3.3V
U24
MP9928GL-Z
qfn20_0d5_3x4x1mm_pad
IN
EN/SYNC
VCC1
PG
VCC2
TG
BST
SW
BG
SENSE+
SENSE-
FB
ILIM
COMP
SS
CCM/AAM
SYNCO
FREQ
GPAD
PGND
SGND
VDD_12V
VCC1_5V_DC2
VDD_5V_SYS
VDD_3V3_SYS
[7,9] BUCK_3V3_EN
[9,14] BUCK_3V3_PG
Q17
CSD17308Q3
vson8_0d65_3_3x3_1x1mm
30V,50A
Q16
CSD17575Q3
vson8_0d65_3_3x3_1x1mm
30V,60A
D12
1N4148WS
sod_323
75V
D14
DFLS240L-7
40V
powerdi123
L7
l2p_5d0_9x8_5x4_8mm
4.7uH 15A
Imax=10A
TP17 Test Point
TP60C_SMD
Vout = Vfb x (1 + R152/ R150)
= 0.8V x (1 + 39.2K / 12.4K)
= 0.8V x 4.161290
= 3.329V
VDD_3V3_SYS RAIL DISCHARGE
DISCHG_3V3_SYS
VDD_3V3_DISCHG
Q8
2SK3018
SOT-323-3
Q7
CJ3134KW
SOT-323-3
3.3V to 1.8V DCDC
U54
TPS62A01DRLR
SOT563
VIN
SW
PG
FB
EN
GND
VDD_1V8
VDD_1V8_LDO
VDD_1V8_DCDC
VDD_1V8_PG
VDD_1V8_DCDC_FB
SW_1V8
L28
L1008
DFE252012F-1R0M=P2
1uH
3.3A
Vout= 1.8V
Imax=1A
FB16
FB15
BLM18PG121SN1D
120R
2A
TP16
Test Point
TP60C_SMD
Vout = Vfb x (1 + R375 / R377)
= 0.6V x (1 + 200K / 100K)
= 0.6V x 3
= 1.8V
3.3V to 1.8V LDO
U17 DNP
TLV75801PDBVR
SOT23-5
Imax=500mA
VDD_1V8_LDO_FB
If use TI_TLV75801PDBVR, Vfb=0.55V
Vout = Vfb x (1 + R111 / R112)
= 0.55V x (1 + 100K / 44.2K)
= 0.55V x 3.2624
= 1.79V
USB3.0 HUB 3.3V to 1.2V
Note: VDD12 should come up before VDD33(VDD33 should rise after or at the same rate as VDD12)
U16
TPS62A01DRLR
SOT563
VDD_1V2
VDD_1V2_PG
VDD_1V2_FB
SW_1V2
EN_1V2
L2
L1008
DFE252012F-1R0M=P2
1uH Vout= 1.2V Imax=688mA
TP12 Test Point
TP60C_SMD
Vout = Vfb x (1 + R97 / R94)
= 0.6V x (1 + 100K / 100K)
= 0.6V x 2
= 1.2V
VDD_1V8_SYS RAIL DISCHARGE
DISCHG_1V8_SYS
VDD_1V8_DISCHG
Q10
2SK3018
sot-323-3
30V,100mA
Q11
CJ3134KW
SOT-323-3
3V3 PG Delay
U22
UM805RE
sot_143
2.63V VTH RST;SOT143
MR
RESET
VCC
GND
Device_Reset
[11,19,22]
TP9 Test Point
TP60C_SMD
Pin10 ILIM | GND | VCC1 | Floating
V ILIMIT | 25mV | 50mV | 75mV
R164 | 5mR | 5mR | 5mR
I pk | 5A | 10A | 15A
ILIM = VCC1 | Min | Typ | Max
V ILIMIT | 40mV | 50mV | 60mV
R164 | 5mR | 5mR | 5mR
I pk | 8A | 10A | 12A
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Title: reComputer Robotics J401
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Button MCU For Power Up



VDD_12V	FORCE_OFF*
12V	2.021V

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VIN_PWR_ON	MODULE_ID	VDD_CVM
0	0	OFF
0	1	OFF
1	0	5V
1	1	12V

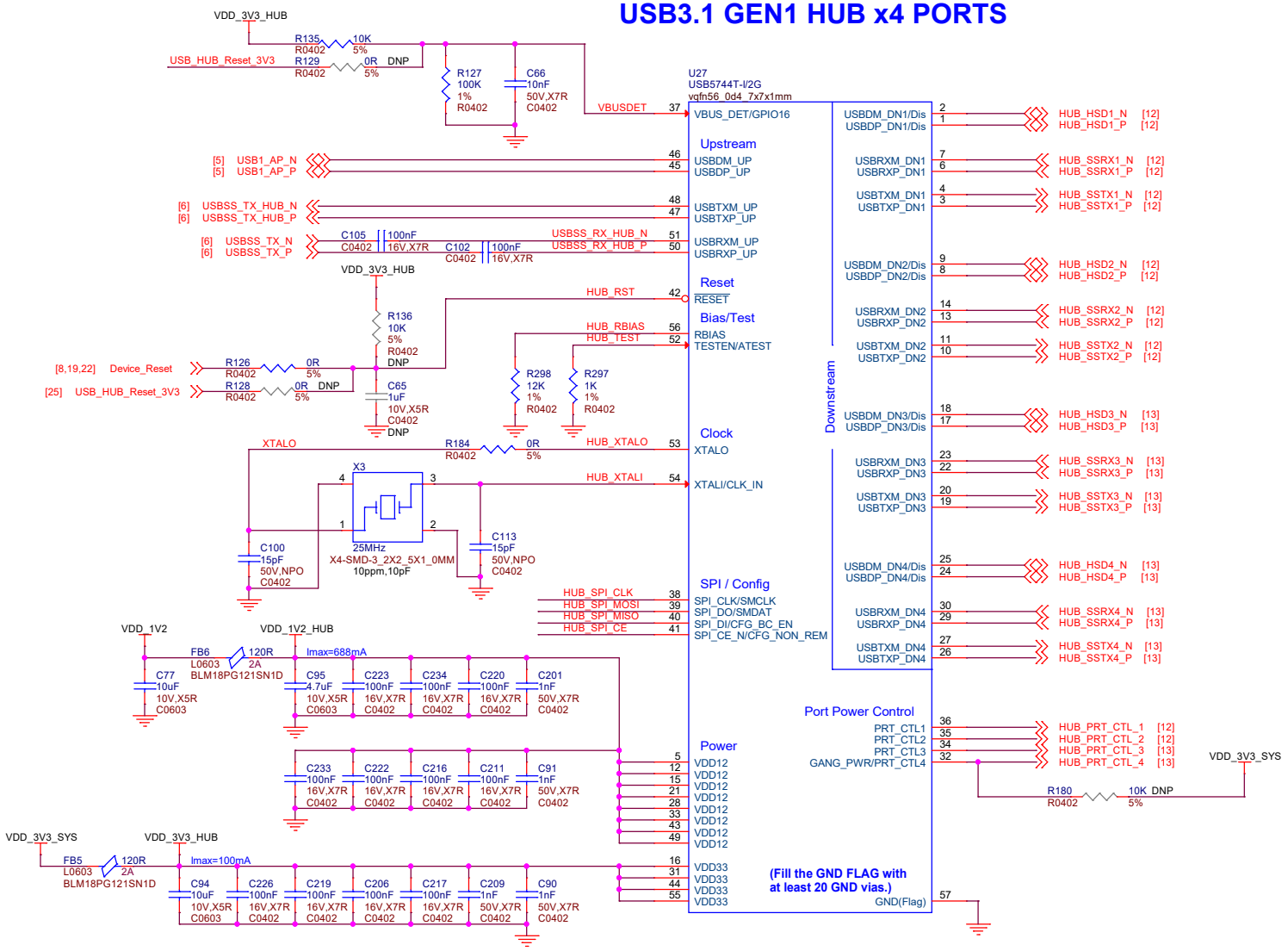
The carrier board only supports 5V output on VDD_IN to the module because the pull-up on MODULE_ID (R231) is not stuffed in the Orin Nano DevKit carrier board.

A 10kOhm, 0402 R231 Resistor can be added to support 5V, and up to 19V. As stated in the design guide, please be aware that Hot Plugging is not supported. Jetson Orin Nano modules have 5V Input Voltage, and hot plugging may cause an incorrect input voltage to be sent to the module if this resistor is added.

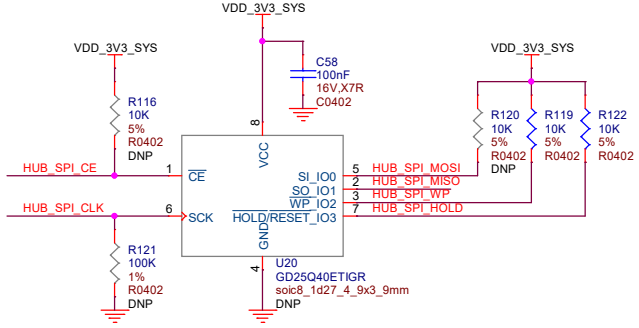
Please make sure the carrier board power is removed and adequate time has elapsed for the various power rails to fully discharge before when plugging in the Jetson Orin Nano module. R231 (to pull MODULE_ID high) is located on the SODIMM Connector 1/3 (page 4).

