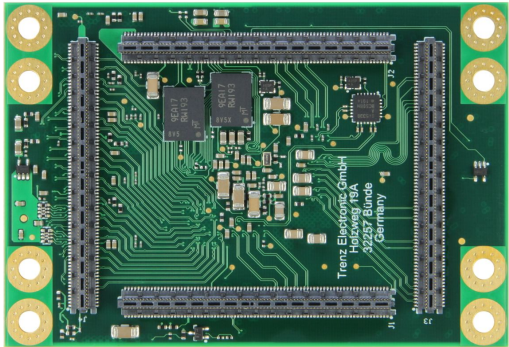
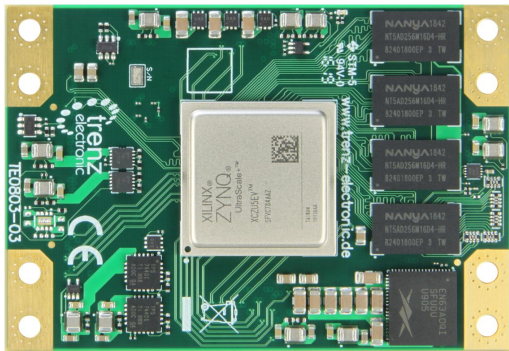




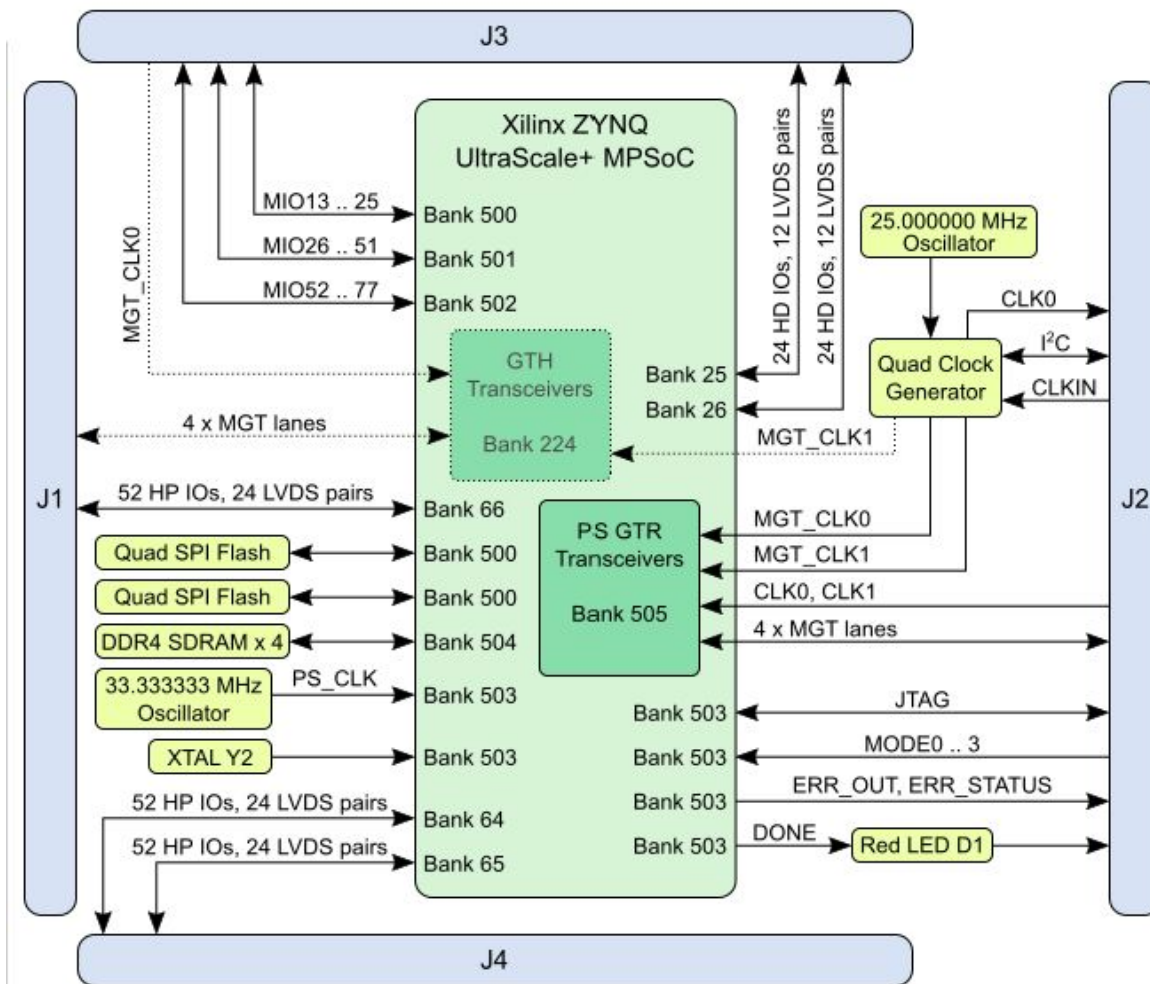
Regarding the usage of our schematics and alike documentation for Trenz module TE0813.

Project is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation, even if the design is just adapted or modified. TE0813 is protected under such right and in case of plagiarism we will have to do anything necessary in order to protect our assets.

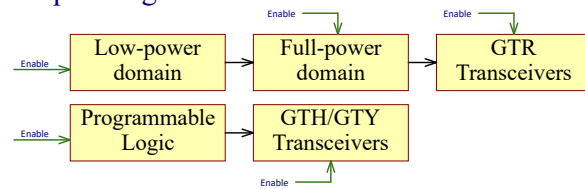
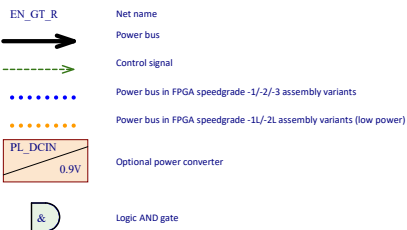
Schematics and other handouts serve for informational purposes only!

