reComputer J601 Carrier Board

Revision History

VER	DATE	REVISION	DESCRIPTION
V1.0	06/12/2026	reComputer J601 Carrier Board_V1.0_SCH_260612	Initial Version.

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Title: reComputer J601 Carrier Board

Size: A3	Document Number: 01 Table of Contents	Rev: V1.0
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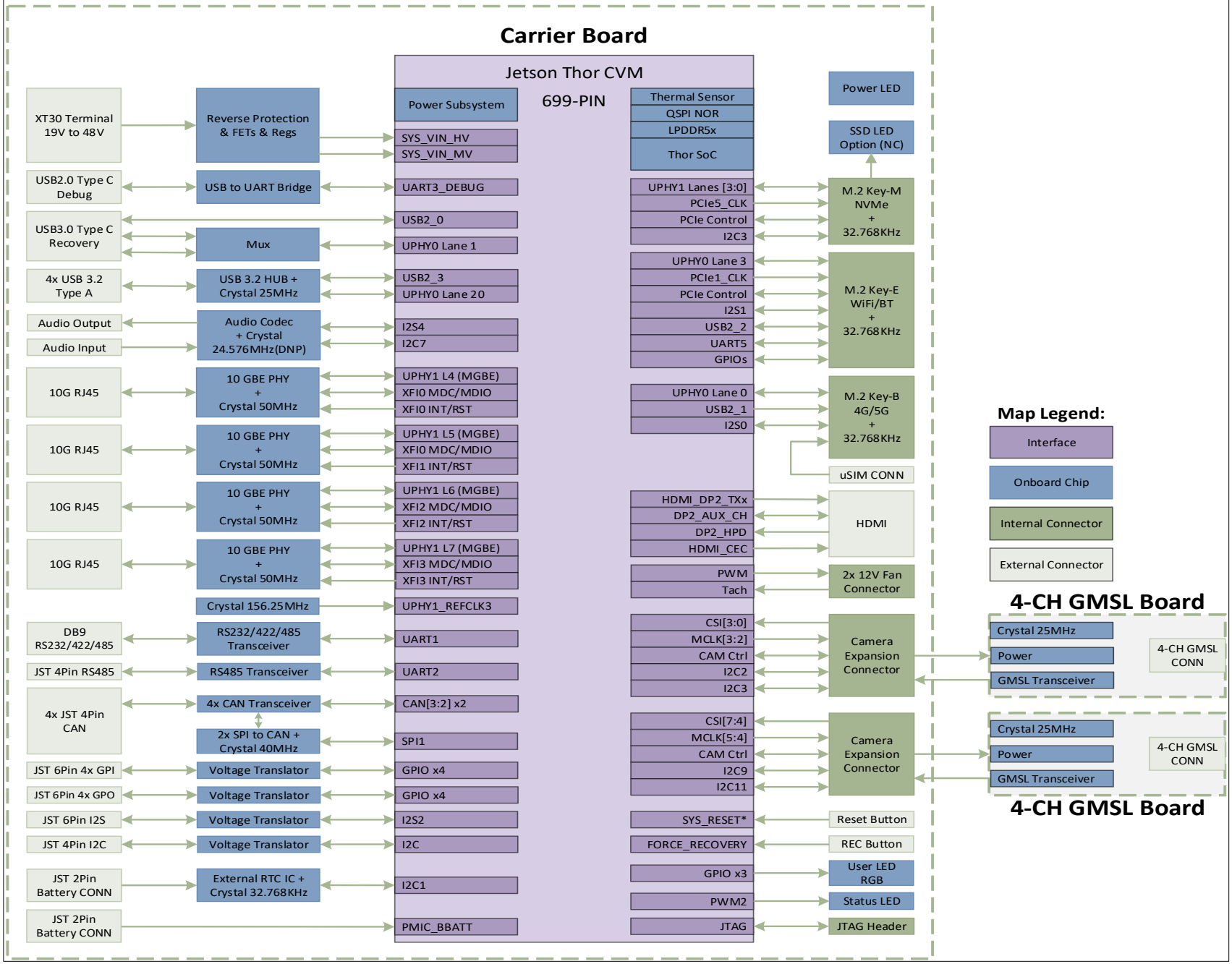
reComputer J601 Carrier Board Block Diagram



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Size: A3	Document Number: 02 Block Diagram	Rev: V1.0
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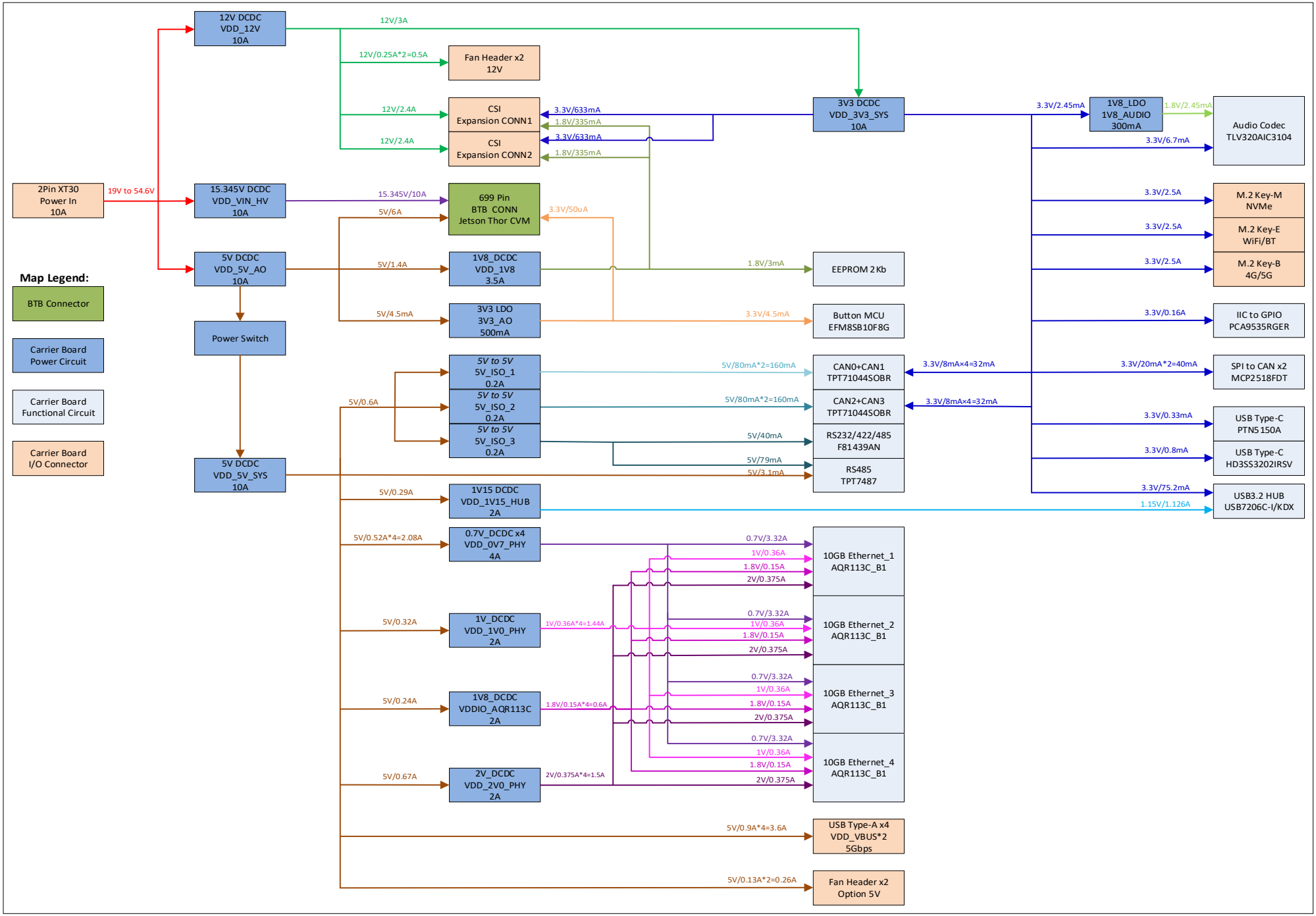

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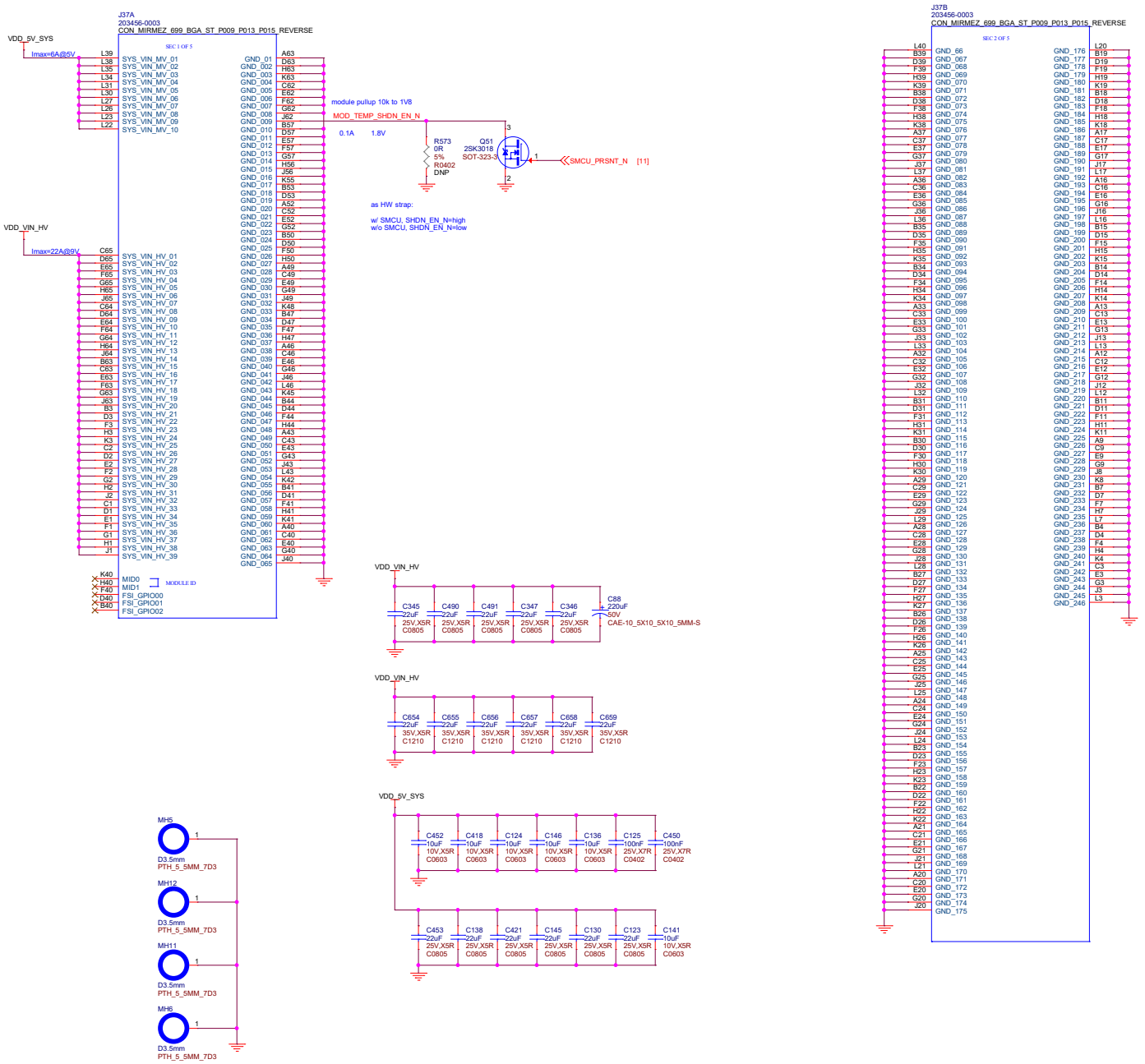
CVM Connector 1/3



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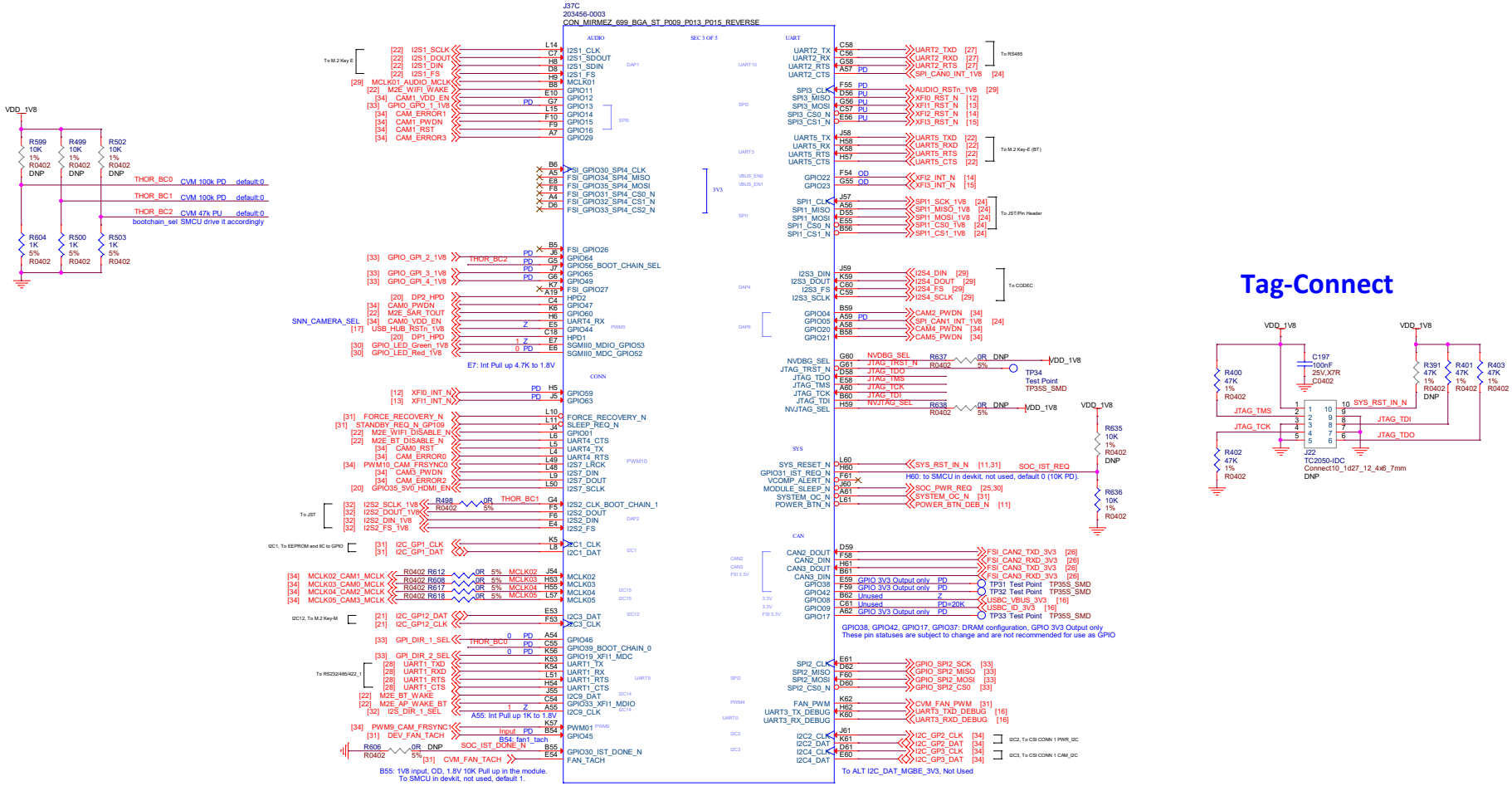
CVM Connector 2/3



Tag-Connect

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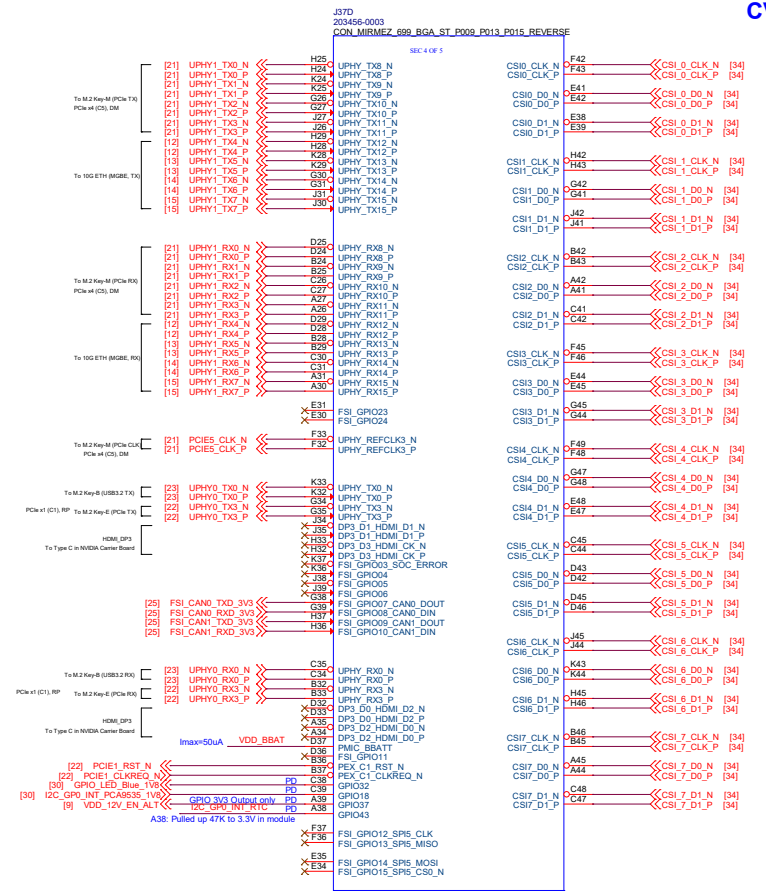
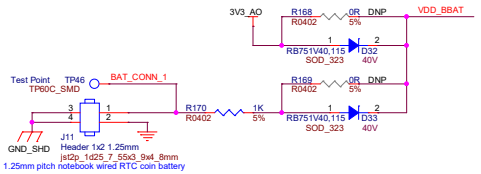
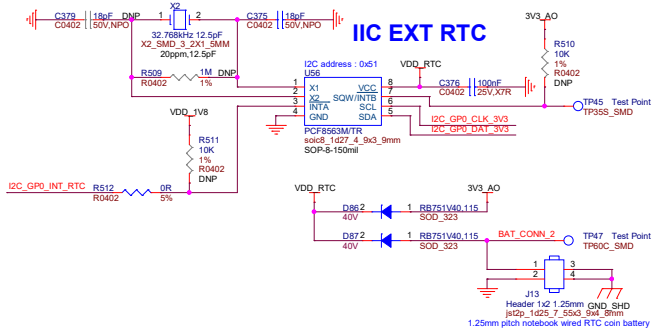
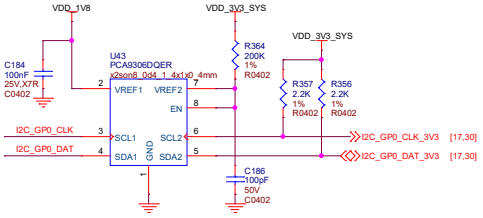
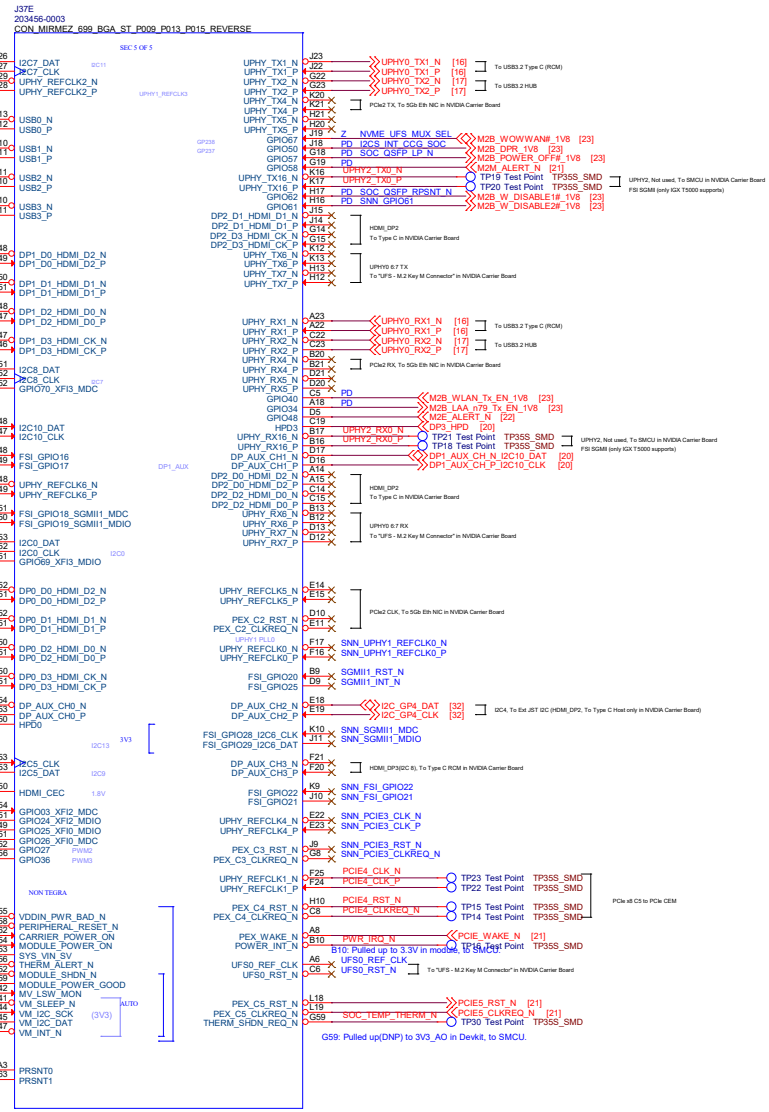
CVM Connector 3/3