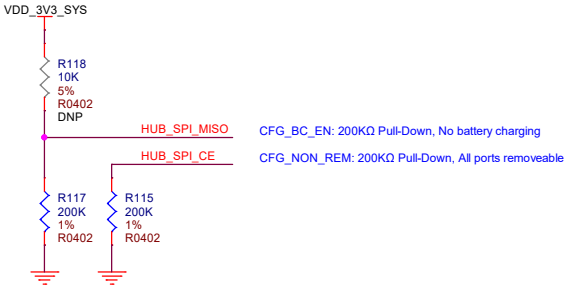
seeed studio	https://www.seeedstudio.com	
	Title: reComputer Robotics J401	
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USB3.1 GEN1 HUB x4 PORTS



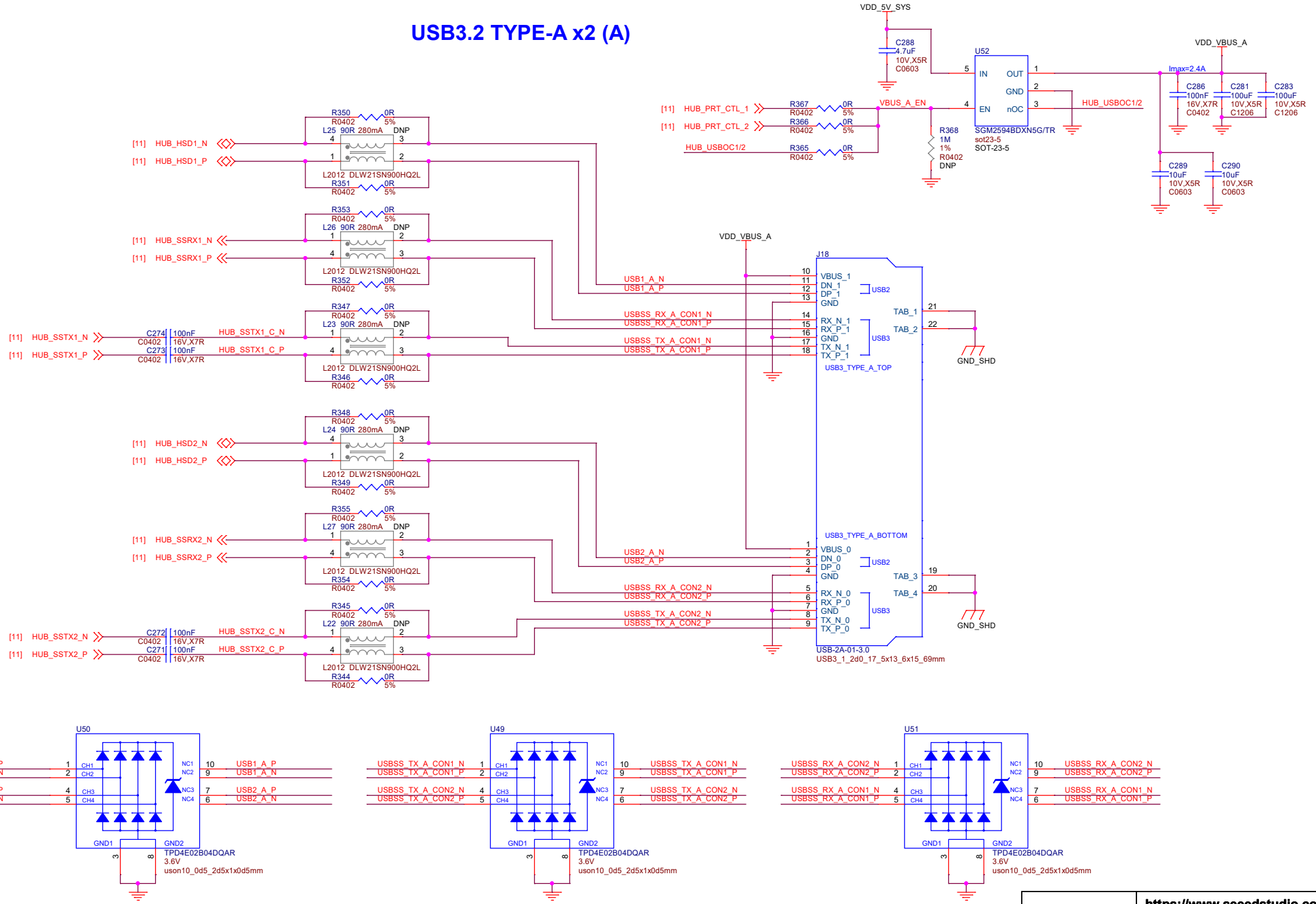
QSPI Flash





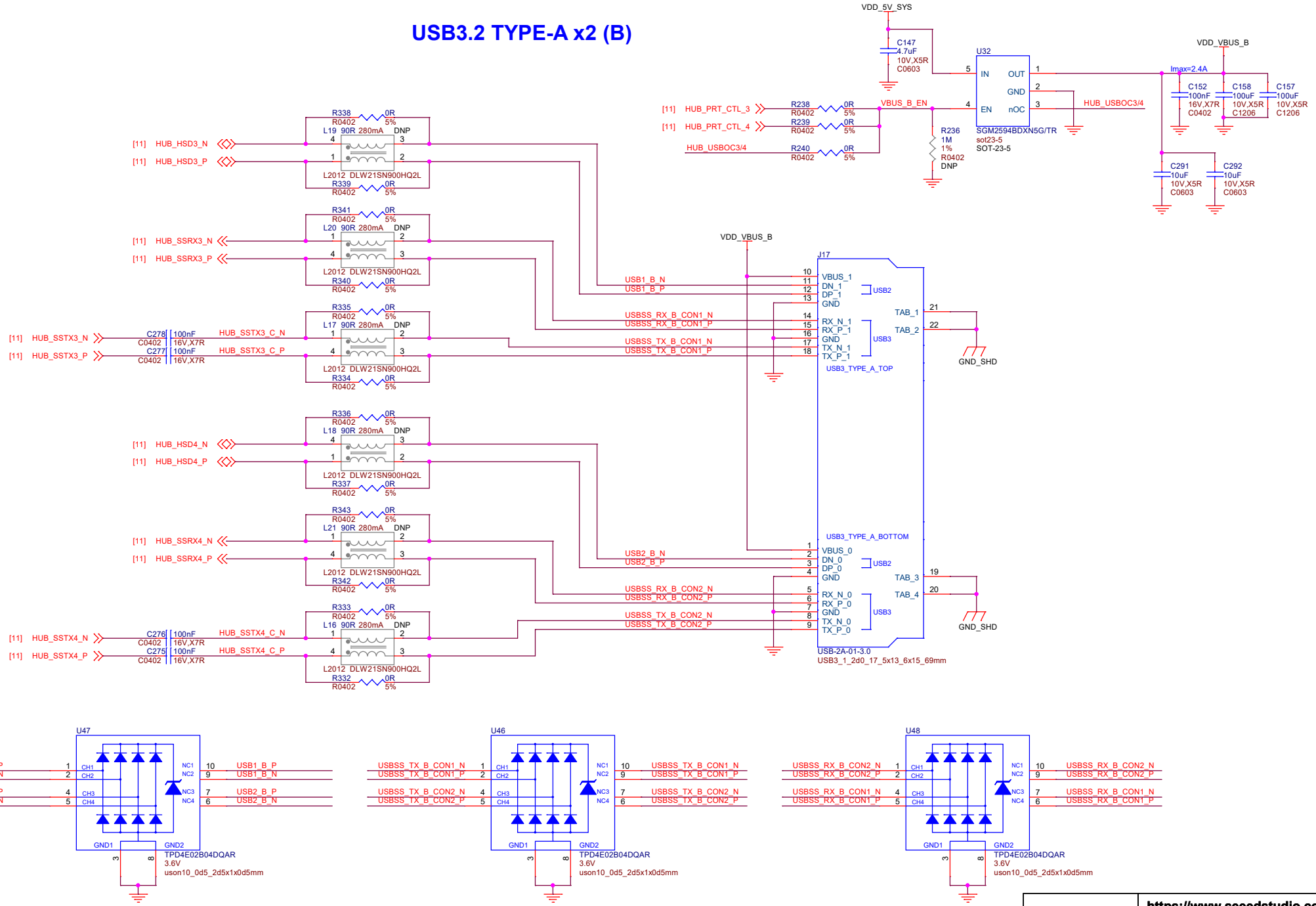
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USB3.2 TYPE-A x2 (A)

