


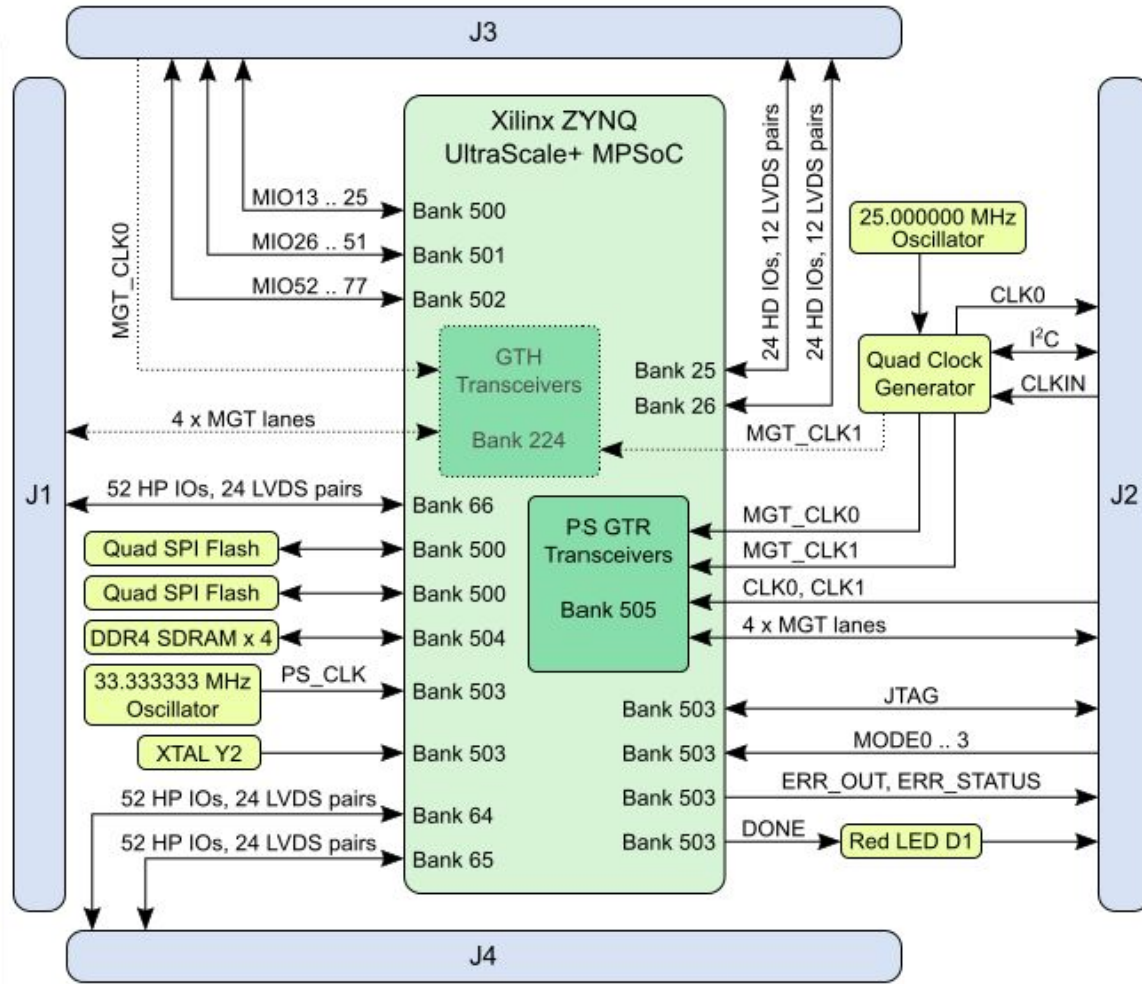
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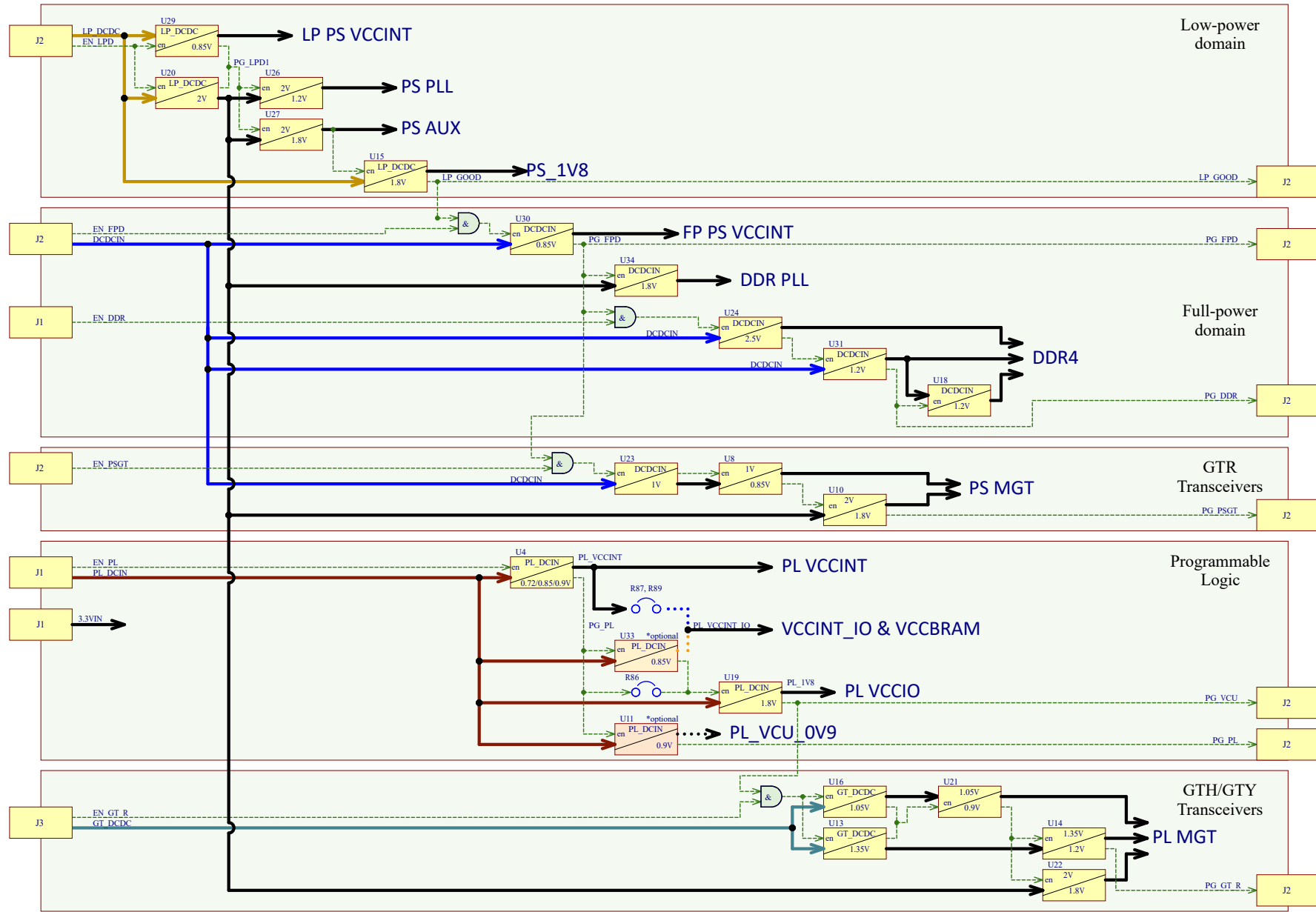
Schematics and other handouts serve for informational purposes only!

	Title: TE0813		
	A4	Number: TE0813 4DE21-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 1 of 30
	Filename: Legal Notices Modules.SchDoc		

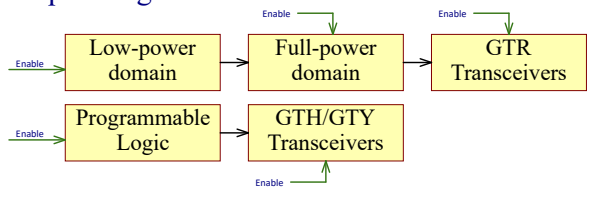
TE0813-01



		Title: Module TE0813 - System Overview	
		A4	Number: TE0813 4DE21-A
Date: 2021-08-16		Copyright: 2015 Trenz Electronic GmbH	
Filename: TE0813-Overview.SchDoc		Page 2 of 30	



Power-on sequencing:



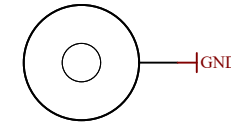
- EN_GT_R Net name
- Power bus
- Control signal
- Power bus in FPGA speedgrade -1/-2/-3 assembly variants
- Power bus in FPGA speedgrade -1L/-2L assembly variants (low power)
- Optional power converter
- Logic AND gate



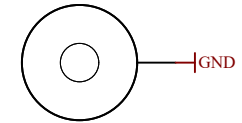
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A3	Number: TE0813 4DE21-A	Rev. 01
Datum: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 3 of 30
Filename: Power_Diagram.SchDoc		

U_J1 J1.SchDoc	U_B_PS_GT B_PS_GT.SchDoc	U_LN Legal Notices Modules.SchDoc
U_J2 J2.SchDoc	U_PS_DDR PS_DDR.SchDoc	U_ZU_POWER ZU_POWER.SchDoc
U_J3 J3.SchDoc	U_B_MIO B_MIO.SchDoc	U_ZU_PS_POWER ZU_PS_POWER.SchDoc
U_J4 J4.SchDoc	U_B_HD B_HD.SchDoc	U_POWER POWER.SchDoc
U_DDR4-TERM DDR4-TERM.SchDoc	U_Clock Clock.SchDoc	U_POWER_1 POWER_1.SchDoc
U_B64 B64.SchDoc	U_CONFIG CONFIG.SchDoc	U_POWER_2 POWER_2.SchDoc
U_B65 B65.SchDoc	U_DDR4-RAM DDR4-RAM.SchDoc	U_POWER_4 POWER_3.SchDoc
U_B66 B66.SchDoc	U_DDR4-RAM_2 DDR4-RAM_2.SchDoc	U_REV_CH Revision Changes.SchDoc
U_B_GT B_GT.SchDoc	U_DDR4-RAM_3 DDR4-RAM_3.SchDoc	U_OVERVIEW TE0813-Overview.SchDoc
U_PD Power_Diagram.SchDoc	U_DDR4-RAM_4 DDR4-RAM_4.SchDoc	

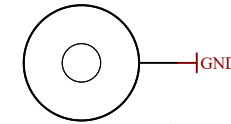
Special notes:



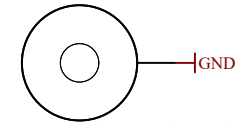
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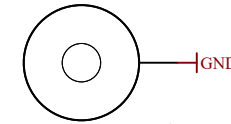
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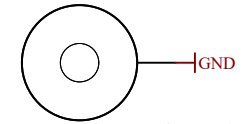
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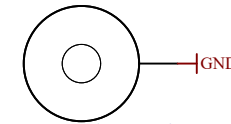
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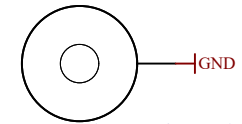
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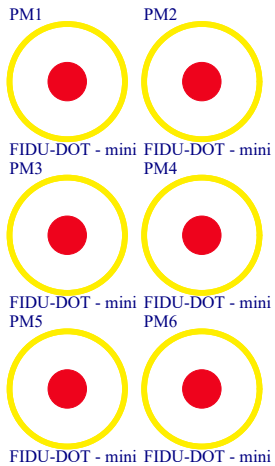
Mount.Hole 3.2mm für Unterlegscheibe



Mount.Hole 3.2mm für Unterlegscheibe



Mount.Hole 3.2mm für Unterlegscheibe



MECH1

TE Address Overlay

LOGO ADDRESS


LOGO1

TE Logo PRINT Layer

LOGO PRINT

Serial
Serial
Serialnumber 6,3 x 6.3mm

Assembly variant	4DE21-A
Created by	ED
Modified by	ED
Modified at	2021-07-09
SVN Revision	12304 [Locally Modified]

			Title: TE0813	
			A4	Number: TE0813 4DE21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT		Page 4 of 30
Filename: TE0813.SchDoc				