	Title: TE0813		
	A4	Number: TE0813 4BI21-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 4BI21-A	Rev. 01
Date: 2021-08-16		Copyright: 2015 Trenz Electronic GmbH	
Filename: TE0813-Overview.SchDoc		Page 2 of 30	

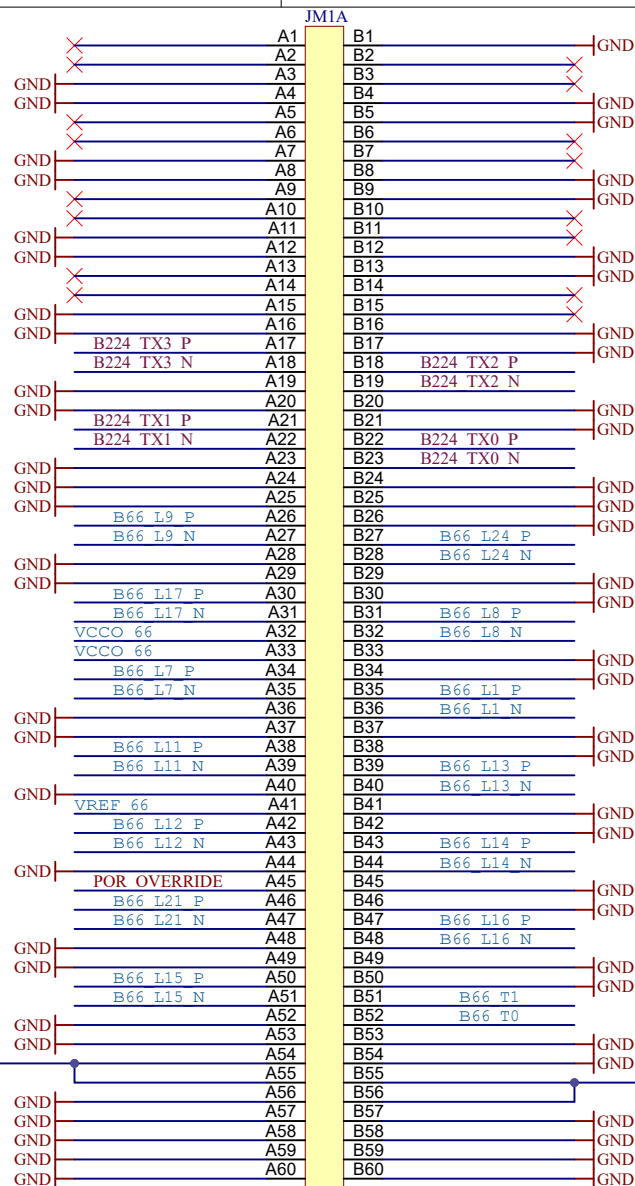


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ADM6-60-01.5-L-4-2

TP8
Testpoint 0.8mm

TP7
Testpoint 0.8mm



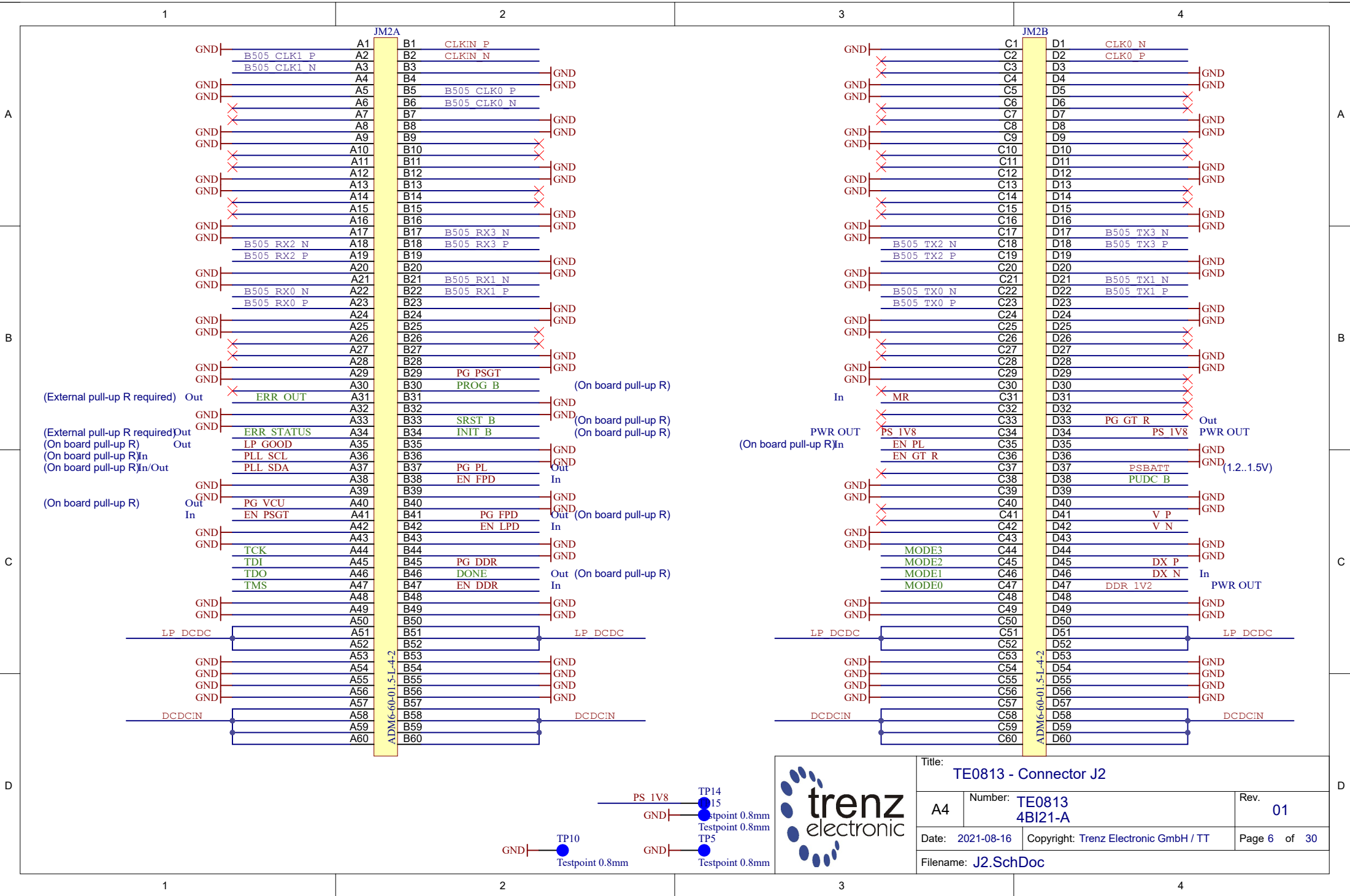
Title: TE0813 - Connector J1		
A4	Number: TE0813 4BI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 5 of 30
Filename: J1.SchDoc		