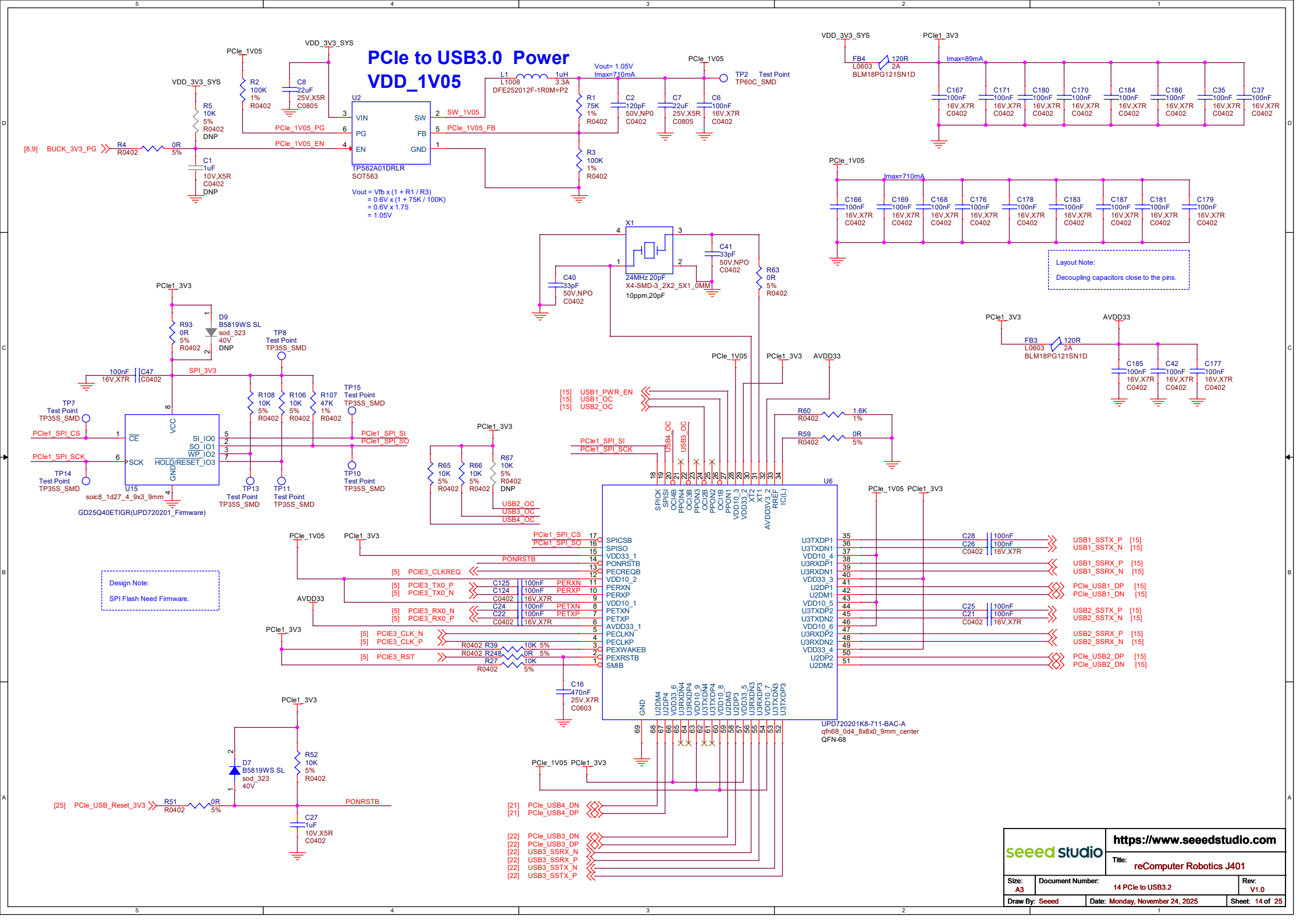


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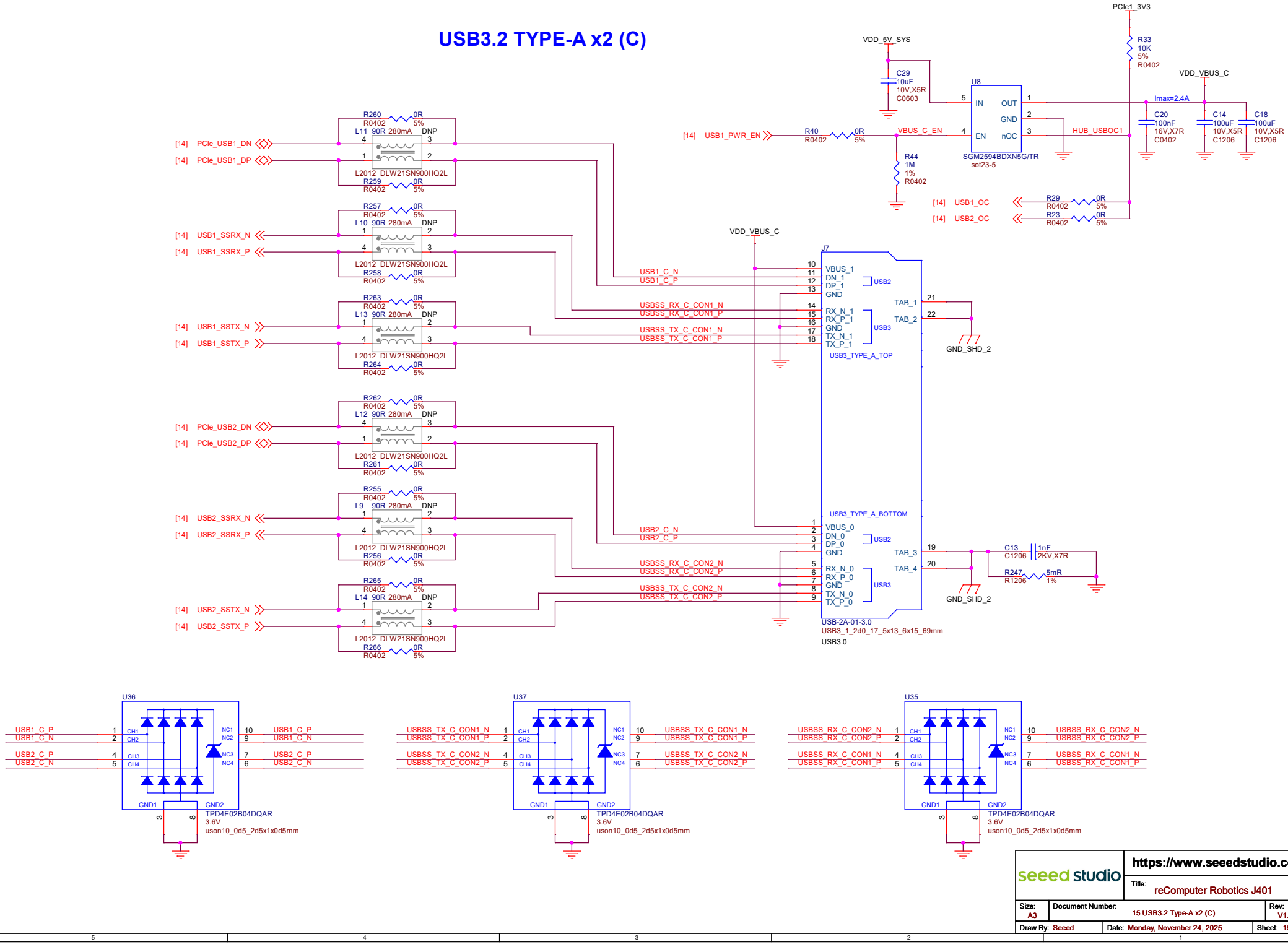
USB3.2 TYPE-A x2 (B)