1

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A

A

B

B

C

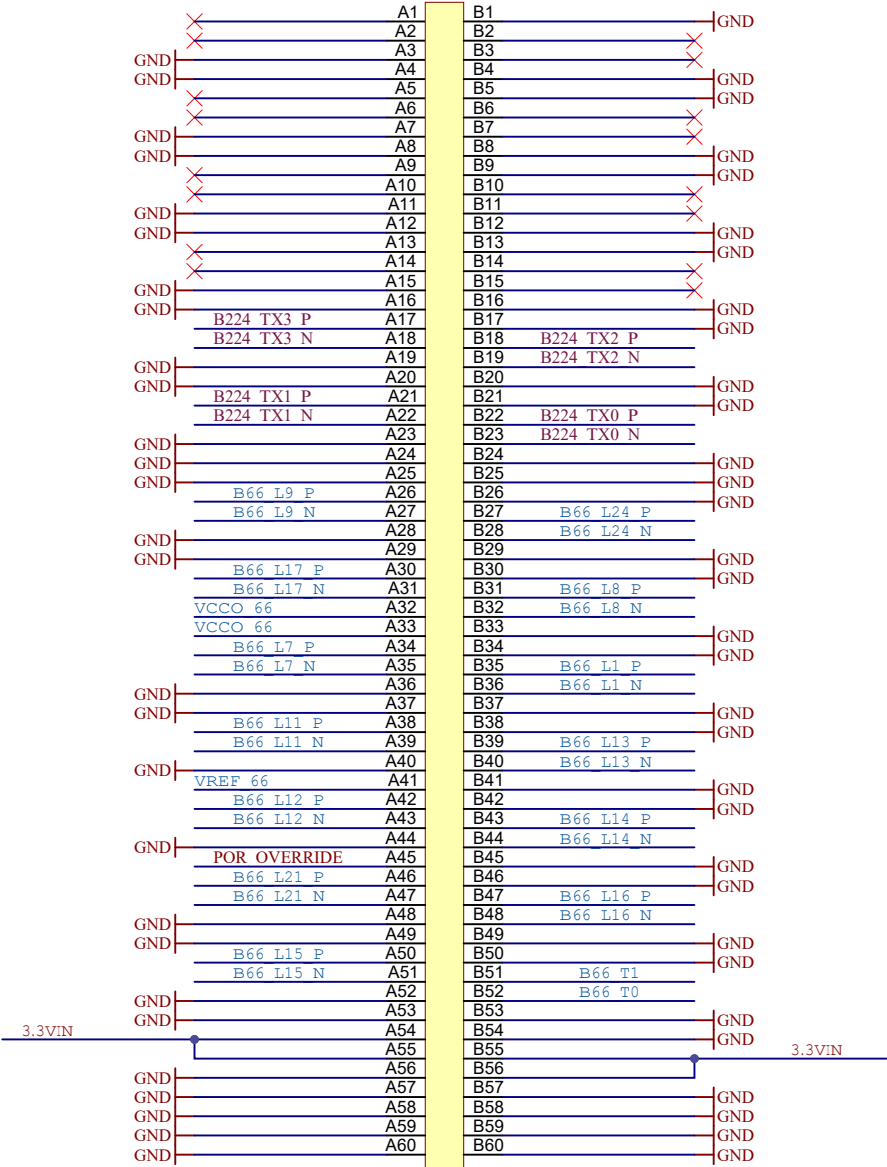
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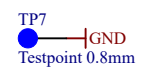
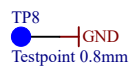
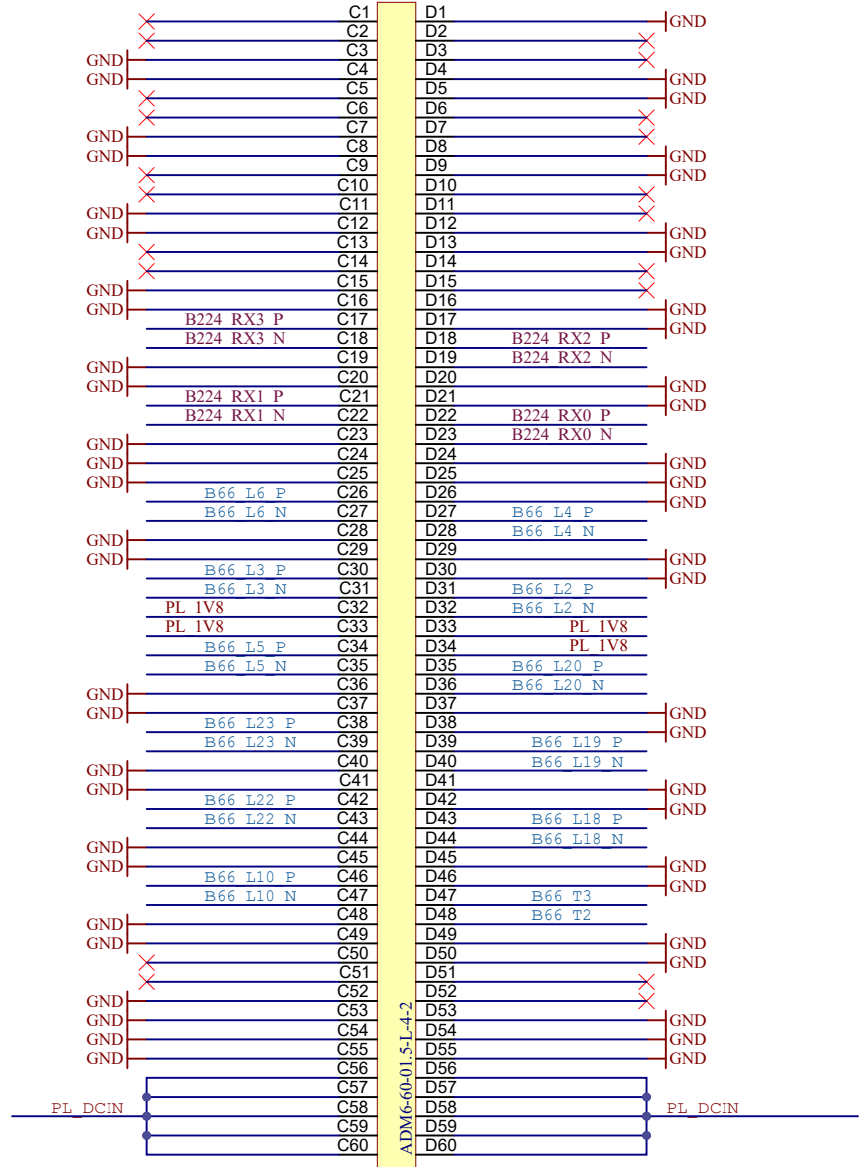
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JM1A

JM1B



ADM6-60-01.5-L-4-2



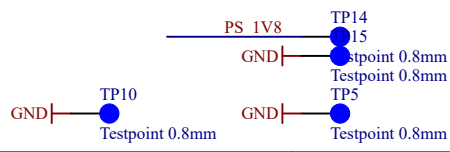
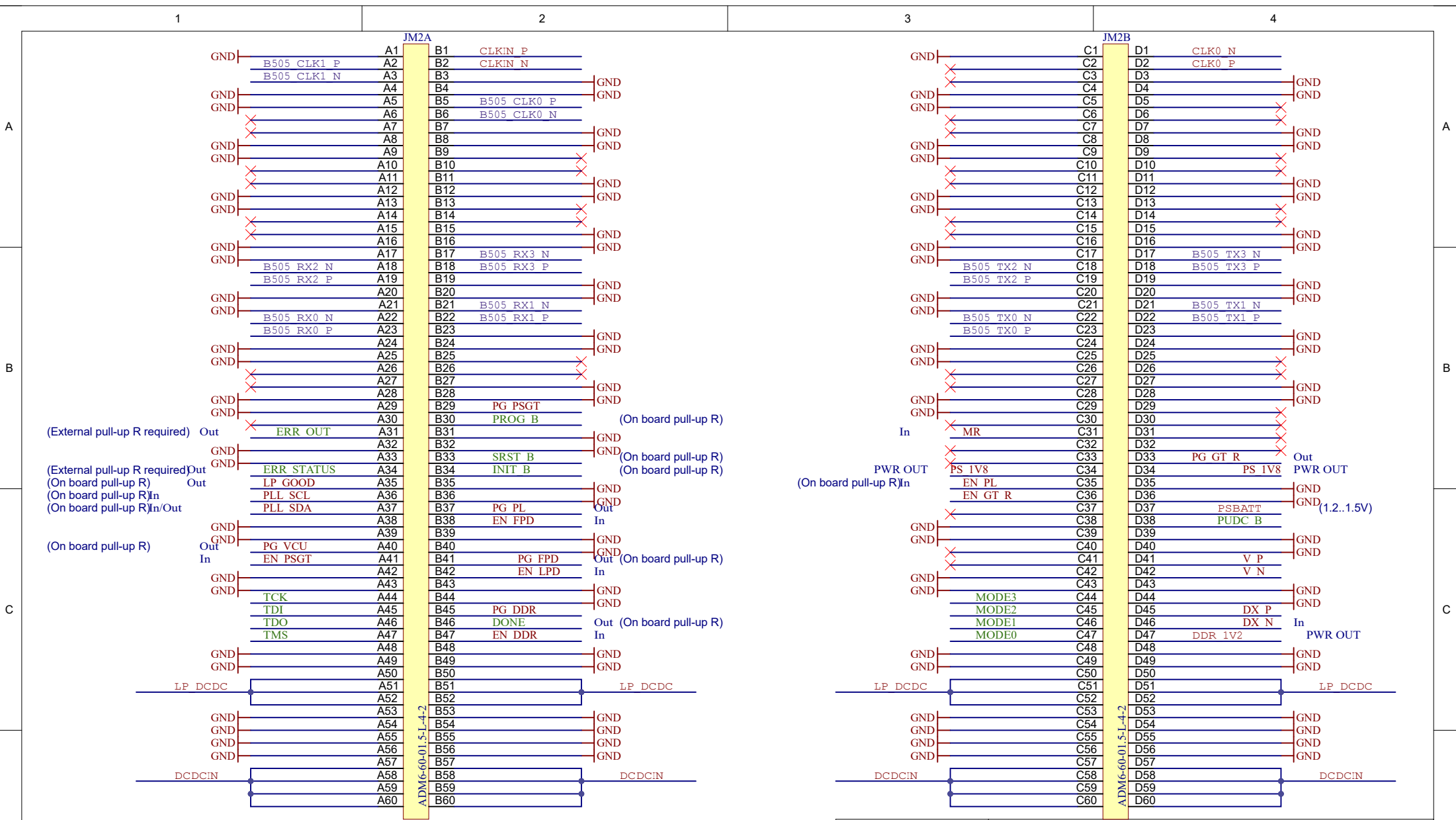
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A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 5 of 30
Filename: J1.SchDoc		

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Title: TE0813 - Connector J2

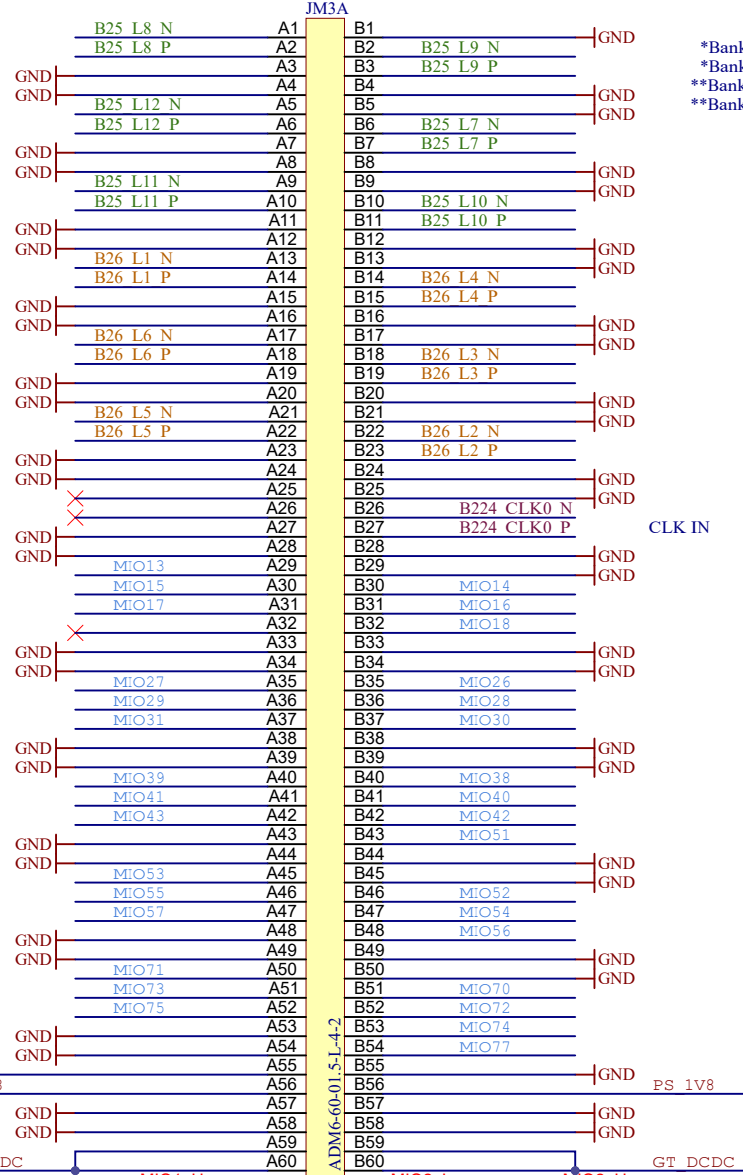
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 6 of 30
Filename: J2.SchDoc		

1

2

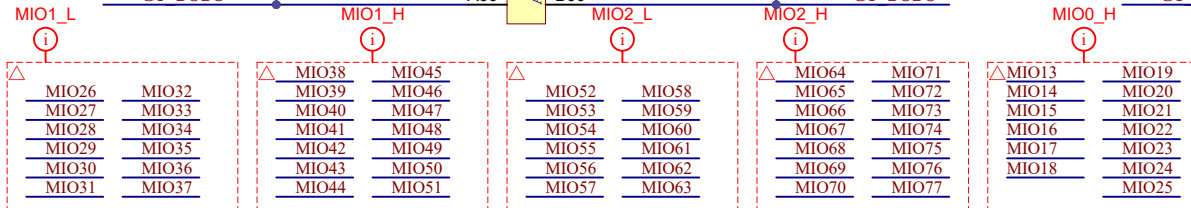
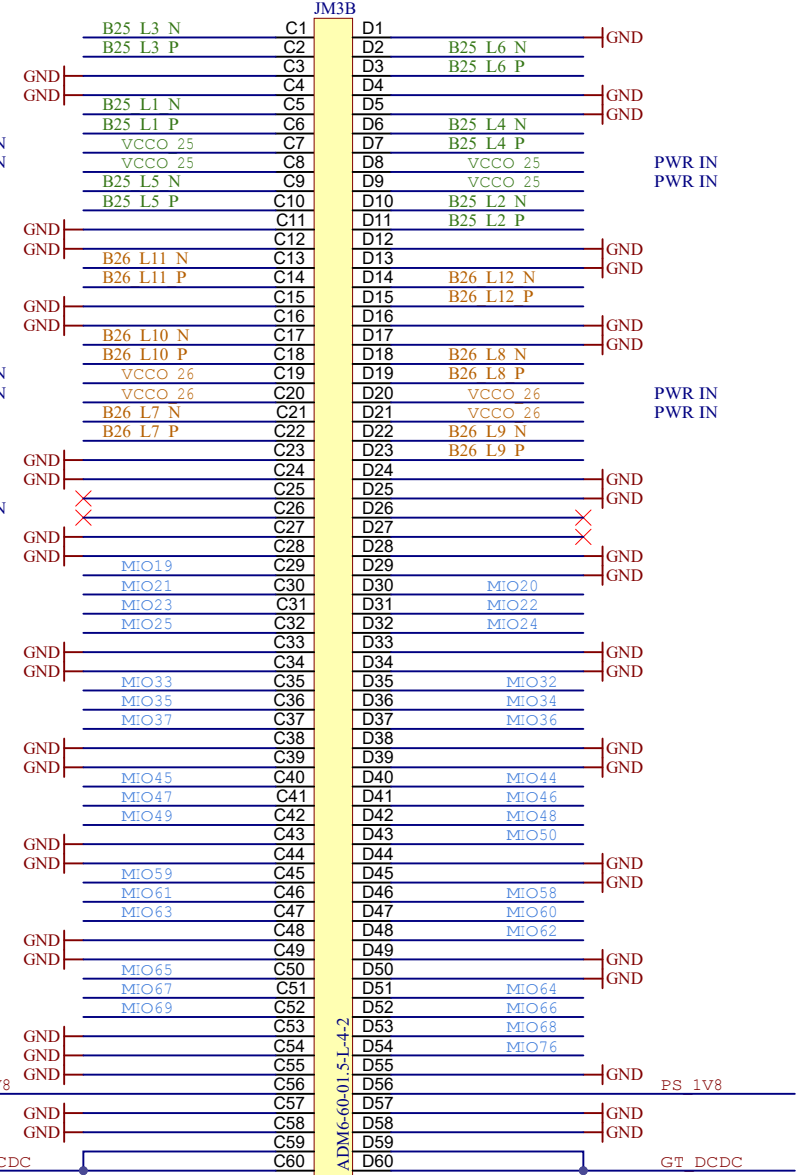
3