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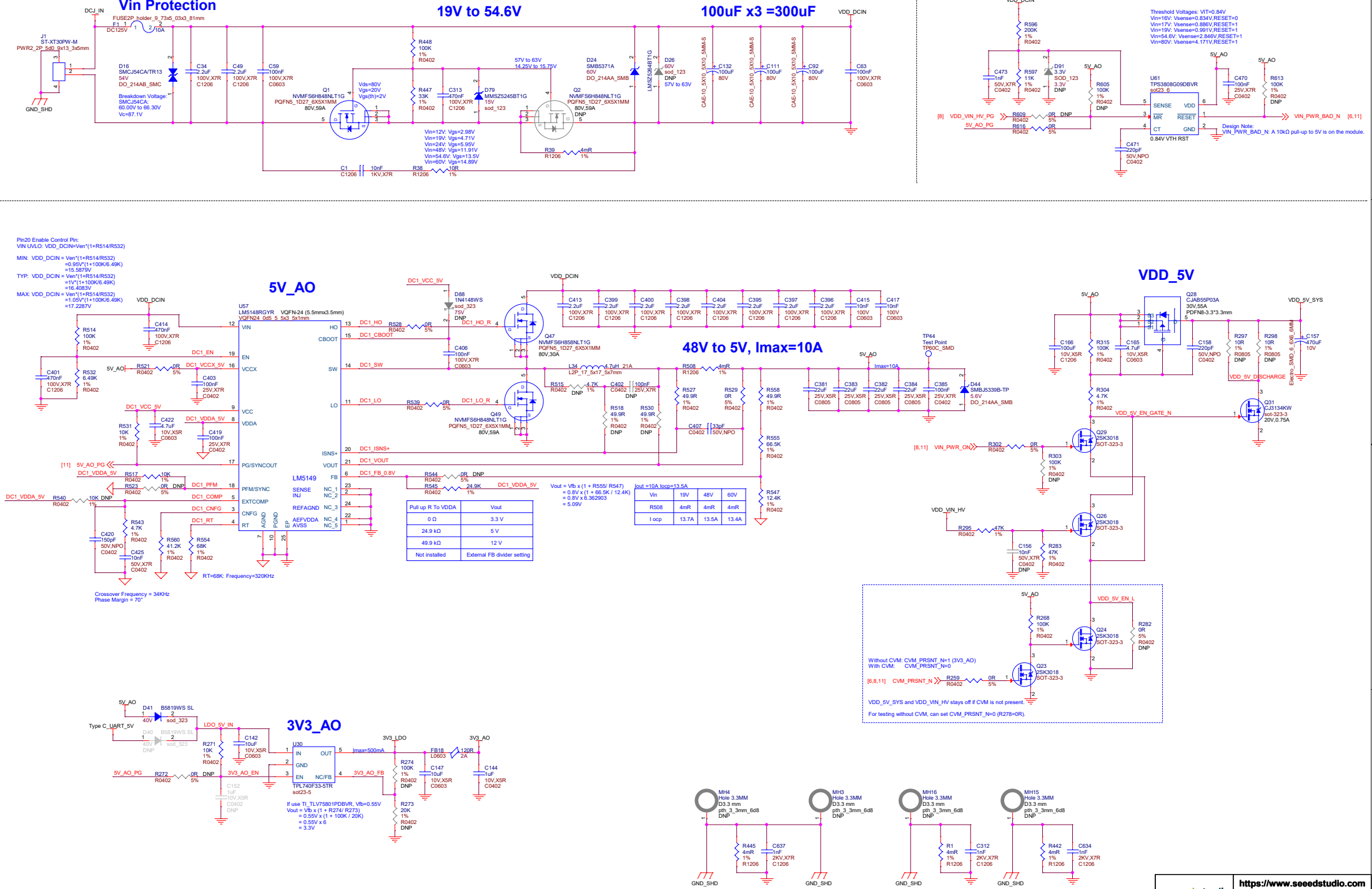
Vin Protection
19V to 54.6V
100uF x3 =300uF
VIN Loss Detection
5V_AO
48V to 5V, Imax=10A
VDD_5V
3V3_AO
DCJ_IN
VDD_DCIN
GND_SHD
Threshold Voltages: VIT=0.84V
Vin=16V: Vsense=0.834V,RESET=0
Vin=17V: Vsense=0.886V,RESET=1
Vin=19V: Vsense=0.991V,RESET=1
Vin=54.6V: Vsense=2.846V,RESET=1
Vin=80V: Vsense=4.171V,RESET=1
Design Note:
VIN_PWR_BAD_N: A 10kΩ pull-up to 5V is on the module.
Pin20 Enable Control Pin:
VIN UVLO: VDD_DCIN=Ven*(1+R514/R532)
MIN: VDD_DCIN = Ven*(1+R514/R532)
=0.95V*(1+100K/6.49K)
=15.5879V
TYP: VDD_DCIN = Ven*(1+R514/R532)
=1V*(1+100K/6.49K)
=16.4083V
MAX: VDD_DCIN = Ven*(1+R514/R532)
=1.05V*(1+100K/6.49K)
=17.2287V
LM5149
Crossover Frequency = 34KHz
Phase Margin = 70°
RT=68K: Frequency=320KHz
Vout = Vfb x (1 + R555/ R547)
= 0.8V x (1 + 66.5K / 12.4K)
= 0.8V x 6.362903
= 5.09V
Pull up R To VDDA
0 Ω
24.9 kΩ
49.9 kΩ
Not installed
3.3 V
5 V
12 V
External FB divider setting
Without CVM: CVM_PRSNT_N=1 (3V3_AO)
With CVM: CVM_PRSNT_N=0
VDD_5V_SYS and VDD_VIN_HV stays off if CVM is not present.
For testing without CVM, can set CVM_PRSNT_N=0 (R278=0R).
If use TI_TLV75801PDBVR, Vfb=0.55V
Vout = Vfb x (1 + R274/ R273)
= 0.55V x (1 + 100K / 20K)
= 0.55V x 6
= 3.3V
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Document Number: 07 Power In, 5V_AO, 3V3_AO
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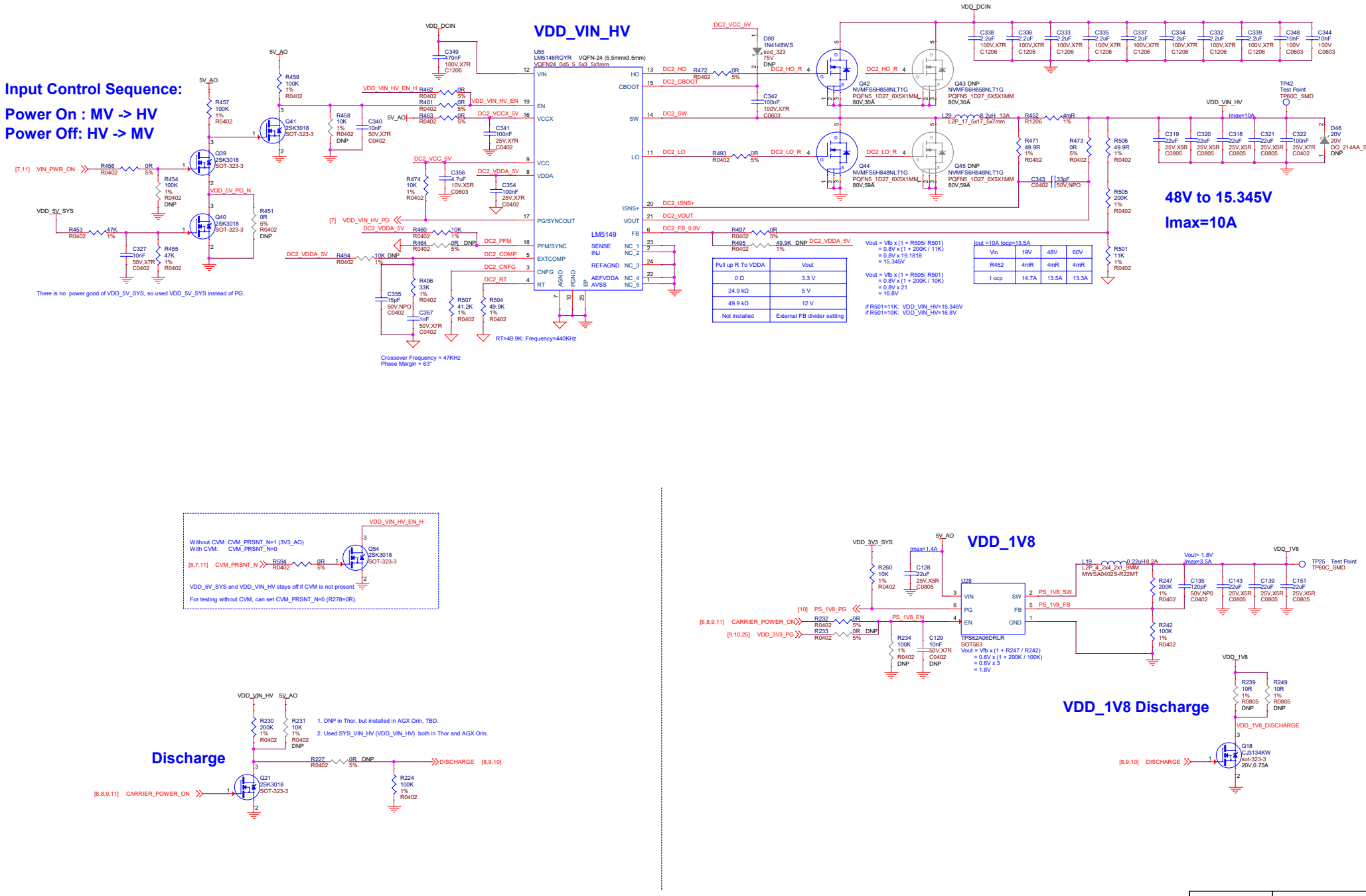

Pull up R To VDDA	Vout
0 Ω	3.3 V
24.9 kΩ	5 V
49.9 kΩ	12 V
Not installed	External FB divider setting

Iout =10A Iocp=13.5A

Vin	19V	48V	60V
R452	4mR	4mR	4mR
I ocp	14.7A	13.5A	13.3A

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VDD_12V

VDD_12V_EN_ALT: "PU on CVM" refer to Thor Carrier Board, but PD refer to Pinmux.
CARRIER_POWER_ON: A 10kΩ pull-up to 3.3V is on module

U60 LM5148RGYR VQFN-24 (5.5mmx3.5mm) VQFN24_0d5_5_5x3_5x1mm

LM5149 pins: VIN, EN, VCCX, VCC, VDDA, PG/SYNCOUT, PFM/SYNC, EXTCOMP, CNFG, RT, HO, CBOOT, SW, LO, ISNS+, VOUT, FB, SENSE, INJ, REFAGND, AEFVDDA, AVSS, NC_1, NC_2, NC_3, NC_4, NC_5, AGND, PGND, EP

Crossover Frequency = 50KHz
Phase Margin = 61°

RT=49.9K: Frequency=440KHz

Pull up R To VDDA	Vout
0 Ω	3.3 V
24.9 kΩ	5 V
49.9 kΩ	12 V
Not installed	External FB divider setting

48V to 12V, Imax=10A

Q55 NVMFS6H858NLT1G PQFN5_1D27_6X5X1MM 80V,30A
Q56 NVMFS6H848NLT1G PQFN5_1D27_6X5X1MM 80V,59A
D90 1N4148WS sod_323 75V DNP
L36 4.7uH_21A L2P_17_5x17_5x7mm

Vout = Vfb x (1 + R611/ R607)
= 0.8V x (1 + 174K / 12.4K)
= 0.8V x 15.03226
= 12.0258V

Iout =10A Iocp=12.8A

Vin	19V	48V	60V
R571	4mR	4mR	4mR
I ocp	13.9A	12.8A	12.7A

VDD_12V Discharge

VDD_3V3_SYS

VDD_3V3_EN_ALT: "PU on CVM" refer to Thor Carrier Board, but PD refer to Pinmux.
CARRIER_POWER_ON: A 10kΩ pull-up to 3.3V is on module

U58 LM5148RGYR VQFN-24 (5.5mmx3.5mm) VQFN24_0d5_5_5x3_5x1mm

LM5149 pins: VIN, EN, VCCX, VCC, VDDA, PG/SYNCOUT, PFM/SYNC, EXTCOMP, CNFG, RT, HO, CBOOT, SW, LO, ISNS+, VOUT, FB, SENSE, INJ, REFAGND, AEFVDDA, AVSS, NC_1, NC_2, NC_3, NC_4, NC_5, AGND, PGND, EP

Crossover Frequency = 47KHz
Phase Margin = 50°

RT=49.9K: Frequency=440KHz

Pull up R To VDDA	Vout
0 Ω	3.3 V
24.9 kΩ	5 V
49.9 kΩ	12 V
Not installed	External FB divider setting

12V to 3.3V, Imax=10A

Q48 NVMFS6H858NLT1G PQFN5_1D27_6X5X1MM 80V,30A
Q46 NVMFS6H848NLT1G PQFN5_1D27_6X5X1MM 80V,59A
D89 1N4148WS sod_323 75V DNP
L35 2.2uH 20A l2p_5d0_9x8_5x4_8mm

Vout = Vfb x (1 + R524/ R533)
= 0.8V x (1 + 39.2K / 12.4K)
= 0.8V x 4.161290
= 3.329V

Iout =10A Iocp=13.7A

Vin	11V	12V	13V
R567	4mR	4mR	4mR
I ocp	13.8A	13.7A	13.7A

22uF ESR: 10-30mR

VDD_3V3_SYS Discharge

VDD_3V3 Supervisor

U23 UM805RE sot_143 2.63V VTH RST;SOT143

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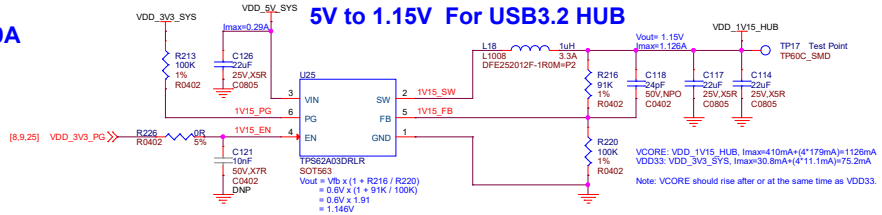
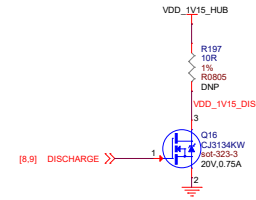
USB3.2 HUB Power

USB Total: 5V 5.09A

5V to 1.15V For USB3.2 HUB



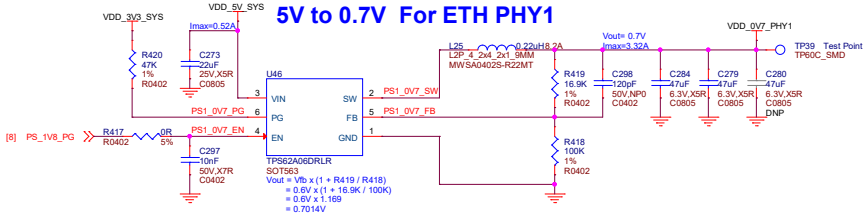
VDD_1V15_HUB Discharge



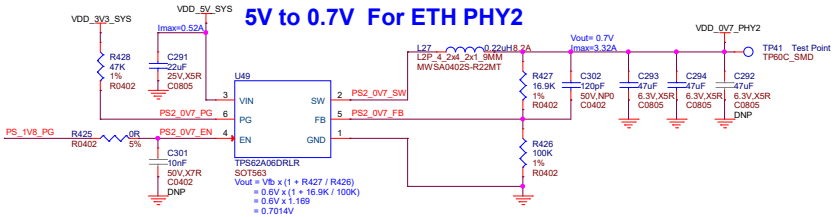
Ethernet Total: 5V 3.31A

10G Ethernet PHY Power

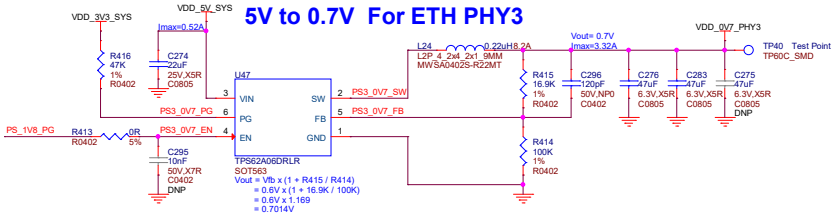
5V to 0.7V For ETH PHY1



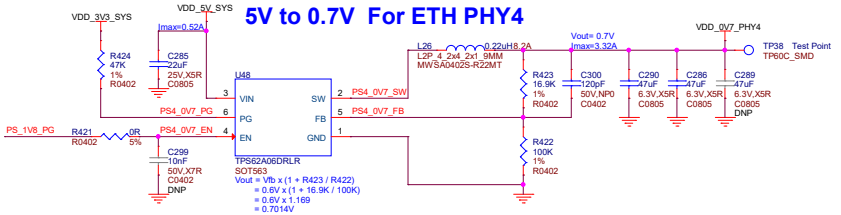
5V to 0.7V For ETH PHY2



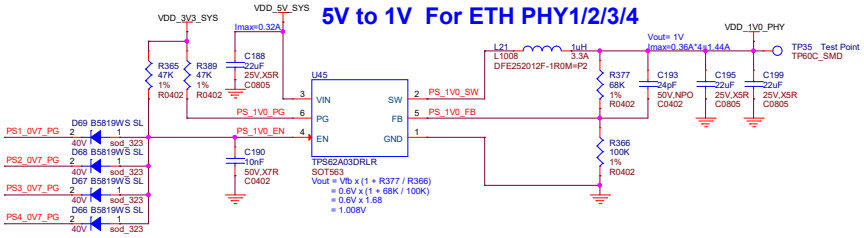
5V to 0.7V For ETH PHY3



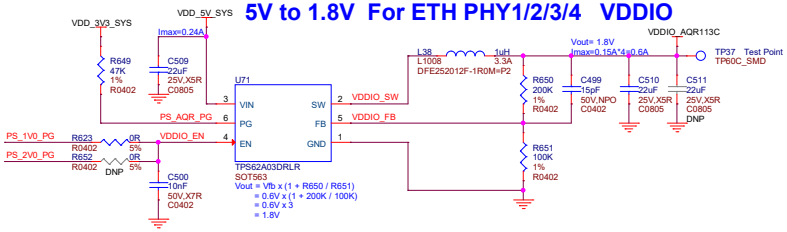
5V to 0.7V For ETH PHY4



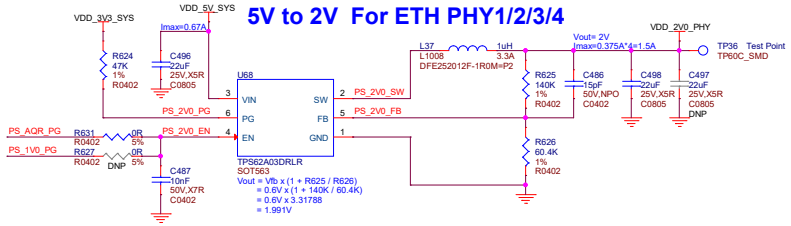
5V to 1V For ETH PHY1/2/3/4



5V to 1.8V For ETH PHY1/2/3/4 VDDIO



5V to 2V For ETH PHY1/2/3/4



PHY AQR113C Power-Up Sequence Requires:

If VDD_IO is 1.8V: VDD -> 1.0V -> VDD_IO -> 2.0V, Default.

