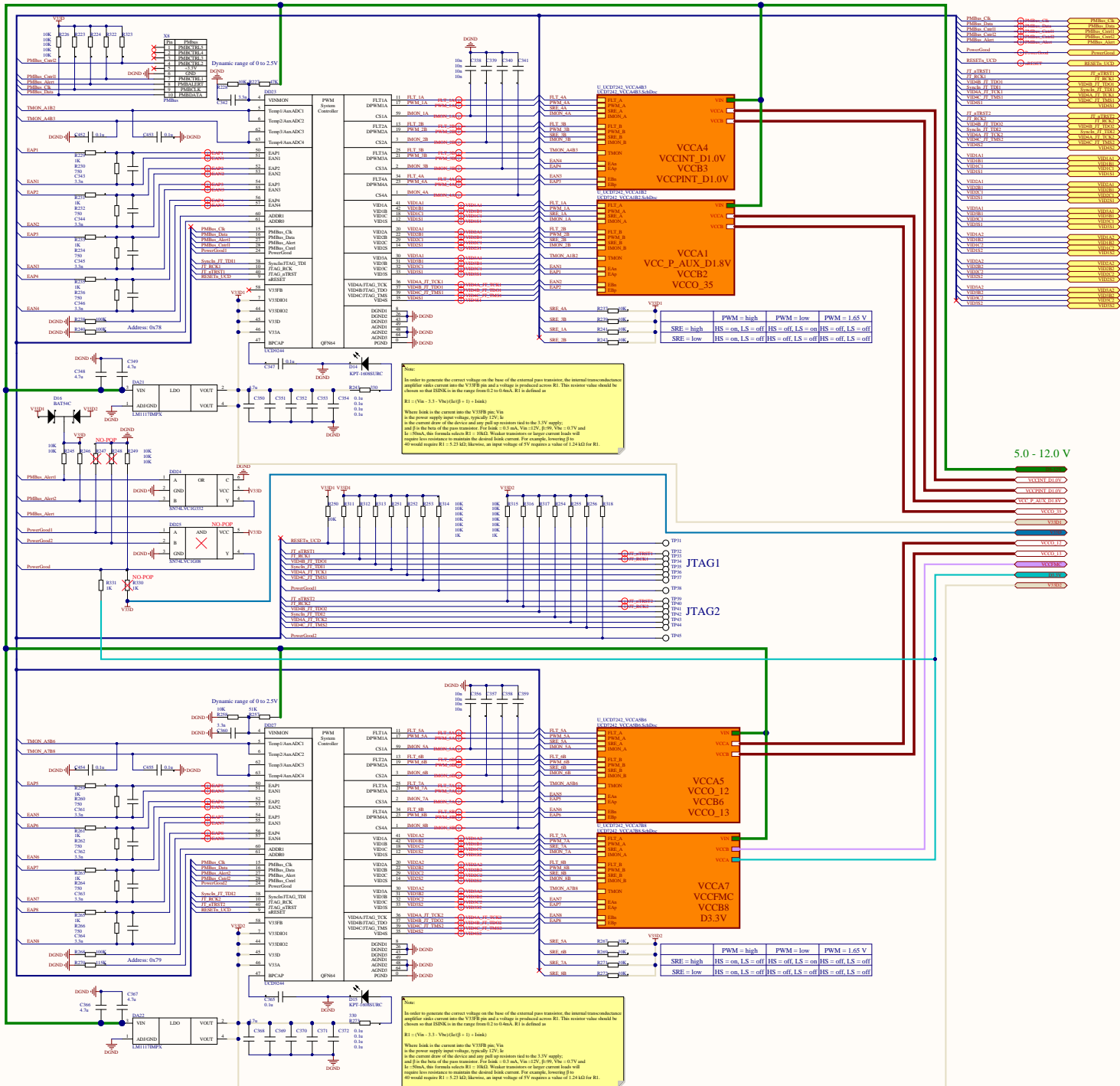
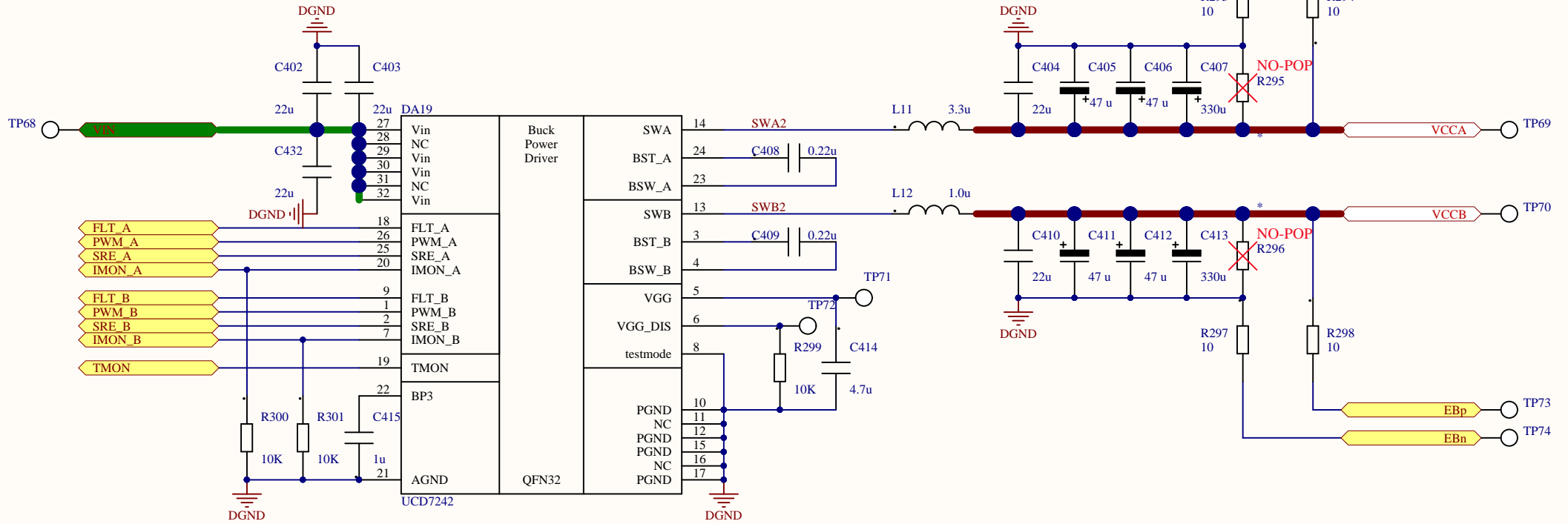


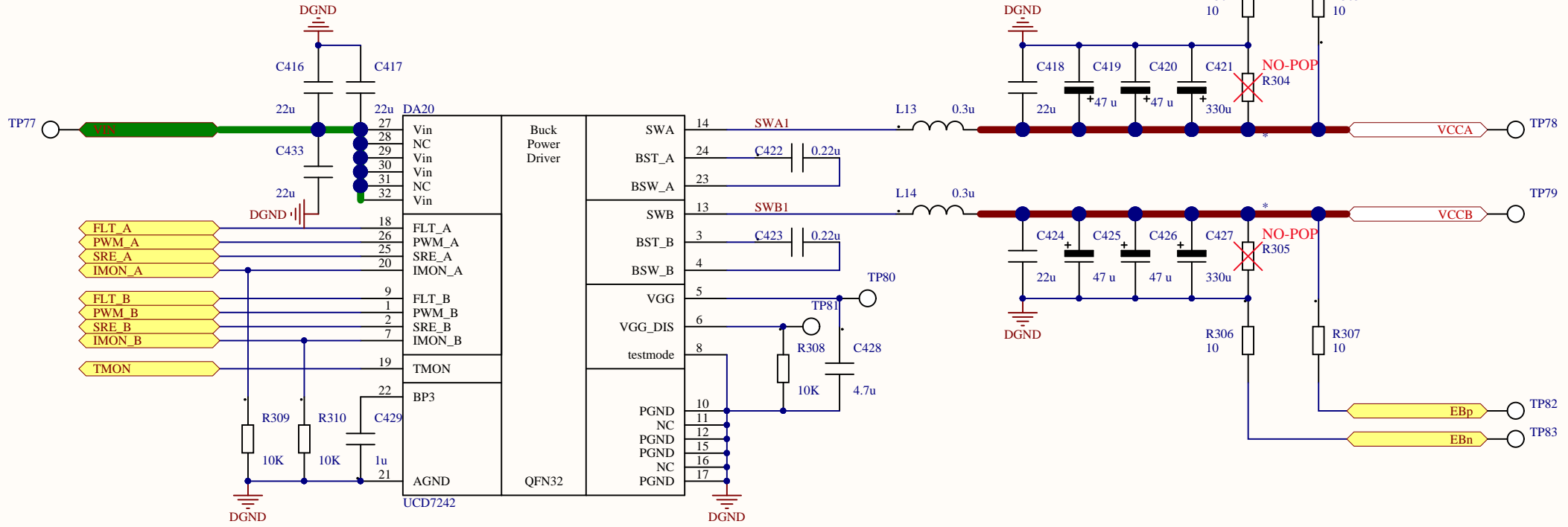
Processing System (PS)	Type V	Type A
VCCPINT	PS primary logic supply	1.00 V *
VCCPAUX	PS auxiliary supply voltage	1.80 V *
VCCPLL	PS PLL supply	1.80 V *
VCCO_DDR	PS DDR I/O supply	1.35 V *
VCCO_MIO	PS MIO I/O supply	3.3 V *
VPREF	PS input reference voltage	1.25 V *
Programmable Logic (PL)		
VCCINT	PL internal supply voltage	1.00 V *
VCCCAUX	PL auxiliary supply voltage	1.80 V *
VCCBRAM	PL supply voltage for the block RAM memories	1.00 V *
VCCO	PL output drivers supply voltage for 3.3V HR I/O banks	3.3 V *
VCCO	PL output drivers supply voltage for 1.8V HP I/O banks	3.3 V *
VCCCAUX_IO	PS primary logic supply	2.00 V 42 mA
VREF	Input reference voltage	1.25 V
VCCBATT	Battery voltage	1.8 V 150 nA
GTX Transceiver		
VMGTAVCC	Analog supply voltage for the GTX transmitter and receiver circuits	1.00 V
VMGTAVTT	Analog supply voltage for the GTX transmitter and receiver termination circuits	1.20 V
VMGTAVCCAUX	Auxiliary analog Quad PLL (QPLL) reference supply for the GTX transceivers	1.80 V
VMGTREFCLK	GTX transceiver reference clock absolute input voltage	2.00 V
XADC		
VCCADC	XADC supply relative to GNDADC	1.8 V 35 mA
VREFP	XADC reference input relative to GNDADC	1.25 V