4



*Bank 25 for XCZU2/3
 *Bank 45 for XCZU4/6
 **Bank 26 for XCZU2/3
 **Bank 46 for XCZU4/5

CLK IN



Title: TE0813 - Connector J3		
A4	Number: TE0813 4DE21-A	Rev. 01
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Filename: J3.SchDoc		

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A

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B

B

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C

D

D

		JM4A		
	B64 T1	A1	B1	
	B64 T0	A2	B2	B64 T3
	B64 L24 N	A3	B3	
	B64 L24 P	A4	B4	
GND		A5	B5	GND
	B64 L22 N	A6	B6	GND
	B64 L22 P	A7	B7	GND
	B64 L15 N	A8	B8	GND
	B64 L15 P	A9	B9	GND
	B64 L20 N	A10	B10	GND
	B64 L20 P	A11	B11	GND
GND		A12	B12	GND
	B64 L19 N	A13	B13	GND
	B64 L19 P	A14	B14	GND
	B64 L21 N	A15	B15	GND
	B64 L21 P	A16	B16	GND
GND		A17	B17	GND
	B64 L23 N	A18	B18	GND
	B64 L23 P	A19	B19	GND
	B64 L16 N	A20	B20	GND
	B64 L16 P	A21	B21	VCCO 64
	B64 L18 N	A22	B22	GND
	B64 L18 P	A23	B23	GND
GND		A24	B24	GND
	B64 L17 N	A25	B25	GND
	B64 L17 P	A26	B26	GND
	B64 L14 N	A27	B27	GND
	B64 L14 P	A28	B28	GND
	B64 L13 N	A29	B29	GND
	B64 L13 P	A30	B30	VREF 64
GND		A31	B31	GND
	B64 L10 N	A32	B32	GND
	B64 L10 P	A33	B33	GND
	B64 L11 N	A34	B34	GND
	B64 L11 P	A35	B35	GND
	B64 L9 N	A36	B36	GND
	B64 L9 P	A37	B37	GND
GND		A38	B38	GND
	B64 L6 N	A39	B39	VCCO 64
	B64 L6 P	A40	B40	GND
	B64 L5 N	A41	B41	GND
	B64 L5 P	A42	B42	GND
	B64 L4 N	A43	B43	GND
	B64 L4 P	A44	B44	GND
GND		A45	B45	GND
	B64 L3 N	A46	B46	GND
	B64 L3 P	A47	B47	GND
	B64 L12 N	A48	B48	GND
	B64 L12 P	A49	B49	GND
	B64 L2 N	A50	B50	GND
	B64 L2 P	A51	B51	GND
GND		A52	B52	GND
	B64 L1 N	A53	B53	GND
	B64 L1 P	A54	B54	GND
	B64 L8 N	A55	B55	GND
	B64 L8 P	A56	B56	GND
	B64 L7 N	A57	B57	GND
	B64 L7 P	A58	B58	GND
GND		A59	B59	GND
GND		A60	B60	GND

ADM6-60-01.5-L-4-2

		JM4B		
	B65 T3	C1	D1	B65 T1
	B65 T2	C2	D2	B65 T0
		C3	D3	B65 L20 N
GND		C4	D4	B65 L20 P
GND		C5	D5	
GND		C6	D6	B65 L24 N
GND		C7	D7	B65 L24 P
GND		C8	D8	B65 L22 N
GND		C9	D9	B65 L22 P
GND		C10	D10	B65 L23 N
GND		C11	D11	B65 L23 P
GND		C12	D12	
GND		C13	D13	B65 L17 N
GND		C14	D14	B65 L17 P
GND		C15	D15	B65 L21 N
GND		C16	D16	B65 L21 P
GND		C17	D17	
GND		C18	D18	B65 L19 N
GND		C19	D19	B65 L19 P
GND		C20	D20	B65 L18 N
	VCCO 65	C21	D21	B65 L18 P
		C22	D22	B65 L15 N
GND		C23	D23	B65 L15 P
GND		C24	D24	
GND		C25	D25	B65 L12 N
GND		C26	D26	B65 L12 P
GND		C27	D27	B65 L7 N
GND		C28	D28	B65 L7 P
GND		C29	D29	B65 L11 N
	VREF 65	C30	D30	B65 L11 P
GND		C31	D31	
GND		C32	D32	B65 L6 N
GND		C33	D33	B65 L6 P
GND		C34	D34	B65 L13 N
GND		C35	D35	B65 L13 P
GND		C36	D36	B65 L10 N
GND		C37	D37	B65 L10 P
GND		C38	D38	
	VCCO 65	C39	D39	B65 L14 N
GND		C40	D40	B65 L14 P
GND		C41	D41	B65 L8 N
GND		C42	D42	B65 L8 P
GND		C43	D43	B65 L9 N
GND		C44	D44	B65 L9 P
GND		C45	D45	
GND		C46	D46	B65 L4 N
GND		C47	D47	B65 L4 P
GND		C48	D48	B65 L5 N
GND		C49	D49	B65 L5 P
GND		C50	D50	B65 L16 N
GND		C51	D51	B65 L16 P
GND		C52	D52	
GND		C53	D53	B65 L2 N
GND		C54	D54	B65 L2 P
GND		C55	D55	B65 L1 N
GND		C56	D56	B65 L1 P
GND		C57	D57	B65 L3 N
GND		C58	D58	B65 L3 P
GND		C59	D59	
GND		C60	D60	

ADM6-60-01.5-L-4-2



Title:

TE0813 - Connector J4

A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 8 of 30
Filename: J4.SchDoc		

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A

B

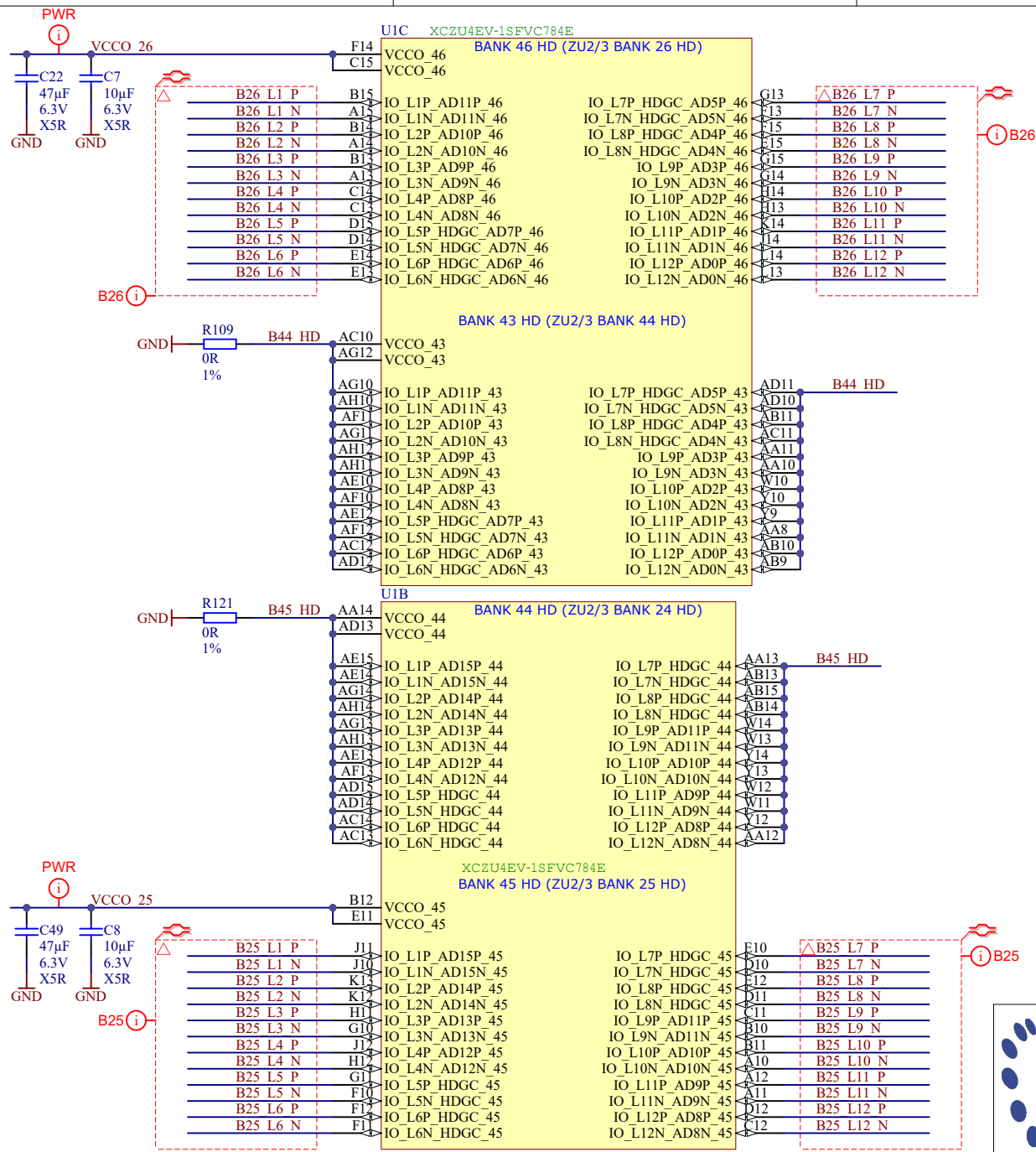
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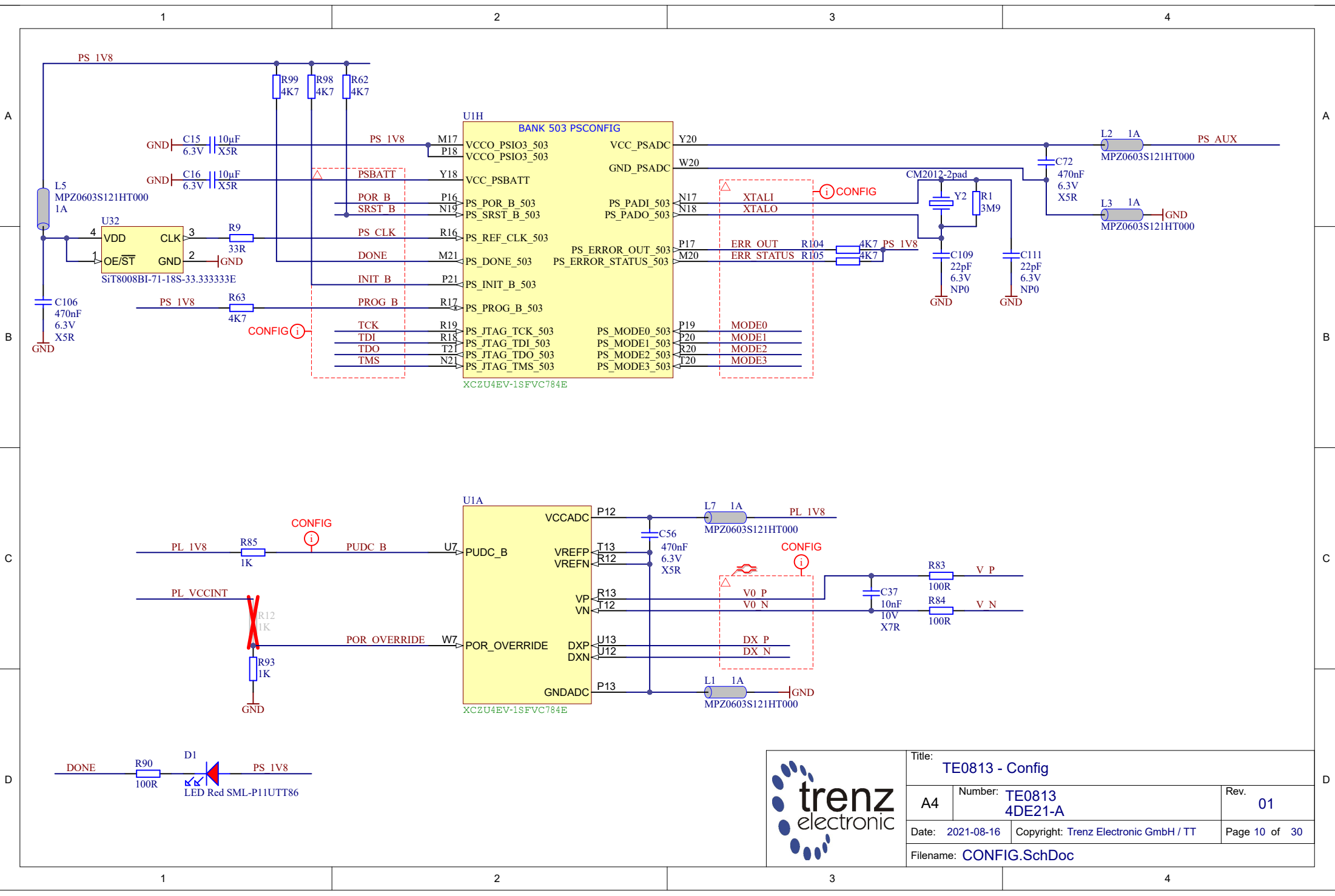
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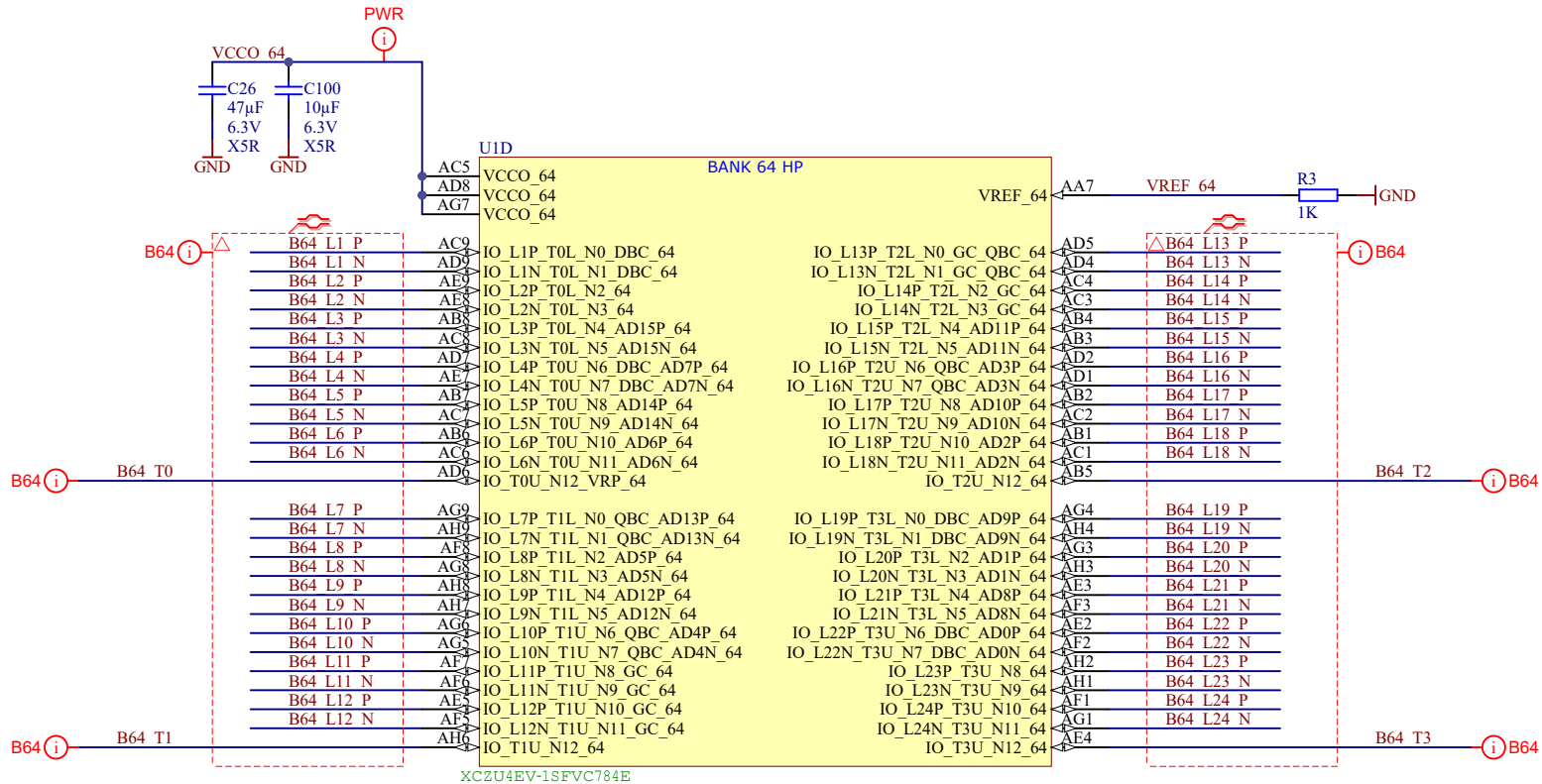
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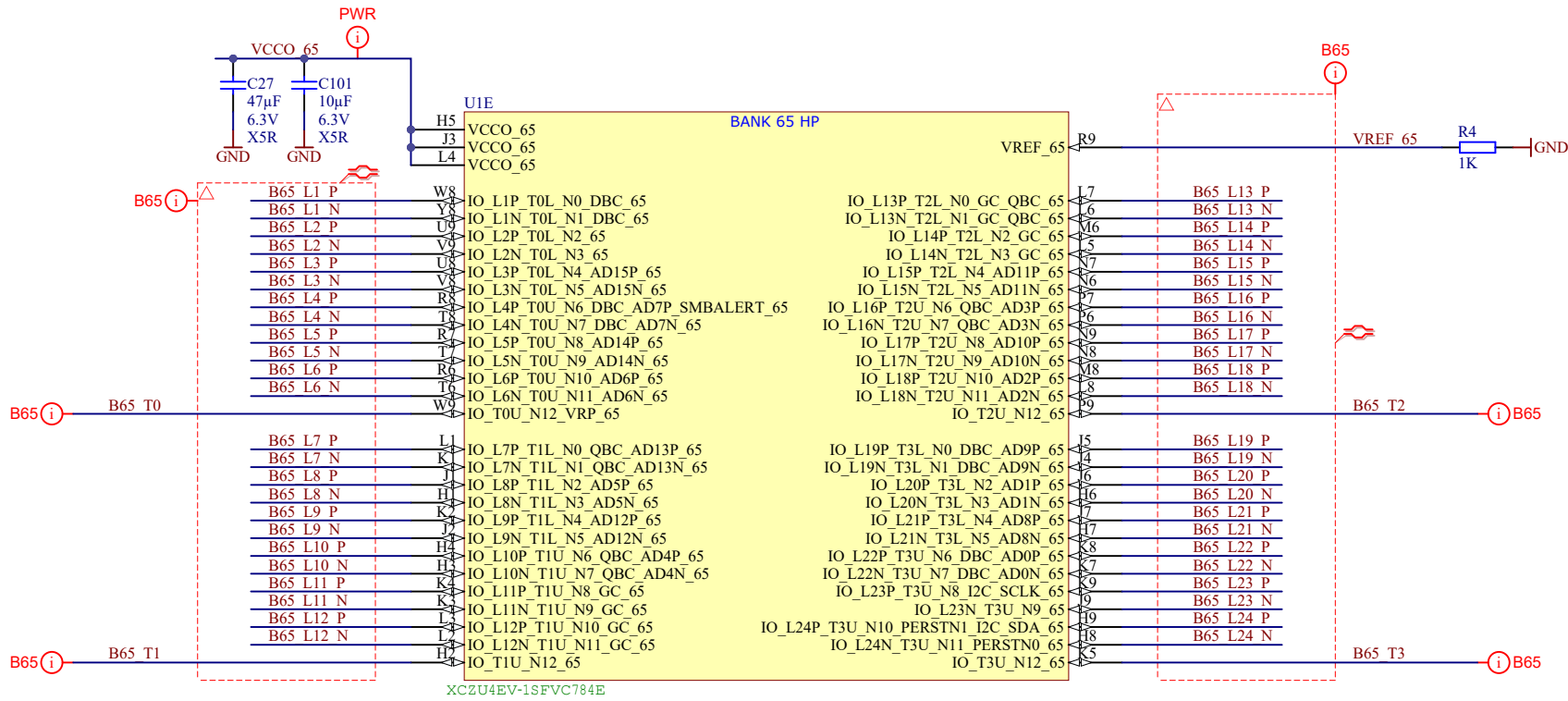
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 9 of 30
Filename: B_HD.SchDoc		