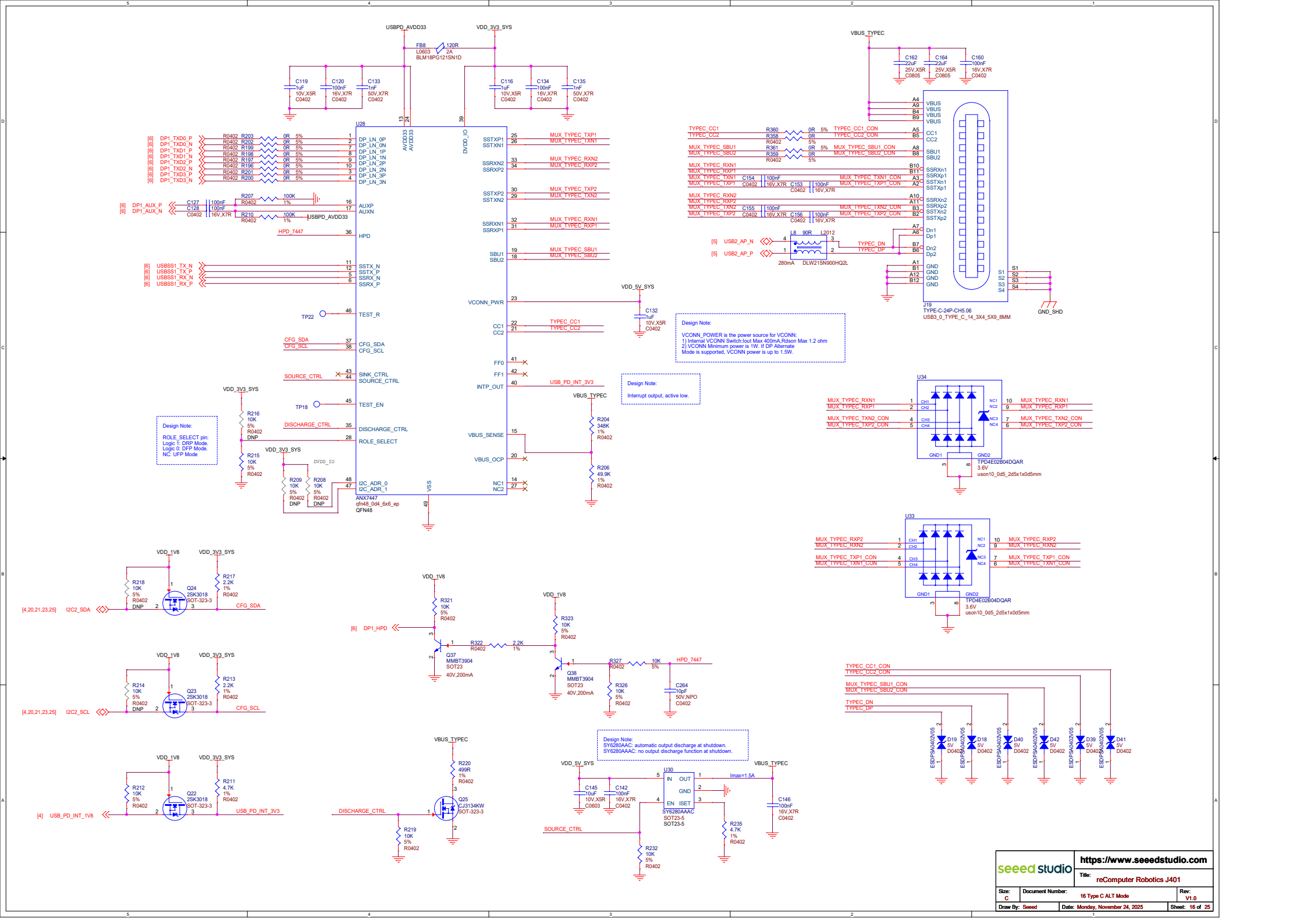
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Size: A3	Document Number: 13 USB3.2 Type-A x2 (B)	Rev: V1.0
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PCIe to USB3.0 Power
VDD_1V05
VDD_3V3_SYS
PCIe_1V05
PCIe1_3V3
AVDD33
U2
VIN
SW
PG
FB
EN
GND
TPS62A01DRLR
SOT563
Vout = Vfb x (1 + R1 / R3)
= 0.6V x (1 + 75K / 100K)
= 0.6V x 1.75
= 1.05V
Vout= 1.05V
Imax=710mA
L1
L1008
1uH
3.3A
DFE252012F-1R0M=P2
TP2
Test Point
TP60C_SMD
Imax=89mA
FB4
L0603
120R
2A
BLM18PG121SN1D
FB3
Layout Note:
Decoupling capacitors close to the pins.
X1
24MHz 20pF
X4-SMD-3_2X2_5X1_0MM
10ppm,20pF
U6
SPICSB
SPISO
SPISI
VDD33_1
PONRSTB
PECREQB
VDD10_2
PERXN
PERXP
VDD10_1
PETXN
PETXP
AVDD33_1
PECLKN
PECLKP
PEXWAKEB
PEXRSTB
SMIB
U3TXDP1
U3TXDN1
VDD10_4
U3RXDP1
U3RXDN1
VDD33_3
U2DP1
U2DM1
VDD10_5
U3TXDP2
U3TXDN2
VDD10_6
U3RXDP2
U3RXDN2
VDD33_4
U2DP2
U2DM2
GND
UPD720201K8-711-BAC-A
qfn68_0d4_8x8x0_9mm_center
QFN-68
U15
GD25Q40ETIGR(UPD720201_Firmware)
soic8_1d27_4_9x3_9mm
Design Note:
SPI Flash Need Firmware.
D9
B5819WS SL
sod_323
40V
D7
B5819WS SL
sod_323
40V
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https://www.seeedstudio.com
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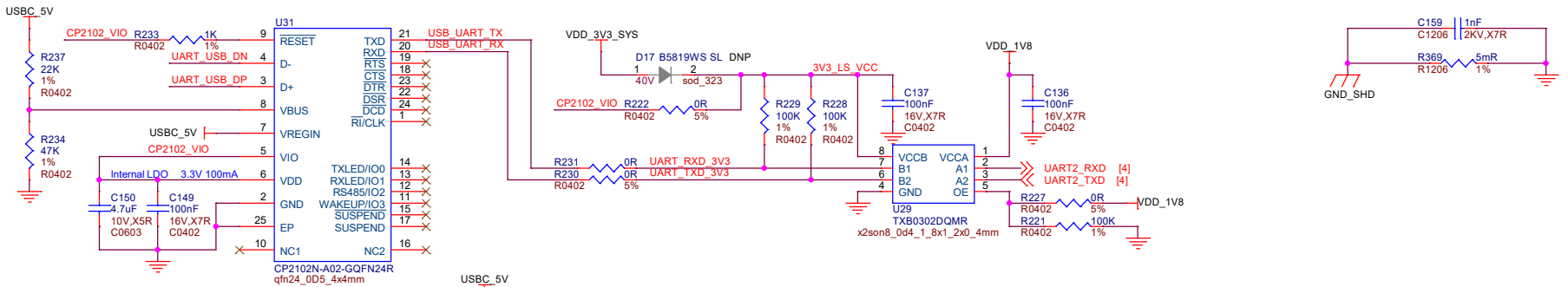
USB3.2 TYPE-A x2 (C)



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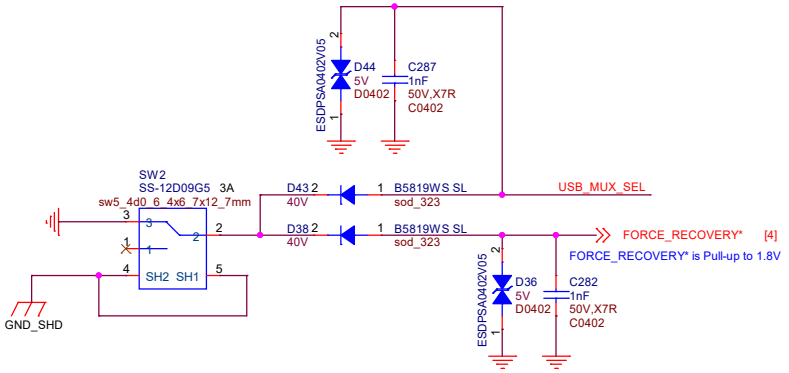

USBPD_AVDD33
VDD_3V3_SYS
FB8
L0603
BLM18PG121SN1D
120R
2A
C119 1uF 10V,X5R C0402
C120 100nF 16V,X7R C0402
C133 1nF 50V,X7R C0402
C116 1uF 10V,X5R C0402
C134 100nF 16V,X7R C0402
C135 1nF 50V,X7R C0402
U28
AVDD33
DVDD_IO
VSS
DP_LN_0P
DP_LN_0N
DP_LN_1P
DP_LN_1N
DP_LN_2P
DP_LN_2N
DP_LN_3P
DP_LN_3N
AUXP
AUXN
HPD
SSTX_N
SSTX_P
SSRX_N
SSRX_P
TEST_R
CFG_SDA
CFG_SCL
SINK_CTRL
SOURCE_CTRL
TEST_EN
DISCHARGE_CTRL
ROLE_SELECT
I2C_ADR_0
I2C_ADR_1
SSTXP1
SSTXN1
SSRXN2
SSRXP2
SSTXP2
SSTXN2
SSRXN1
SSRXP1
SBU1
SBU2
VCONN_PWR
CC1
CC2
FF0
FF1
INTP_OUT
VBUS_SENSE
VBUS_OCP
NC1
NC2
ANX7447
qfn48_0d4_6x6_ep
QFN48
MUX_TYPEC_TXP1
MUX_TYPEC_TXN1
MUX_TYPEC_RXN2
MUX_TYPEC_RXP2
MUX_TYPEC_TXP2
MUX_TYPEC_TXN2
MUX_TYPEC_RXN1
MUX_TYPEC_RXP1
MUX_TYPEC_SBU1
MUX_TYPEC_SBU2
TYPEC_CC1
TYPEC_CC2
USB_PD_INT_3V3
VDD_5V_SYS
C132 1uF 10V,X5R C0402
TP22
TP18
R216 10K 5% R0402 DNP
R215 10K 5% R0402
R209 10K 5% R0402 DNP
R208 10K 5% R0402 DNP
R204 348K 1% R0402
R206 49.9K 1% R0402
Design Note:
ROLE_SELECT pin:
Logic 1: DRP Mode.
Logic 0: DFP Mode.
NC: UFP Mode
Design Note:
VCONN_POWER is the power source for VCONN:
1) Internal VCONN Switch:Iout Max 400mA,Rdson Max 1.2 ohm
2) VCONN Minimum power is 1W. If DP Alternate Mode is supported, VCONN power is up to 1.5W.
Design Note:
Interrupt output, active low.
VBUS_TYPEC
J19
TYPE-C-24P-CH5.06
USB3_0_TYPE_C_14_3X4_5X9_8MM
GND_SHD
L8 90R L2012
280mA DLW21SN900HQ2L
TYPEC_DN
TYPEC_DP
U34
TPD4E02B04DQAR
3.6V
uson10_0d5_2d5x1x0d5mm
U33
TPD4E02B04DQAR
3.6V
uson10_0d5_2d5x1x0d5mm
VDD_1V8
Q24 2SK3018 SOT-323-3
Q23 2SK3018 SOT-323-3
Q22 2SK3018 SOT-323-3
Q37 MMBT3904 SOT23 40V,200mA
Q38 MMBT3904 SOT23 40V,200mA
Q25 CJ3134KW SOT-323-3
R218 10K 5% R0402 DNP
R217 2.2K 1% R0402
R214 10K 5% R0402 DNP
R213 2.2K 1% R0402
R212 10K 5% R0402
R211 4.7K 1% R0402
R321 10K 5% R0402
R322 2.2K 1% R0402
R323 10K 5% R0402
R327 10K 5% R0402
R326 10K 5% R0402
C264 10pF 50V,NPO C0402
R220 499R 1% R0402
R219 10K 5% R0402
[4,20,21,23,25] I2C2_SDA
[4,20,21,23,25] I2C2_SCL
[4] USB_PD_INT_1V8
[6] DP1_HPD
DISCHARGE_CTRL
SOURCE_CTRL
HPD_7447
Design Note:
SY6280AAC: automatic output discharge at shutdown.
SY6280AAAC: no output discharge function at shutdown.
U30
SY6280AAAC
SOT23-5
Imax=1.5A
C145 10uF 10V,X5R C0603
C142 100nF 16V,X7R C0402
C146 100nF 16V,X7R C0402
R235 4.7K 1% R0402
R232 10K 5% R0402
ESDPSA0402/05
D19 5V D0402
D18 5V D0402
D40 5V D0402
D42 5V D0402
D39 5V D0402
D41 5V D0402
seeed studio
https://www.seeedstudio.com
Title: reComputer Robotics J401
Size: C
Document Number: 16 Type C ALT Mode
Rev: V1.0
Draw By: Seeed
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Sheet: 16 of 25