U.CAPACITORS	CAPACITORS Schöbe
VCCO_12	AA16
VCCO_12	AC17
VCCO_12	AD17
VCCO_12	AE17
VCCO_12	AF17
VCCO_12	AG17
VCCO_12	AH17
VCCO_12	AI17
VCCO_12	AJ17
VCCO_12	AK17
VCCO_12	AL17
VCCO_12	AM17
VCCO_12	AN17
VCCO_12	AO17
VCCO_12	AP17
VCCO_12	AQ17
VCCO_12	AR17
VCCO_12	AS17
VCCO_12	AT17
VCCO_12	AV17
VCCO_12	AW17
VCCO_12	AX17
VCCO_12	AY17
VCCO_12	AZ17
VCCO_12	BA17
VCCO_12	BB17
VCCO_12	BC17
VCCO_12	BD17
VCCO_12	BE17
VCCO_12	BF17
VCCO_12	BG17
VCCO_12	BH17
VCCO_12	BI17
VCCO_12	BJ17
VCCO_12	BK17
VCCO_12	BL17
VCCO_12	BM17
VCCO_12	BN17
VCCO_12	BO17
VCCO_12	BP17
VCCO_12	BQ17
VCCO_12	BR17
VCCO_12	BS17
VCCO_12	BT17
VCCO_12	BU17
VCCO_12	BV17
VCCO_12	BW17
VCCO_12	BX17
VCCO_12	BY17
VCCO_12	BZ17
VCCO_12	CA17
VCCO_12	CB17
VCCO_12	CC17
VCCO_12	CD17
VCCO_12	CE17
VCCO_12	CF17
VCCO_12	CG17
VCCO_12	CH17
VCCO_12	CI17
VCCO_12	CJ17
VCCO_12	CK17
VCCO_12	CL17
VCCO_12	CM17
VCCO_12	CN17
VCCO_12	CO17
VCCO_12	CP17
VCCO_12	CQ17
VCCO_12	CR17
VCCO_12	CS17
VCCO_12	CT17
VCCO_12	CU17
VCCO_12	CV17
VCCO_12	CW17
VCCO_12	CX17
VCCO_12	CY17
VCCO_12	CZ17
VCCO_12	DA17
VCCO_12	DB17
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VCCO_12	DE17
VCCO_12	DF17
VCCO_12	DG17
VCCO_12	DH17
VCCO_12	DI17
VCCO_12	DJ17
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VCCO_12	DL17
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VCCO_12	DP17
VCCO_12	DQ17
VCCO_12	DR17
VCCO_12	DS17
VCCO_12	DT17
VCCO_12	DU17
VCCO_12	DV17
VCCO_12	DW17
VCCO_12	DX17
VCCO_12	DY17
VCCO_12	DZ17
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VCCO_12	EB17
VCCO_12	EC17
VCCO_12	ED17
VCCO_12	EE17
VCCO_12	EF17
VCCO_12	EG17
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VCCO_12	EI17
VCCO_12	EJ17
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VCCO_12	EN17
VCCO_12	EO17
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VCCO_12	ER17
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VCCO_12	FQ17
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VCCO_12	FU17
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VCCO_12	FX17
VCCO_12	FY17
VCCO_12	FZ17
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VCCO_12	GB17
VCCO_12	GC17
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VCCO_12	GE17
VCCO_12	GF17
VCCO_12	GG17
VCCO_12	GH17
VCCO_12	GI17
VCCO_12	GJ17
VCCO_12	GK17
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VCCO_12	GP17
VCCO_12	GQ17
VCCO_12	GR17
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VCCO_12	GY17
VCCO_12	GZ17
VCCO_12	HA17
VCCO_12	HB17
VCCO_12	HC17
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VCCO_12	HF17
VCCO_12	HG17
VCCO_12	HH17
VCCO_12	HI17
VCCO_12	HJ17
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VCCO_12	HM17
VCCO_12	HN17
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VCCO_12	HQ17
VCCO_12	HR17
VCCO_12	HS17
VCCO_12	HT17
VCCO_12	HU17
VCCO_12	HV17
VCCO_12	HW17
VCCO_12	HX17
VCCO_12	HY17
VCCO_12	HZ17
VCCO_12	IA17
VCCO_12	IB17
VCCO_12	IC17
VCCO_12	ID17
VCCO_12	IE17
VCCO_12	IF17
VCCO_12	IG17
VCCO_12	IH17
VCCO_12	II17
VCCO_12	IJ17
VCCO_12	IK17
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VCCO_12	IM17
VCCO_12	IN17
VCCO_12	IO17
VCCO_12	IP17
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VCCO_12	IS17
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VCCO_12	JF17
VCCO_12	JG17
VCCO_12	JH17
VCCO_12	JI17
VCCO_12	IJ17
VCCO_12	JK17
VCCO_12	KL17
VCCO_12	LM17
VCCO_12	LN17
VCCO_12	LO17
VCCO_12	LP17
VCCO_12	LQ17
VCCO_12	LR17
VCCO_12	LS17
VCCO_12	LT17
VCCO_12	LU17
VCCO_12	LV17
VCCO_12	LW17
VCCO_12	LX17
VCCO_12	LY17
VCCO_12	LZ17
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VCCO_12	MI17
VCCO_12	MJ17
VCCO_12	MK17
VCCO_12	ML17
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VCCO_12	MN17
VCCO_12	MO17
VCCO_12	MP17
VCCO_12	MQ17
VCCO_12	MR17
VCCO_12	MS17
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VCCO_12	MY17
VCCO_12	MZ17
VCCO_12	NA17
VCCO_12	NB17
VCCO_12	NC17
VCCO_12	ND17
VCCO_12	NE17
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VCCO_12	NG17
VCCO_12	NH17
VCCO_12	NI17
VCCO_12	NJ17
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VCCO_12	NP17
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VCCO_12	NS17
VCCO_12	NT17
VCCO_12	NU17
VCCO_12	NV17
VCCO_12	NW17
VCCO_12	NX17
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VCCO_12	NZ17
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VCCO_12	OE17
VCCO_12	OF17
VCCO_12	OG17
VCCO_12	OH17
VCCO_12	OI17
VCCO_12	OJ17
VCCO_12	OK17
VCCO_12	OL17
VCCO_12	OM17
VCCO_12	ON17
VCCO_12	OO17
VCCO_12	OP17
VCCO_12	OQ17
VCCO_12	OR17
VCCO_12	OS17
VCCO_12	OT17
VCCO_12	OU17
VCCO_12	OV17
VCCO_12	OW17
VCCO_12	OX17
VCCO_12	OY17
VCCO_12	OZ17
VCCO_12	PA17
VCCO_12	PB17
VCCO_12	PC17
VCCO_12	PD17
VCCO_12	PE17
VCCO_12	PF17
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VCCO_12	PH17
VCCO_12	PI17
VCCO_12	PJ17
VCCO_12	PK17
VCCO_12	PL17
VCCO_12	PM17
VCCO_12	PN17
VCCO_12	PO17
VCCO_12	PP17
VCCO_12	PQ17
VCCO_12	PR17
VCCO_12	PS17
VCCO_12	PT17
VCCO_12	PU17
VCCO_12	PV17
VCCO_12	PW17
VCCO_12	PX17
VCCO_12	PY17
VCCO_12	PZ17
VCCO_12	QA17
VCCO_12	QB17
VCCO_12	QC17
VCCO_12	QD17
VCCO_12	QE17
VCCO_12	QF17
VCCO_12	QG17
VCCO_12	QH17
VCCO_12	QI17
VCCO_12	QJ17
VCCO_12	QK17
VCCO_12	QL17
VCCO_12	QM17
VCCO_12	QN17
VCCO_12	QO17
VCCO_12	QP17
VCCO_12	QQ17
VCCO_12	QR17
VCCO_12	QS17
VCCO_12	QT17
VCCO_12	QU17
VCCO_12	QV17
VCCO_12	QW17
VCCO_12	QX17
VCCO_12	QY17
VCCO_12	QZ17
VCCO_12	RA17
VCCO_12	RB17
VCCO_12	RC17
VCCO_12	RD17
VCCO_12	RE17
VCCO_12	RF17
VCCO_12	RG17
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VCCO_12	RL17
VCCO_12	RM17
VCCO_12	RO17
VCCO_12	RP17
VCCO_12	RQ17
VCCO_12	RR17
VCCO_12	RS17
VCCO_12	