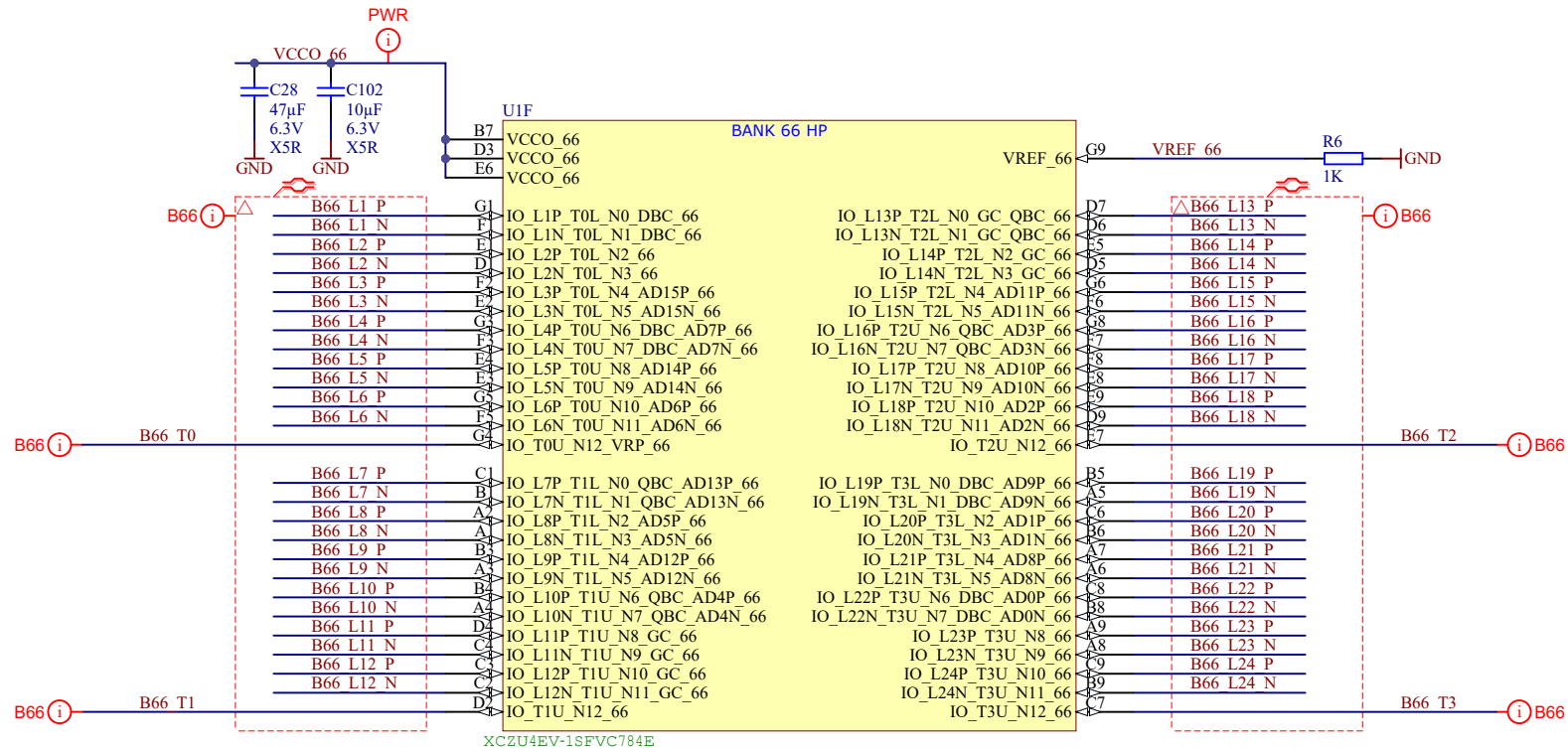

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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 10 of 30
Filename: CONFIG.SchDoc		



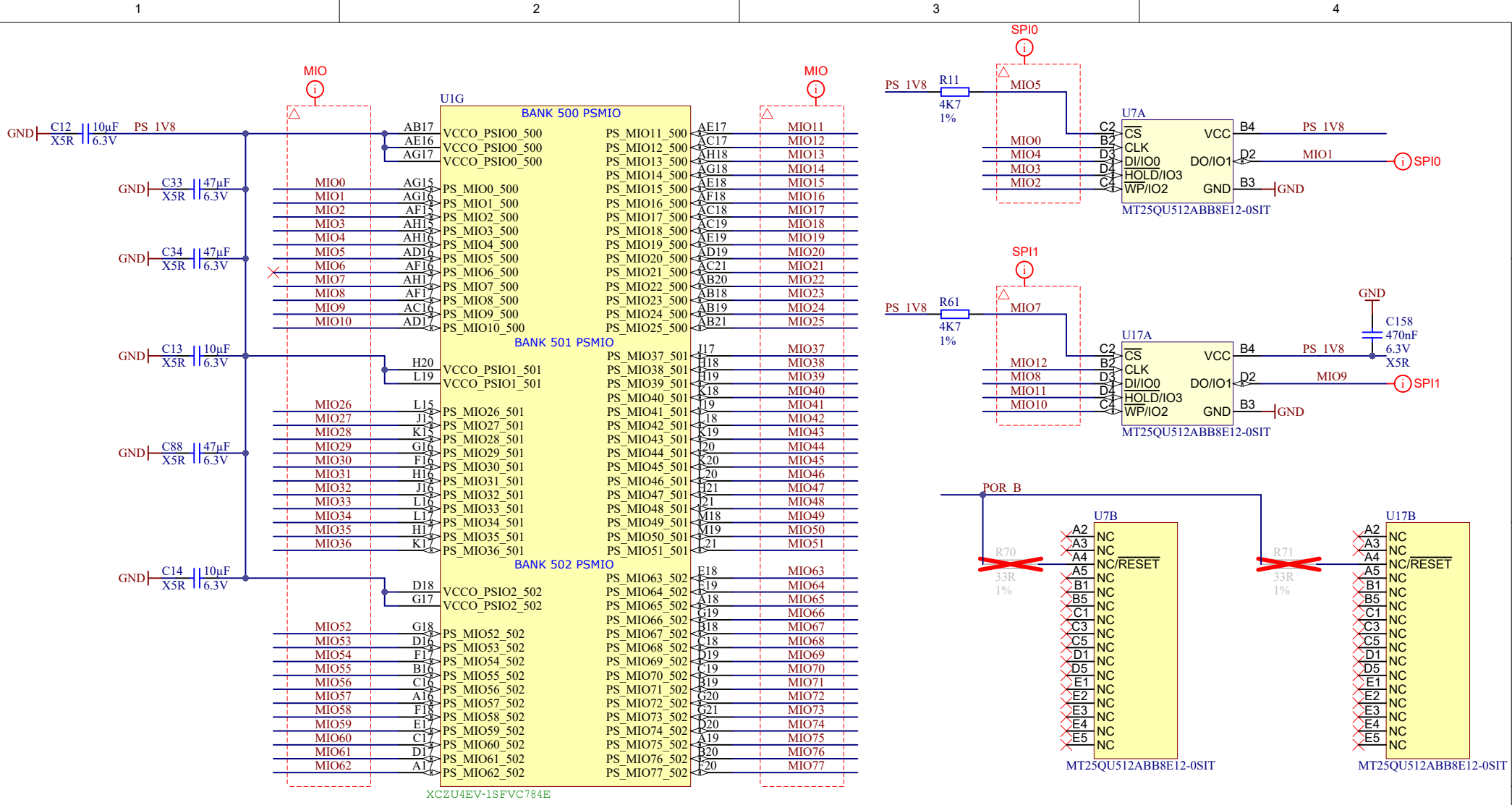
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 11 of 30
Filename: B64.SchDoc		