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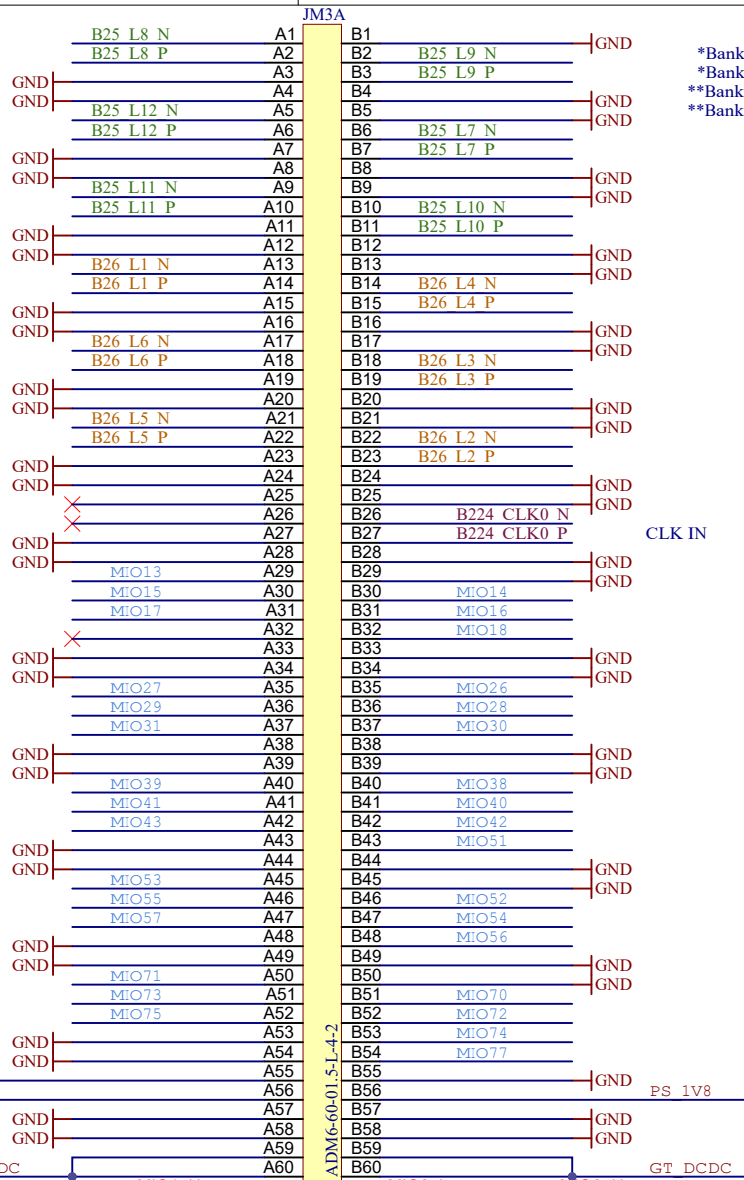


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JM4A			
B64 T1	A1	B1	B64 T2
B64 T0	A2	B2	B64 T3
B64 L24 N	A3	B3	
B64 L24 P	A4	B4	GND
GND	A5	B5	GND
B64 L22 N	A6	B6	GND
B64 L22 P	A7	B7	GND
B64 L15 N	A8	B8	GND
B64 L15 P	A9	B9	GND
B64 L20 N	A10	B10	GND
B64 L20 P	A11	B11	GND
GND	A12	B12	GND
B64 L19 N	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	
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
GND	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
GND	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	GND

ADM6-60-01.5-L-4-2



Title: TE0813 - Connector J4		
A4	Number: TE0813 4BI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 8 of 30
Filename: J4.SchDoc		