CP2102N

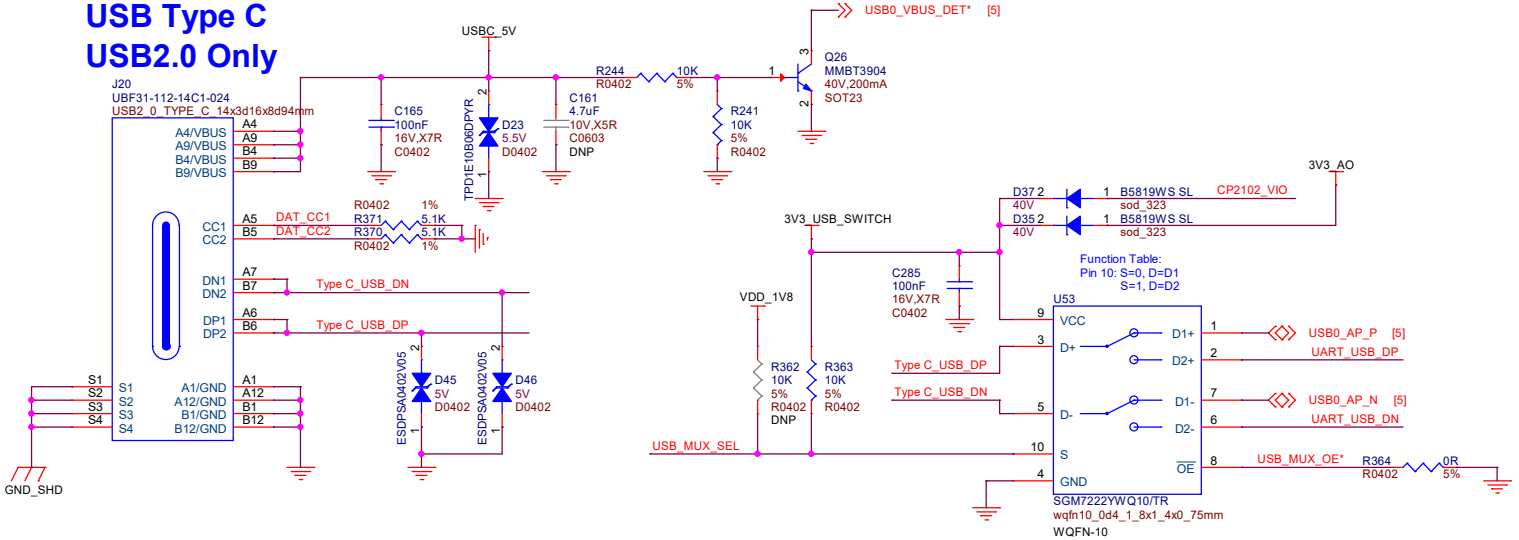


USB to UART



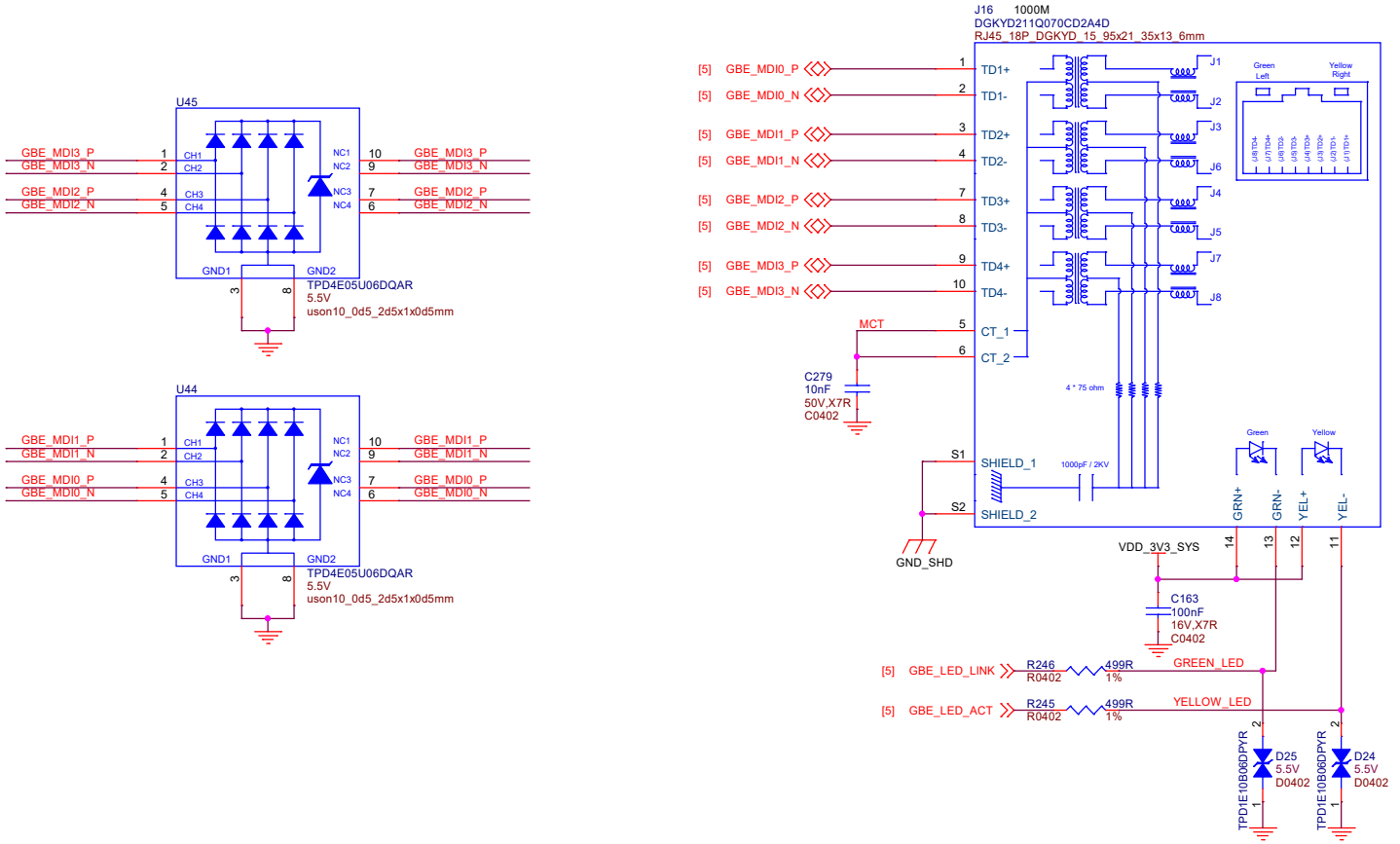


USB Type C
USB2.0 Only



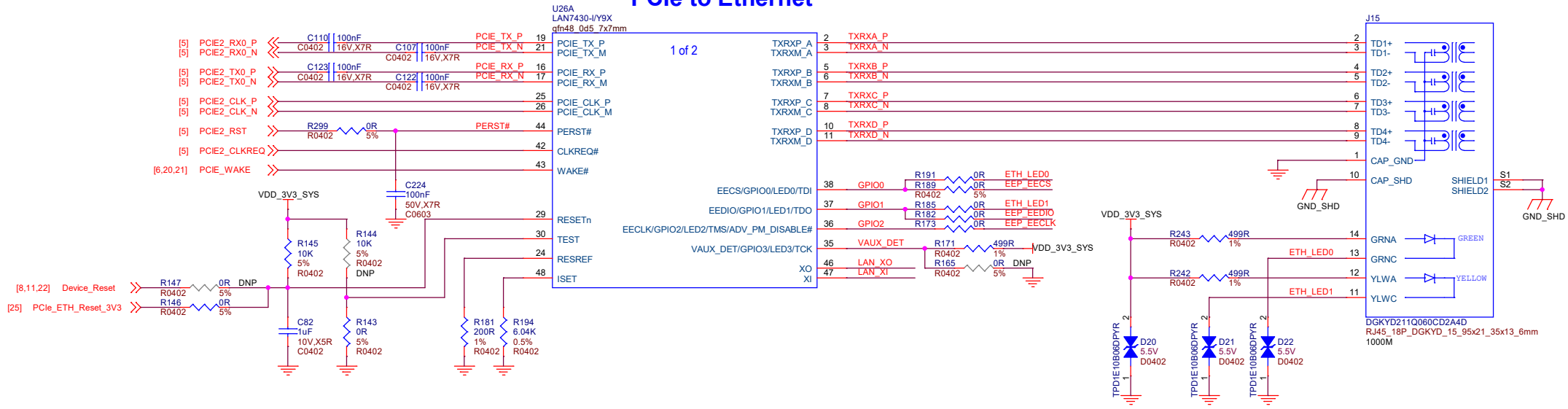
seeed studio
https://www.seeedstudio.com
Title: reComputer Robotics J401
Size: A3
Document Number: 17 Type C, USB to UART
Rev: V1.0
Draw By: Seeed
Date: Monday, November 24, 2025
Sheet: 17 of 25