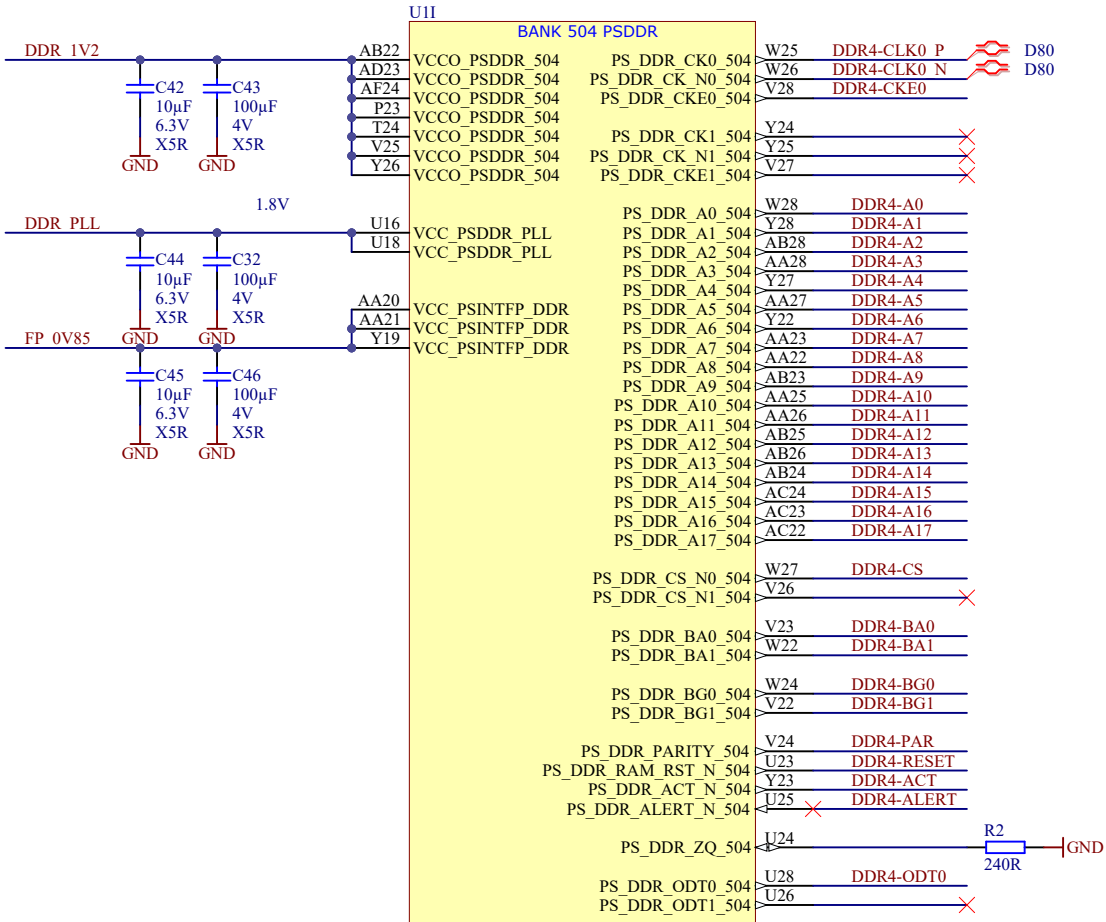
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 12 of 30
Filename: B65.SchDoc		

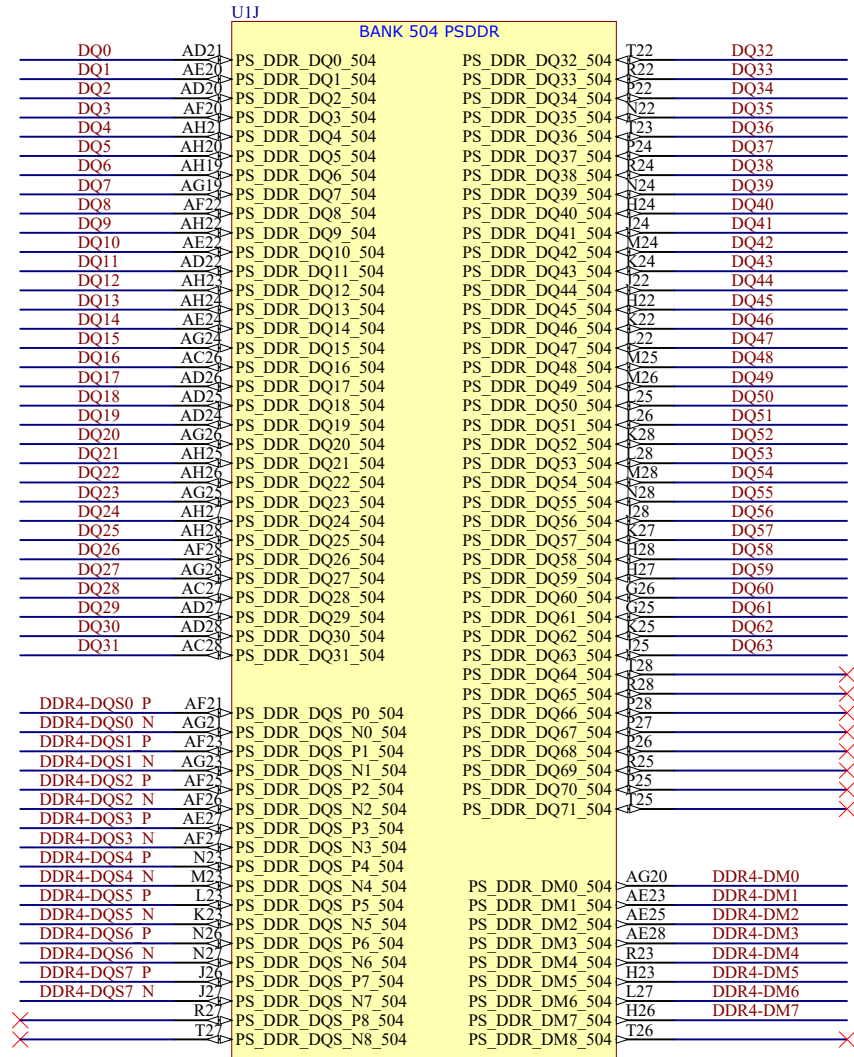
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Filename: B66.SchDoc		



			Title: TE0813 - MIO Banks	
			A4	Number: TE0813 4DE21-A
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Filename: B_MIO.SchDoc				



XC2U4EV-1SFVC784E



XC2U4EV-1SFVC784E



Title: TE0813 - PS_DDR		
A4	Number: TE0813 4DE21-A	Rev. 01
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Filename: PS_DDR.SchDoc		

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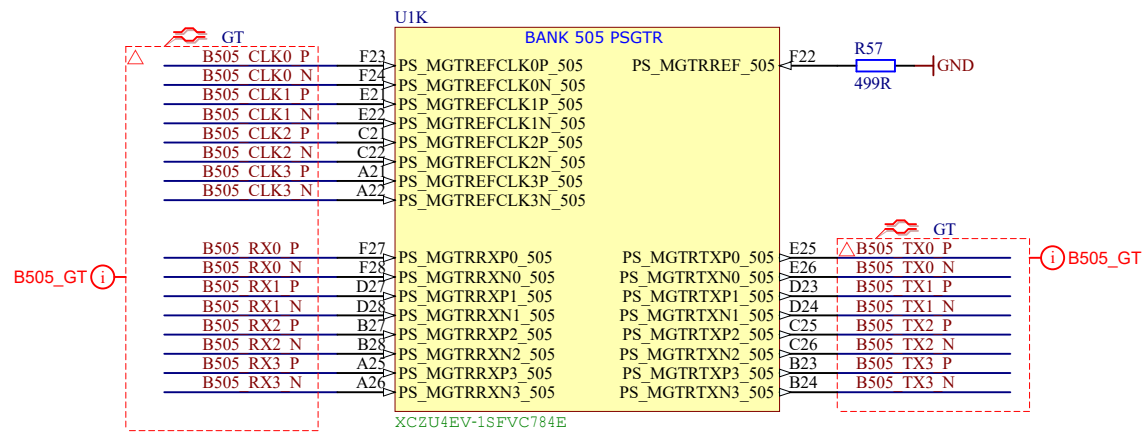
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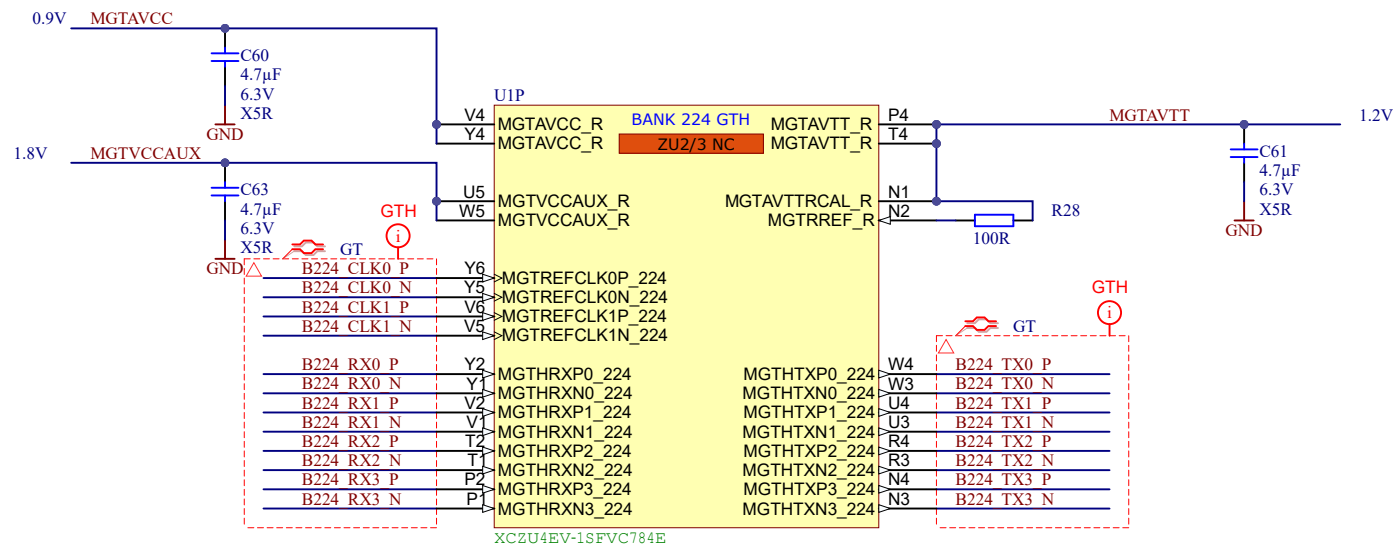
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	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 16 of 30
	Filename: B_PS_GT.SchDoc		


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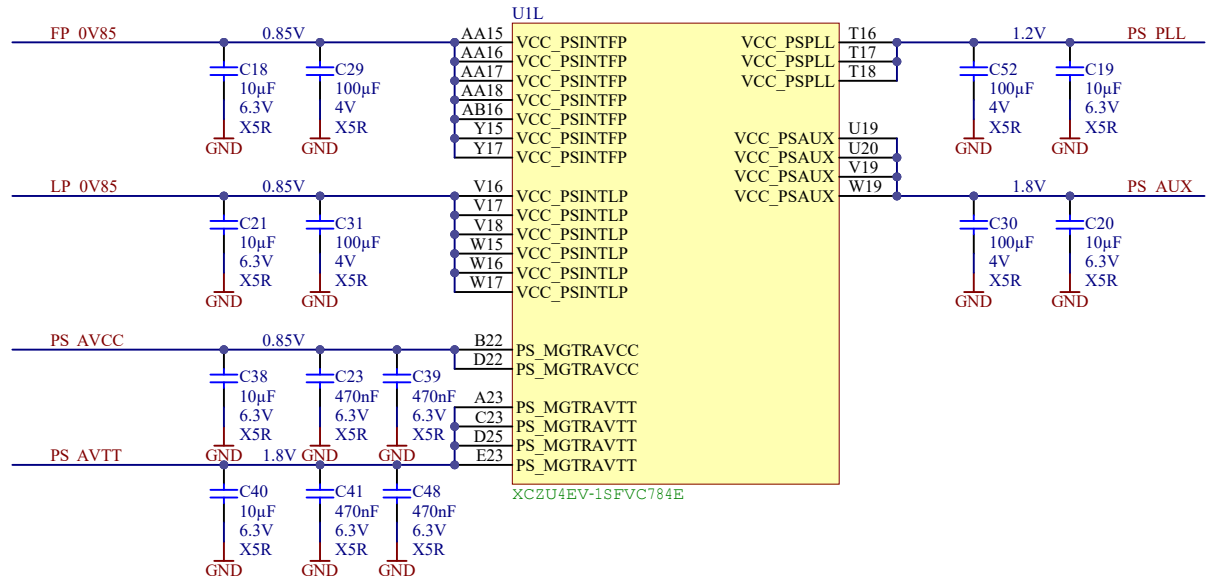
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	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 17 of 30
	Filename: B_GT.SchDoc		



	Title: TE0813 - ZU_PS_POWER		
	A4	Number: TE0813 4DE21-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 18 of 30
	Filename: ZU_PS_POWER.SchDoc		