If VDD_IO is 3.3V: VDD -> 1.0V -> 2.0V -> VDD_IO.

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	Title: reComputer J601 Carrier Board		
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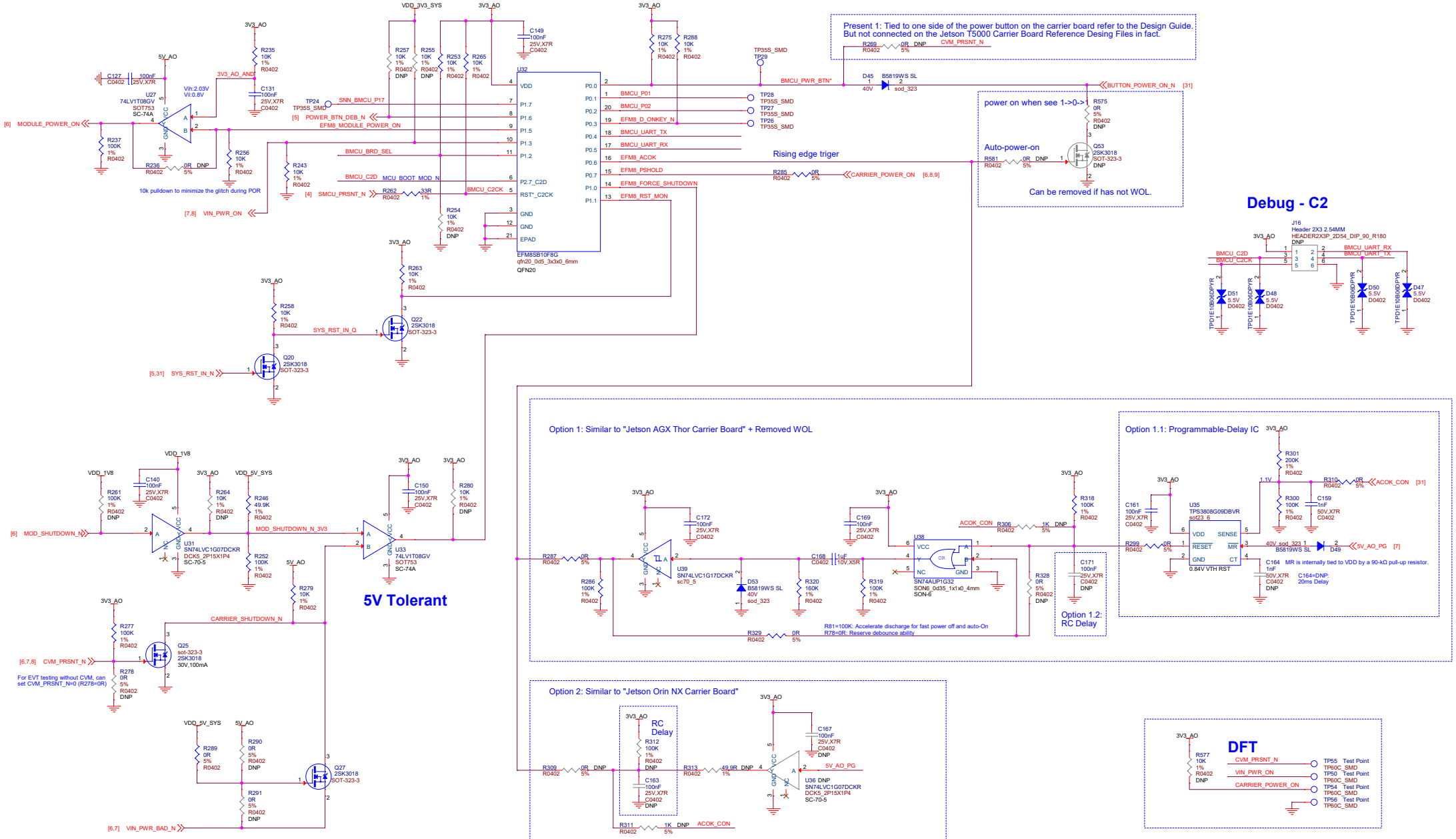
Button MCU For Power Up



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Size: A2	Document Number: 11 Button MCU For Power Up	Rev: V1.0	
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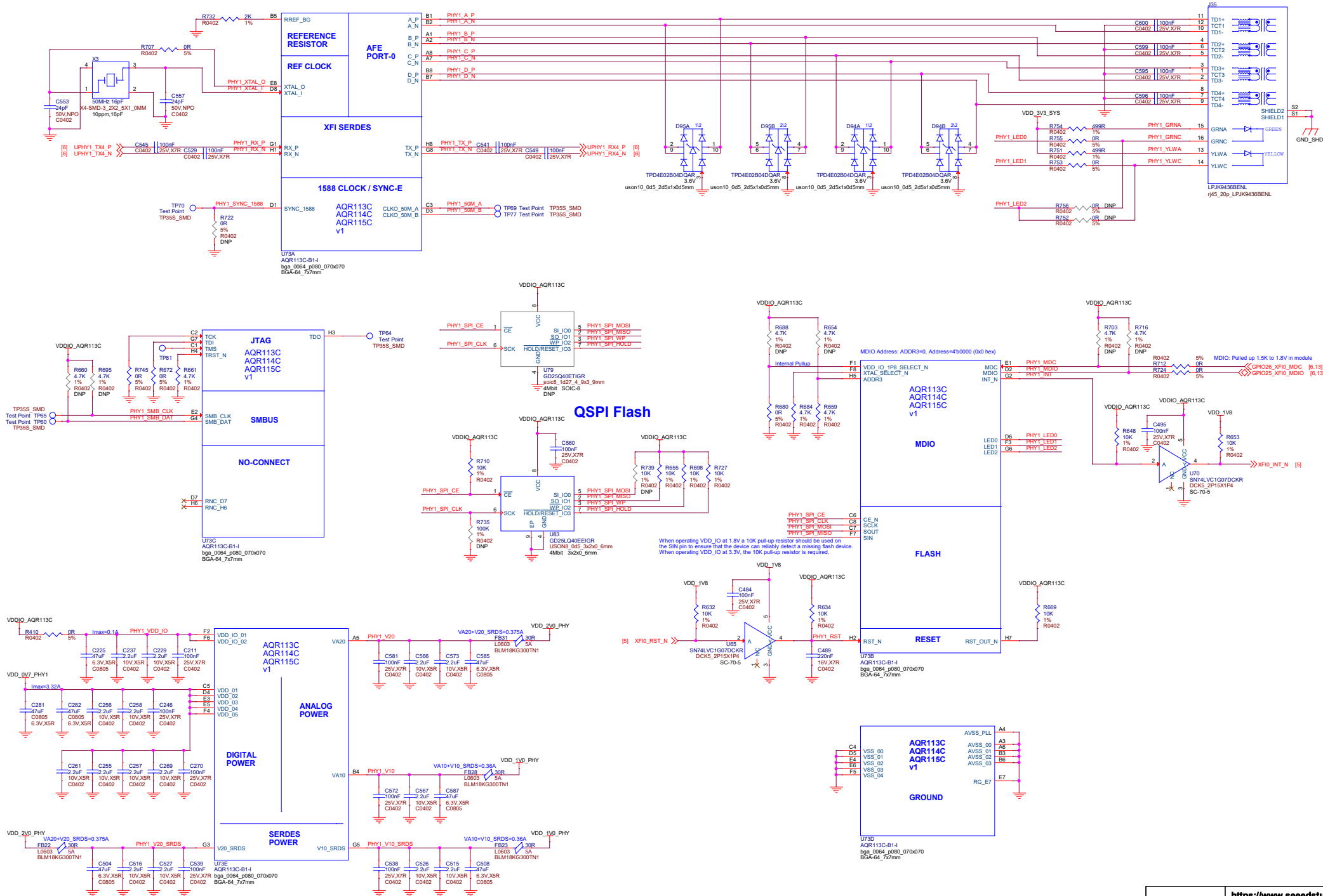
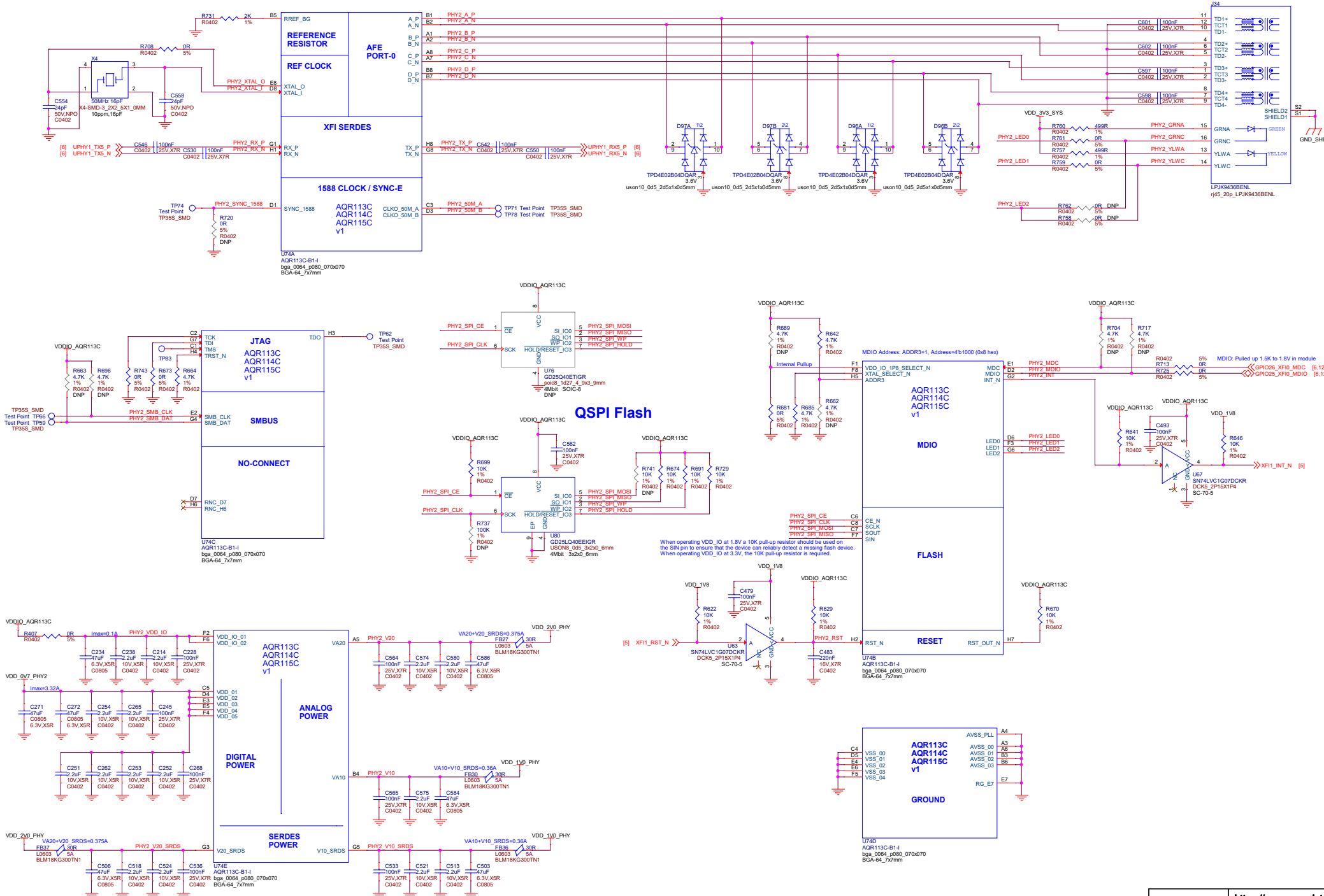
10GB Ethernet 1/4



10GB Ethernet 2/4



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Size: A2	Document Number: 13 10G Ethernet 2/4		Rev: V1.0
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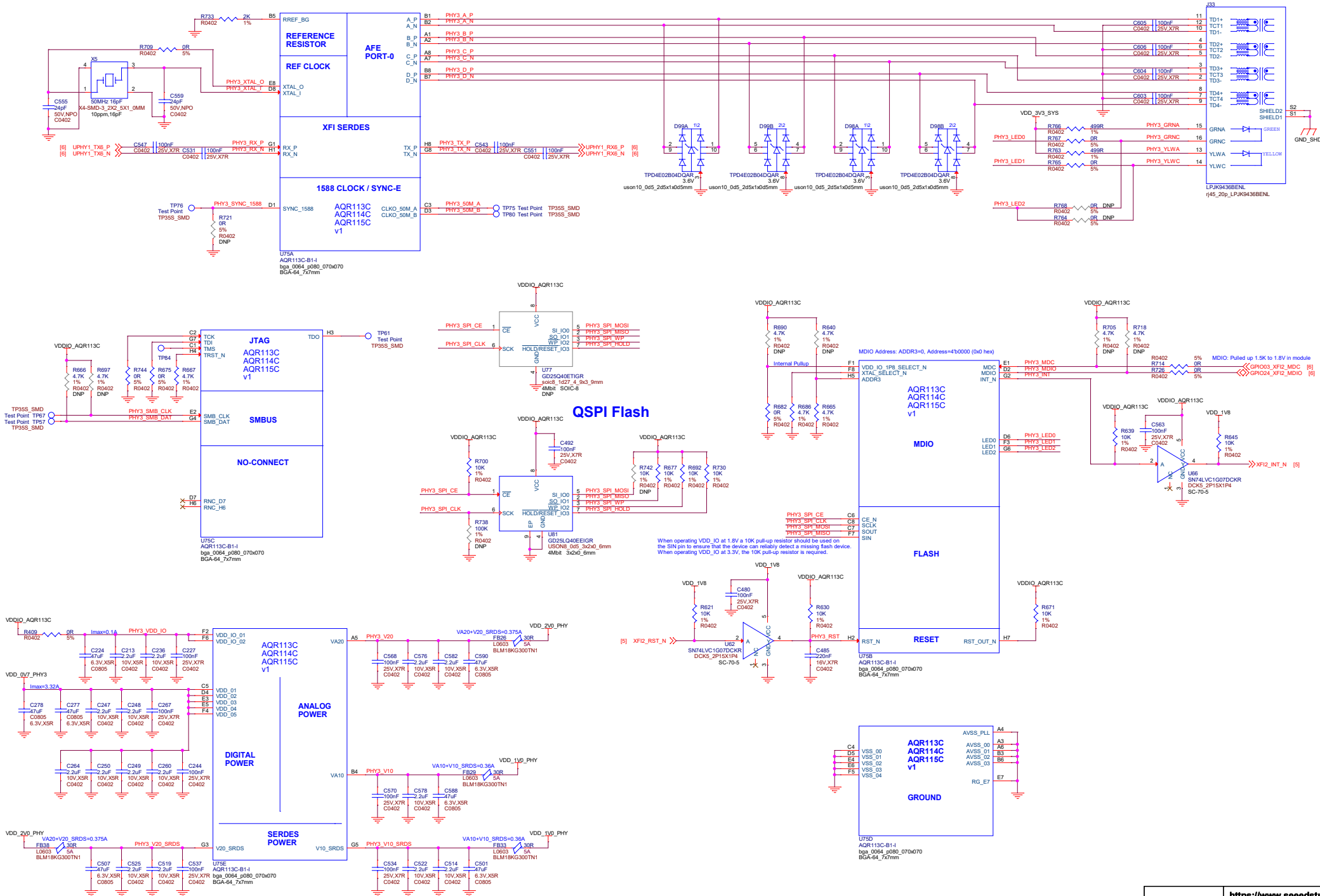
10GB Ethernet 3/4