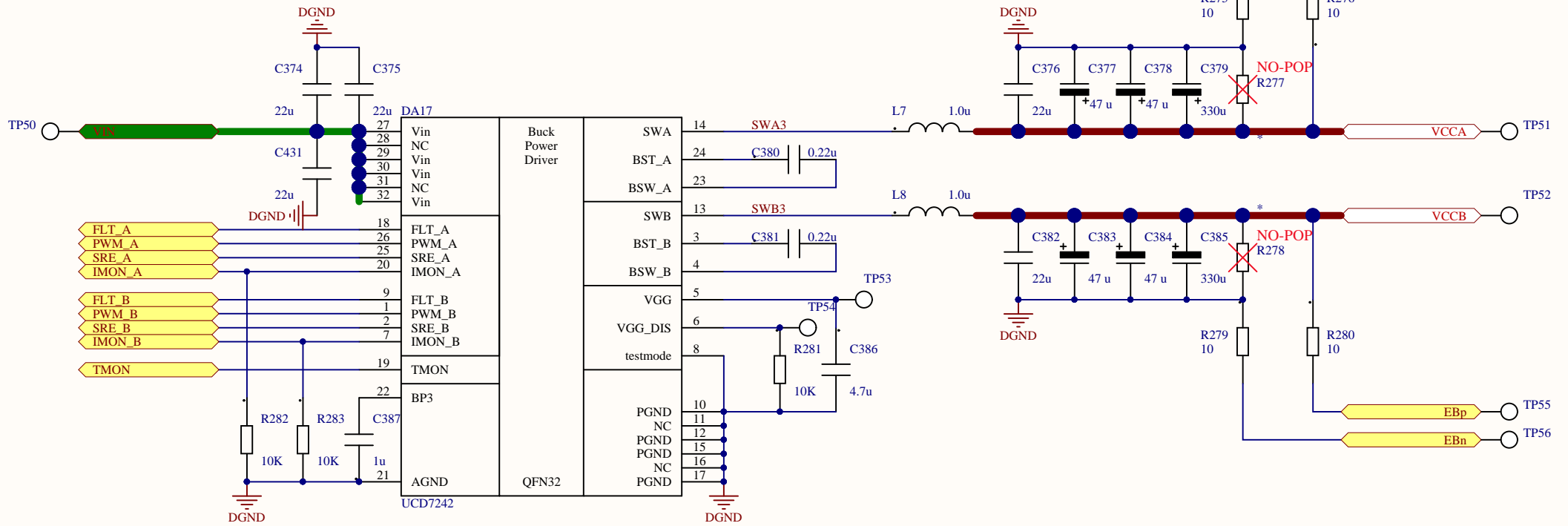




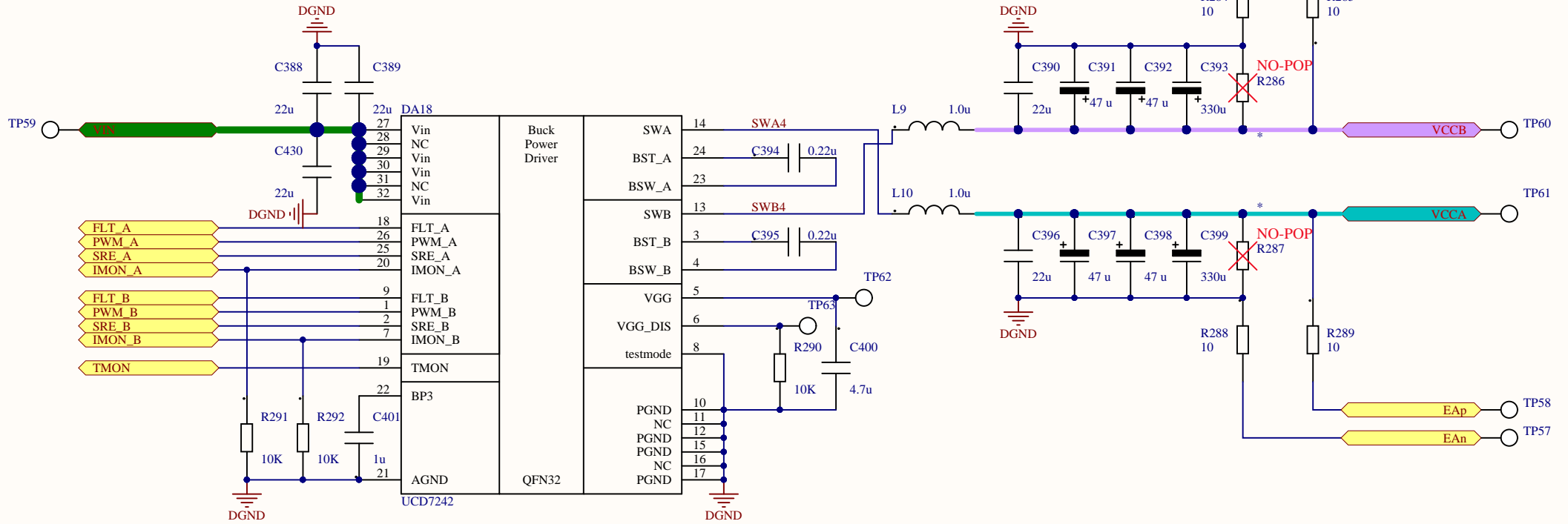
UCD7242_VCCA1B2



UCD7242_VCCA4B3

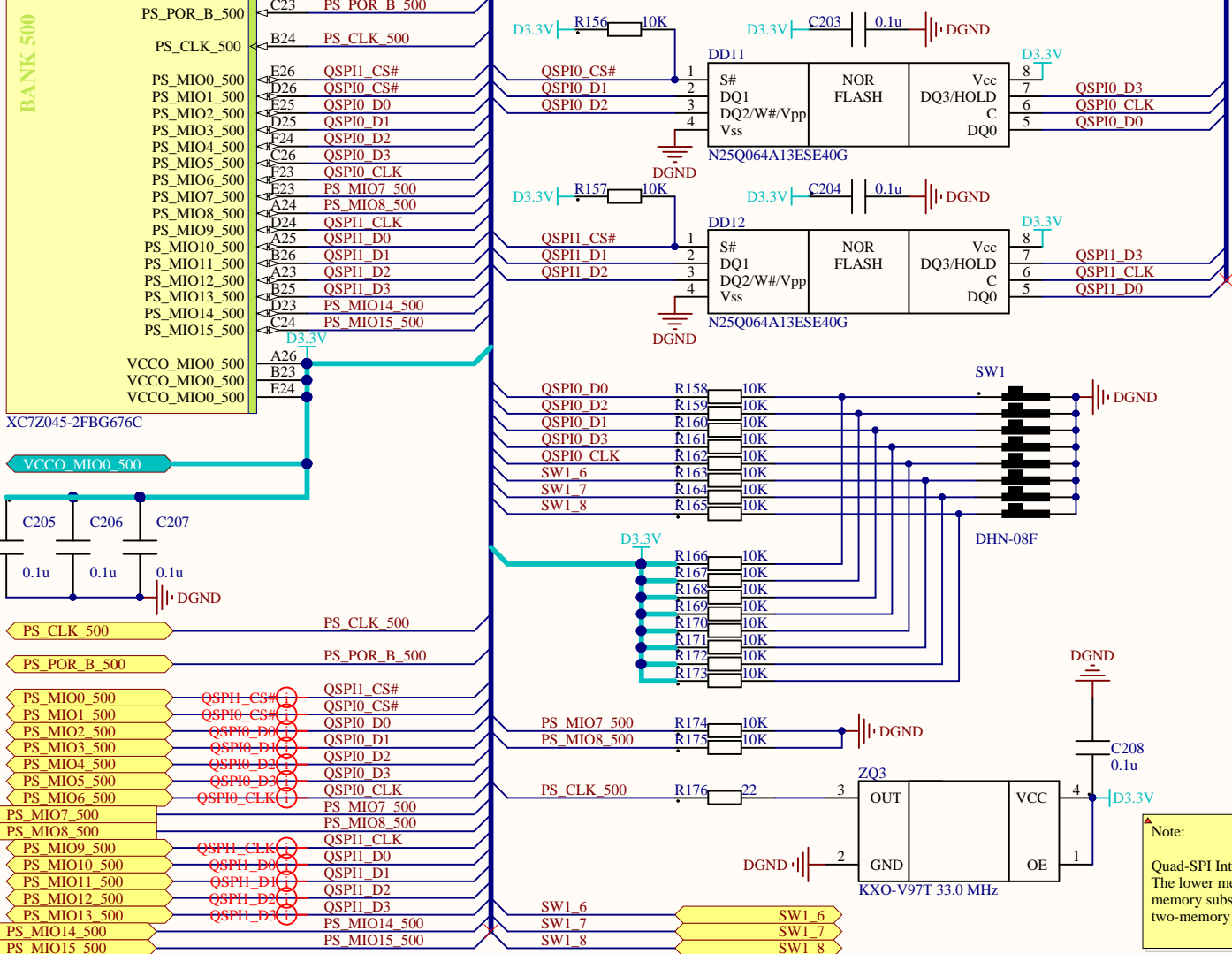


UCD7242_VCCA5B6



UCD7242_VCCA7B8

DD1H



Boot Mode MIO Strapping Pins

Mode	JTAG_C	JTAG_I	NOR	QSPI
MIO[2]	0	1	X	X
MIO[3]	0	0	1	0
MIO[4]	0	0	0	0
MIO[5]	0	0	0	1
MIO[6]	X	X	X	X
MIO[7]	X	X	X	X
MIO[8]	X	X	X	X

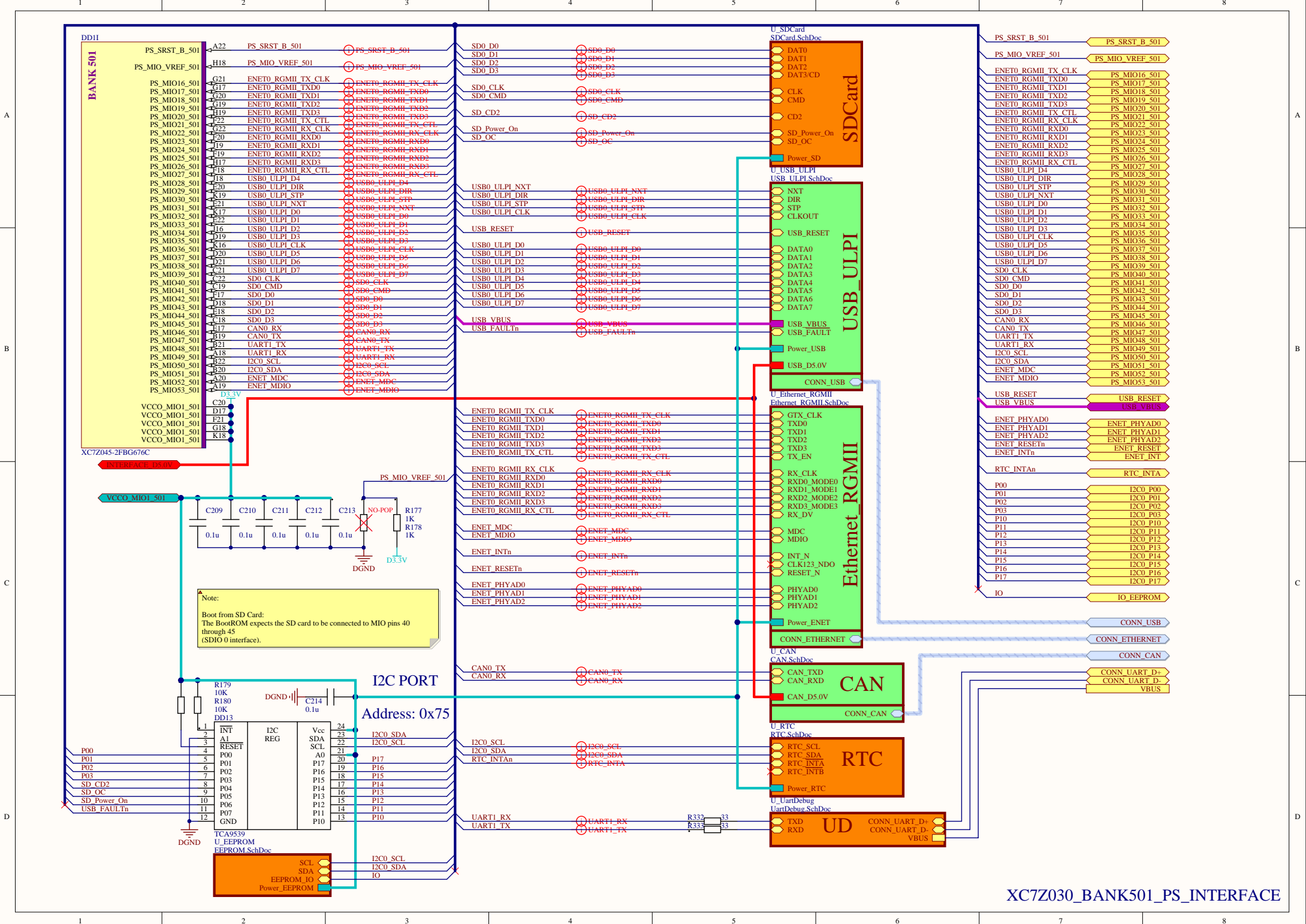
Mode	SDCard	PLL_En	PLL_By
MIO[2]	X	X	X
MIO[3]	0	X	X
MIO[4]	1	X	X
MIO[5]	1	X	X
MIO[6]	X	0	1
MIO[7]	X	X	X
MIO[8]	X	X	X

Mode	Bank01 = 2.5V, 3.3V	Bank01 = 1.8V
MIO[2]	X	X
MIO[3]	X	X
MIO[4]	X	X
MIO[5]	X	X
MIO[6]	X	X
MIO[7]	0	1
MIO[8]	0	1

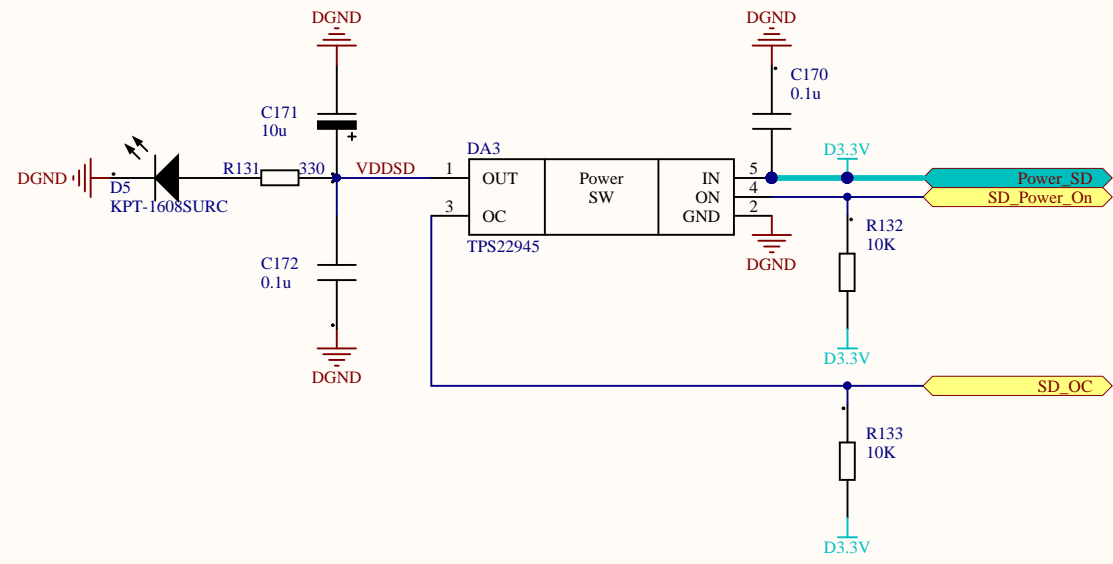
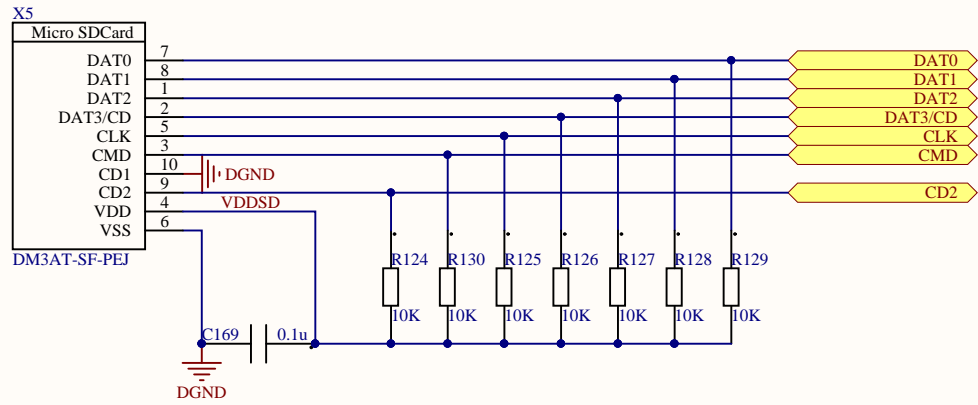
Note:
MIO Pins [8:7] are Outputs:
These MIO pins are available as output only. GPIO channels 7 and 8 can only be configured as outputs

Note:
Boot Mode Strapping Pins:
These pins can be assigned to I/O peripherals in addition to functioning as boot mode pins. MIO pins [8:2], define the bootdevice, the initial PLL clock bypass mode, and the voltage mode (VMODE) for the MIO banks. The strapping pins are sampled a few PS_CLK clock cycles after the PS_POR_B reset signal de-asserts. The board design ties these signals to VCC or ground using 20 K Ω pull-up and pull-down resistors. More information about the boot mode pin settings is provided in Chapter 6. Boot and Configuration.