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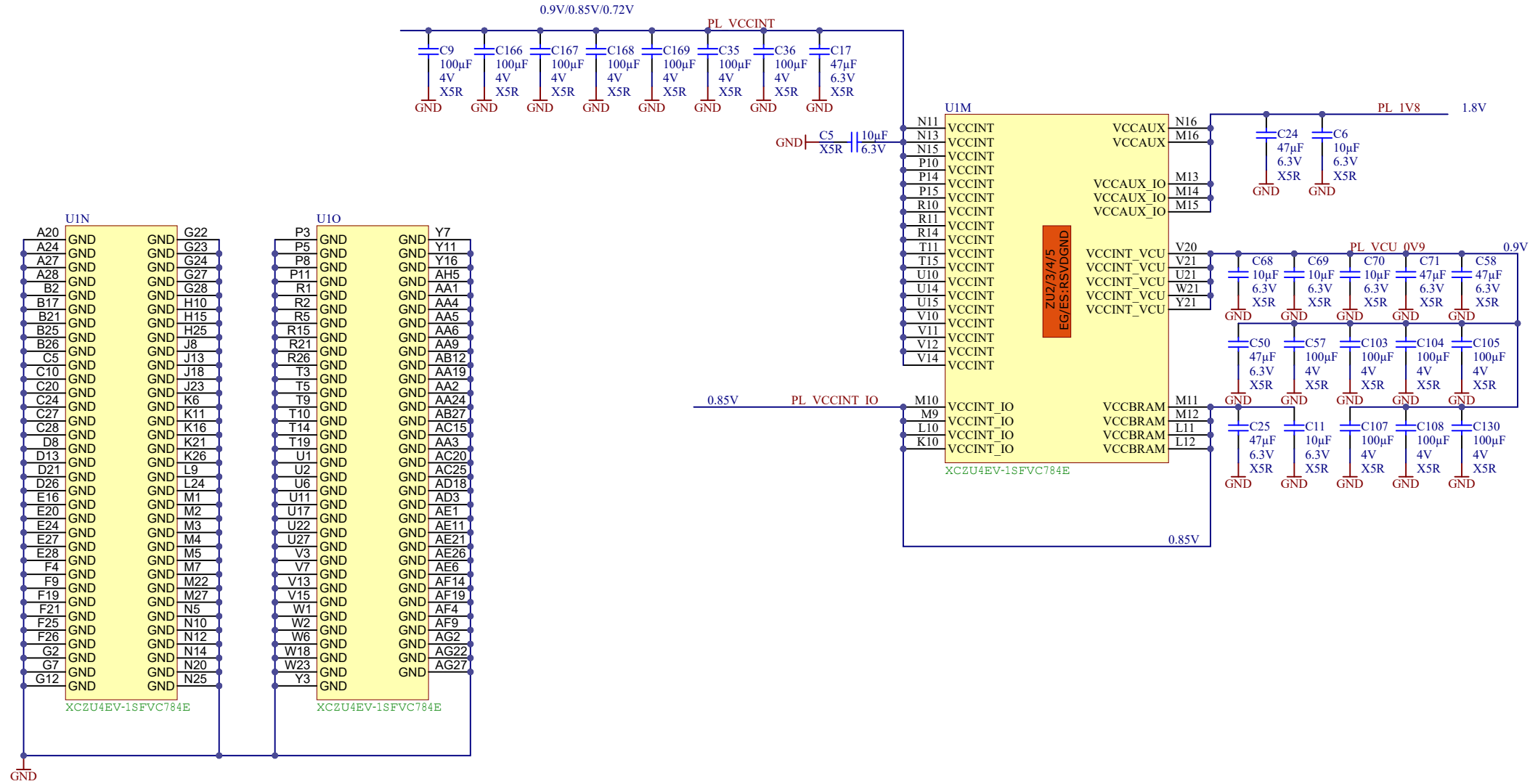
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C

D

D



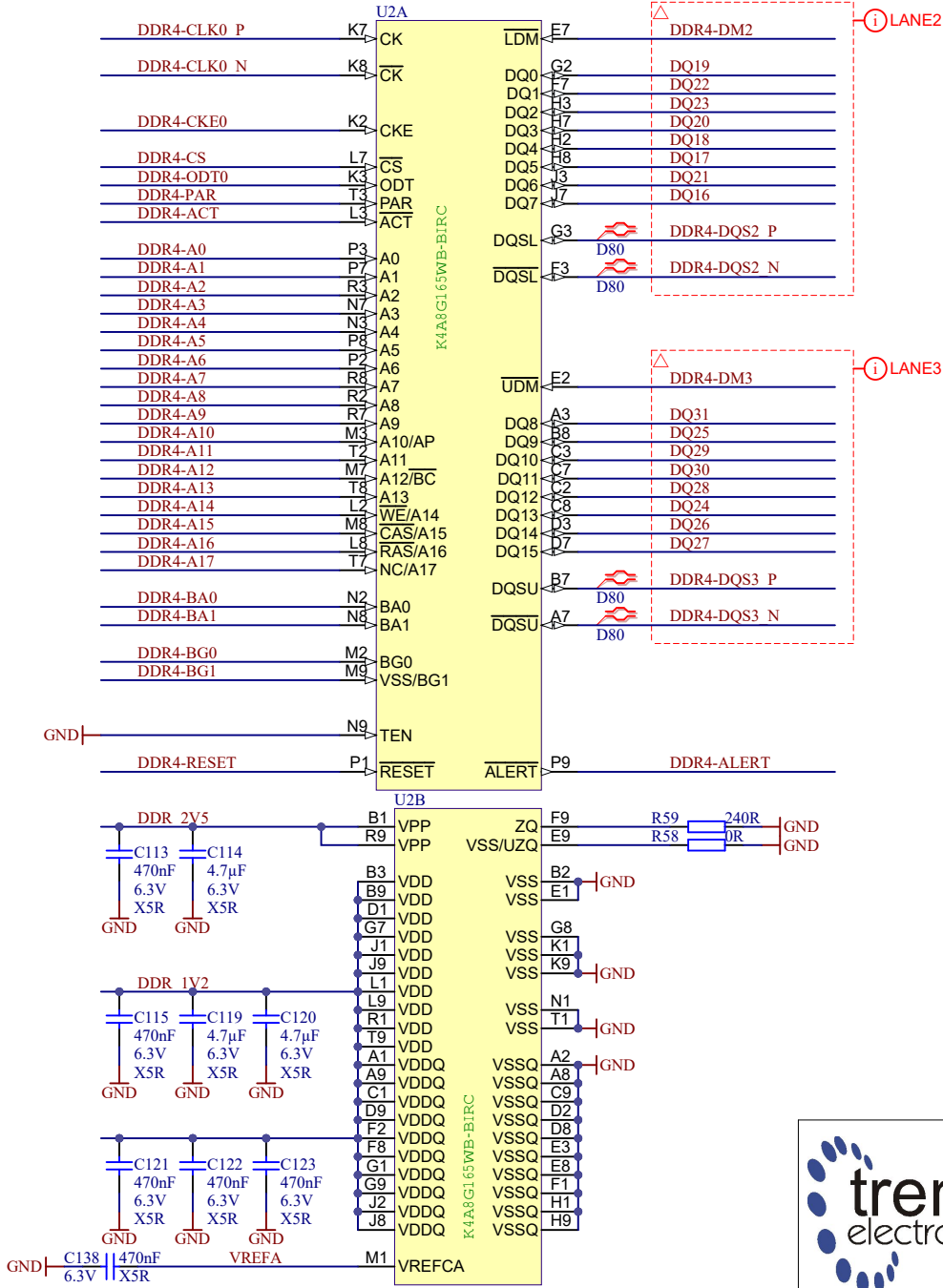
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Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Date: 2021-08-16		Page 19 of 30	
Filename: ZU_POWER.SchDoc			

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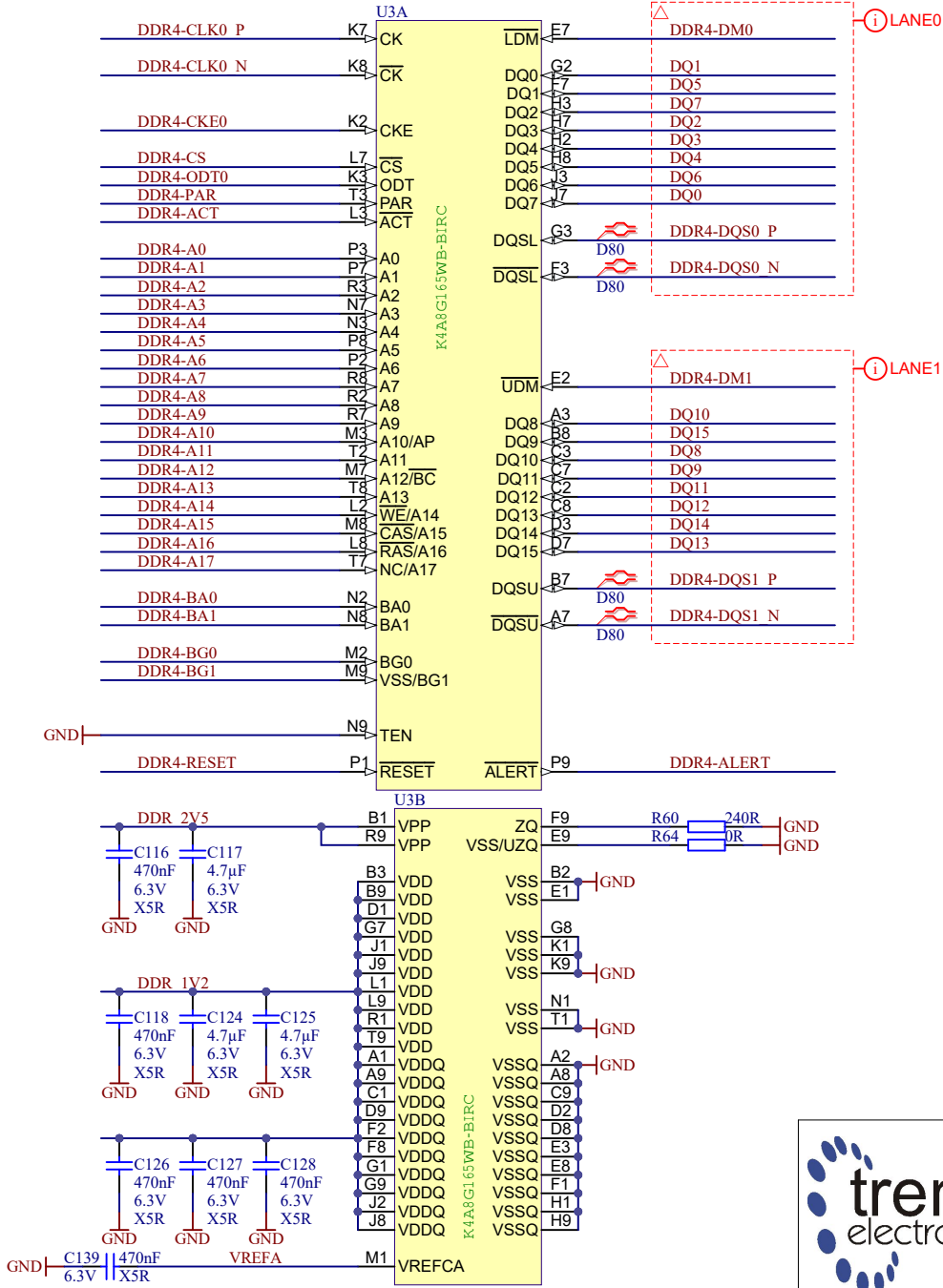
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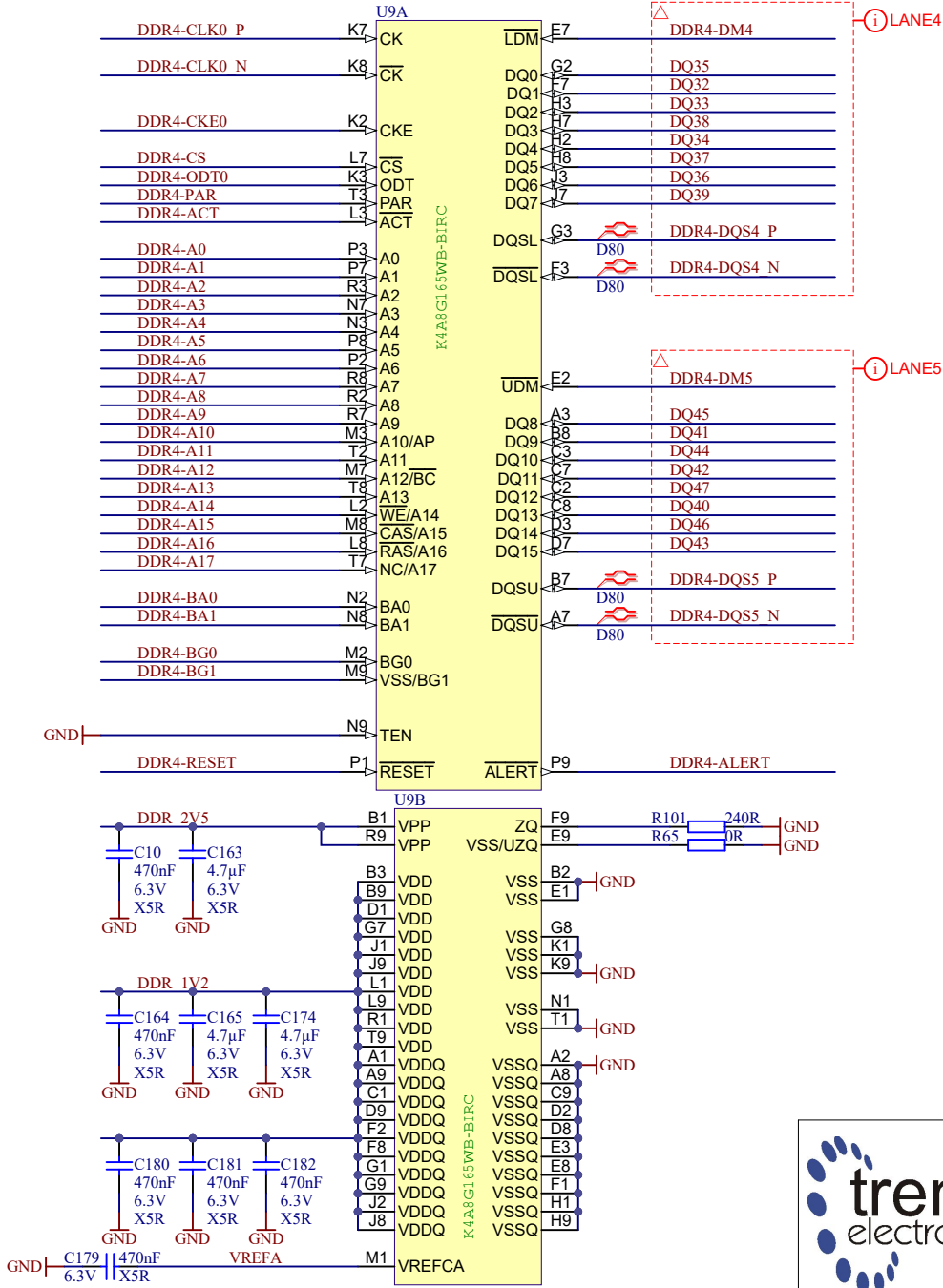