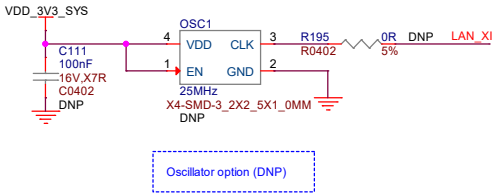
Gigabit Ethernet

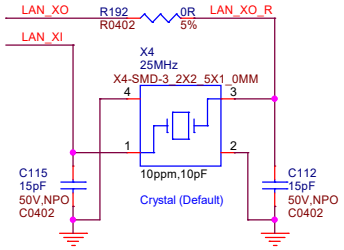


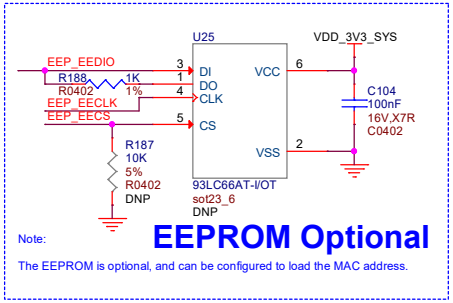
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	Title: reComputer Robotics J401	
Size: A3	Document Number: 18 Gigabit Ethernet	Rev: V1.0
Draw By: Seeed	Date: Monday, November 24, 2025	Sheet: 18 of 25