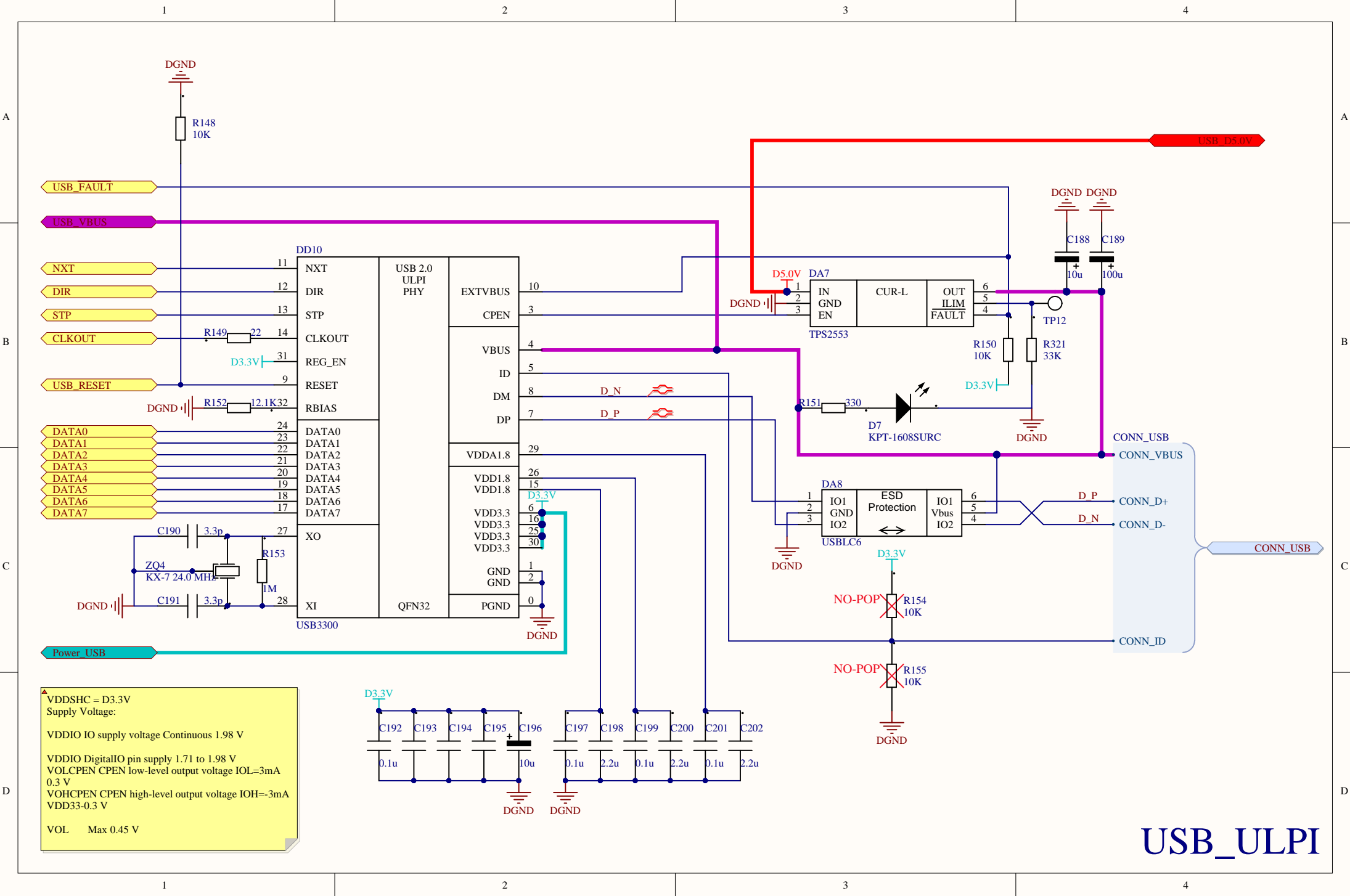
Note:
Quad-SPI Interface:
The lower memory Quad-SPI interface (QSPLI_0) must be used if the Quad-SPI memory subsystem is to be used. The upper interface (QSPLI_1) is optional and is only used for a two-memory arrangement (parallel or stacked). Do not use the Quad-SPI 1 interface alone.



XC7Z030_BANK501_PS_INTERFACE



SDCard



USB_ULPI

Single-LED Mode

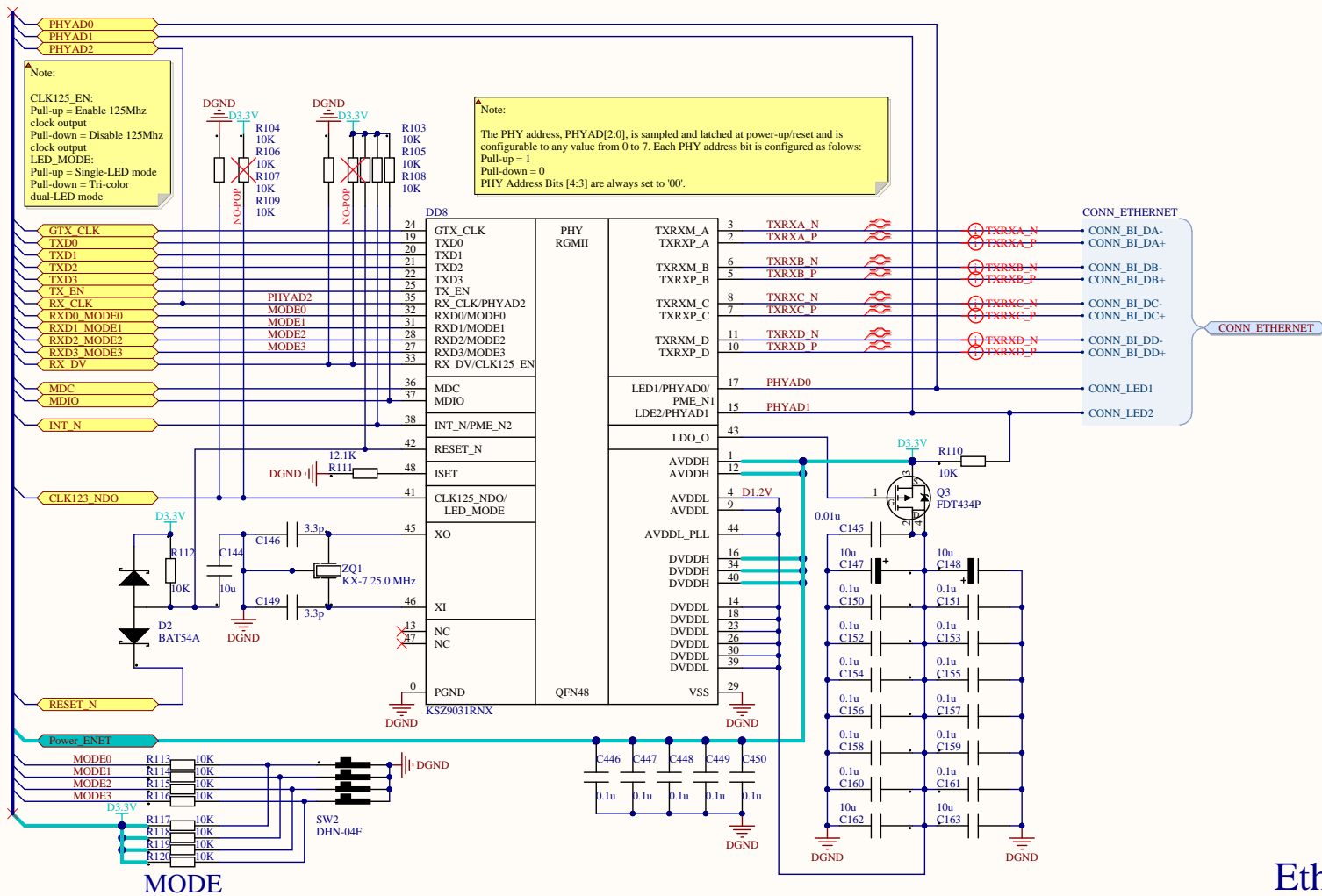
Link	Pin State	LED Definition
Link off	H	OFF
Link on	L	ON

Tri-Color Dual-LED Mode

Link/Activity	Pin State		LED Definition	
	LED2	LED1	LED2	LED1
Link off	H	H	OFF	OFF
1000 Link / No activity	L	H	ON	OFF
1000 Link / Activity (RX, TX)	Toggle	H	Blinking	OFF
100 Link / No activity	H	L	OFF	ON
100 Link / Activity (RX, TX)	H	Toogle	OFF	Blinking
10 Link / No activity	L	L	ON	ON
10 Link / Activity (RX, TX)	Toogle	Toogle	Blinking	Blinking

Strapping Pins

MODE[3:0]	MODE
0100	NAND tree mode
0111	Chip power-down mode
1100	RGMII mode - advertise 1000Base-T full-duplex only
1101	RGMII mode - advertise 1000Base-T full- and half-duplex only
1110	RGMII mode - advertise all capabilities (10/100/1000 speed half-/full-duplex), except 1000Base-T half-duplex
1111	RGMII mode - advertise all capabilities (10/100/1000 speed half-/full-duplex)