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	Title: reComputer J601 Carrier Board		
Size: A2	Document Number: 14 10G Ethernet 3/4		Rev: V1.0
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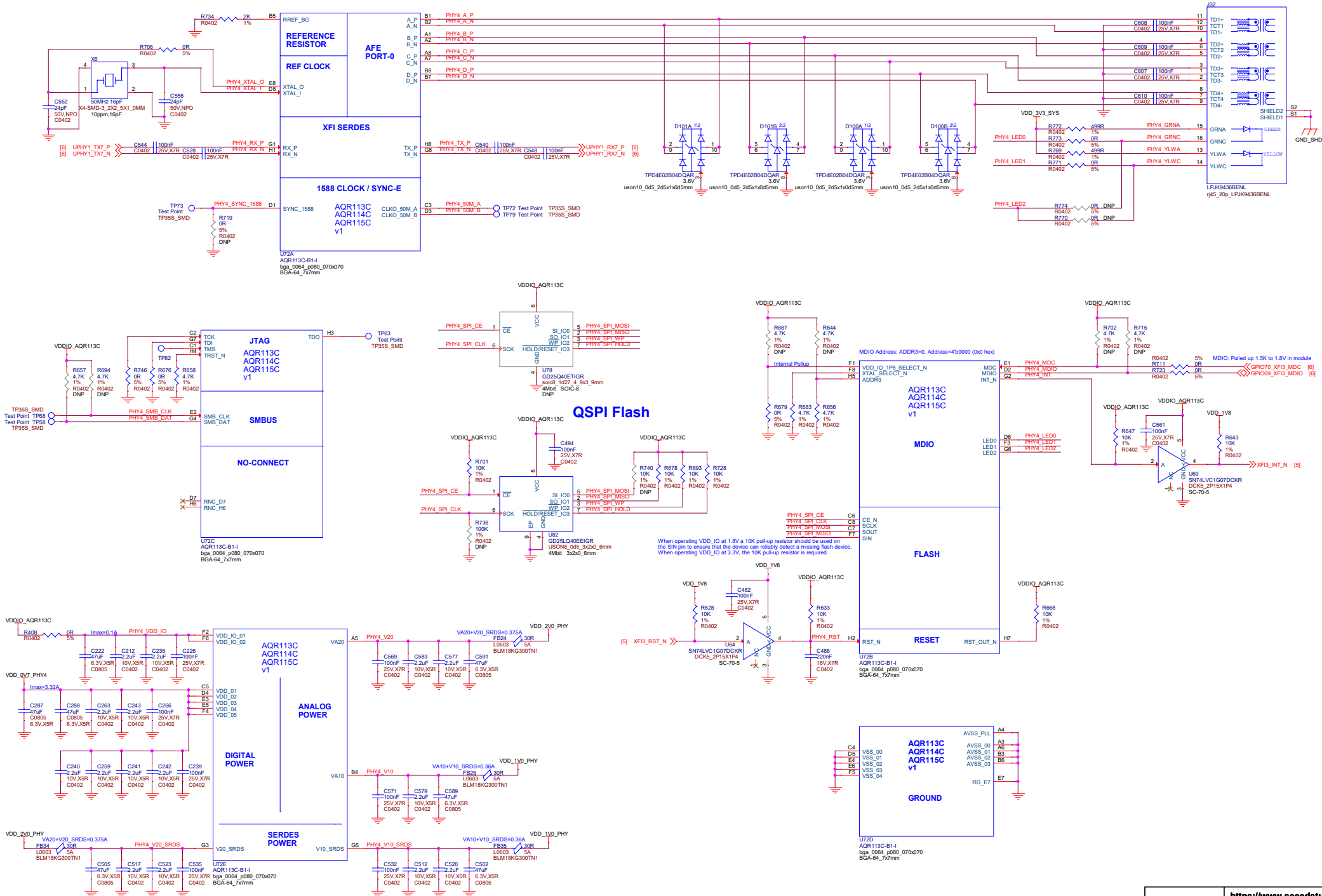
10GB Ethernet 4/4



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	Title: reComputer J601 Carrier Board		
Size: A2	Document Number: 15 10G Ethernet 4/4		Rev: V1.0
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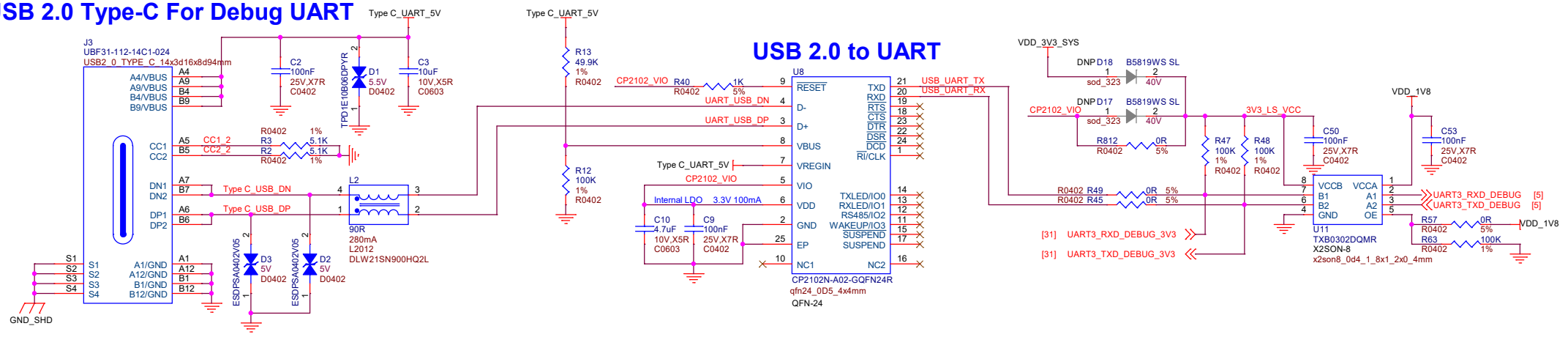
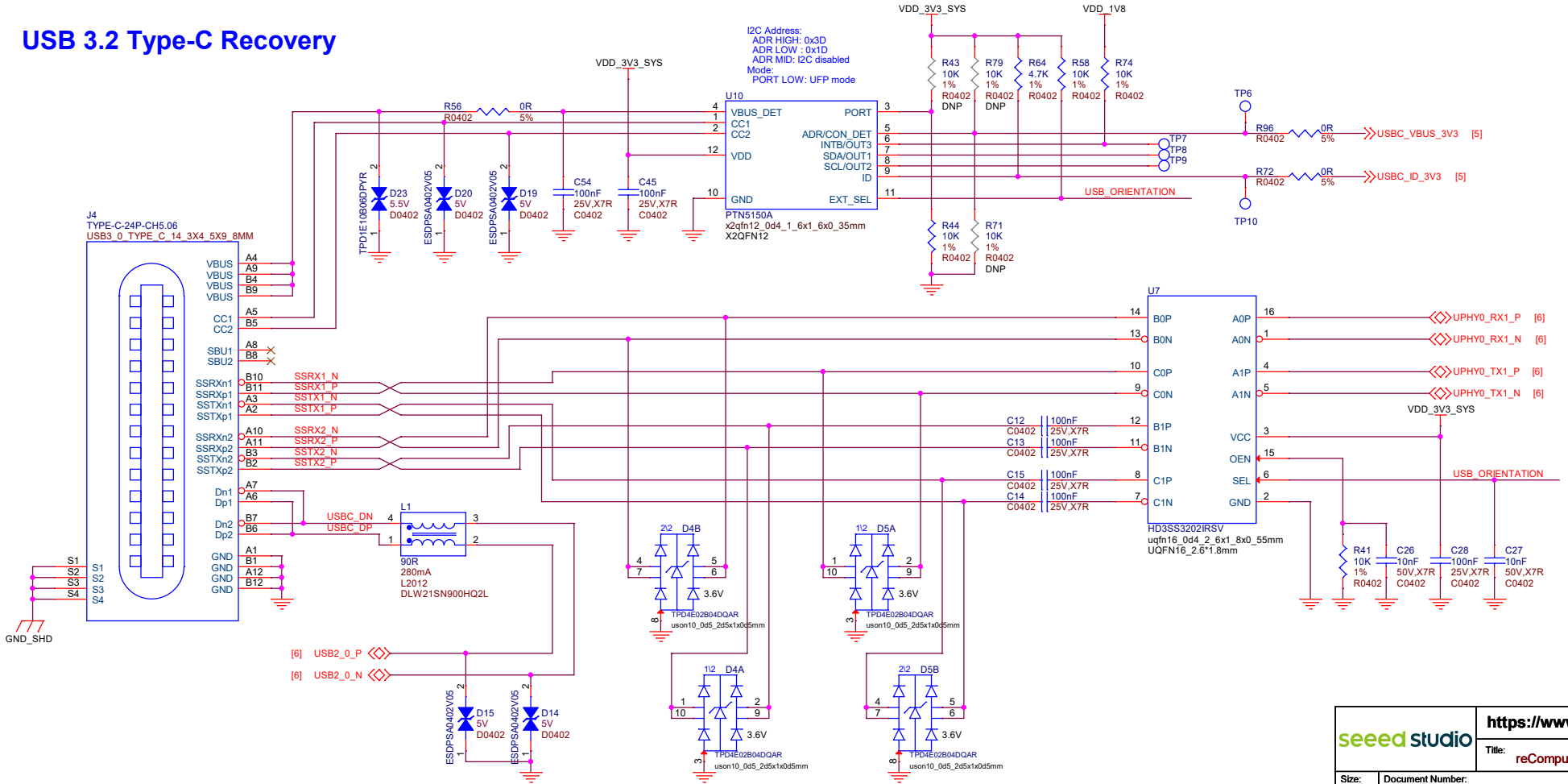
USB 2.0 Type-C For Debug UART



USB 3.2 Type-C Recovery



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	Title: reComputer J601 Carrier Board	
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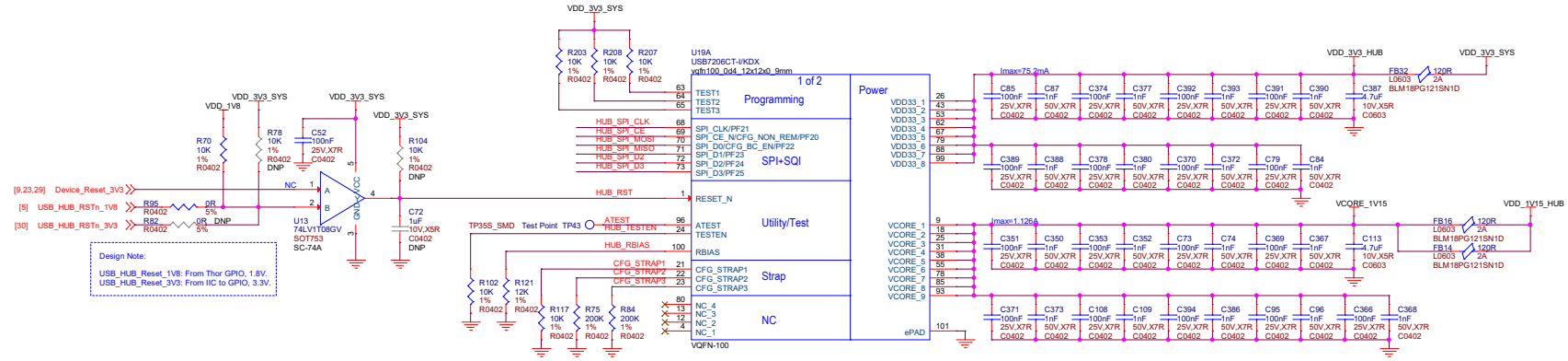
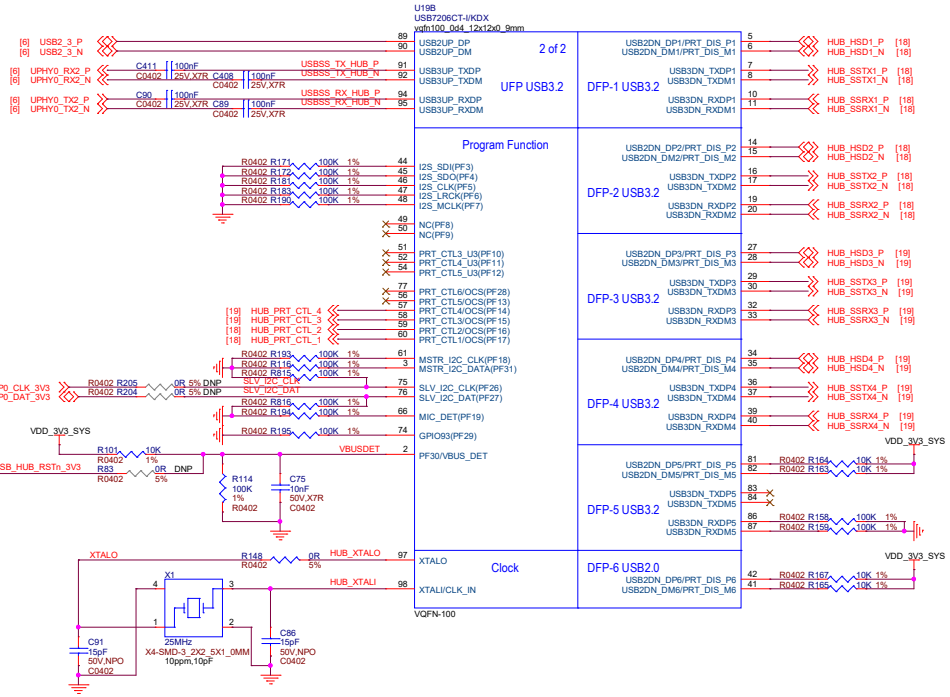
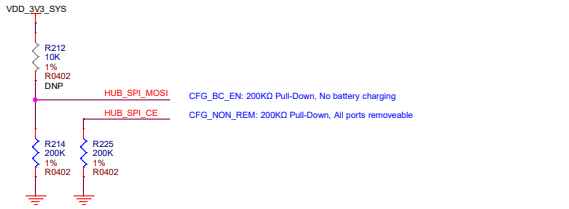
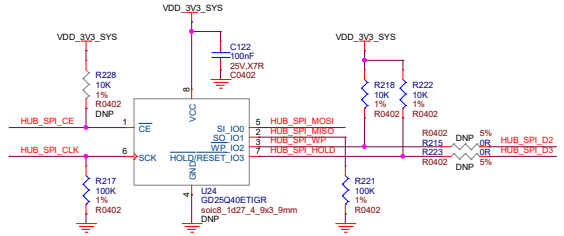
USB 3.2 GEN2 10Gbps HUB x6 Ports







QSPI Flash



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	Title: reComputer J601 Carrier Board		
Size: A2	Document Number: 17 USB 3.2 HUB		Rev: V1.0
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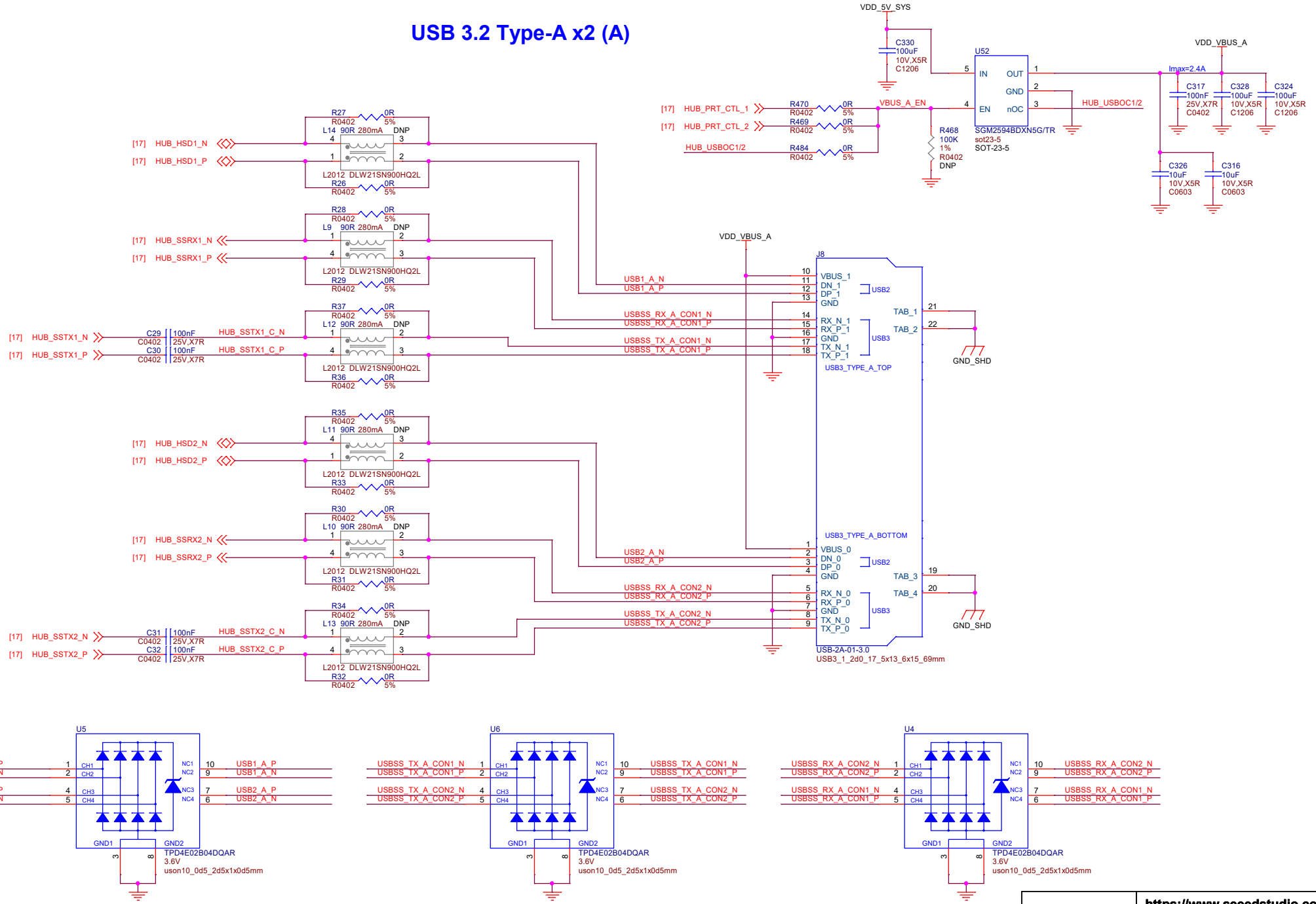
USB 3.2 Type-A x2 (A)



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	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 18 USB 3.2 Type-A x2 (A)	Rev: V1.0
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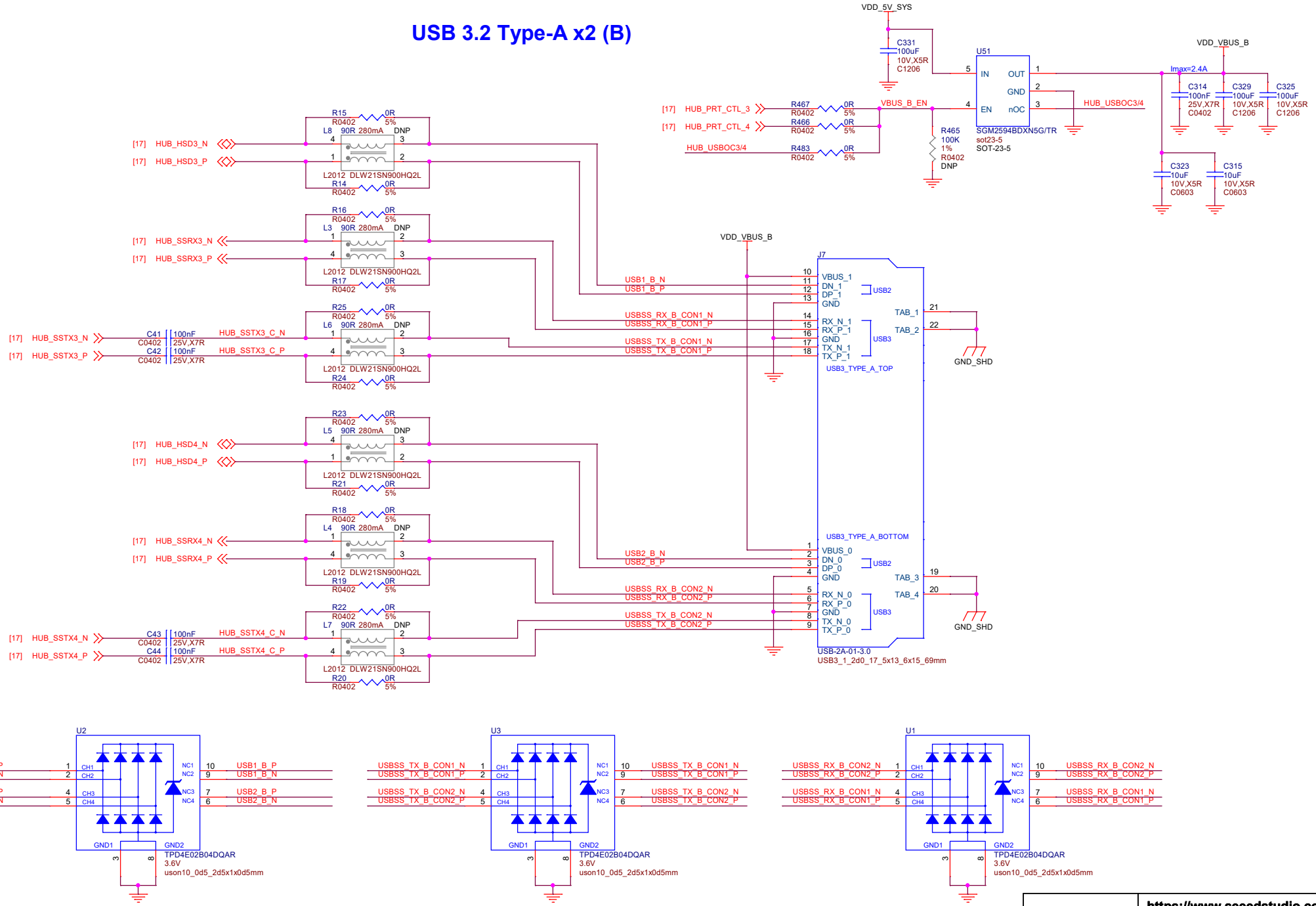
USB 3.2 Type-A x2 (B)