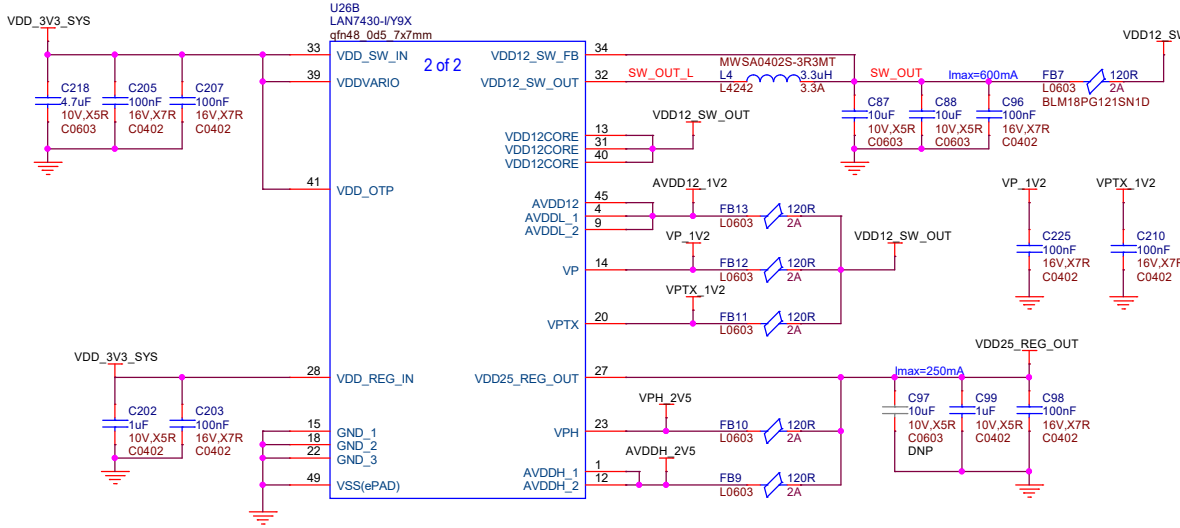
PCIe to Ethernet

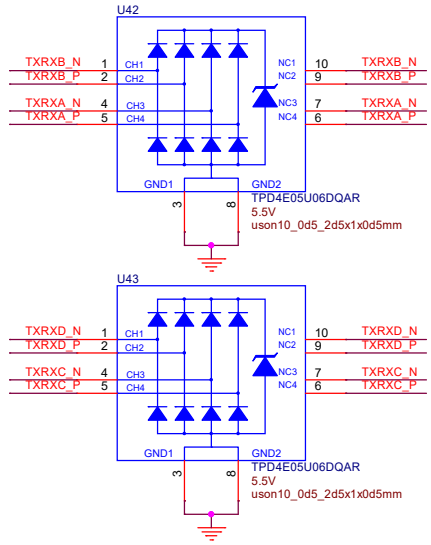






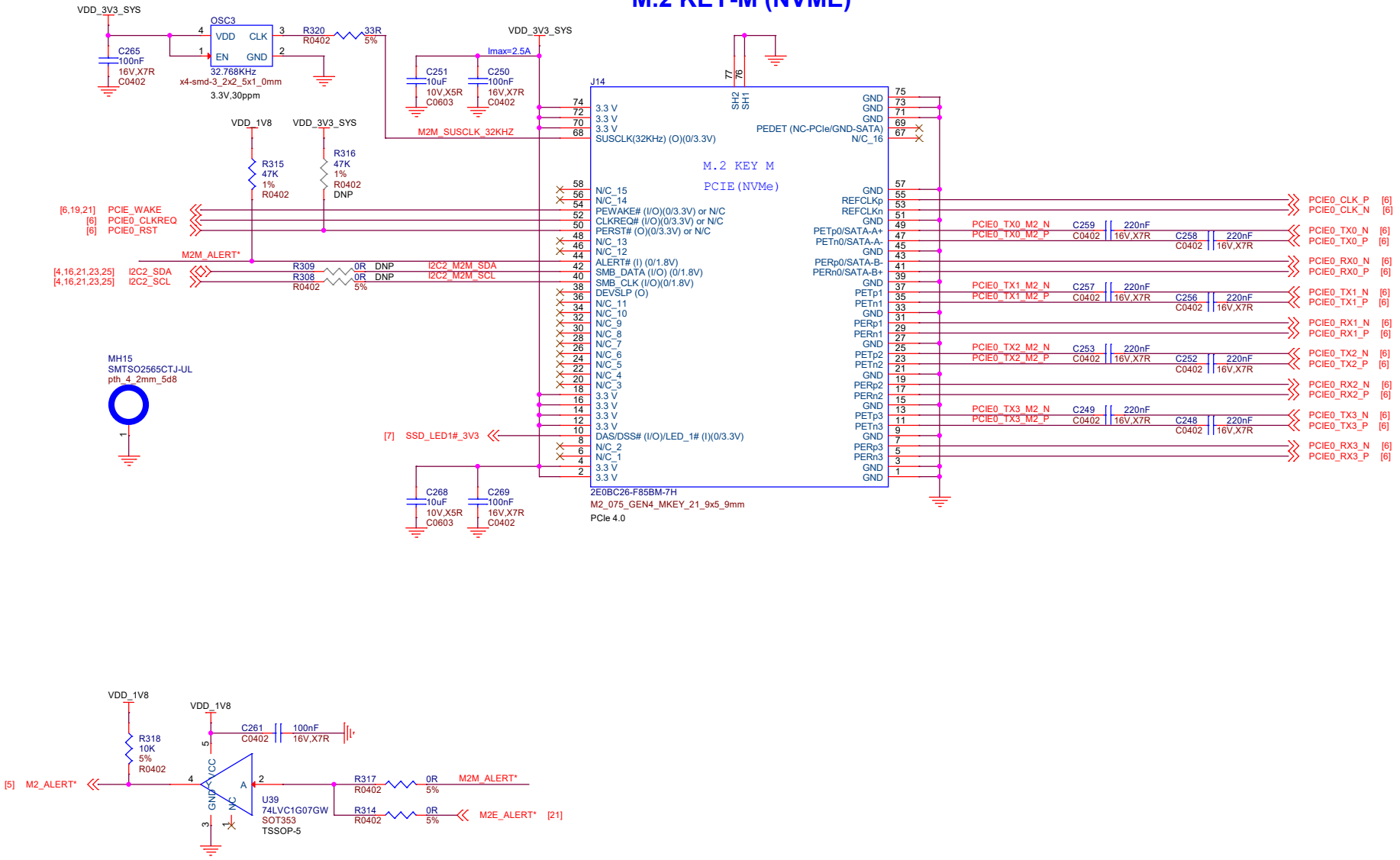






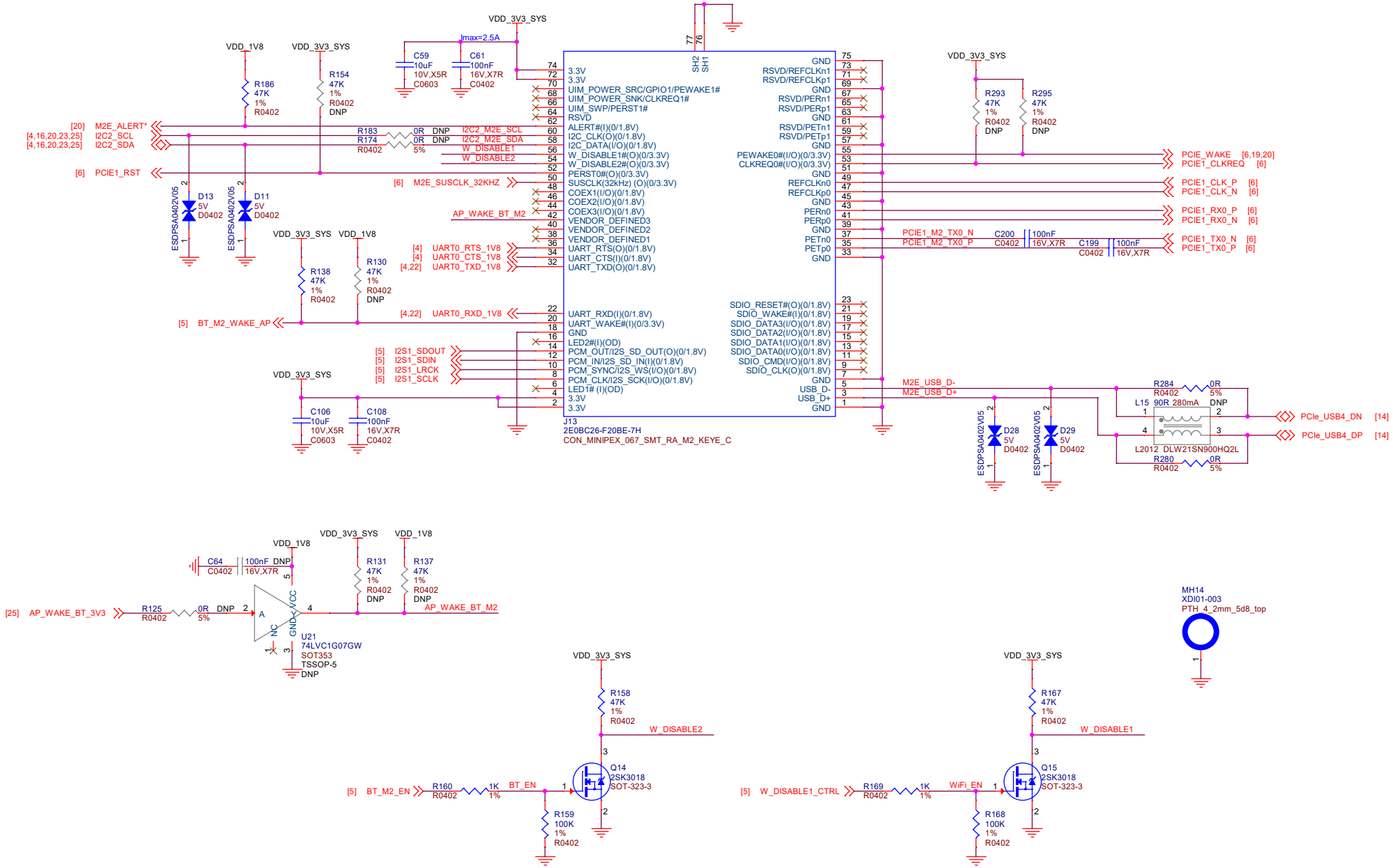
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	Title: reComputer Robotics J401	
Size: A3	Document Number: 19 PCIe to Ethernet	Rev: V1.0
Draw By: Seeed	Date: Monday, November 24, 2025	Sheet: 19 of 25

M.2 KEY-M (NVME)



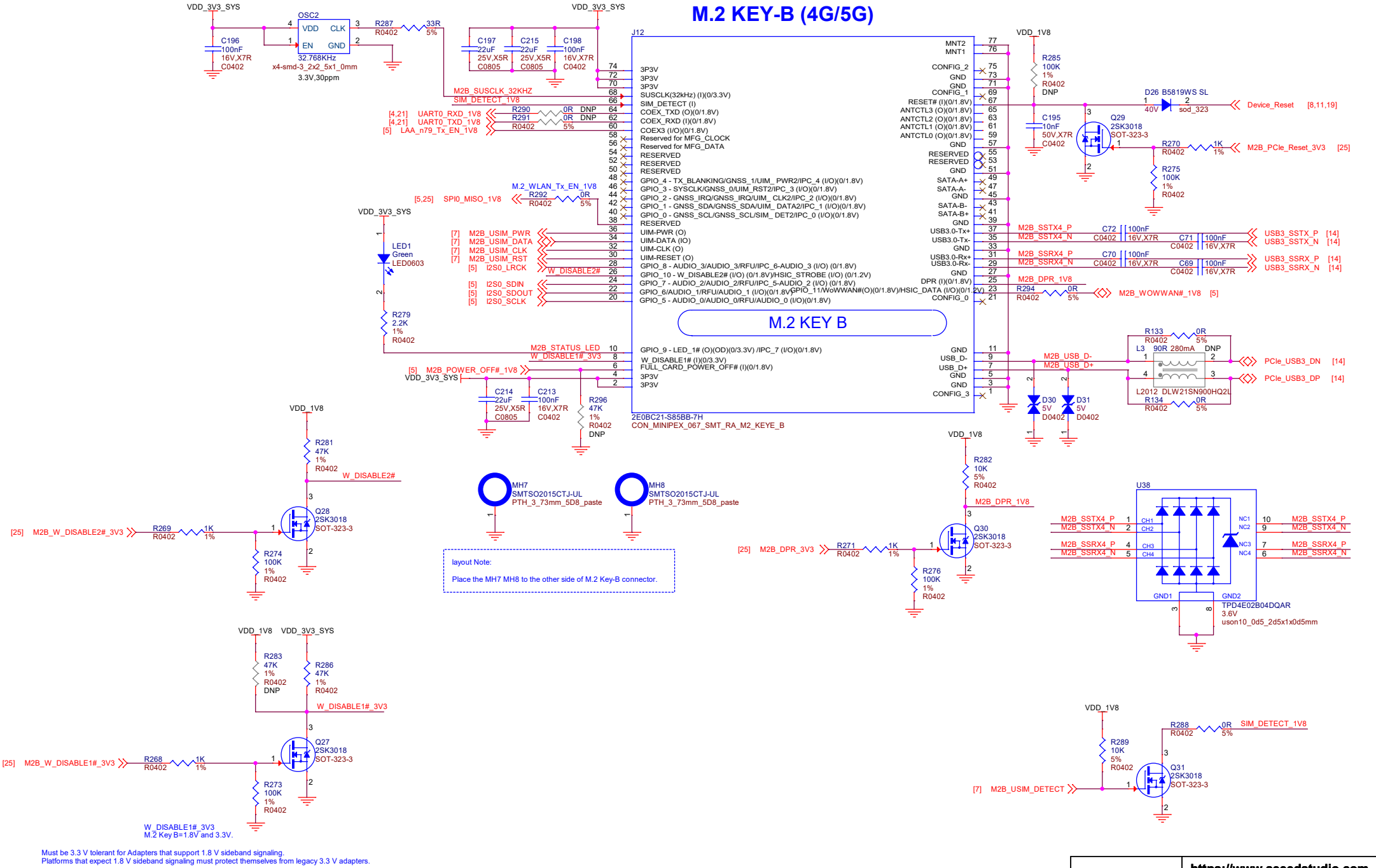
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Size: A3	Document Number: 20 M.2 KEY-M (NVME)	Rev: V1.0
Draw By: Seeed	Date: Monday, November 24, 2025	Sheet: 20 of 25

M.2 KEY-E (WIFI/BT) SIZE: 2230



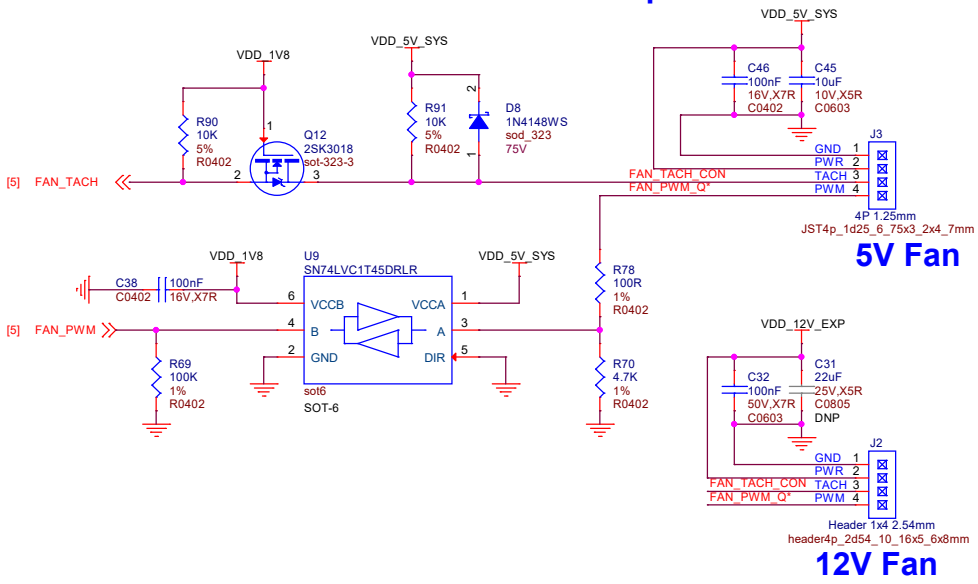
seeed studio	https://www.seeedstudio.com	
	Title: reComputer Robotics J401	
Size: A3	Document Number: 21 M.2 KEY-E (WIFI/BT)	Rev: V1.0
Draw By: Seeed	Date: Monday, November 24, 2025	Sheet: 21 of 25

M.2 KEY-B (4G/5G)