Ethernet_RGMII

1

2

3

4

A

A

B

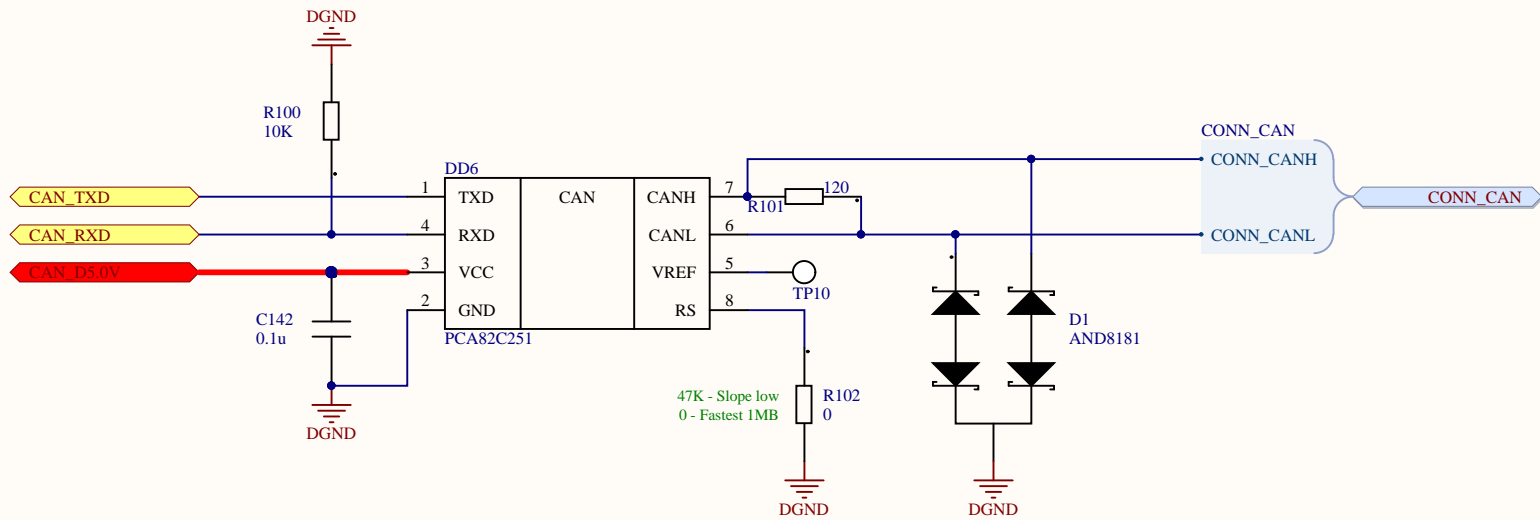
B

C

C

D

D



CAN

1

2

3

4

1

2

3

4

A

A

B

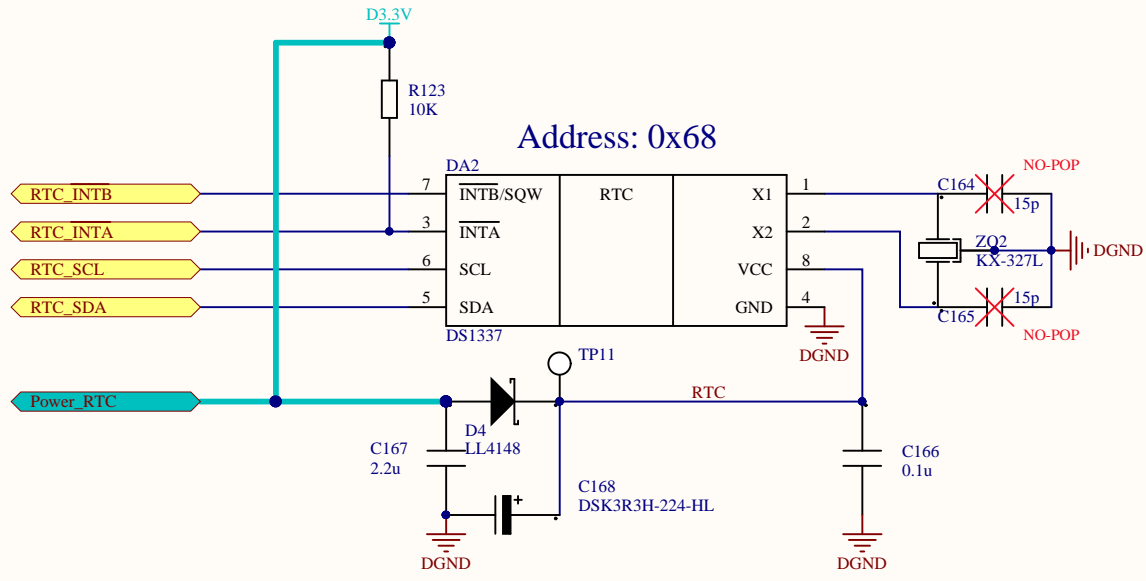
B

C

C

D

D



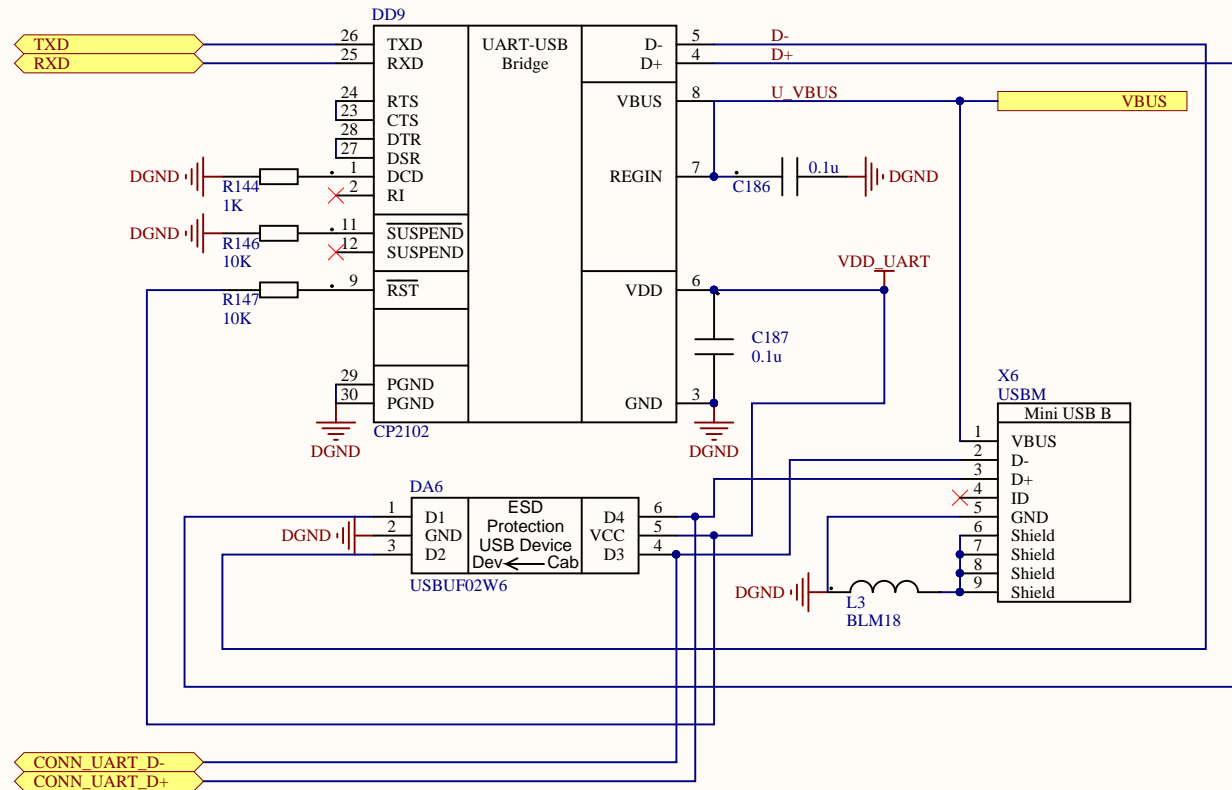
RTC

1

2

3

4



1

2

3

4

A

A

B

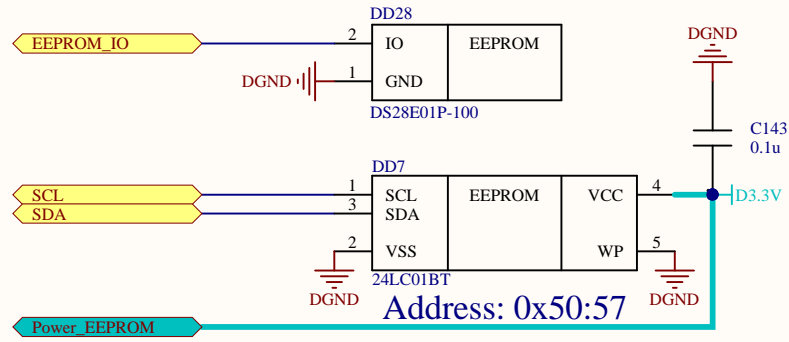
B

C

C

D

D



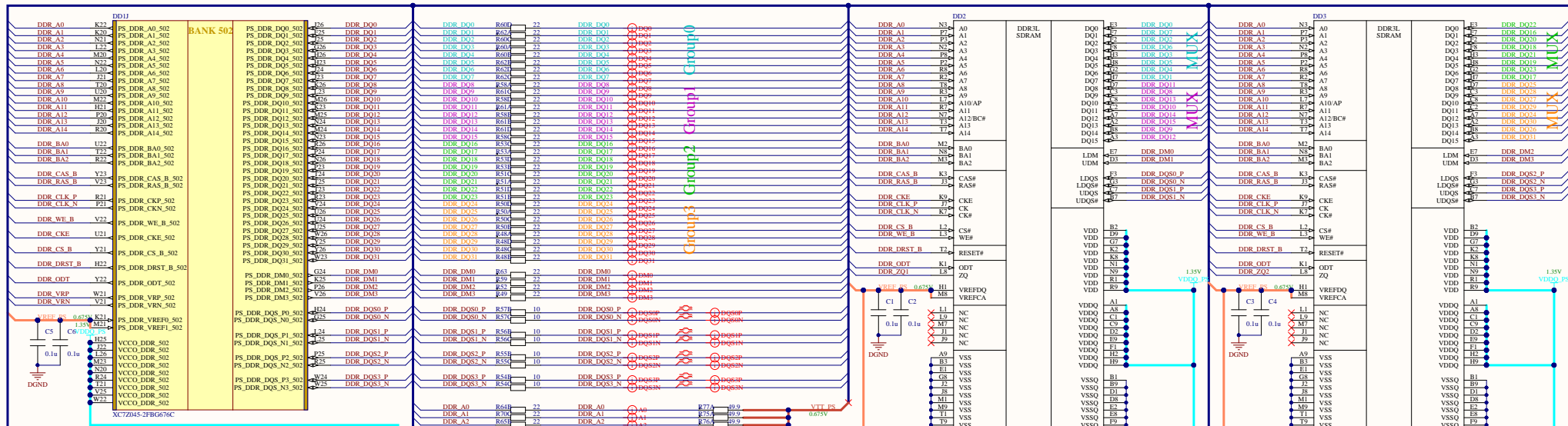
EEPROM

1

2

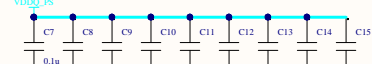
3

4



Layout Note:
 DDR3L target trace impedances are:
 Single Ended Signals = 40 ohms
 Differential Signals = 80 ohms

High-Speed bypass capacitors DD1



Bulk bypass capacitors DD1



Layout Note:
 CKE and RESET# require a 75K resistor for PD, to maintain logic low through FPGA Configuration. See UG586p120

Layout Note:
 Use Fly-by routing and termination per DDR3L control signals.
 Resistors should be placed past the last device as close to the device as possible.