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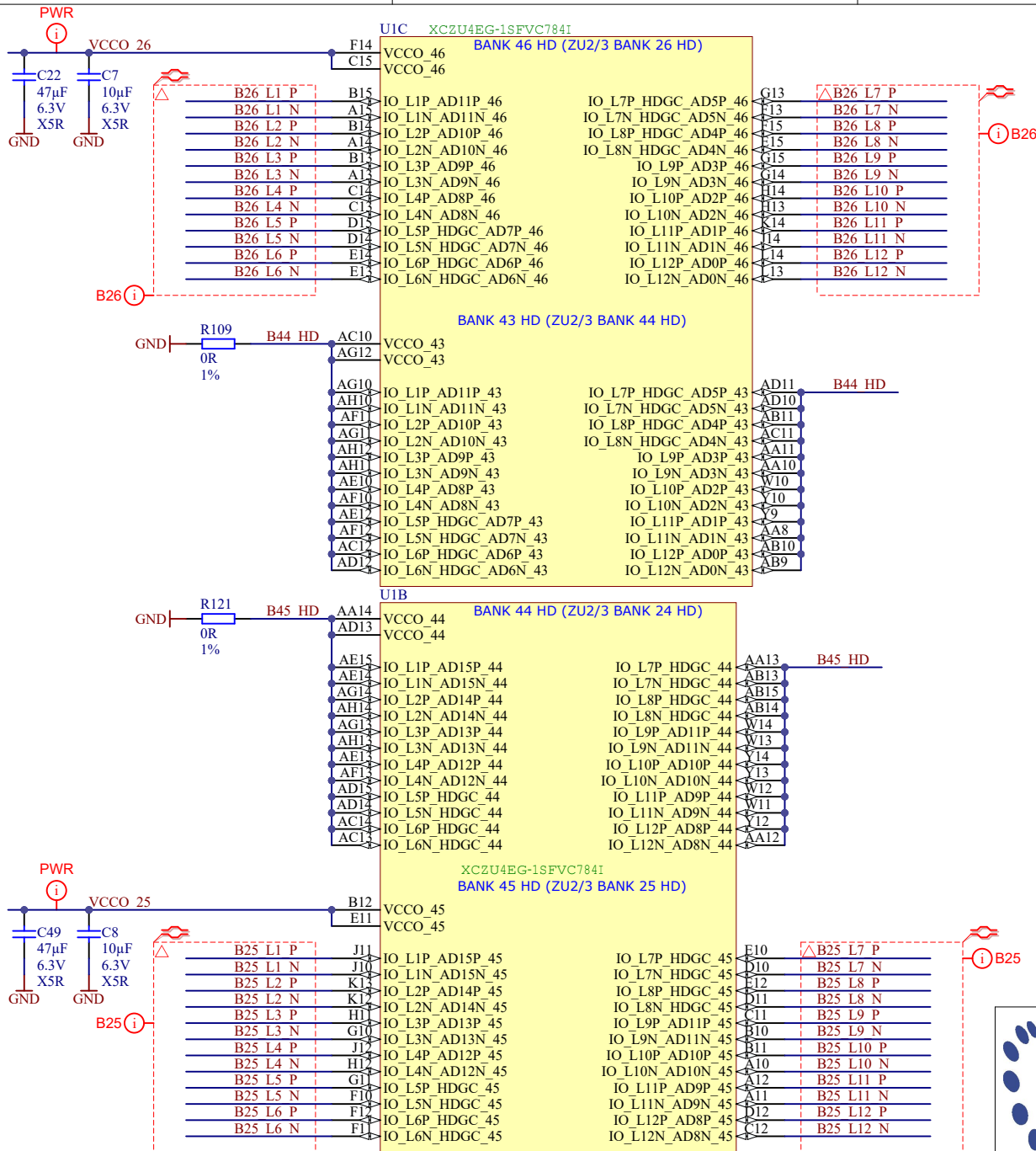
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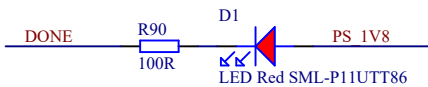
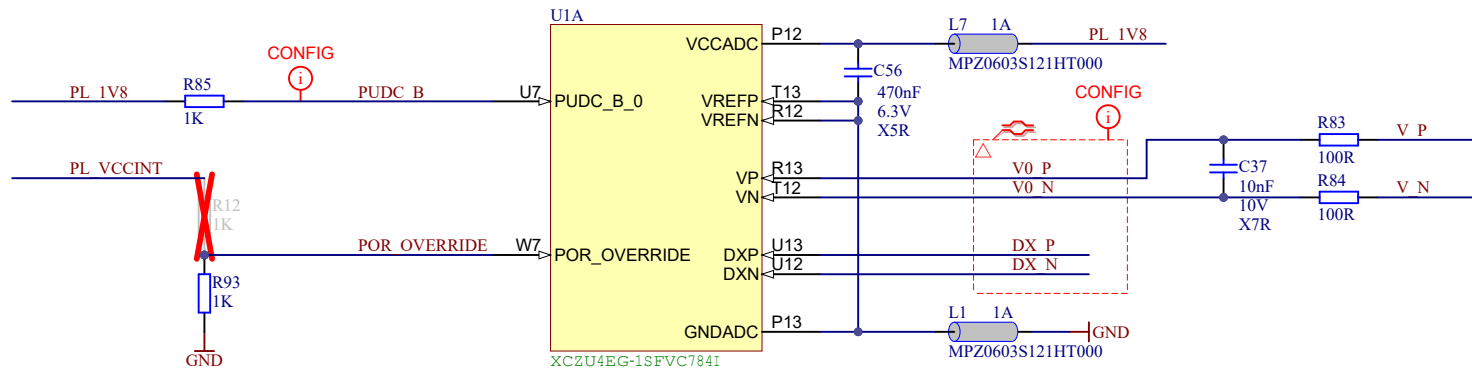