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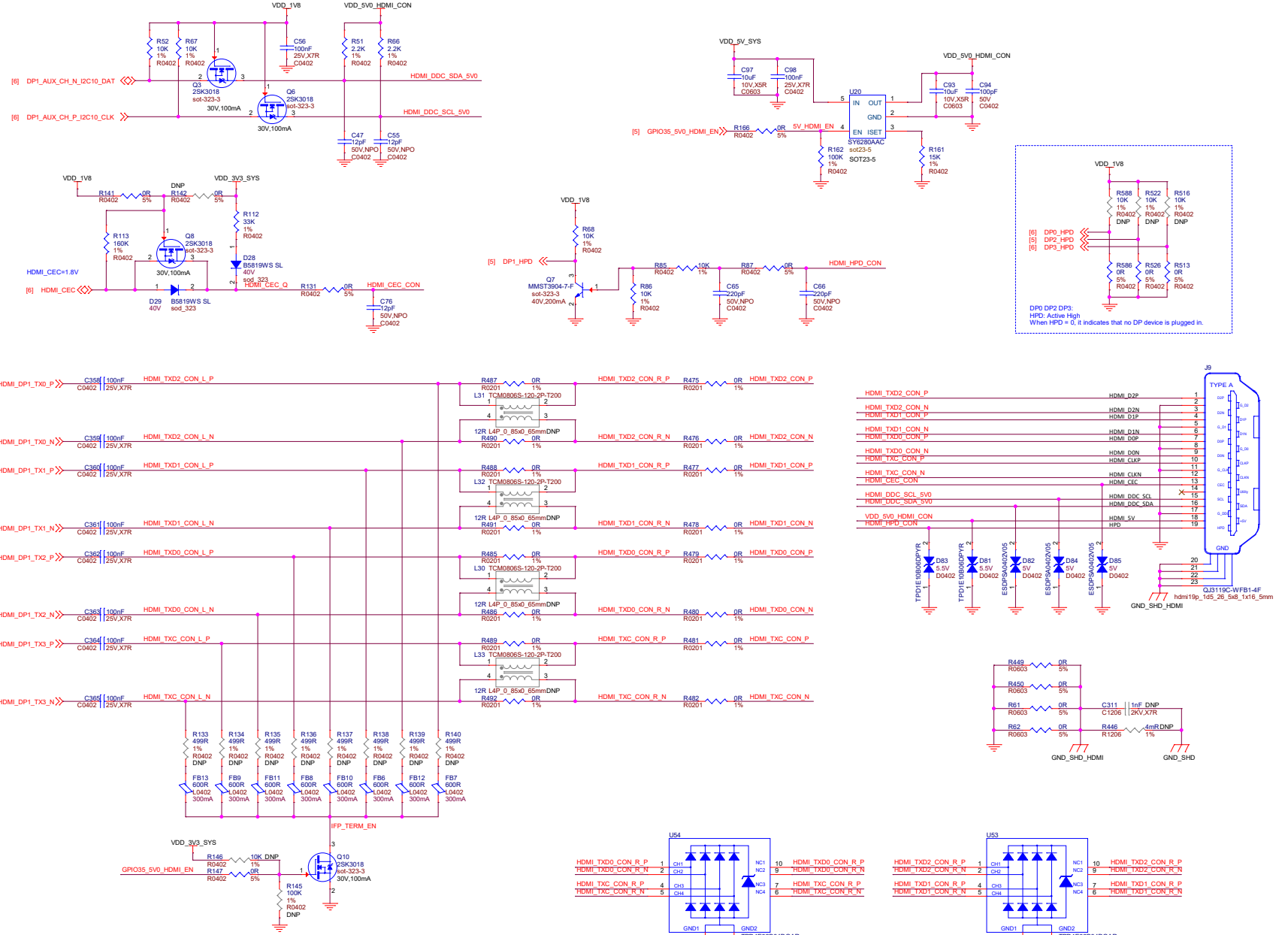
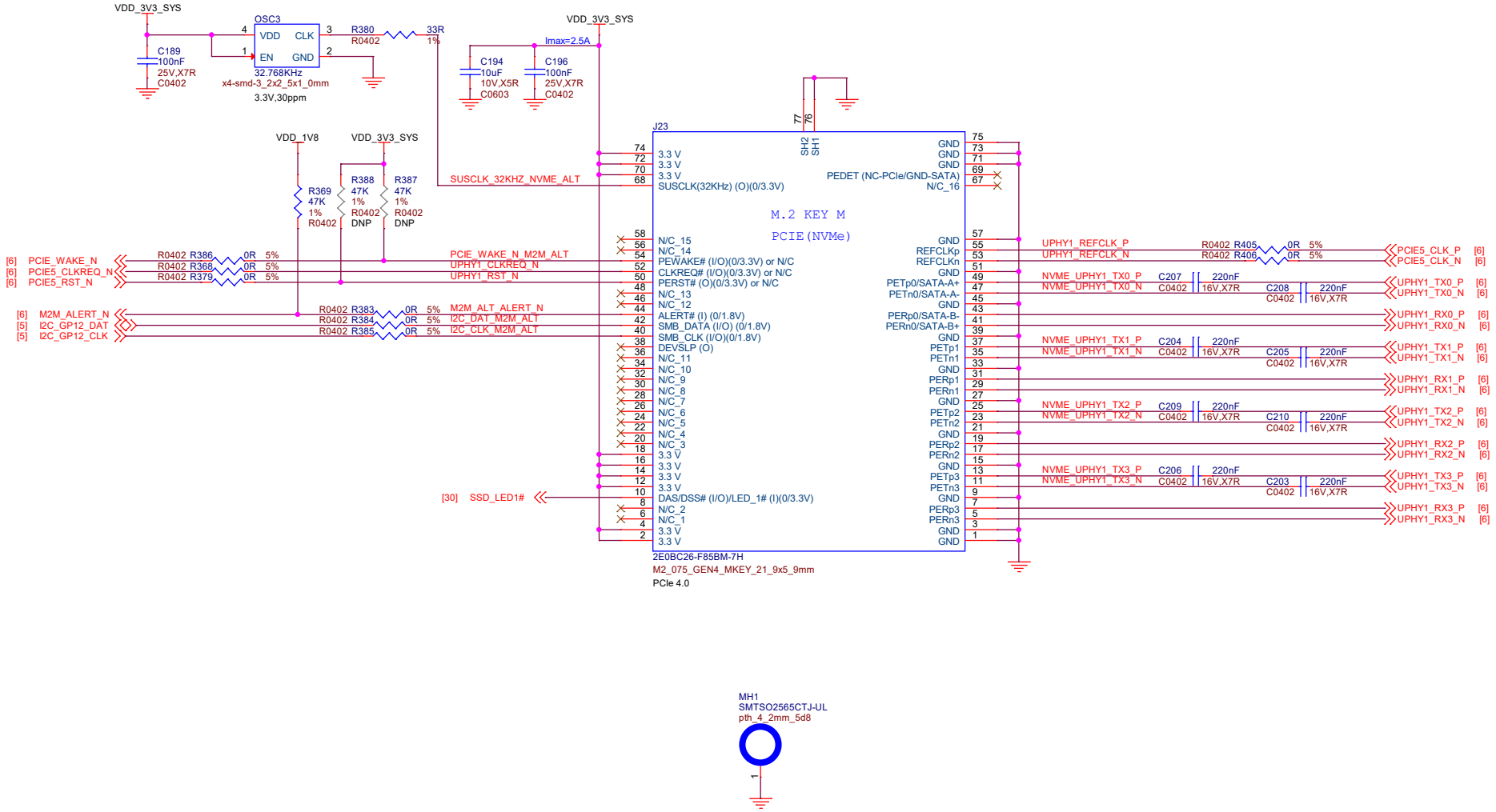
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 19 USB 3.2 Type-A x2 (B)	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 19 of 34

HDMI Connector



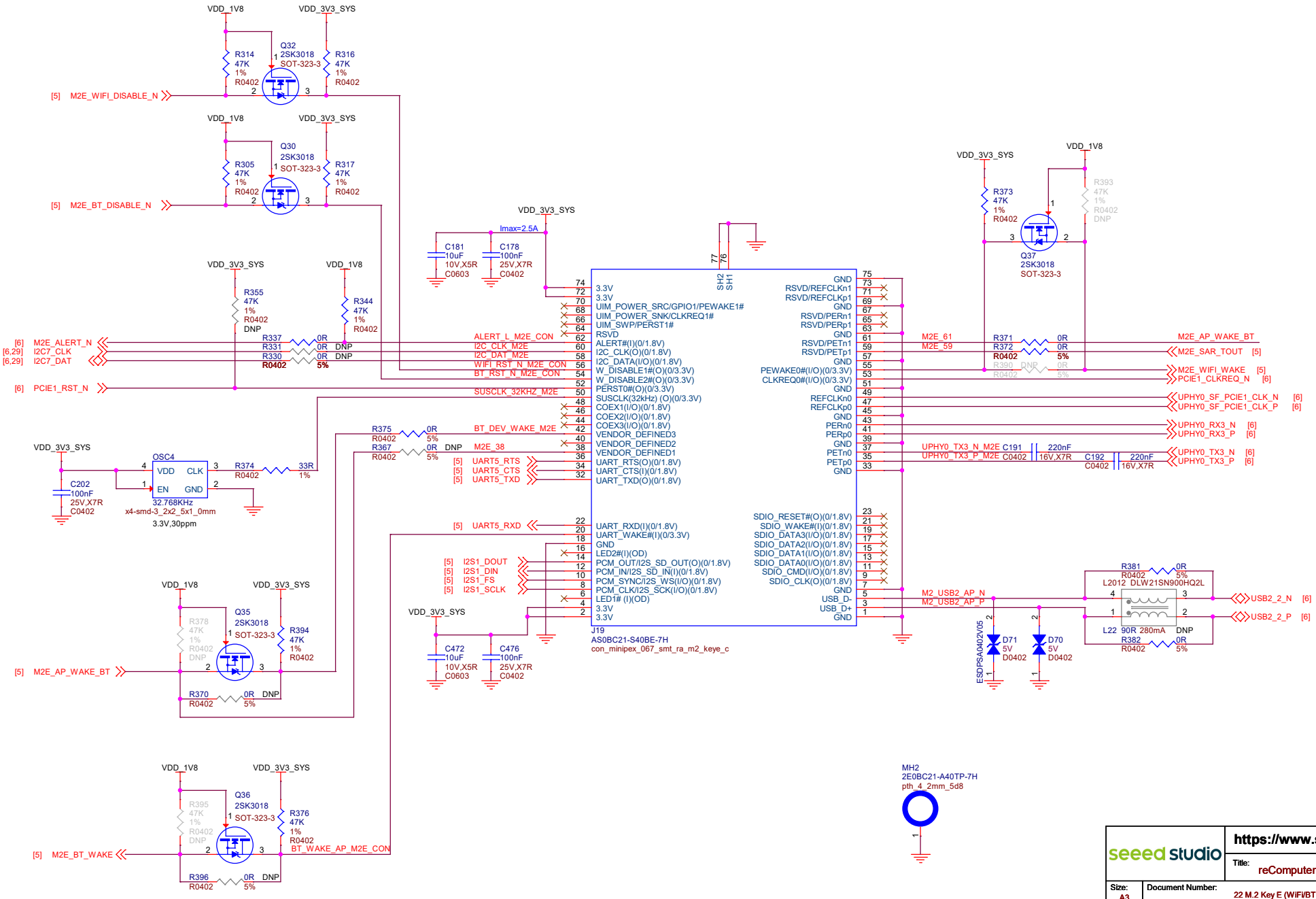
M.2 Key M (NVMe)

Size:2280,H=8.5MM



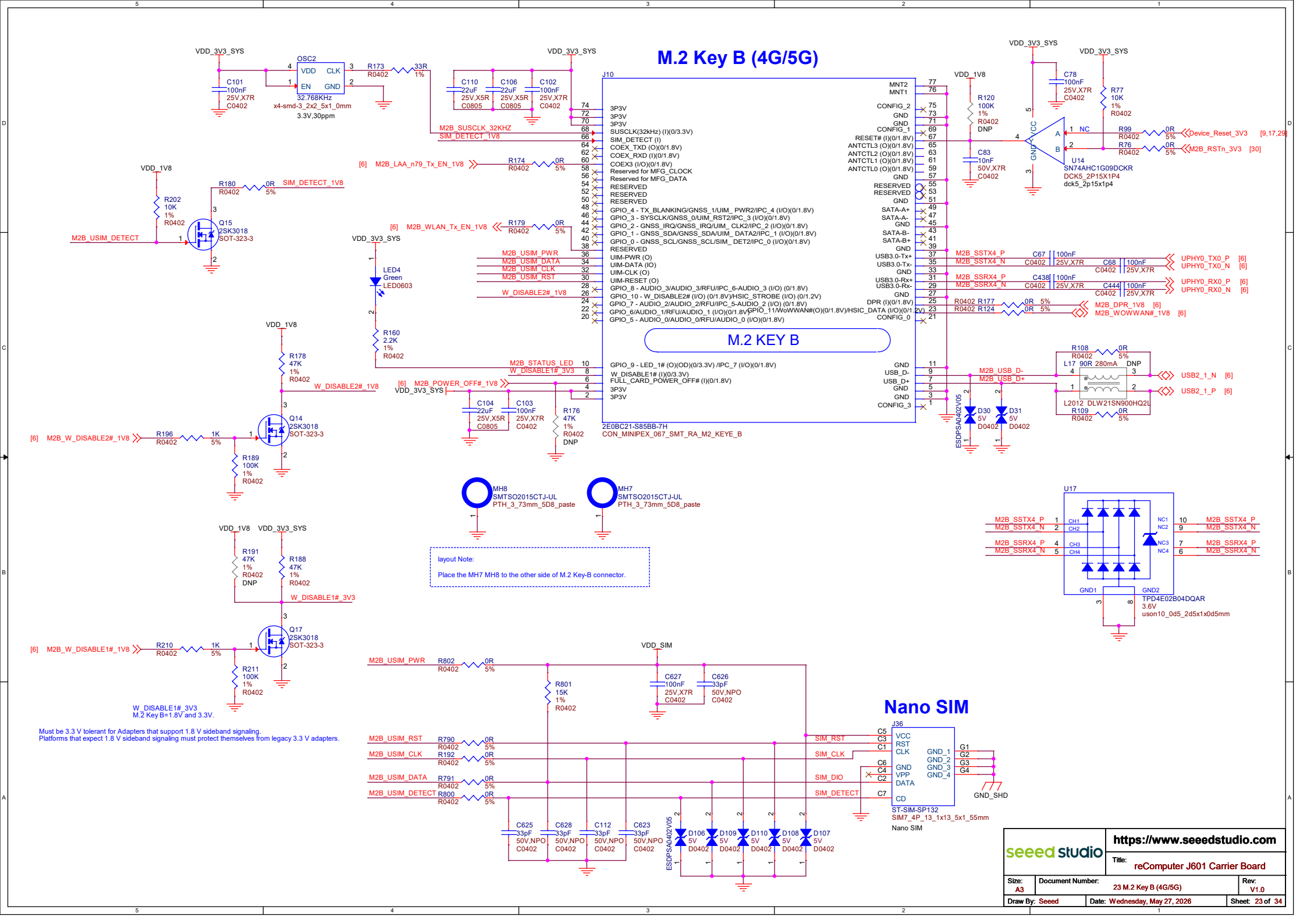
seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 21 M.2 Key M (NVMe)	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 21 of 34

M.2 Key E (WiFi/BT)

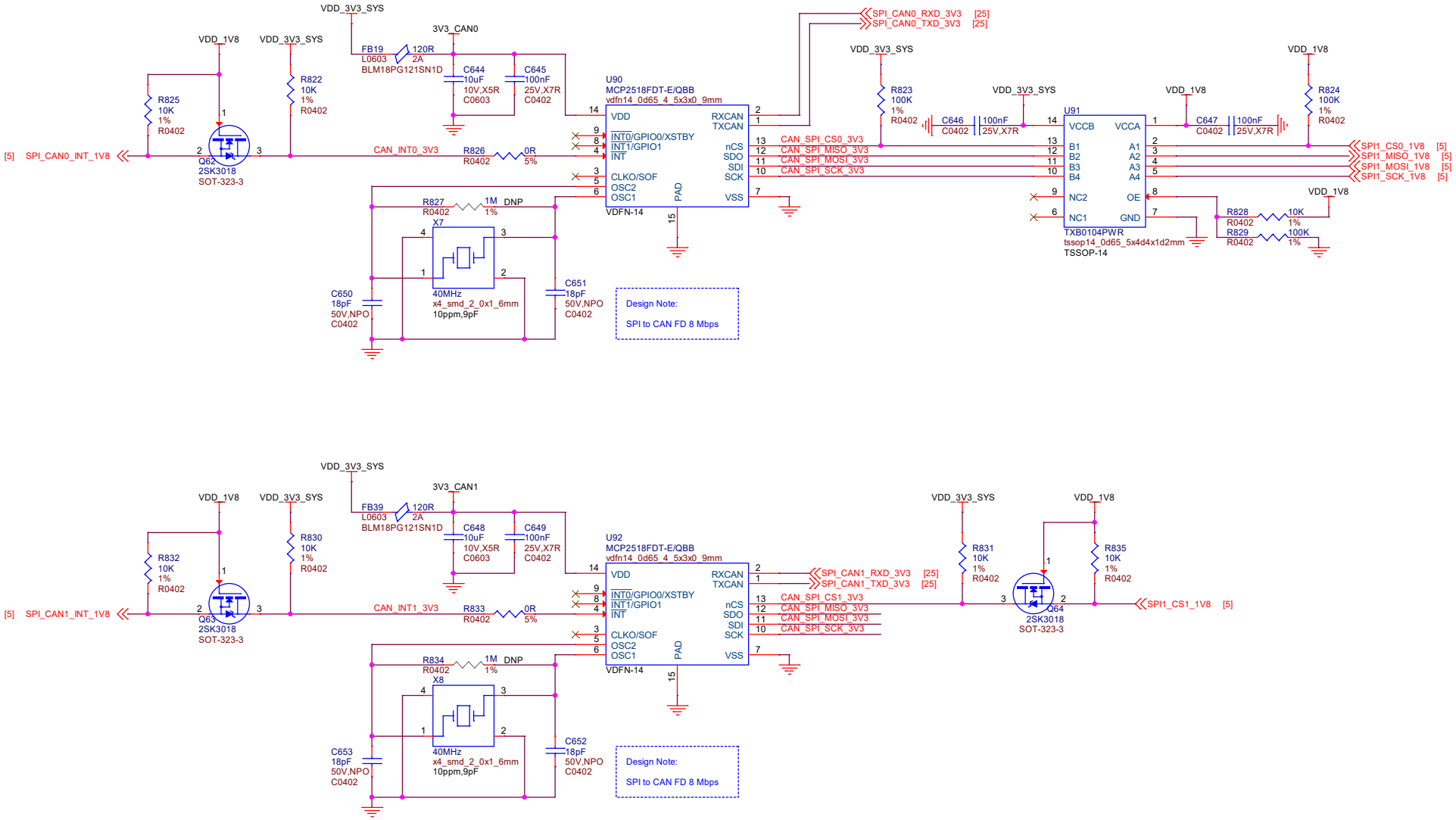


seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 22 M.2 Key E (WiFi/BT)	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 22 of 34