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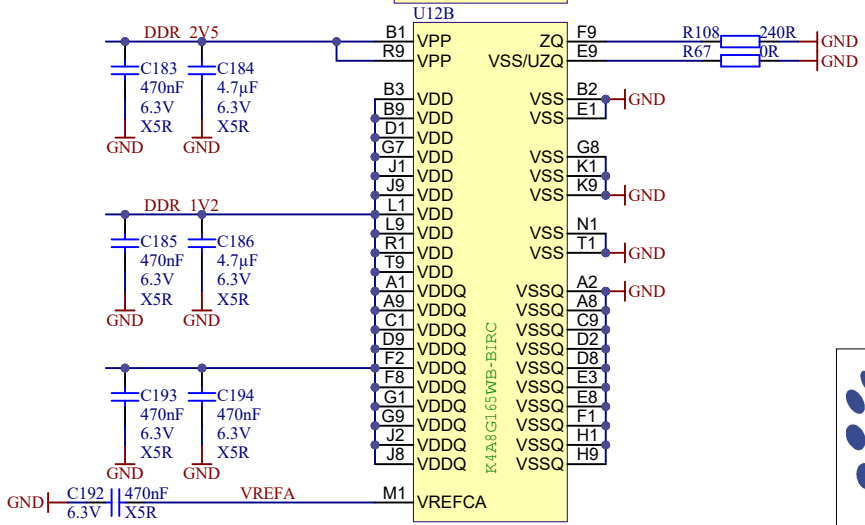
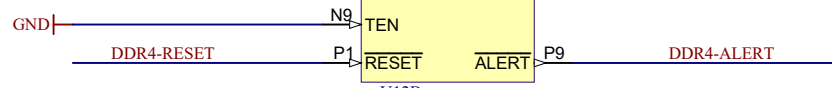
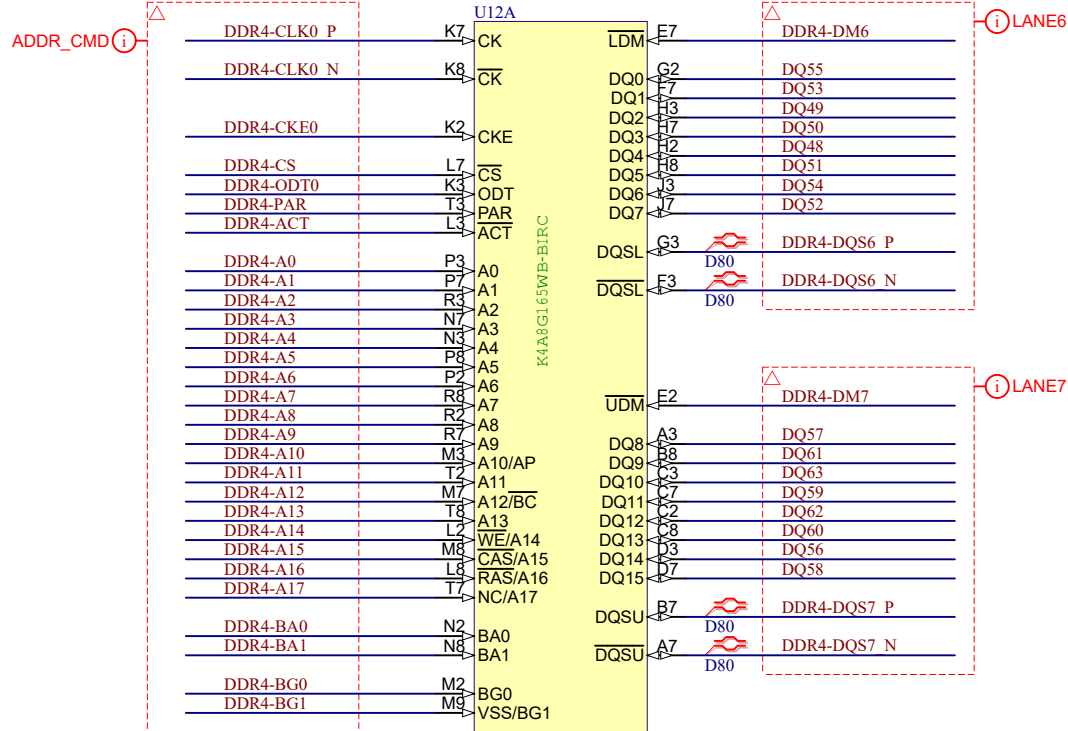

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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 20 of 30
Filename: DDR4-RAM.SchDoc		



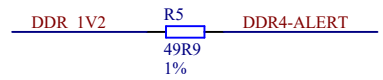
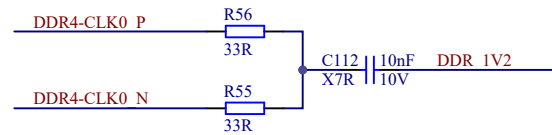
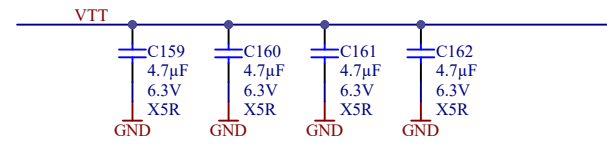
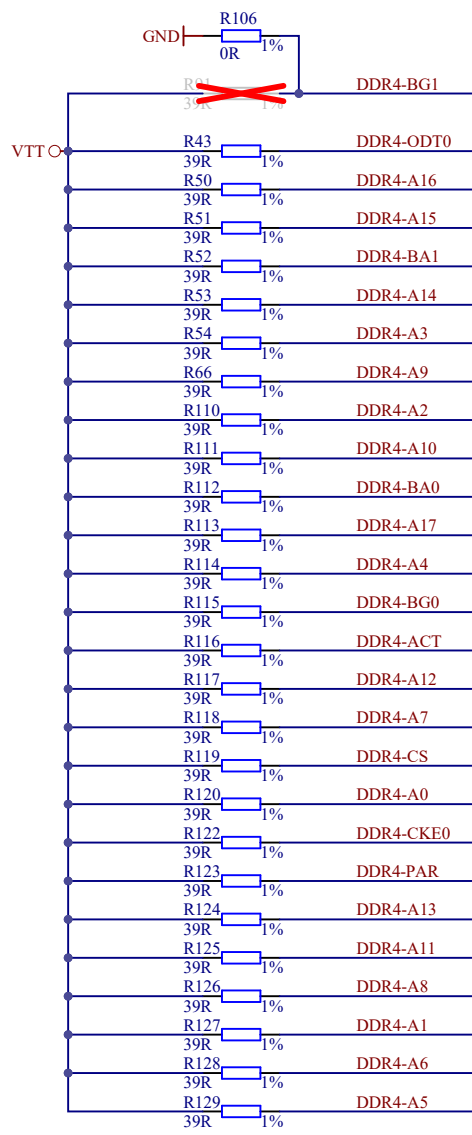
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A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 21 of 30
Filename: DDR4-RAM_2.SchDoc		

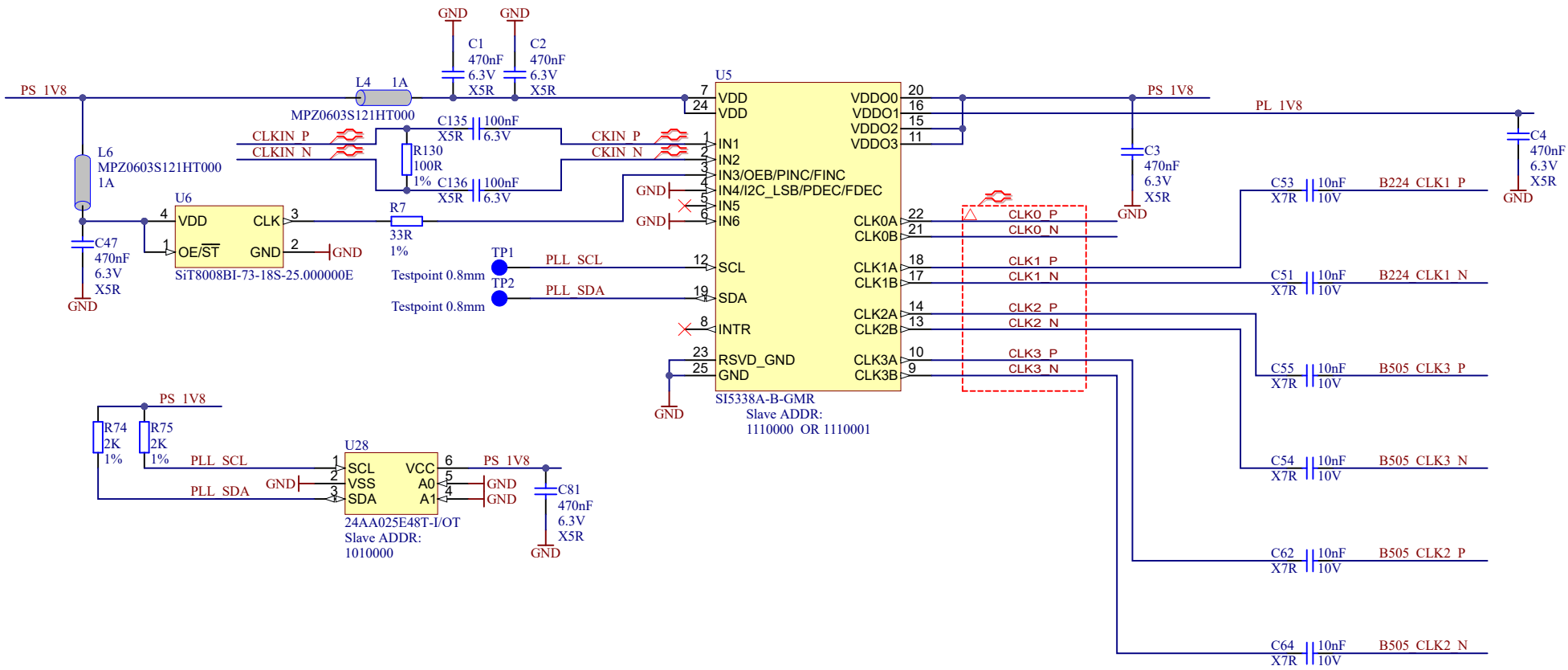
Title: TE0813 - DDR4_3_RAM		
A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 22 of 30
Filename: DDR4-RAM_3.SchDoc		





Title: TE0813 - DDR4_4_RAM		
A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 23 of 30
Filename: DDR4-RAM_4.SchDoc		



Title: TE0813 - DDR4_TERM		
A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 24 of 30
Filename: DDR4-TERM.SchDoc		



		Title: TE0813 - CLOCK	
		A4	Number: TE0813 4DE21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Filename: Clock.SchDoc			

1

2

3

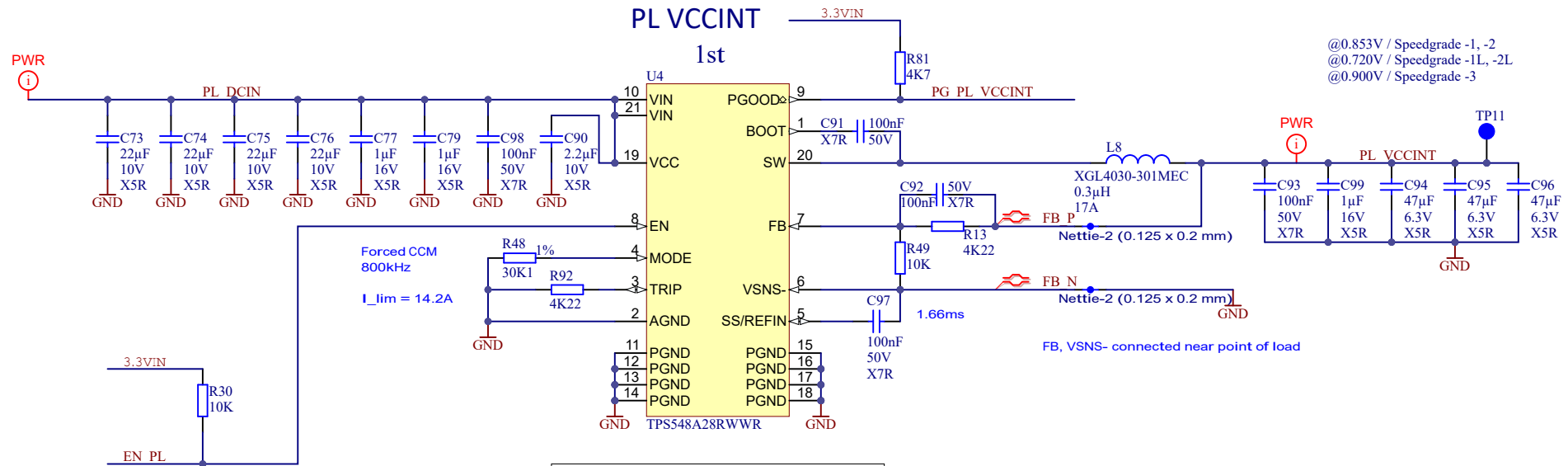
4

1

2

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4



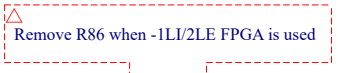
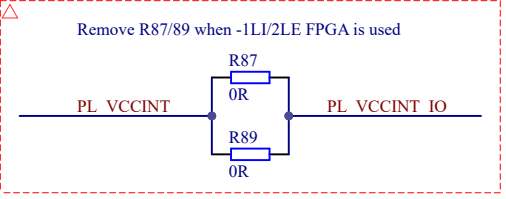
@0.853V / Speedgrade -1, -2
 @0.720V / Speedgrade -1L, -2L
 @0.900V / Speedgrade -3