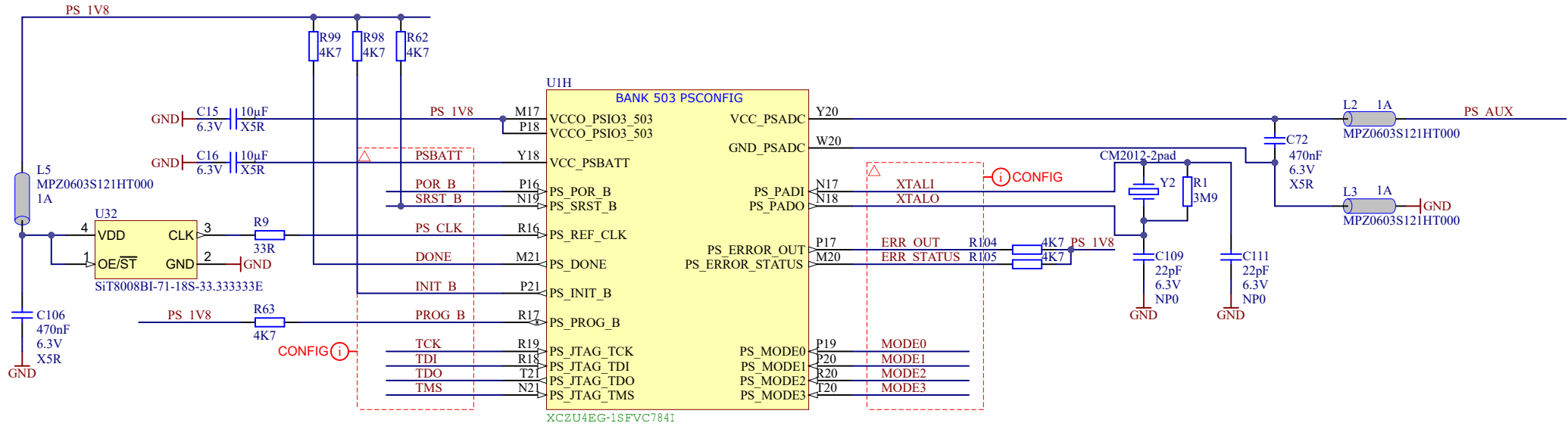
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 9 of 30
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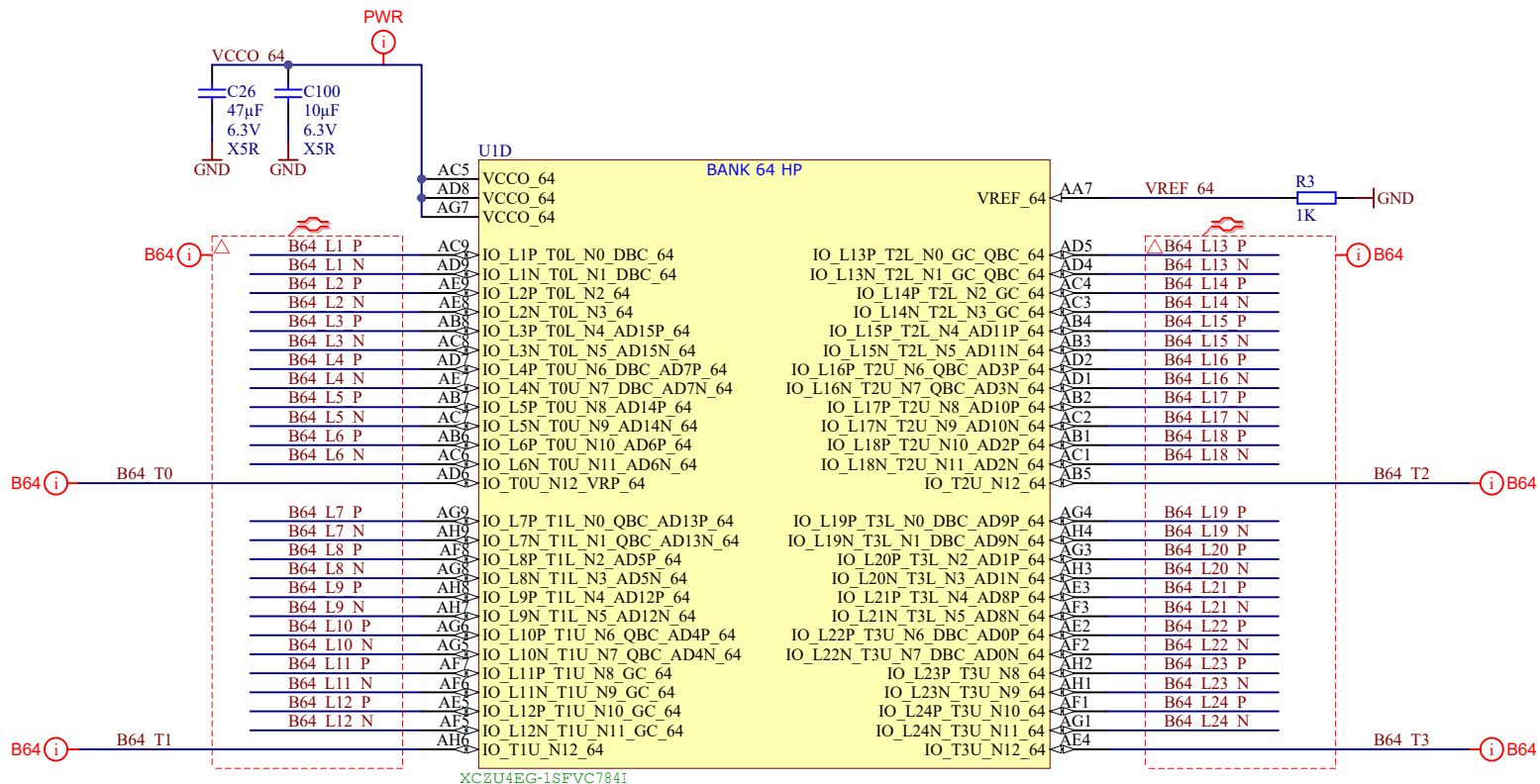
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