M.2 Key B (4G/5G)

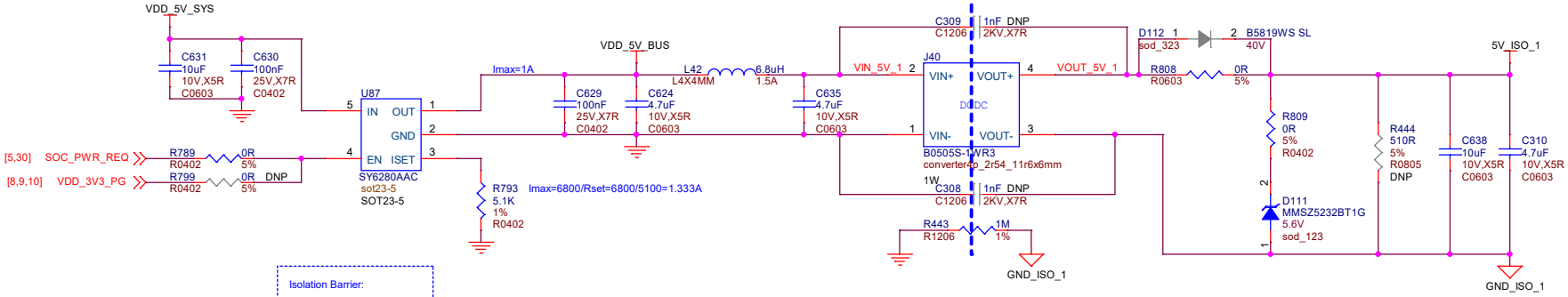


seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 23 M.2 Key B (4G/5G)	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 23 of 34

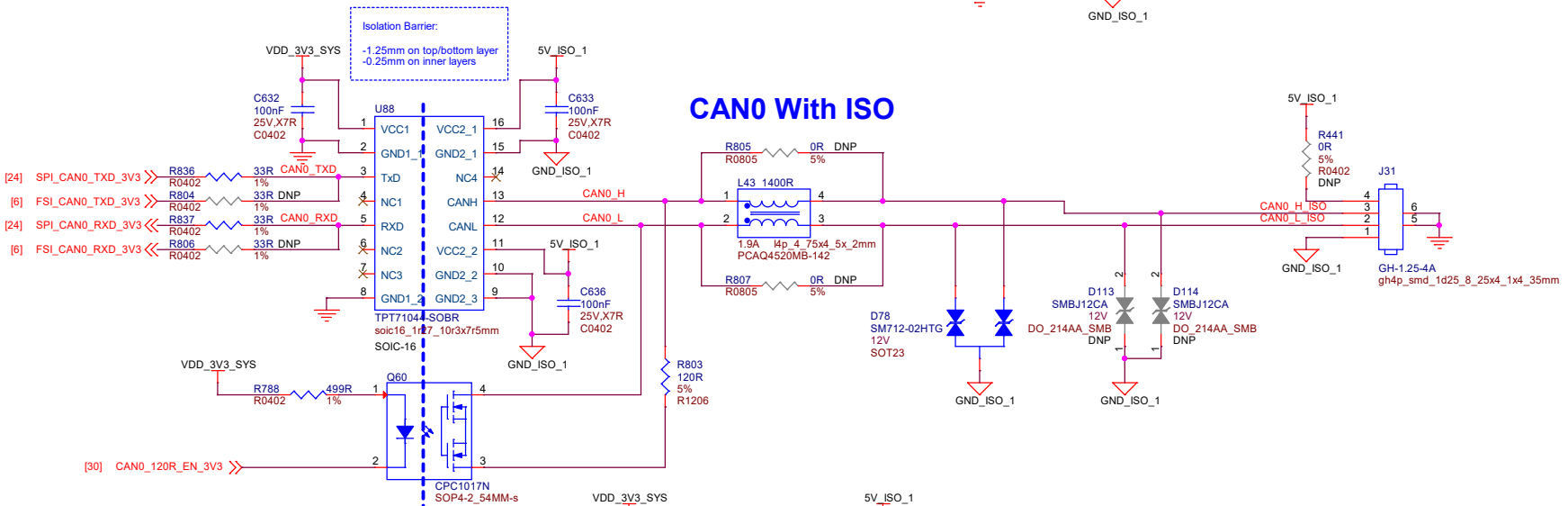


seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 24 SPI to CAN x2	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 24 of 34

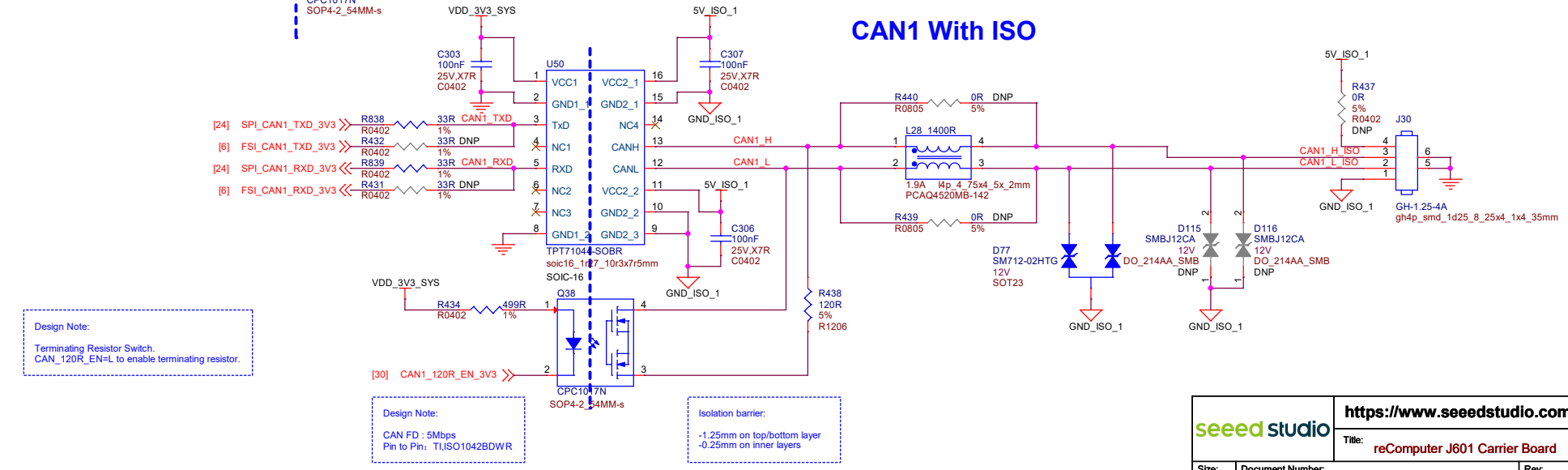
Isolated DCDC 5V to 5V/200mA



CAN0 With ISO



CAN1 With ISO



Design Note:

Terminating Resistor Switch.
CAN_120R_EN=L to enable terminating resistor.

Design Note:

CAN FD : 5Mbps
Pin to Pin：TI,ISO1042BDWR

Isolation barrier:

-1.25mm on top/bottom layer
-0.25mm on inner layers

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	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 25 CAN0, CAN1	Rev: V1.0
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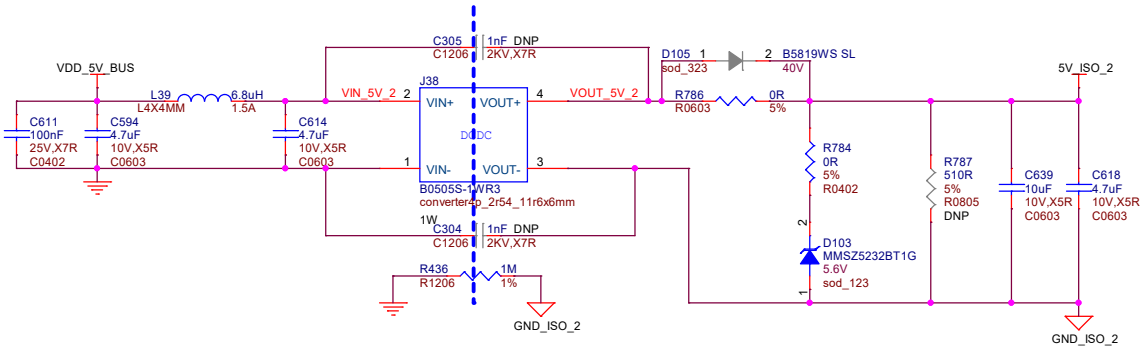
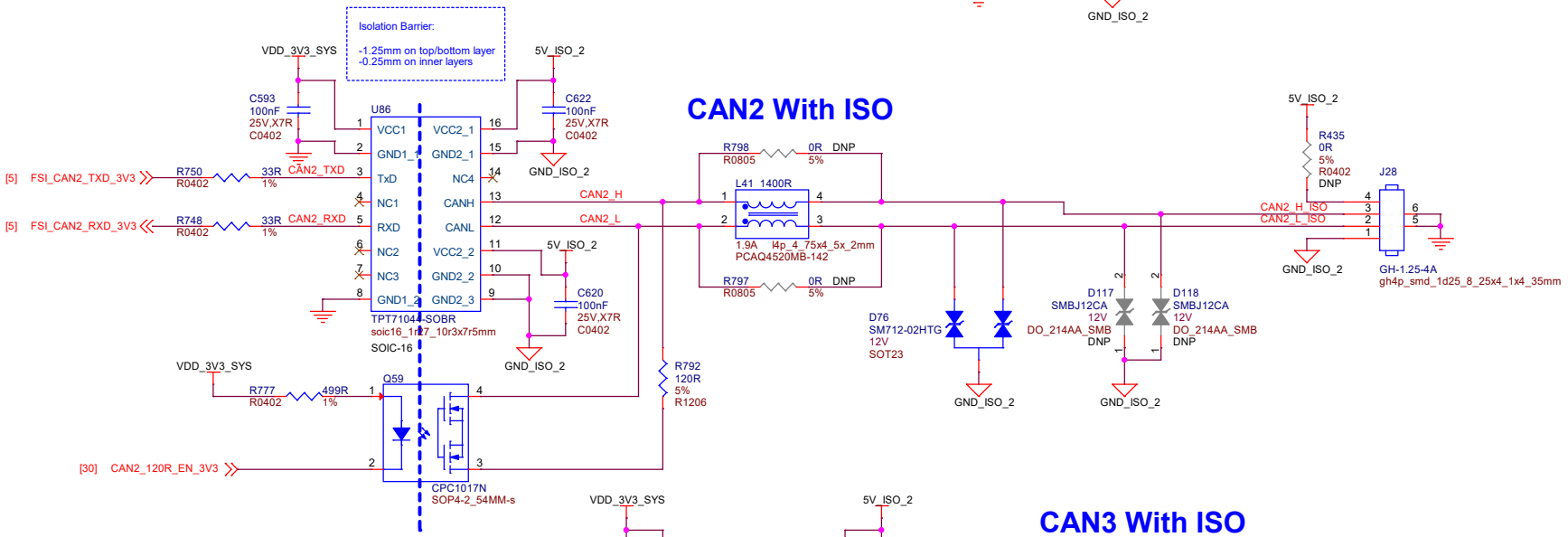
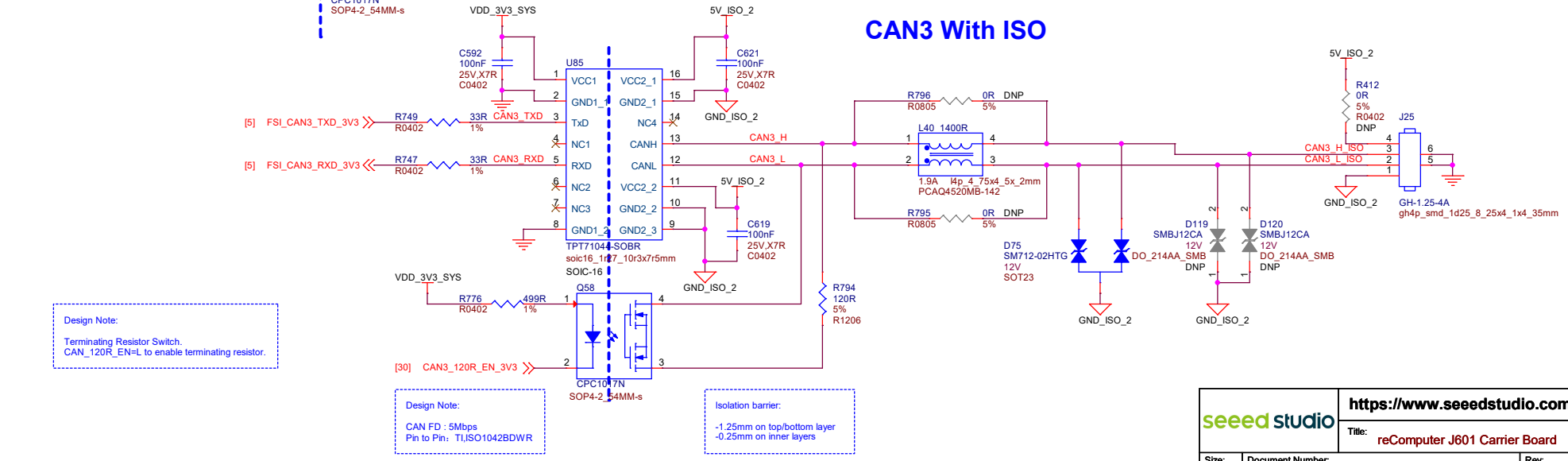
Isolated DCDC 5V to 5V/200mA



CAN2 With ISO

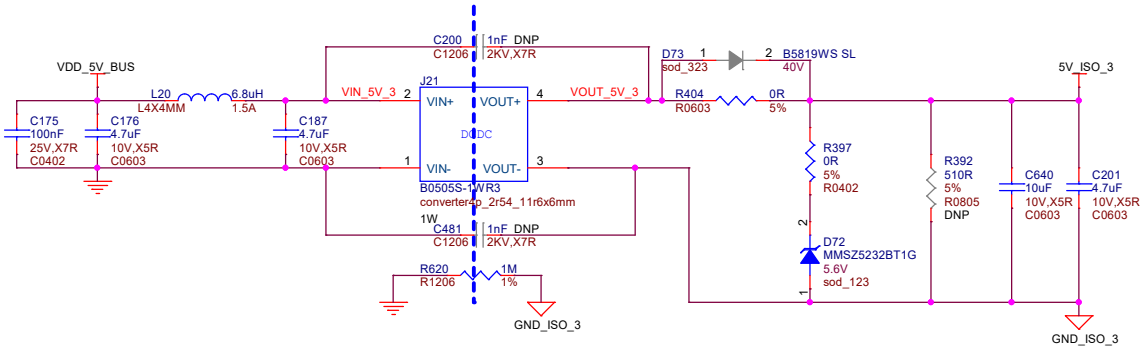


CAN3 With ISO

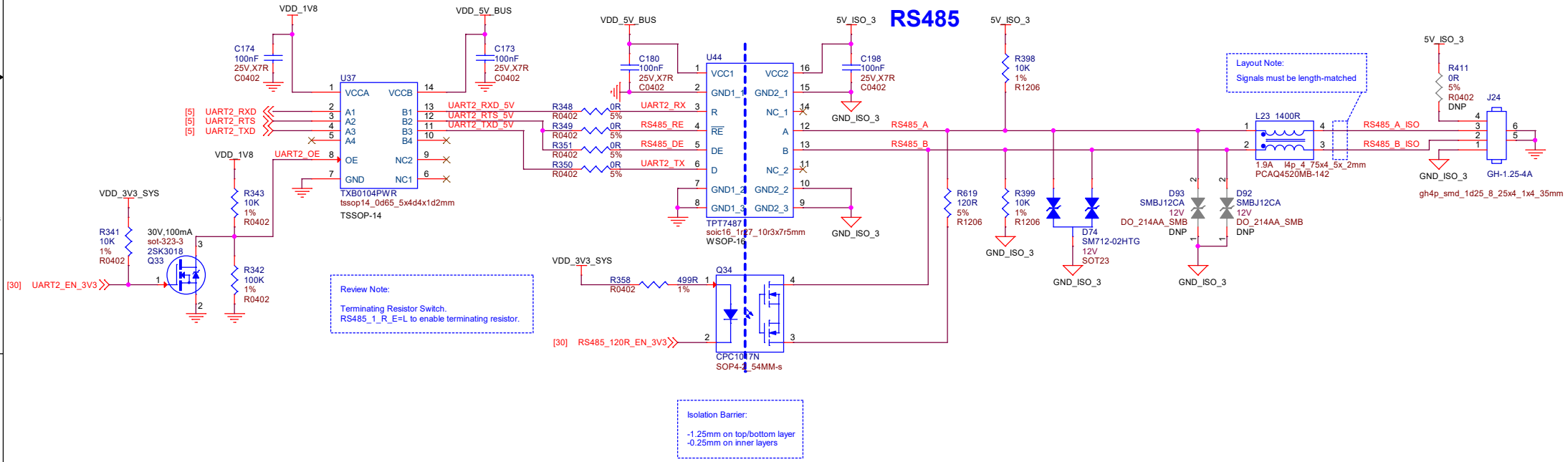


seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 26 CAN2, CAN3	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 26 of 34