Device Configuration Power for DDR3L

• Revision D:/E/J

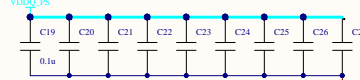
MT41J256M16RE-15E

DDR3 512MB 32M x 16 x 8 banks

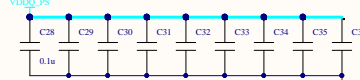
- VDD = VDDQ = 1.35V±0.075V
 -1.5m @ CL = 9 (DDR3-1333)-15E
 - TC of -40°C to 95°C; 64ms, 8192 cycle refresh at 0°C to 85°C; 32ms, 8192 cycle refresh at 85°C to 95°C

Rev D	Rev E/J
Burst read operating current	240mA
Burst write operating current	200mA
Burst refresh current	210mA
All banks interleaved read current	285mA
Burst read operating current	202mA
Burst write operating current	152mA
Burst refresh current	226mA
All banks interleaved read current	217mA

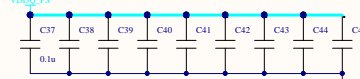
High-Speed bypass capacitors DD2



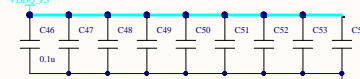
High-Speed bypass capacitors DD3



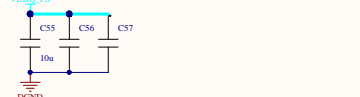
High-Speed bypass capacitors DD2



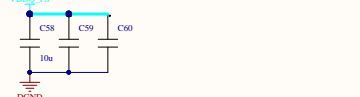
High-Speed bypass capacitors DD3

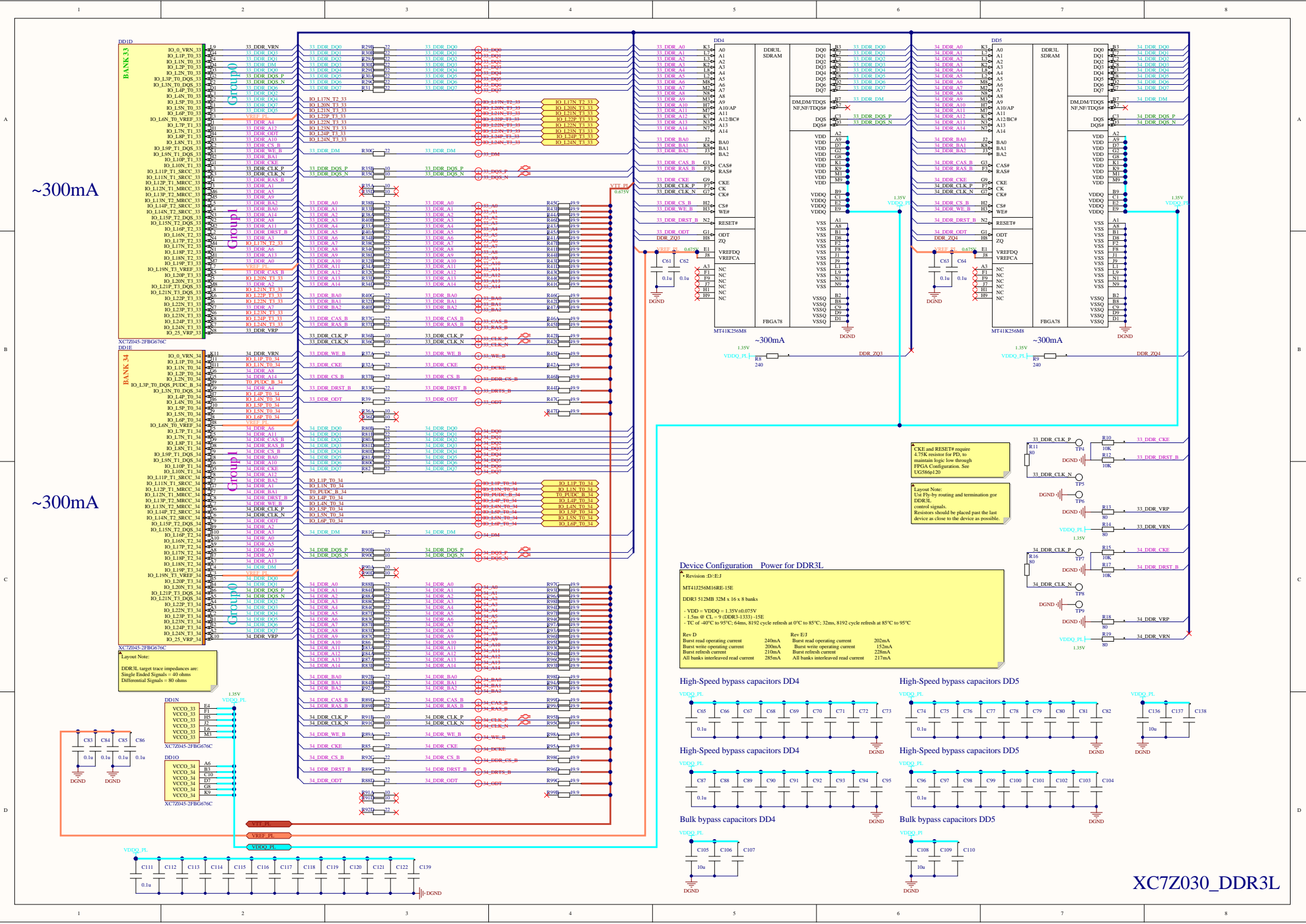


Bulk bypass capacitors DD2



Bulk bypass capacitors DD3





~300mA

~300mA

CKE and RESET# require 4.75k resistor for PD, to minimize logic low through FPGA Configuration. See UG586v120

Layout Note: Use Fly-by routing and termination for DDR3L control signals. Resistor should be placed past the last device as close to the device as possible.

Device Configuration Power for DDR3L

Revision: D/E/3

MT41K256M8RE-15E

DDR3 512MB 32M x 16 x 8 banks

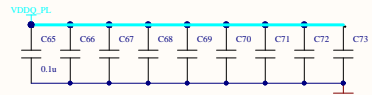
VDD = VDDQ = 1.35V/0.075V

-1.5m @ CL = 9 (DDR3-1333)-15E

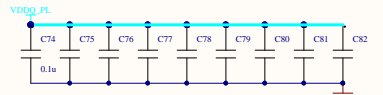
-TC of 40°C to 95°C, 64ms, 8192 cycle refresh at 0°C to 85°C, 32ms, 8192 cycle refresh at 85°C to 95°C

Rev D	Rev E/J		
Burst read operating current	240mA	Burst read operating current	202mA
Burst write operating current	200mA	Burst write operating current	152mA
Burst refresh current	210mA	Burst refresh current	228mA
All banks interleaved read current	285mA	All banks interleaved read current	217mA

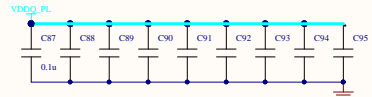
High-Speed bypass capacitors DD4



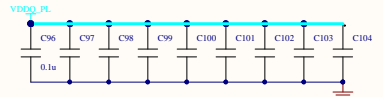
High-Speed bypass capacitors DD5



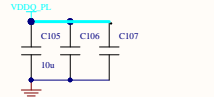
High-Speed bypass capacitors DD4



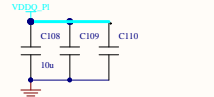
High-Speed bypass capacitors DD5



Bulk bypass capacitors DD4

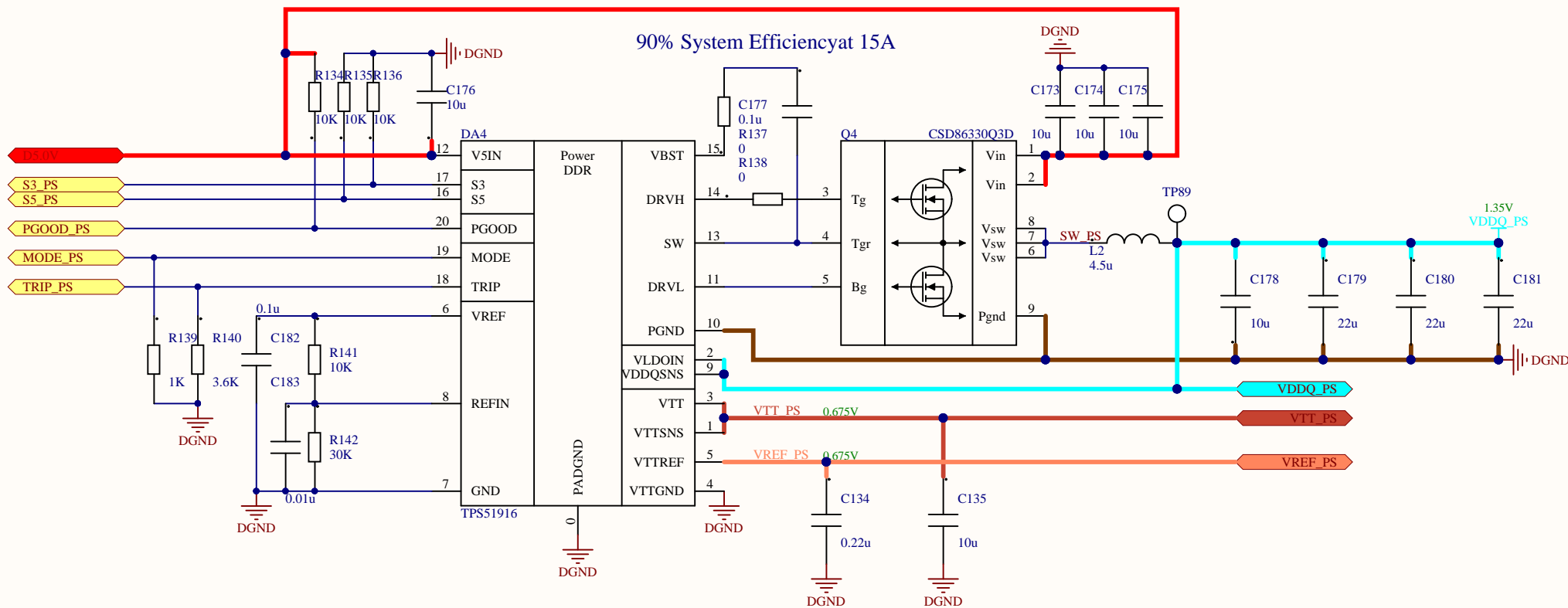


Bulk bypass capacitors DD5



XC7Z030_DDR3L

90% System Efficiency at 15A

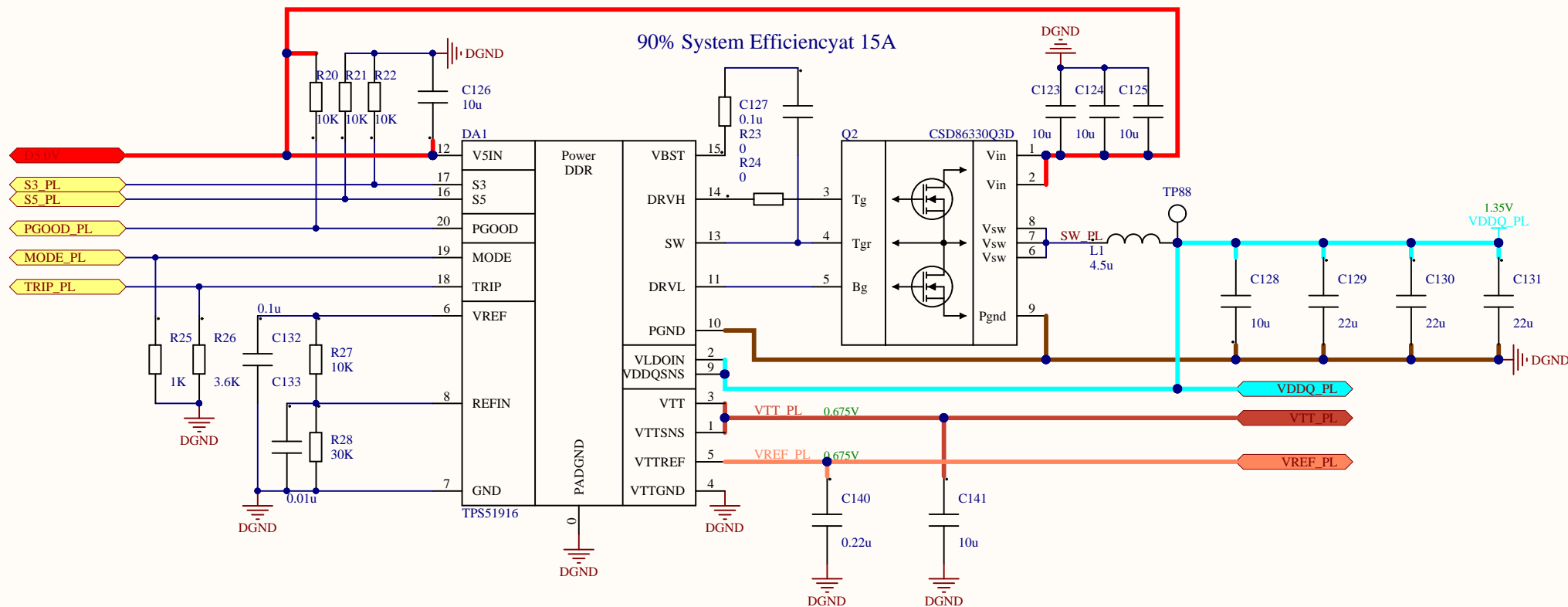


Device Configuration for DDR3/3L

MODE: R = 1K Fsw = 500KHz
 TRIP: CDS86350Q5D Rds = 2mΩ Iocl = 2.5A Rtrip = 3.6K
 Vin = 5.5V VDDQ = 1.35V VTT = 0.675V
 Iout = 1.8A Iind(ripple) = 0.6A Iind(peak) = 2.75A Ivtt = 1.2A
 Cout > 57u

TPS51916_PW_DDR3L_PS

90% System Efficiency at 15A



Device Configuration for DDR3/3L

▲ MODE: R = 1K Fsw = 500KHz
 TRIP: CDS86350Q5D Rds = 2mO Iocl = 2.5A Rtrip = 3.6K
 Vin = 5.5V VDDQ = 1.35V VTT = 0.675V
 Iout = 1.8A Iind(ripple) = 0.6A Iind(peak) = 2.75A Ivtt = 1.2A
 Cout > 57u

TPS51916_PW_DDR3L_PL

Note:
 Six-Digit Start-up Frequency/I2C Address Designator
 The Si57x supports a user-defined start-up frequency within the following bands of frequencies: 10-945 MHz, 970-1134 MHz, and 1213-1417 MHz. The start-up frequency must be in the same frequency range as that specified by the Frequency Grade 3rd option code.
 The Si57x supports a user-defined I2C 7-bit address. Each unique start-up frequency/I2C address combination is assigned a six-digit numerical code. This code can be requested during the part number request process. Refer to www.silabs.com/VCXOPartNumber to request an Si57x part number.