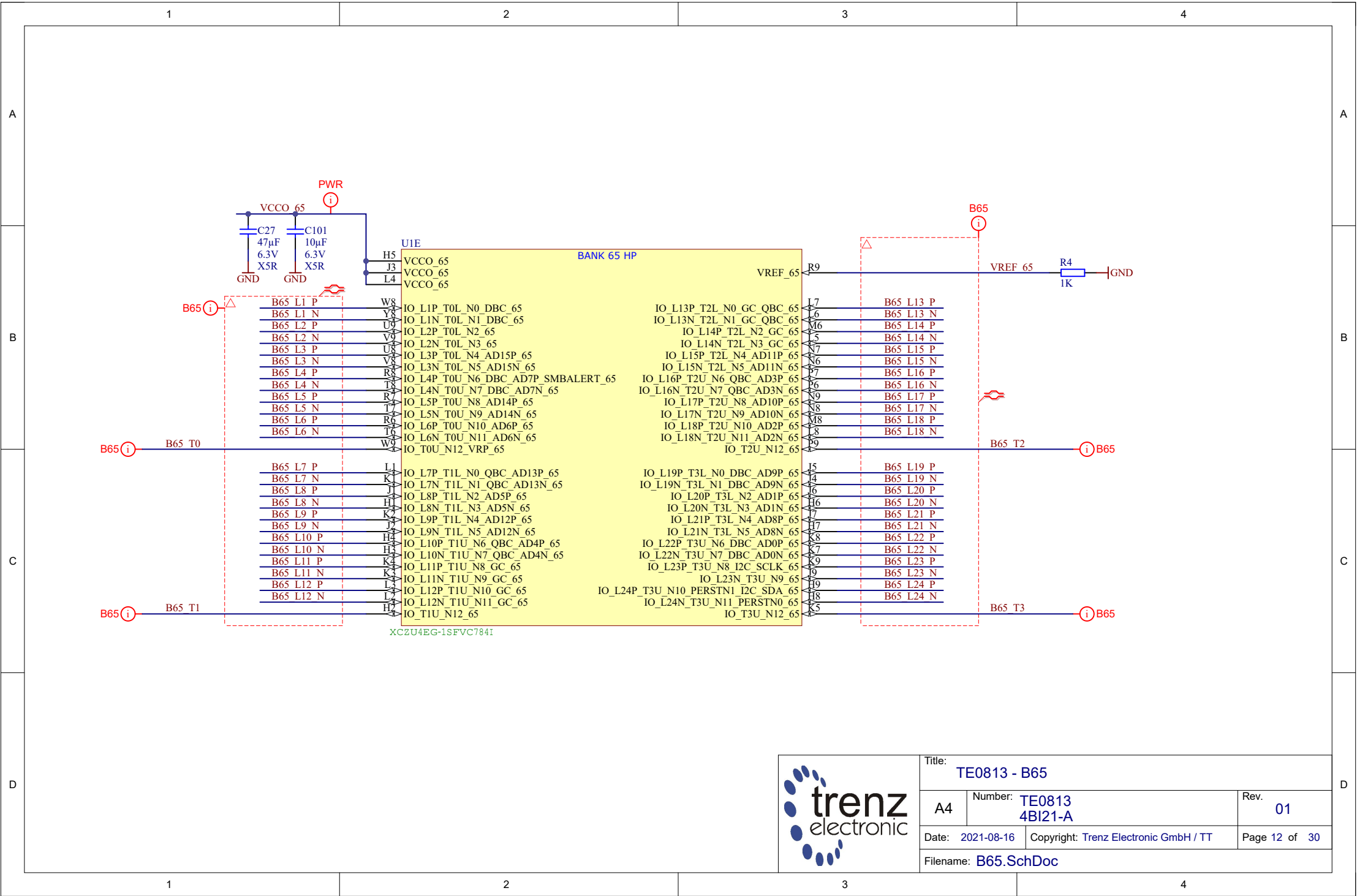
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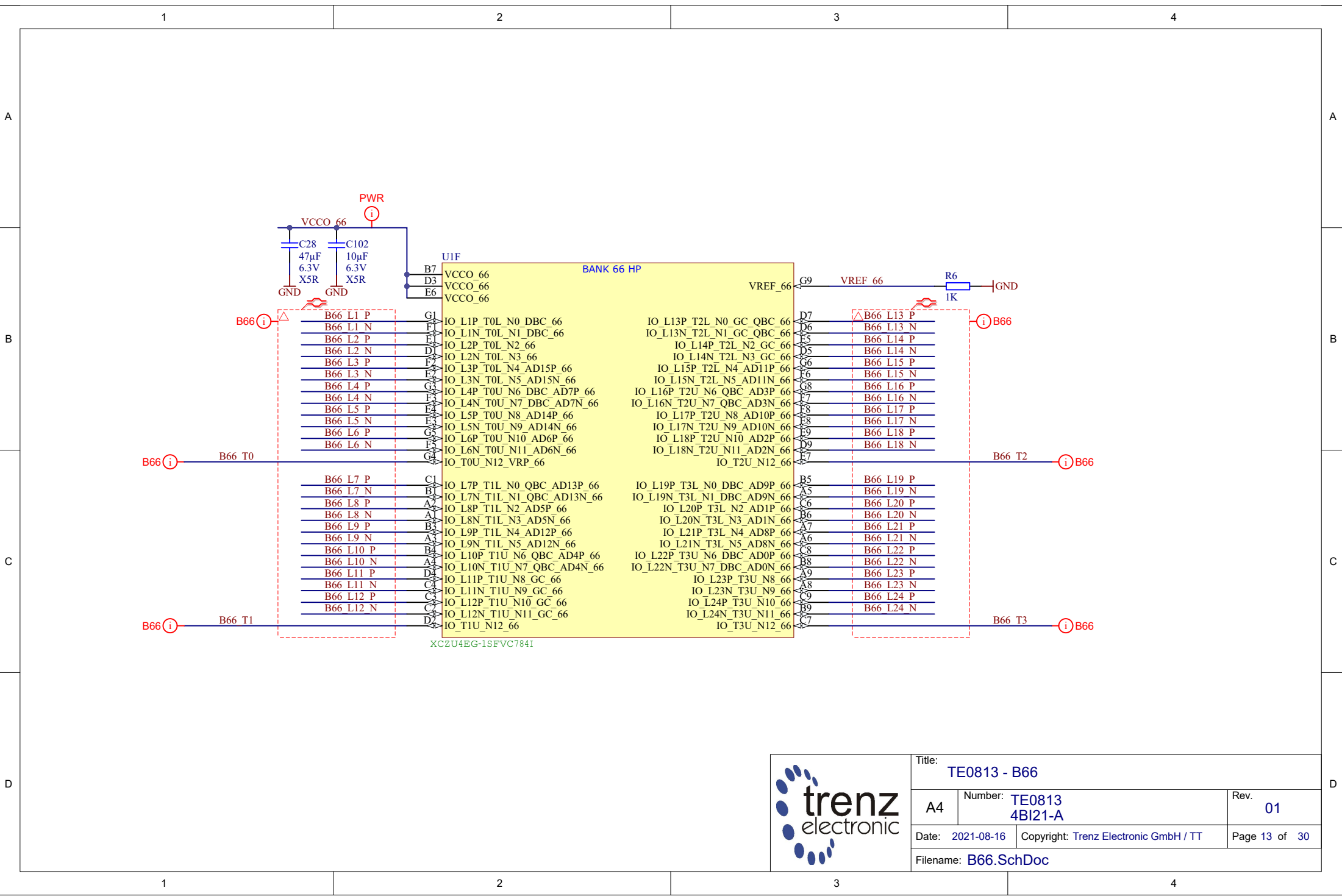
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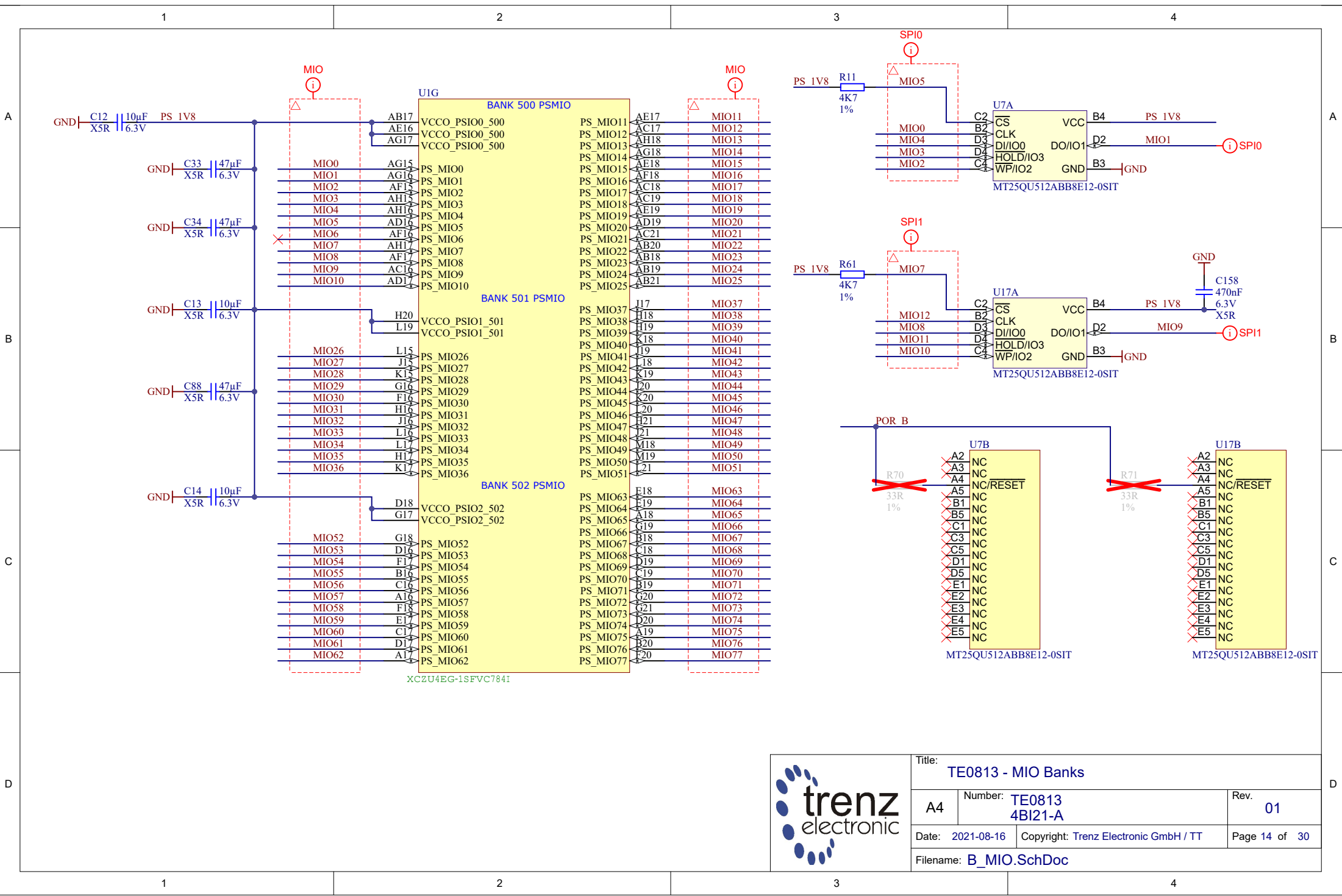