Isolated DCDC 5V to 5V/200mA

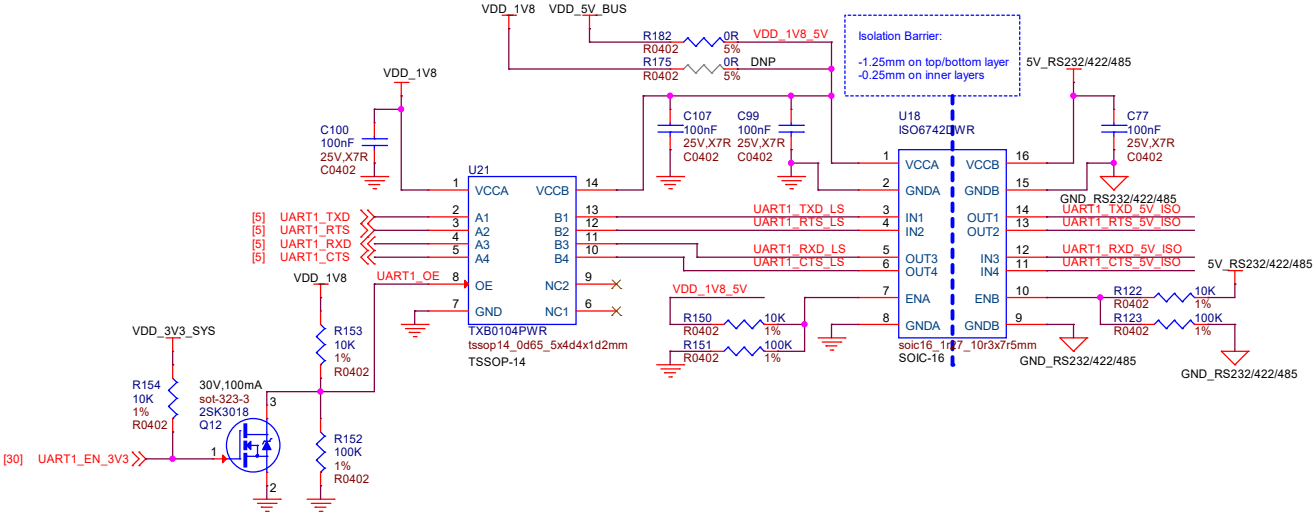


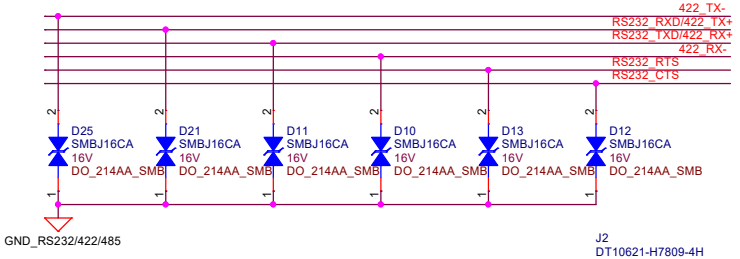
RS485

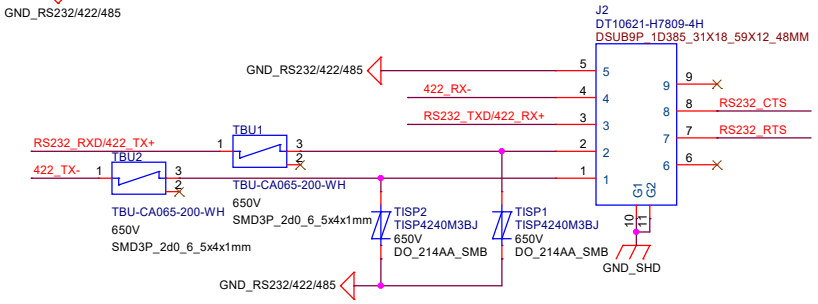


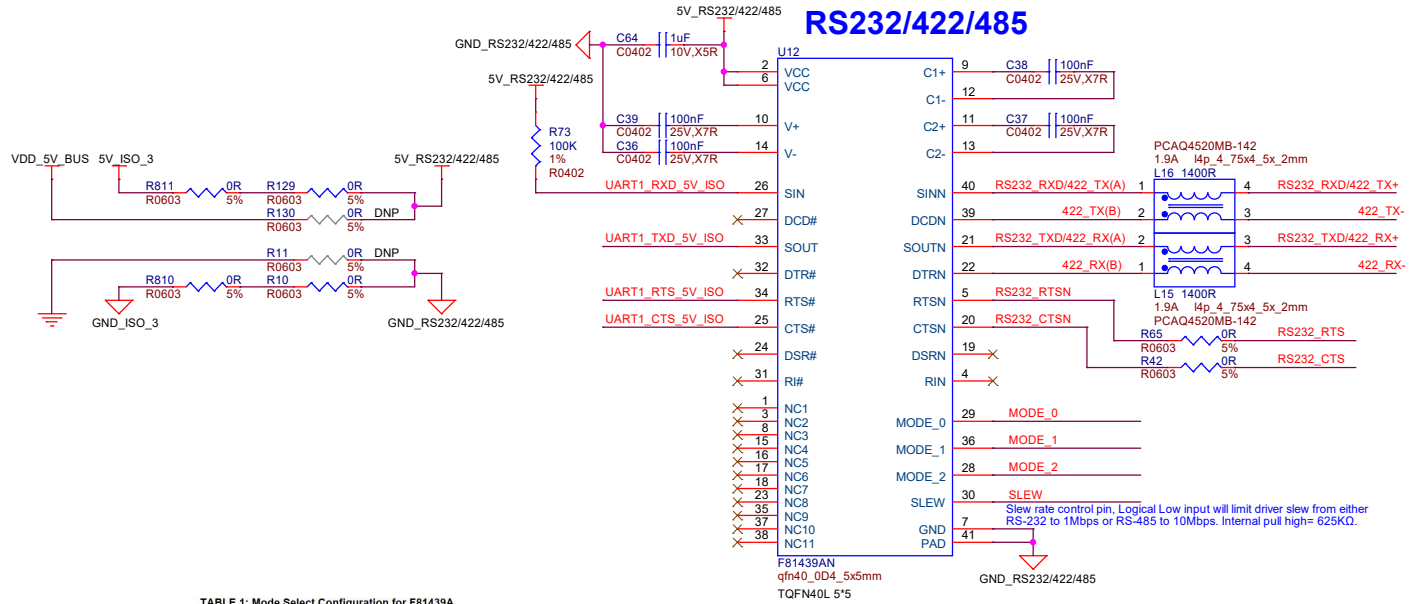
seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 27 RS485	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 27 of 34

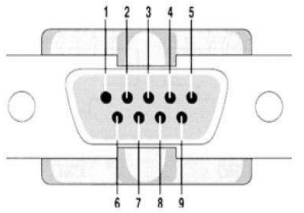
RS232/422/485











MODE	001	000/100	010/110
PIN	RS232	RS422	RS485
1		TXD- (B)	Data- (B)
2	RXD	TXD+ (A)	Data+ (A)
3	TXD	RXD+ (A)	
4		RXD- (B)	
5	GND	GND	GND
6			
7	RTS		
8	CTS		
9			

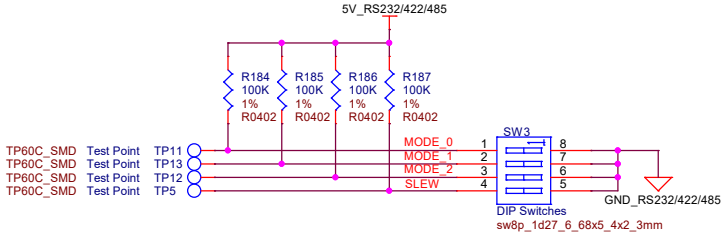


TABLE 1: Mode Select Configuration for F81439A

Pin 29 MODE_0	Pin 36 MODE_1	Pin28 MODE_2	Mode	Status
0	0	0	RS-422 Full Duplex	1T/1R RS-422
0	0	1	Pure RS-232	3T/5R RS-232.
0	1	0	RS-485 Half Duplex	1T/1R RS-485, TX ENABLE Low Active
0	1	1	RS-485 Half Duplex	1T/1R RS-485, TX ENABLE High Active
1	0	0	RS-422 Full Duplex	1T/1R RS-422 with termination resistor and bias resistor.
1	0	1	Reserved	Reserved
1	1	0	RS-485 Half Duplex	1T/1R RS-485 with termination resistor and bias resistor. TX ENABLE Low Active
1	1	1	Low Power Shutdown	All I/O pins are High Impedance

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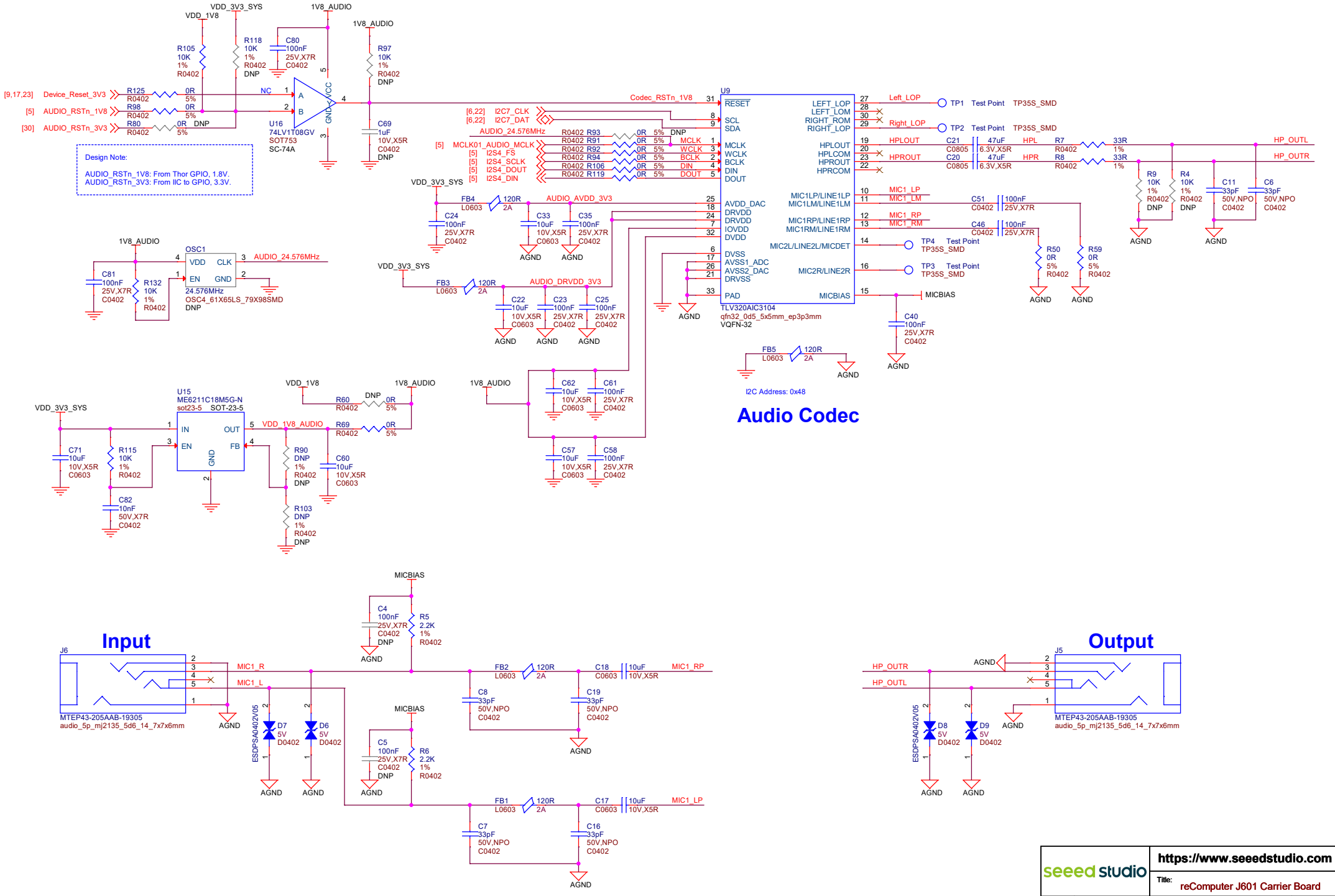
Title: reComputer J601 Carrier Board

Size: A3	Document Number: 28 RS232/422/485	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 28 of 34


Audio Codec
Input
Output
Design Note:
AUDIO_RSTn_1V8: From Thor GPIO, 1.8V.
AUDIO_RSTn_3V3: From IIC to GPIO, 3.3V.
U9
TLV320AIC3104
qfn32_0d5_5x5mm_ep3p3mm
VQFN-32
I2C Address: 0x48
U15
ME6211C18M5G-N
sot23-5 SOT-23-5
U16
74LV1T08GV
SOT753
SC-74A
OSC1
24.576MHz
OSC4_61X65LS_79X98SMD
MTEP43-205AAB-19305
audio_5p_mj2135_5d6_14_7x7x6mm
ESDPSA0402V05
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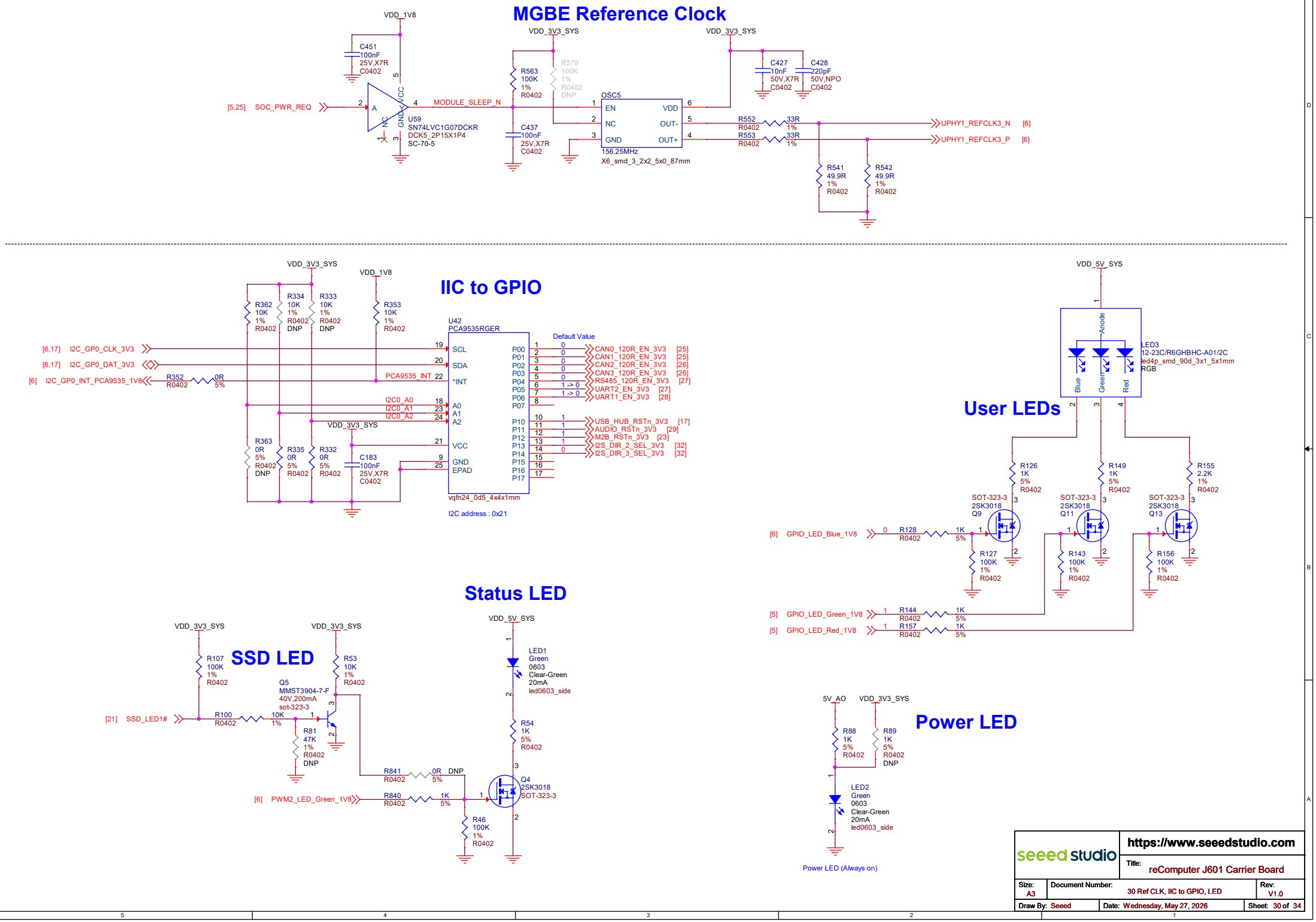
https://www.seeedstudio.com
Title: reComputer J601 Carrier Board
Size: A3
Document Number: 29 Audio
Rev: V1.0
Draw By: Seeed
Date: Wednesday, May 27, 2026
Sheet: 29 of 34


MGBE Reference Clock
VDD_1V8
C451
100nF
25V,X7R
C0402
[5,25] SOC_PWR_REQ
MODULE_SLEEP_N
U59
SN74LVC1G07DCKR
DCK5_2P15X1P4
SC-70-5
VDD_3V3_SYS
R563
100K
1%
R0402
R570
100K
1%
R0402
DNP
C437
100nF
25V,X7R
C0402
OSC5
EN
NC
GND
VDD
OUT-
OUT+
156.25MHz
X6_smd_3_2x2_5x0_87mm
C427
10nF
50V,X7R
C0402
C428
220pF
50V,NPO
C0402
R552
33R
1%
R0402
R553
33R
1%
R0402
UPHY1_REFCLK3_N [6]
UPHY1_REFCLK3_P [6]
R541
49.9R
1%
R0402
R542
49.9R
1%
R0402
IIC to GPIO
VDD_3V3_SYS
VDD_1V8
R362
10K
1%
R0402
R334
10K
1%
R0402
DNP
R333
10K
1%
R0402
DNP
R353
10K
1%
R0402
U42
PCA9535RGER
[6,17] I2C_GP0_CLK_3V3
[6,17] I2C_GP0_DAT_3V3
[6] I2C_GP0_INT_PCA9535_1V8
R352
0R
5%
R0402
PCA9535_INT
SCL
SDA
*INT
A0
A1
A2
VCC
GND
EPAD
I2C0_A0
I2C0_A1
I2C0_A2
R363
0R
5%
R0402
DNP
R335
0R
5%
R0402
R332
0R
5%
R0402
C183
100nF
25V,X7R
C0402
vqfn24_0d5_4x4x1mm
I2C address : 0x21
Default Value
P00 0 CAN0_120R_EN_3V3 [25]
P01 0 CAN1_120R_EN_3V3 [25]
P02 0 CAN2_120R_EN_3V3 [26]
P03 0 CAN3_120R_EN_3V3 [26]
P04 0 RS485_120R_EN_3V3 [27]
P05 1 -> 0 UART2_EN_3V3 [27]
P06 1 -> 0 UART1_EN_3V3 [28]
P07
P10 1 USB_HUB_RSTn_3V3 [17]
P11 1 AUDIO_RSTn_3V3 [29]
P12 1 M2B_RSTn_3V3 [23]
P13 1 I2S_DIR_2_SEL_3V3 [32]
P14 0 I2S_DIR_3_SEL_3V3 [32]
P15
P16
P17
User LEDs
VDD_5V_SYS
LED3
12-23C/R6GHBHC-A01/2C
led4p_smd_90d_3x1_5x1mm
RGB
Anode
Blue
Green
Red
R126
1K
5%
R0402
R149
1K
5%
R0402
R155
2.2K
1%
R0402
SOT-323-3
2SK3018
Q9
Q11
Q13
[6] GPIO_LED_Blue_1V8
R128
1K
5%
R0402
R127
100K
1%
R0402
R143
100K
1%
R0402
R156
100K
1%
R0402
[5] GPIO_LED_Green_1V8
R144
1K
5%
R0402
[5] GPIO_LED_Red_1V8
R157
1K
5%
R0402
Status LED
SSD LED
VDD_3V3_SYS
VDD_5V_SYS
R107
100K
1%
R0402
R53
10K
1%
R0402
Q5
MMST3904-7-F
40V,200mA
sot-323-3
[21] SSD_LED1#
R100
10K
1%
R0402
R81
47K
1%
R0402
DNP
LED1
Green
0603
Clear-Green
20mA
led0603_side
R54
1K
5%
R0402
R841
0R
5%
R0402
DNP
[6] PWM2_LED_Green_1V8
R840
1K
5%
R0402
Q4
2SK3018
SOT-323-3
R46
100K
1%
R0402
Power LED
5V_AO
VDD_3V3_SYS
R88
1K
5%
R0402
R89
1K
5%
R0402
DNP
LED2
Green
0603
Clear-Green
20mA
led0603_side
Power LED (Always on)
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https://www.seeedstudio.com
Title: reComputer J601 Carrier Board
Size: A3
Document Number: 30 Ref CLK, IIC to GPIO, LED
Rev: V1.0
Draw By: Seeed
Date: Wednesday, May 27, 2026
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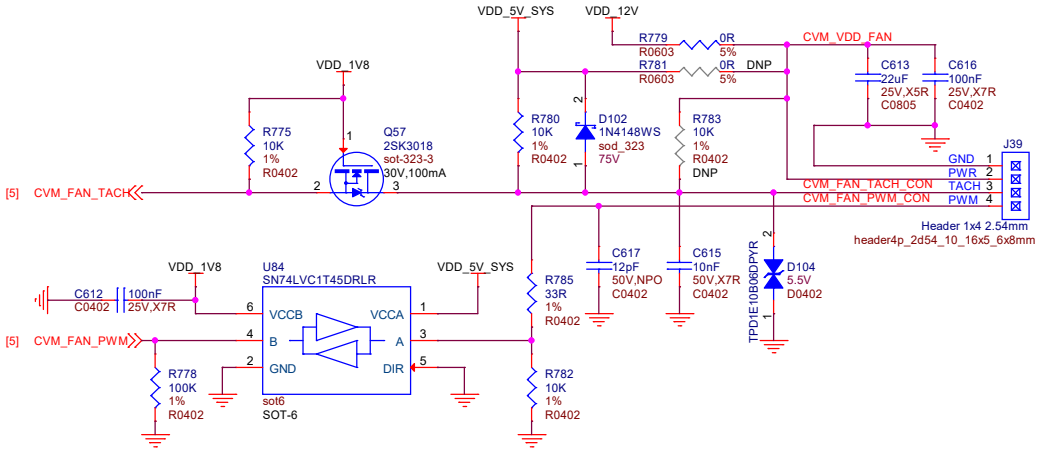
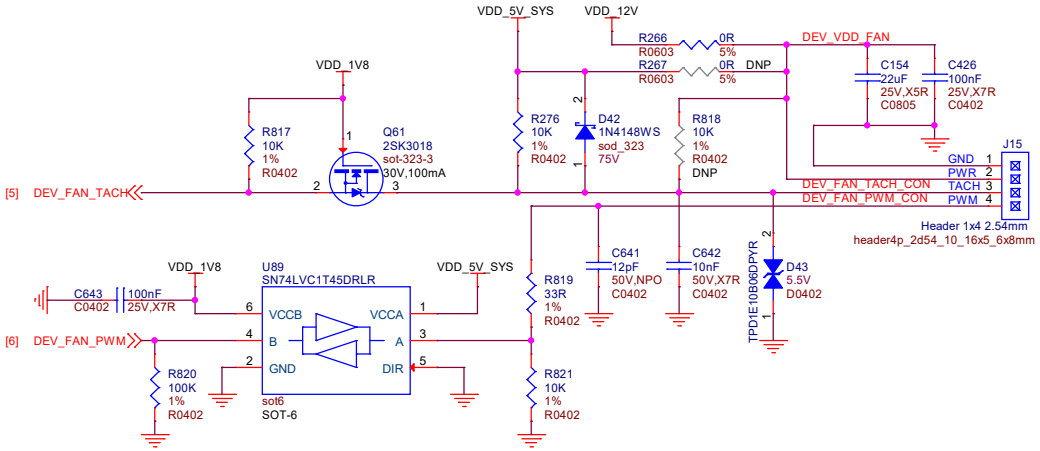
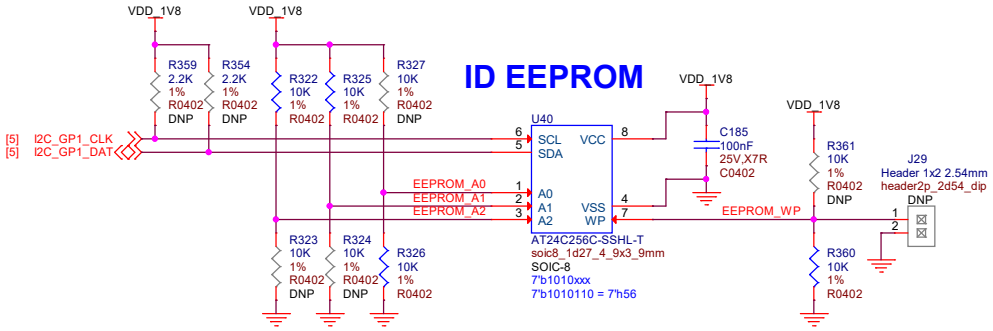
SoC Fan Header 4pin