FPGA Speed grade:

-1L1 / -2LE	R13 - 2K, R49 - 10K	PL_VCCINT = 0.720V
-1 / -2	R13 - 4K22, R49 - 10K	PL_VCCINT = 0.853V
-3E	R13 - 10K, R49 - 20K	PL_VCCINT = 0.900V

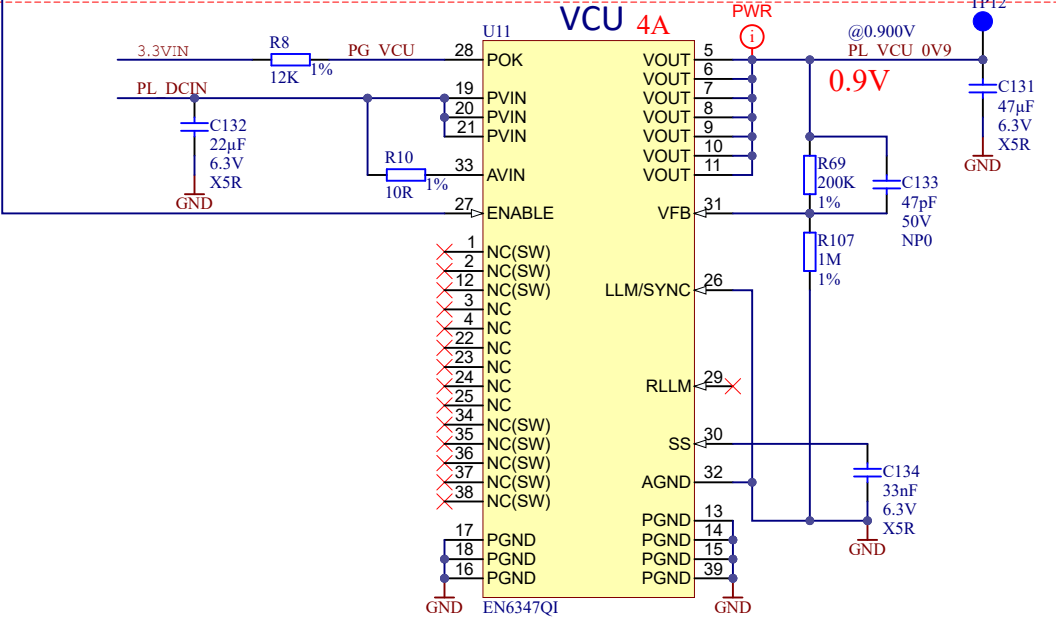
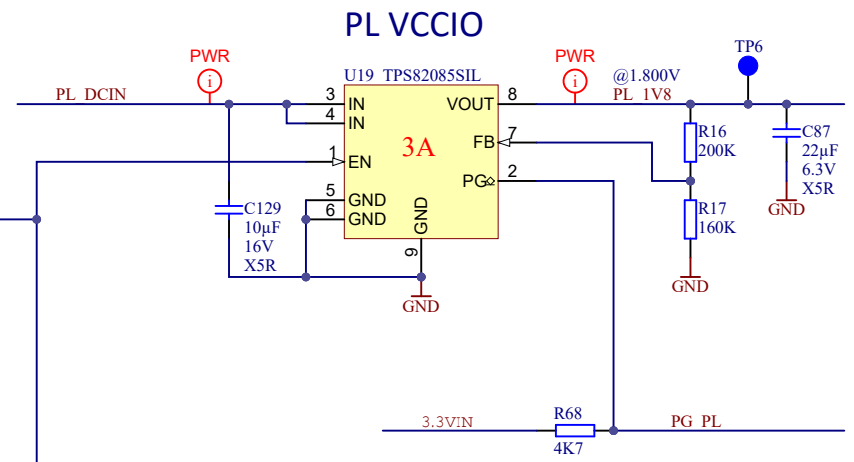
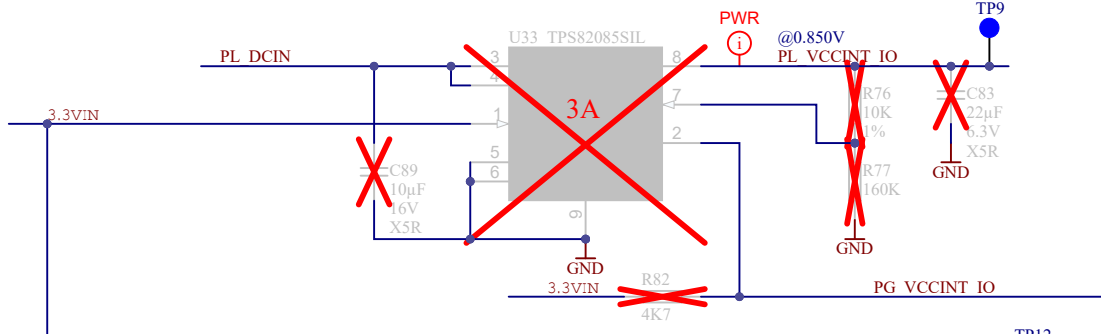
U4 pin compatible with
 -- TPS548B28 (20A)
 -- TPS54JA20 (12A)

	Title: TE0813 - POWER	
	A4	Number: TE0813 4DE21-A
	Date: 2021-08-16	Rev. 01
	Page 26 of 30	
Copyright: Trenz Electronic GmbH / TT		Filename: POWER.SchDoc



VCCINT_IO & VCCBRAM

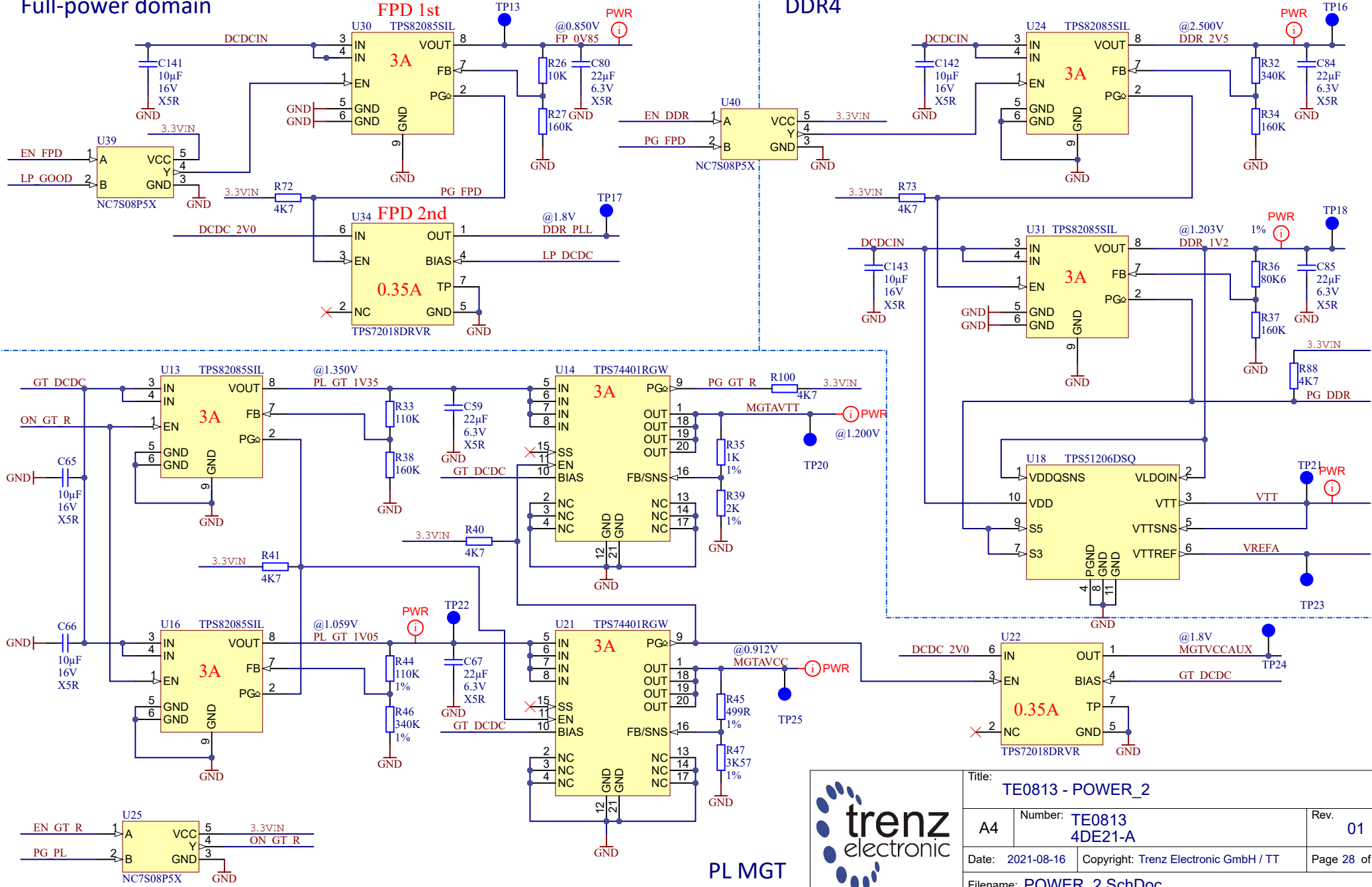
Add U33 when -1L1/2LE FPGA is used



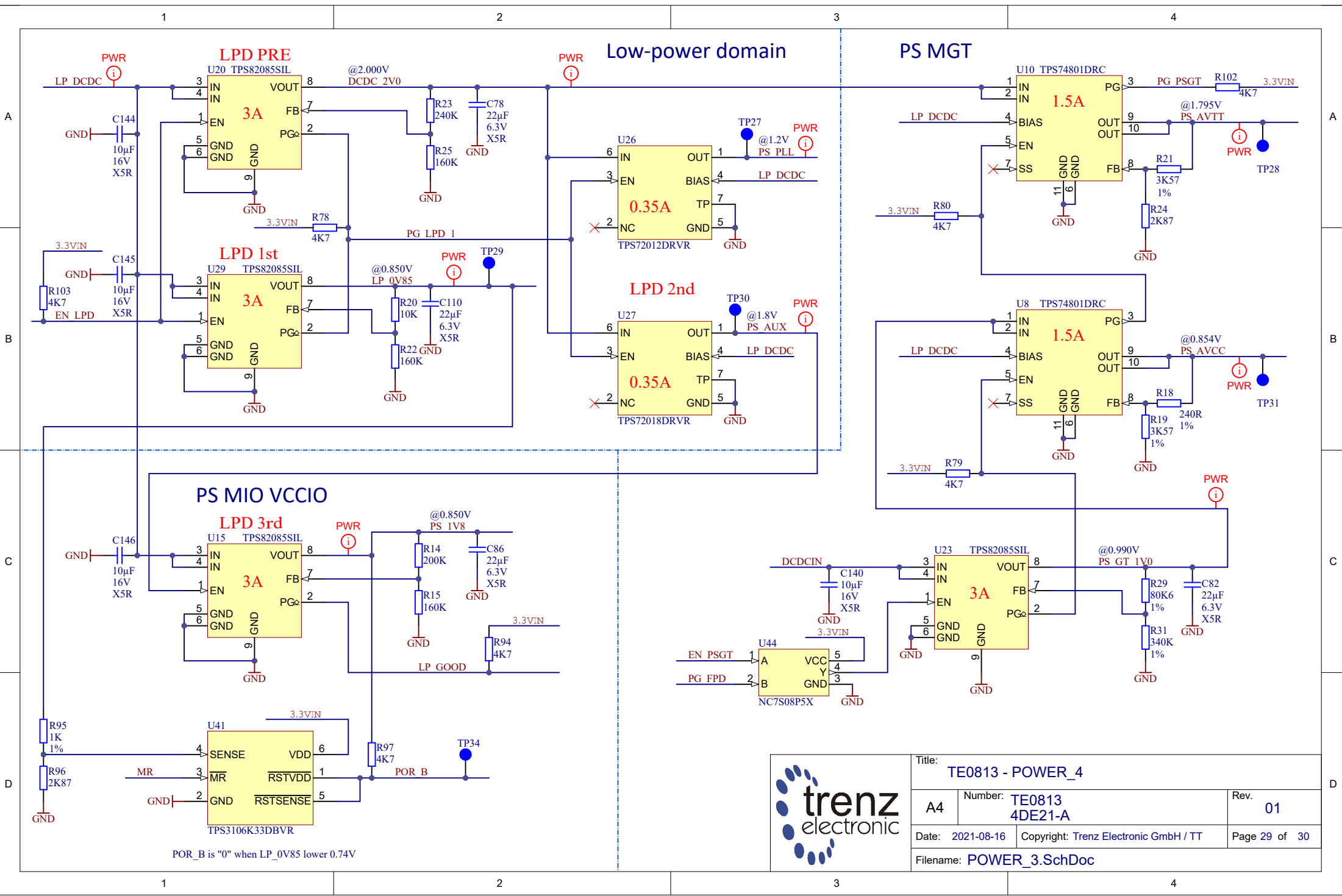
Title: TE0813 - POWER		
A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 27 of 30
Filename: POWER_1.SchDoc		

Full-power domain

DDR4



Title: TE0813 - POWER_2		
A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 28 of 30
Filename: POWER_2.SchDoc		



POR_B is "0" when LP_0V85 lower 0.74V



Title: TE0813 - POWER_4		
A4	Number: TE0813 4DE21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 29 of 30
Filename: POWER_3.SchDoc		

1

2

3

4

A

A

B

B


C

C

D

D

REV	DATE	Description	
-01	2021-05	Initial revision	VT

	Title: TE0813 - Revision History		
	A4	Number: TE0813 4DE21-A	Rev. 01
	Date: 2021-07-26	Copyright: Trenz Electronic GmbH	Page 30 of 30
	Filename: Revision Changes.SchDoc		

1

2

3

4