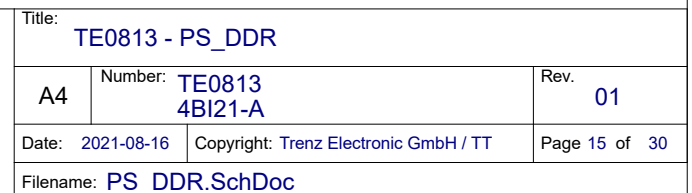
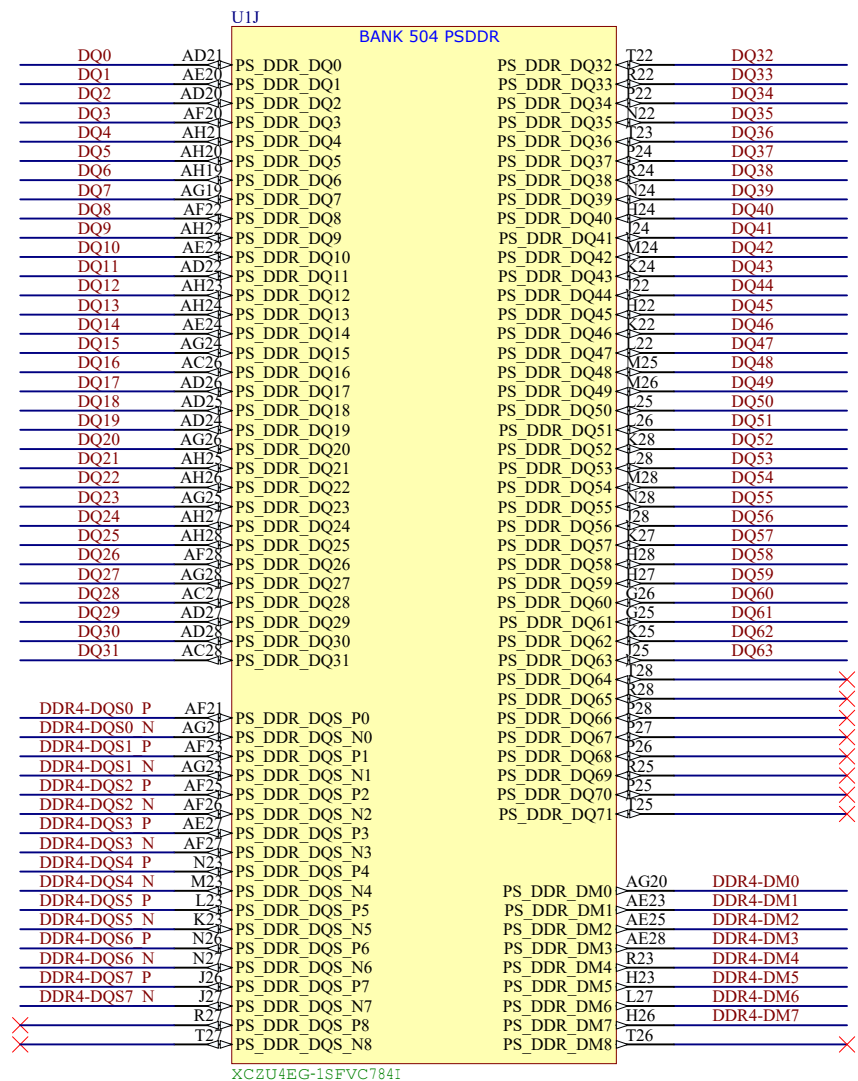
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	A4	Number: TE0813 4BI21-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 10 of 30
	Filename: CONFIG.SchDoc		