BANK 111

DD1R

MGTXTXN0_111	AF7	MGTX111TX0_N	MGTX111TX0_N	MGTX111TX0_N
MGTXTXP0_111	AF8	MGTX111TX0_P	MGTX111TX0_P	MGTX111TX0_P
MGTXRXN0_111	AD7	MGTX111RX0_N	MGTX111RX0_N	MGTX111RX0_N
MGTXRXP0_111	AD8	MGTX111RX0_P	MGTX111RX0_P	MGTX111RX0_P
MGTXTXN1_111	AF3	MGTX111TX1_N	MGTX111TX1_N	MGTX111TX1_N
MGTXTXP1_111	AF4	MGTX111TX1_P	MGTX111TX1_P	MGTX111TX1_P
MGTXRXN1_111	AE5	MGTX111RX1_N	MGTX111RX1_N	MGTX111RX1_N
MGTXRXP1_111	AE6	MGTX111RX1_P	MGTX111RX1_P	MGTX111RX1_P
MGTXTXN2_111	AE1	MGTX111TX2_N	MGTX111TX2_N	MGTX111TX2_N
MGTXTXP2_111	AE2	MGTX111TX2_P	MGTX111TX2_P	MGTX111TX2_P
MGTXRXN2_111	AC5	MGTX111RX2_N	MGTX111RX2_N	MGTX111RX2_N
MGTXRXP2_111	AC6	MGTX111RX2_P	MGTX111RX2_P	MGTX111RX2_P
MGTXTXN3_111	AC1	MGTX111TX3_N	MGTX111TX3_N	MGTX111TX3_N
MGTXTXP3_111	AC2	MGTX111TX3_P	MGTX111TX3_P	MGTX111TX3_P
MGTXRXN3_111	AD3	MGTX111RX3_N	MGTX111RX3_N	MGTX111RX3_N
MGTXRXP3_111	AD4	MGTX111RX3_P	MGTX111RX3_P	MGTX111RX3_P
MGTRFCLK0N_111	W5	MGTX111CLK0_N	MGTX111CLK0_N	MGTX111CLK0_N
MGTRFCLK0P_111	W6	MGTX111CLK0_P	MGTX111CLK0_P	MGTX111CLK0_P
MGTRFCLK1N_111	AA5	MGTX111CLK1_N	MGTX111CLK1_N	MGTX111CLK1_N
MGTRFCLK1P_111	AA6	MGTX111CLK1_P	MGTX111CLK1_P	MGTX111CLK1_P

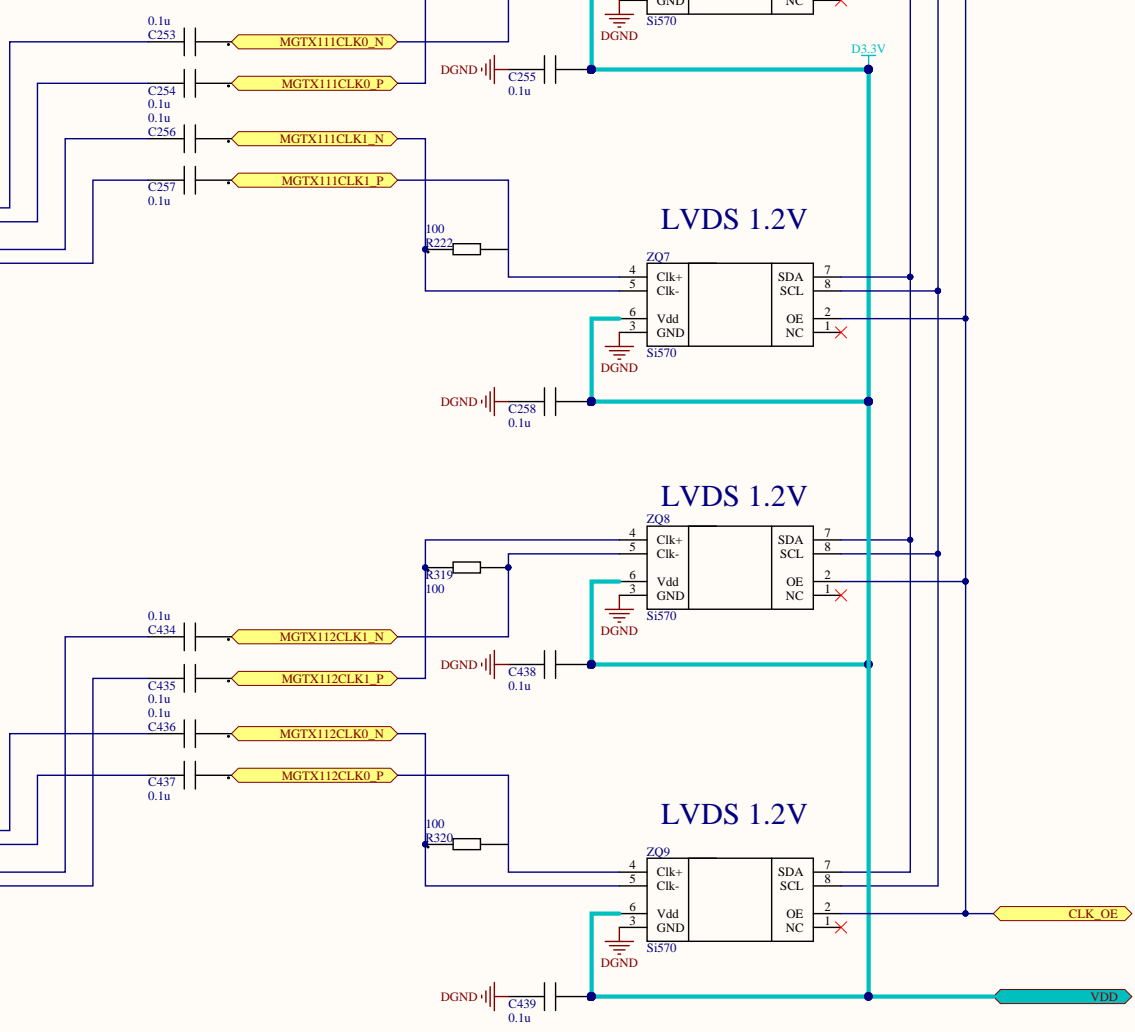
XC7Z045-2FBG676C

BANK 112

DD1G

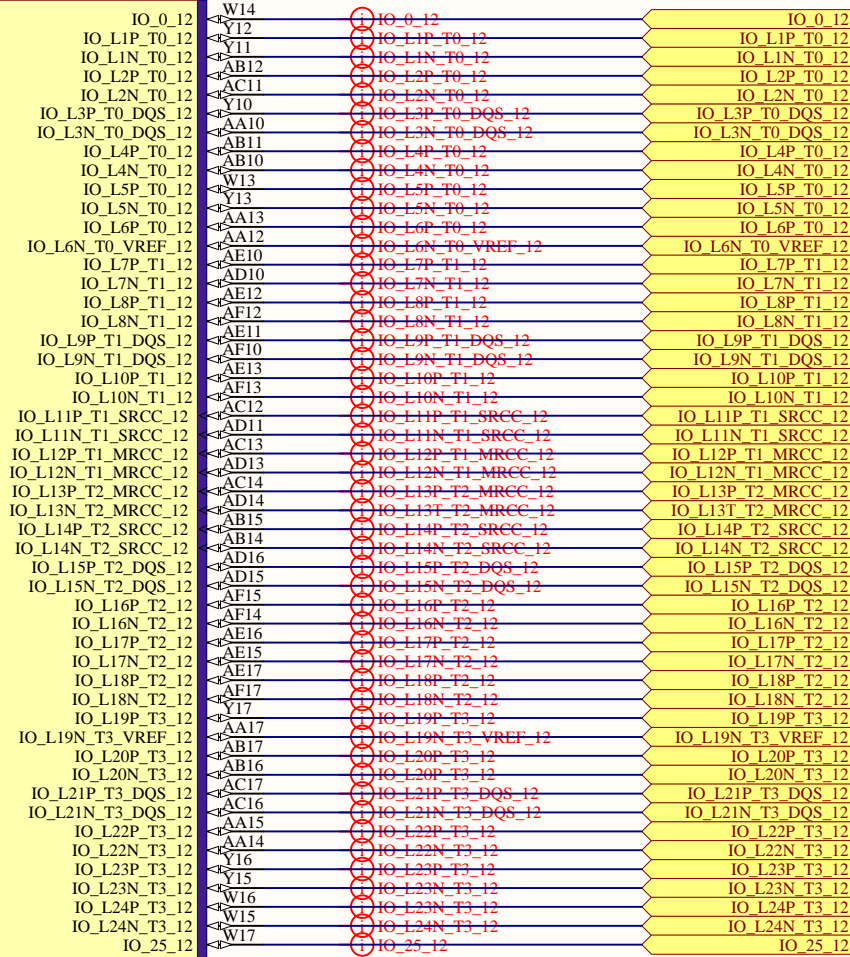
MGTXTXN0_112	AA1	MGTX112TX0_N	MGTX112TX0_N	MGTX112TX0_N
MGTXTXP0_112	AA2	MGTX112TX0_P	MGTX112TX0_P	MGTX112TX0_P
MGTXRXN0_112	AB3	MGTX112RX0_N	MGTX112RX0_N	MGTX112RX0_N
MGTXRXP0_112	AB4	MGTX112RX0_P	MGTX112RX0_P	MGTX112RX0_P
MGTXTXN1_112	W1	MGTX112TX1_N	MGTX112TX1_N	MGTX112TX1_N
MGTXTXP1_112	W2	MGTX112TX1_P	MGTX112TX1_P	MGTX112TX1_P
MGTXRXN1_112	Y3	MGTX112RX1_N	MGTX112RX1_N	MGTX112RX1_N
MGTXRXP1_112	Y4	MGTX112RX1_P	MGTX112RX1_P	MGTX112RX1_P
MGTXTXN2_112	U1	MGTX112TX2_N	MGTX112TX2_N	MGTX112TX2_N
MGTXTXP2_112	U2	MGTX112TX2_P	MGTX112TX2_P	MGTX112TX2_P
MGTXRXN2_112	V3	MGTX112RX2_N	MGTX112RX2_N	MGTX112RX2_N
MGTXRXP2_112	V4	MGTX112RX2_P	MGTX112RX2_P	MGTX112RX2_P
MGTXTXN3_112	R1	MGTX112RX3_N	MGTX112RX3_N	MGTX112RX3_N
MGTXTXP3_112	R2	MGTX112RX3_P	MGTX112RX3_P	MGTX112RX3_P
MGTXRXN3_112	R3	MGTX112RX3_N	MGTX112RX3_N	MGTX112RX3_N
MGTXRXP3_112	R4	MGTX112RX3_P	MGTX112RX3_P	MGTX112RX3_P
MGTRFCLK0N_112	R5	MGTX112CLK0_N	MGTX112CLK0_N	MGTX112CLK0_N
MGTRFCLK0P_112	R6	MGTX112CLK0_P	MGTX112CLK0_P	MGTX112CLK0_P
MGTRFCLK1N_112	U5	MGTX112CLK1_N	MGTX112CLK1_N	MGTX112CLK1_N
MGTRFCLK1P_112	U6	MGTX112CLK1_P	MGTX112CLK1_P	MGTX112CLK1_P
MGTRREF_112	AB8	R221	100	MGTAVTT_D1.2V
MGTAVTTRCAL_112	AB7			