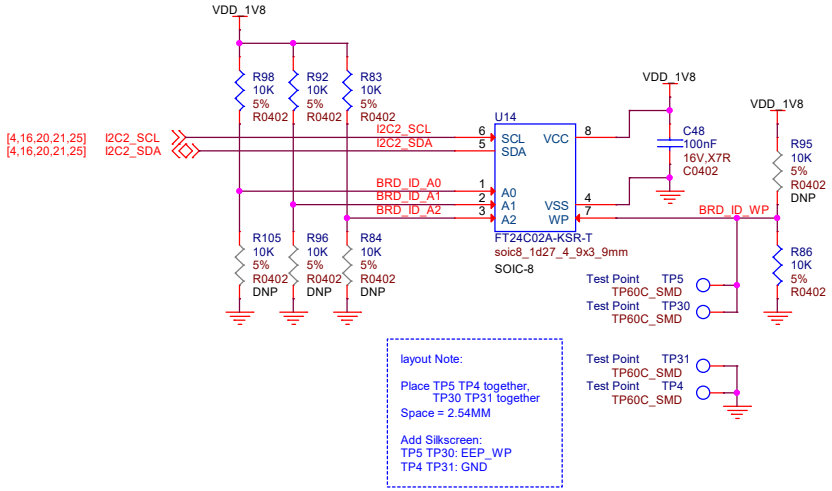


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Title:	reComputer Robotics J401
Size: A3	Document Number: 22 M.2 KEY-B (4G/5G)
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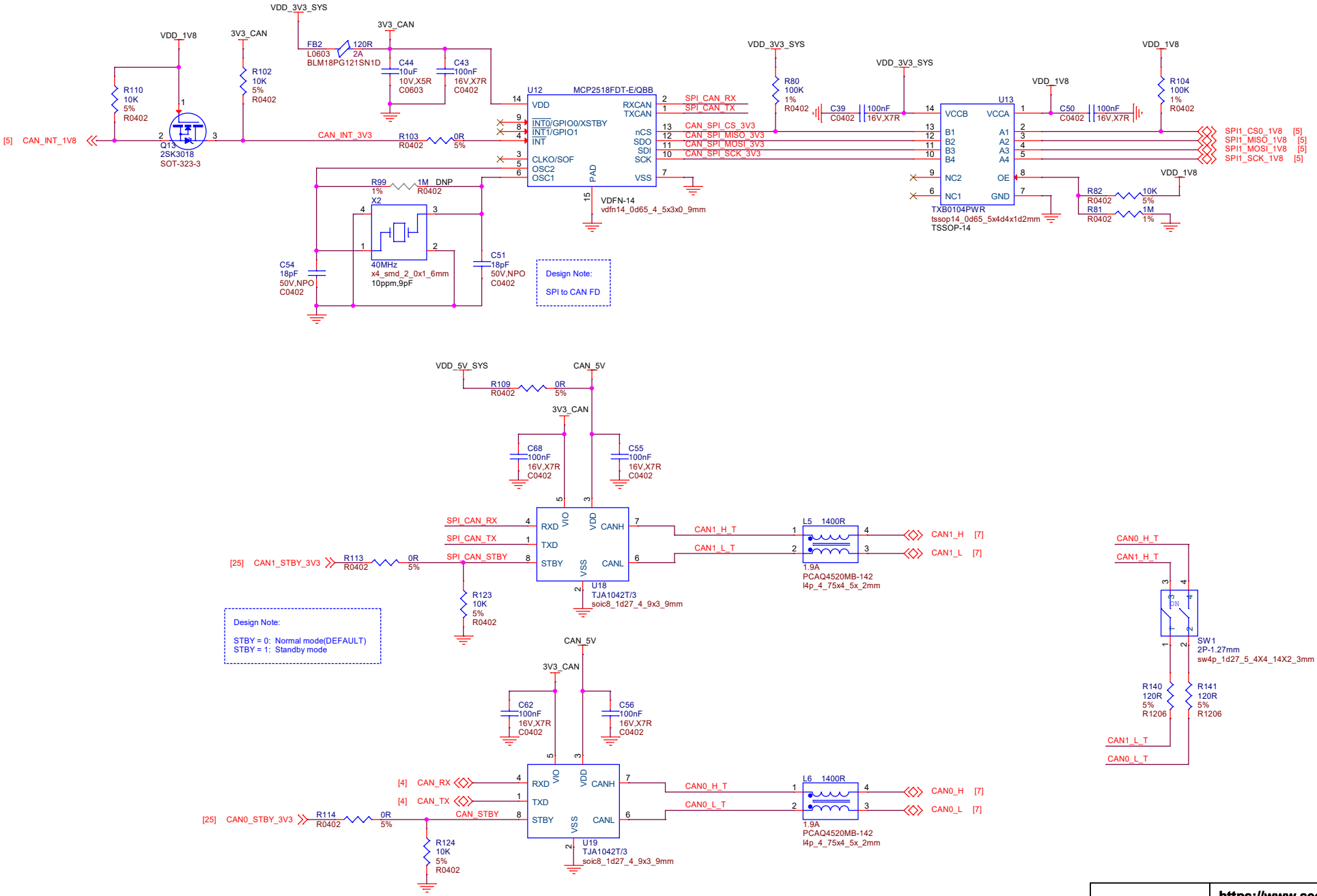
SoC Fan Header 4pin



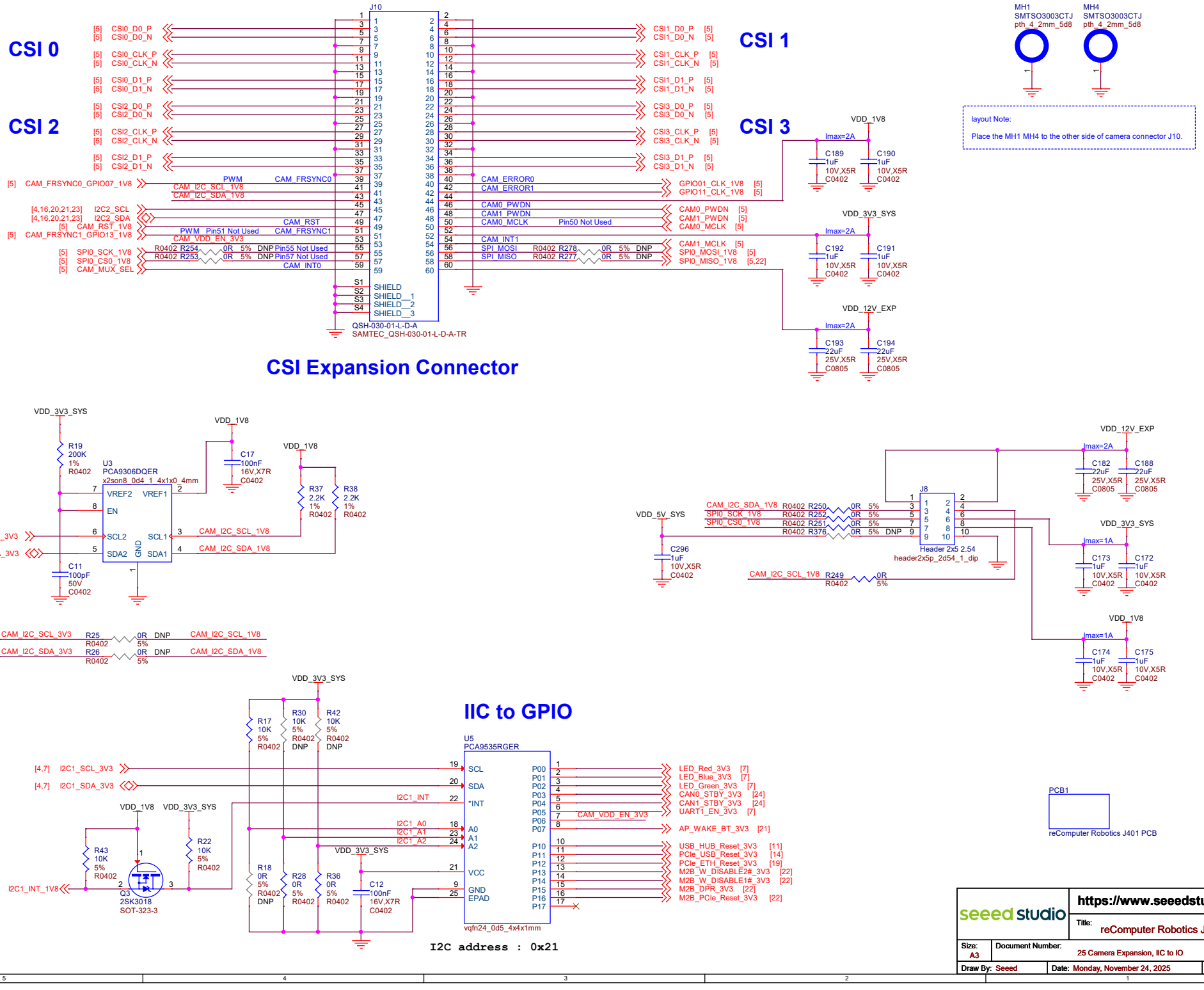
Carrier Board Config



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	Title: reComputer Robotics J401	
Size: A3	Document Number: 23 Fan, EEPROM	Rev: V1.0
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	Title: reComputer Robotics J401	
Size: A3	Document Number: 24 CAN x2	Rev: V1.0
Draw By: Seeed	Date: Monday, November 24, 2025	Sheet: 24 of 25


CSI 0
CSI 1
CSI 2
CSI 3
J10
QSH-030-01-L-D-A
SAMTEC_QSH-030-01-L-D-A-TR
CSI Expansion Connector
MH1
SMTSO3003CTJ
pth_4_2mm_5d8
MH4
SMTSO3003CTJ
pth_4_2mm_5d8
layout Note:
Place the MH1 MH4 to the other side of camera connector J10.
VDD_1V8
VDD_3V3_SYS
VDD_12V_EXP
U3
PCA9306DQER
x2son8_0d4_1_4x1x0_4mm
J8
Header 2x5 2.54
header2x5p_2d54_1_dip
IIC to GPIO
U5
PCA9535RGER
vqfn24_0d5_4x4x1mm
Q3
2SK3018
SOT-323-3
I2C address : 0x21
PCB1
reComputer Robotics J401 PCB
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https://www.seeedstudio.com
Title: reComputer Robotics J401
Size: A3
Document Number: 25 Camera Expansion, IIC to IO
Rev: V1.0
Draw By: Seeed
Date: Monday, November 24, 2025
Sheet: 25 of 25