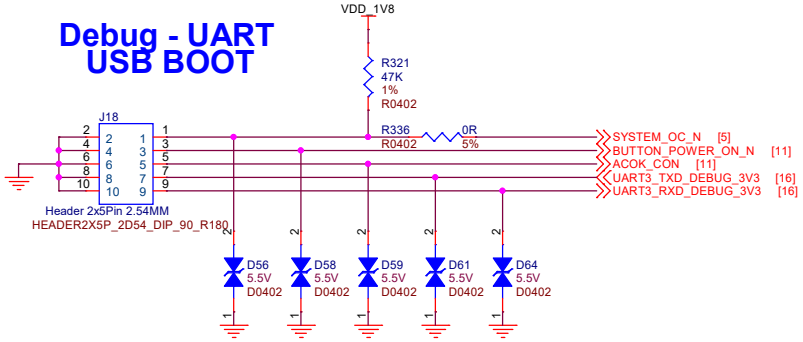
Device Fan Header 4pin



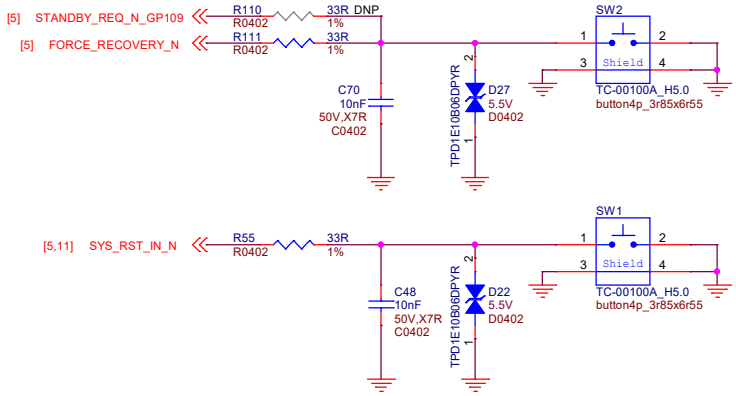
ID EEPROM



Debug - UART USB BOOT



Button



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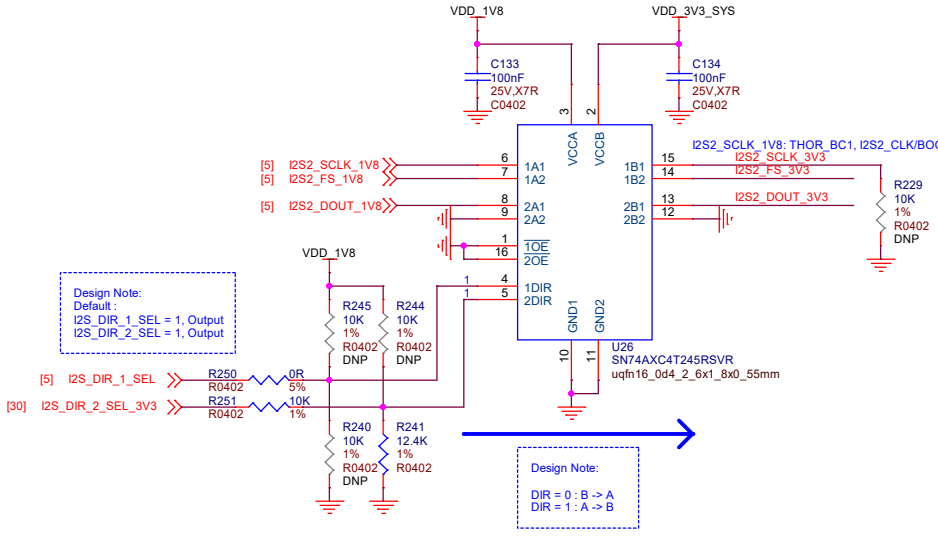
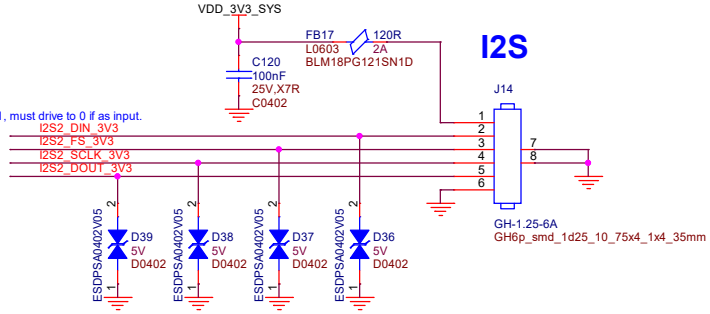
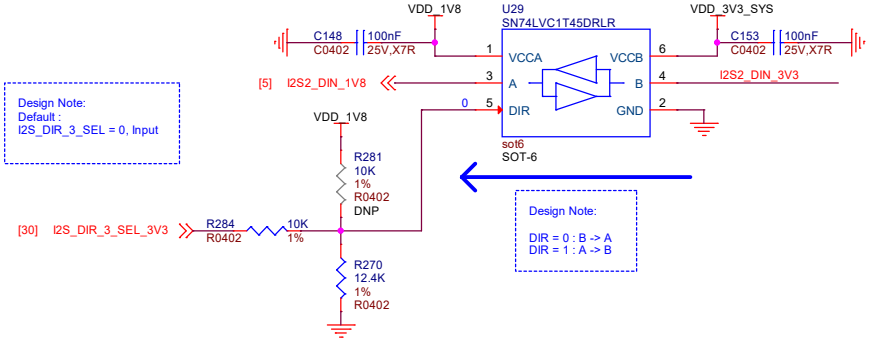
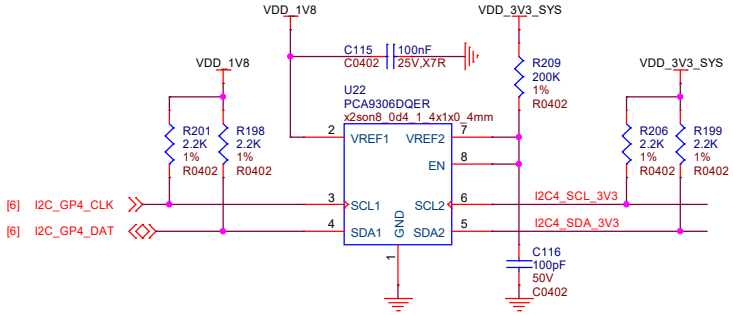
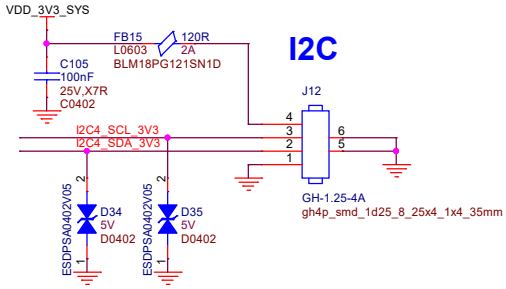
Title: reComputer J601 Carrier Board		
Size: A3	Document Number: 31 Fan, EEPROM, Debug, Button	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 31 of 34



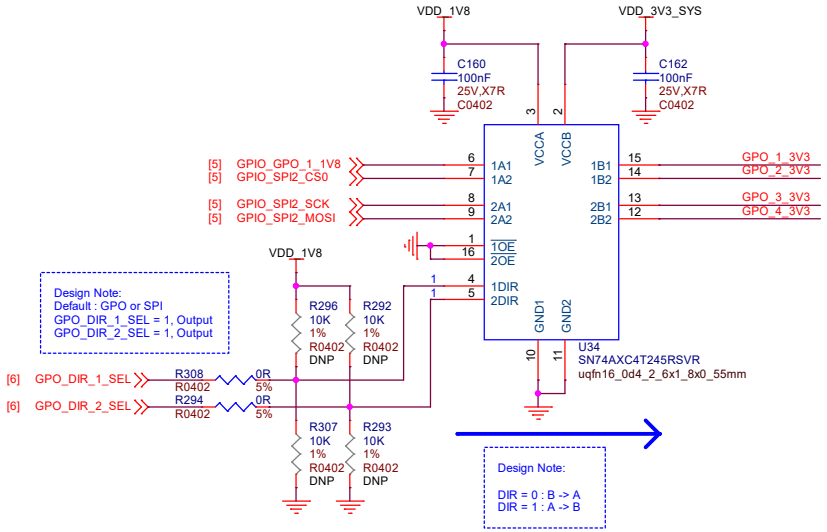


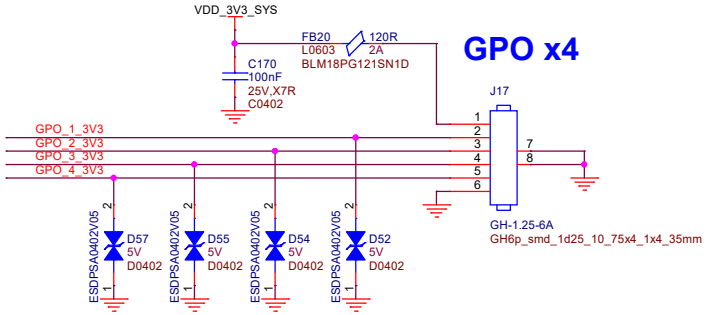


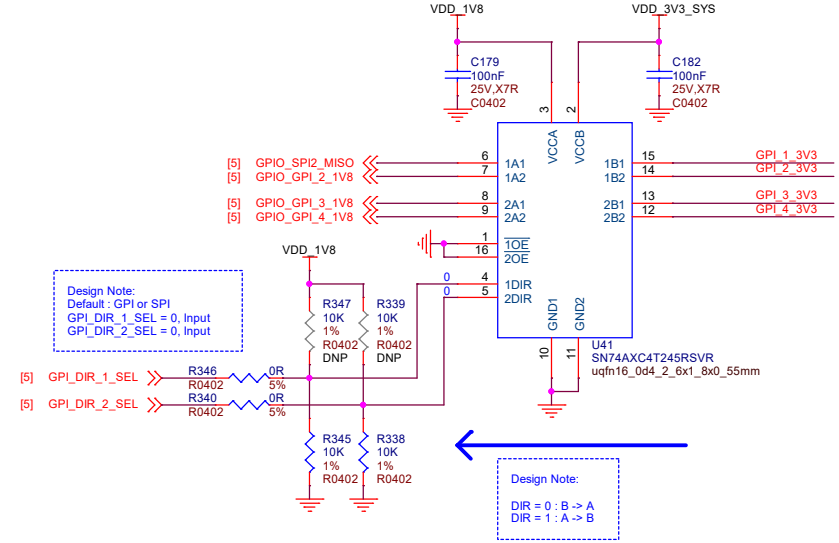


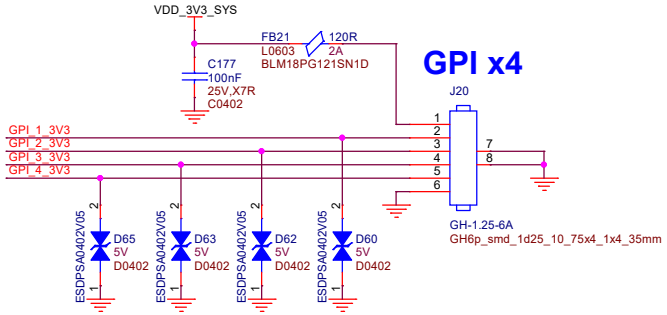


seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 32 I2S, I2C	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 32 of 34



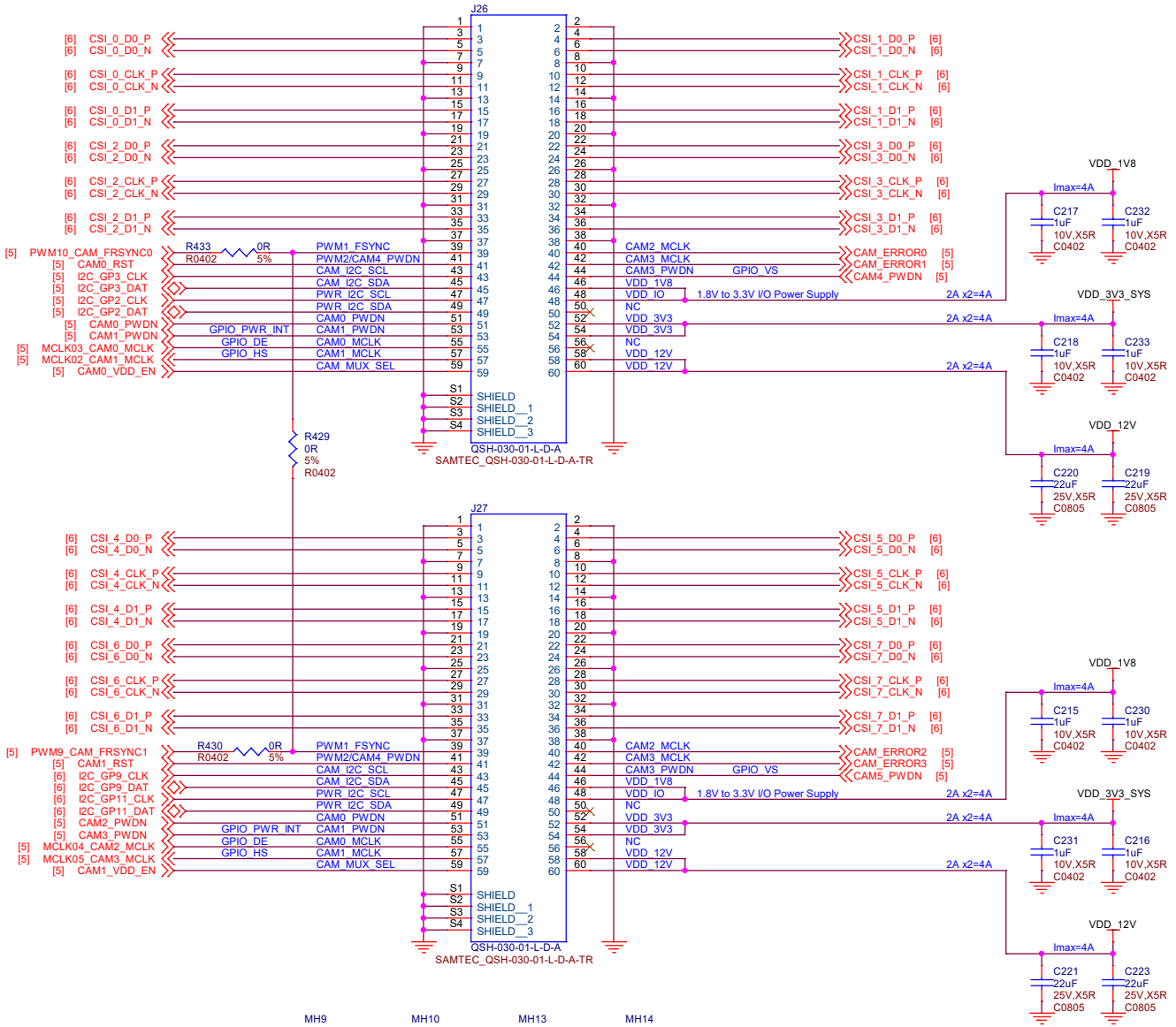






seeed studio	https://www.seeedstudio.com	
	Title: reComputer J601 Carrier Board	
Size: A3	Document Number: 33 GPI, GPO	Rev: V1.0
Draw By: Seeed	Date: Wednesday, May 27, 2026	Sheet: 33 of 34

CSI Expansion Connector



MH9 SMTSO3003CTJ pth_4_2mm_5d8

MH10 SMTSO3003CTJ pth_4_2mm_5d8

MH13 SMTSO3003CTJ pth_4_2mm_5d8

MH14 SMTSO3003CTJ pth_4_2mm_5d8

Design Note:

Place the MH9 MH10 MH13 MH14 to the other side of camera connector.

PCB1

reComputer J601 Carrier Board PCB

Label1

SN Label

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