XC7Z045-2FBG676C



DD1B

BANK 12



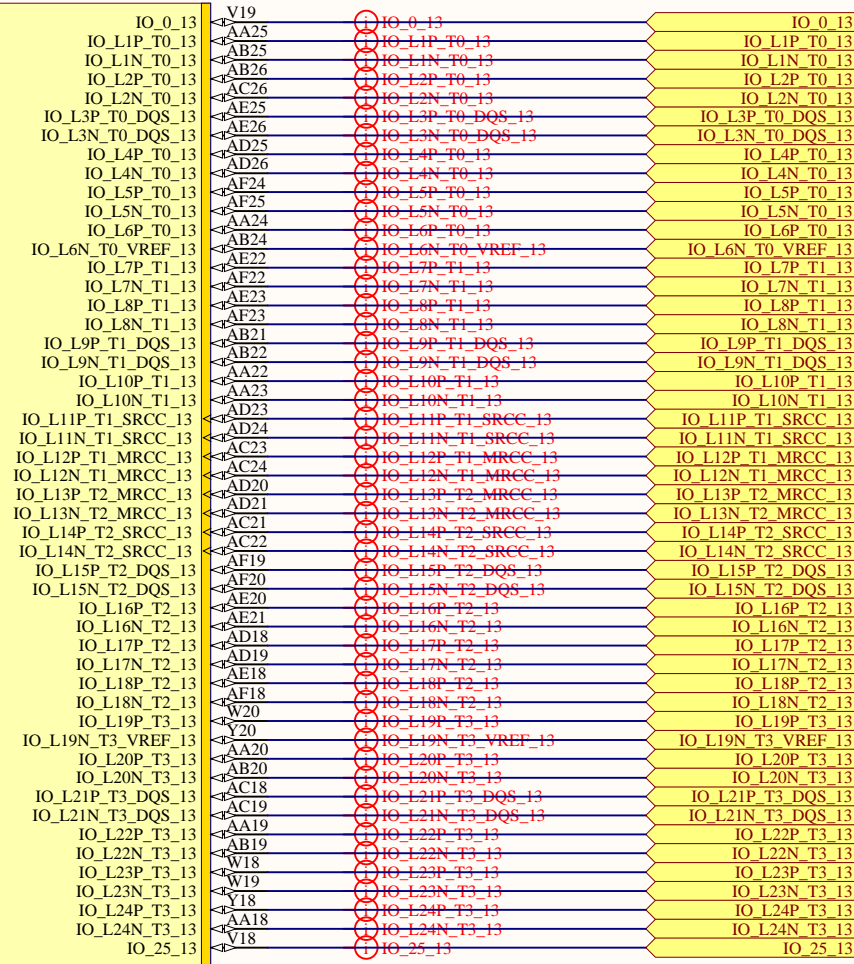
- 1 IO_L11P_T1_SRCC_12
- 1 IO_L11N_T1_SRCC_12
- 1 IO_L12P_T1_MRCC_12
- 1 IO_L12N_T1_MRCC_12
- 1 IO_L13P_T2_MRCC_12
- 1 IO_L13N_T2_MRCC_12
- 1 IO_L14P_T2_SRCC_12
- 1 IO_L14N_T2_SRCC_12
- 1 IO_L15P_T2_DQS_12
- 1 IO_L15N_T2_DQS_12

XC7Z045-2FBG676C

BANK12

DDIC

BANK 13

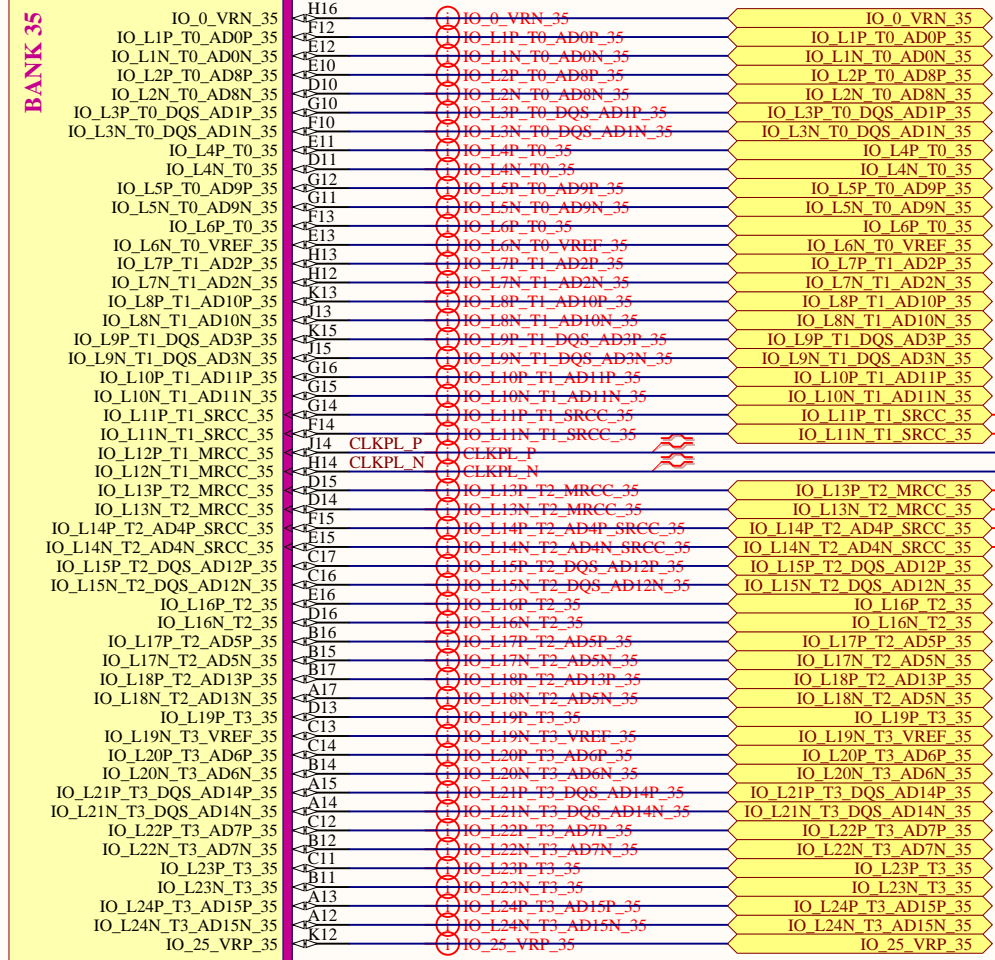


- IO_L11P_T1_SRCC_13
- IO_L11N_T1_SRCC_13
- IO_L12P_T1_MRCC_13
- IO_L12N_T1_MRCC_13
- IO_L13P_T2_MRCC_13
- IO_L13N_T2_MRCC_13
- IO_L14P_T2_SRCC_13
- IO_L14N_T2_SRCC_13
- IO_L15P_T2_DQS_13
- IO_L15N_T2_DQS_13

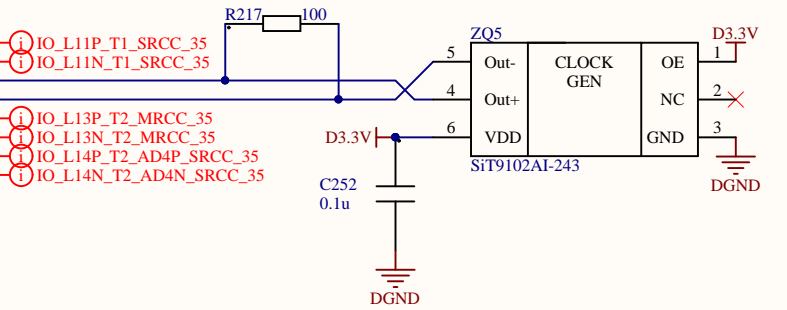
XC7Z045-2FBG676C

BANK13

DD1F



XC7Z045-2FBG676C



BANK35

1

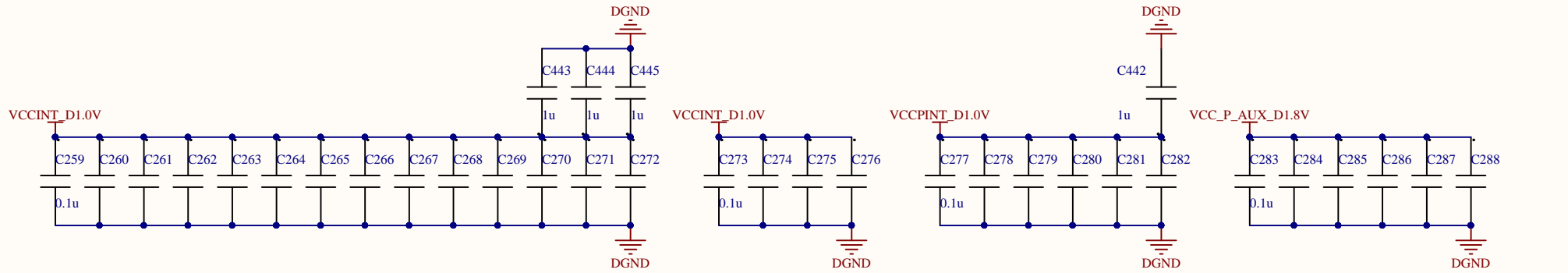
2

3

4

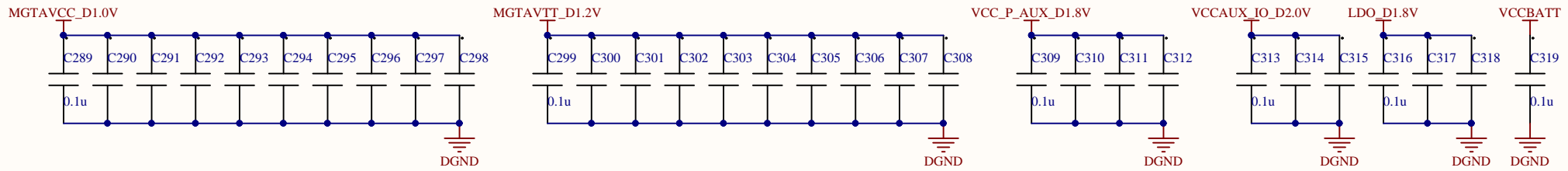
A

A



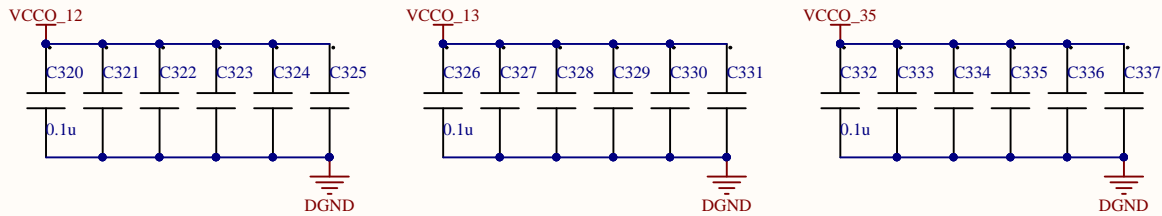
B

B



C

C



D

D

CAPACITORS

1

2

3

4