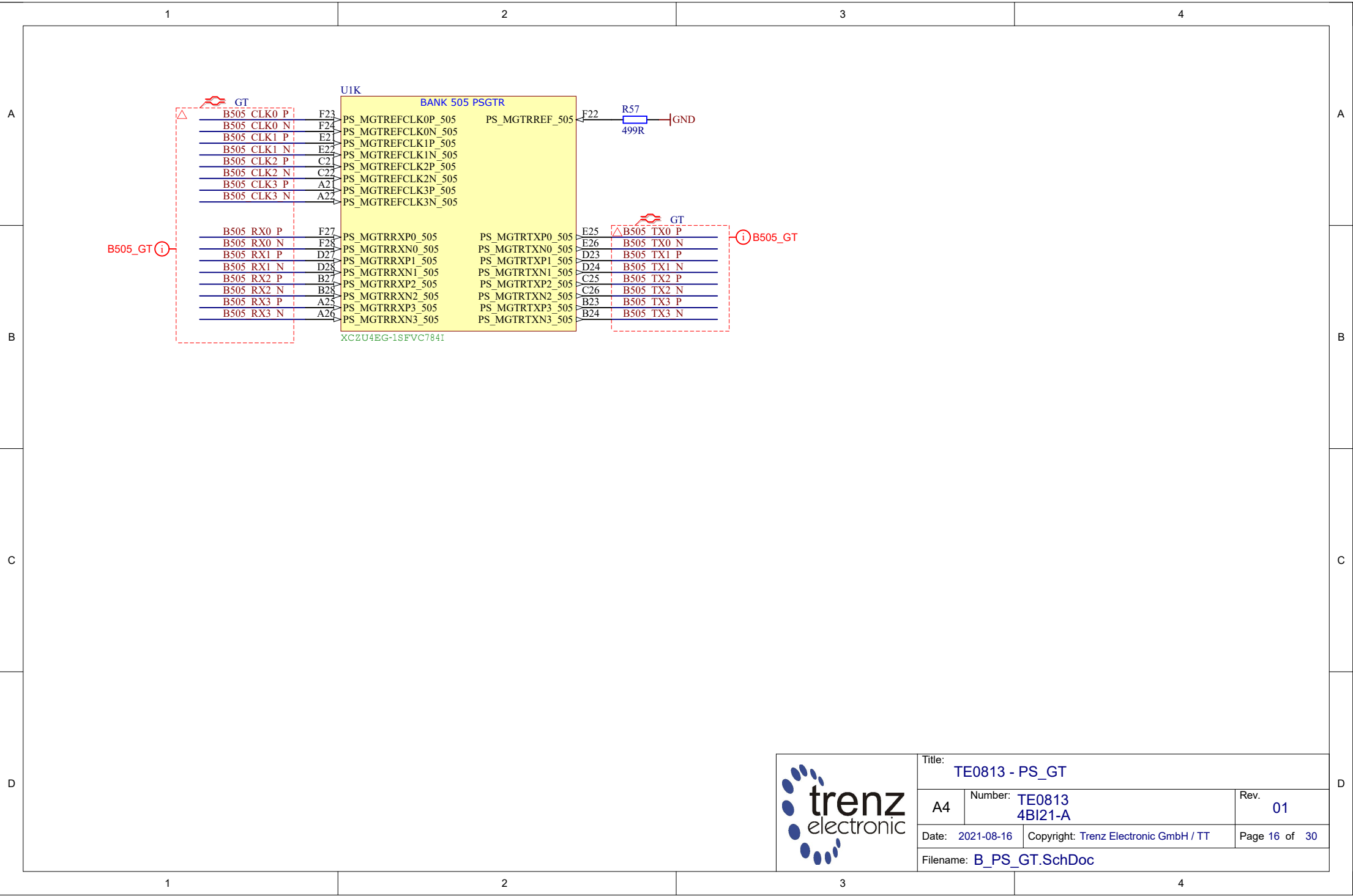


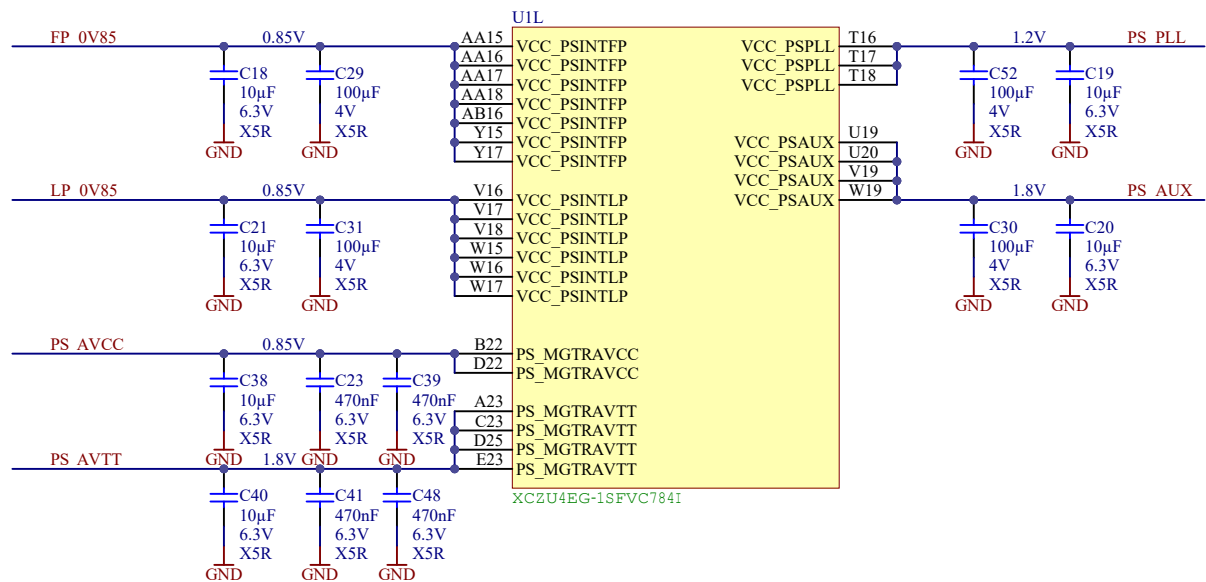




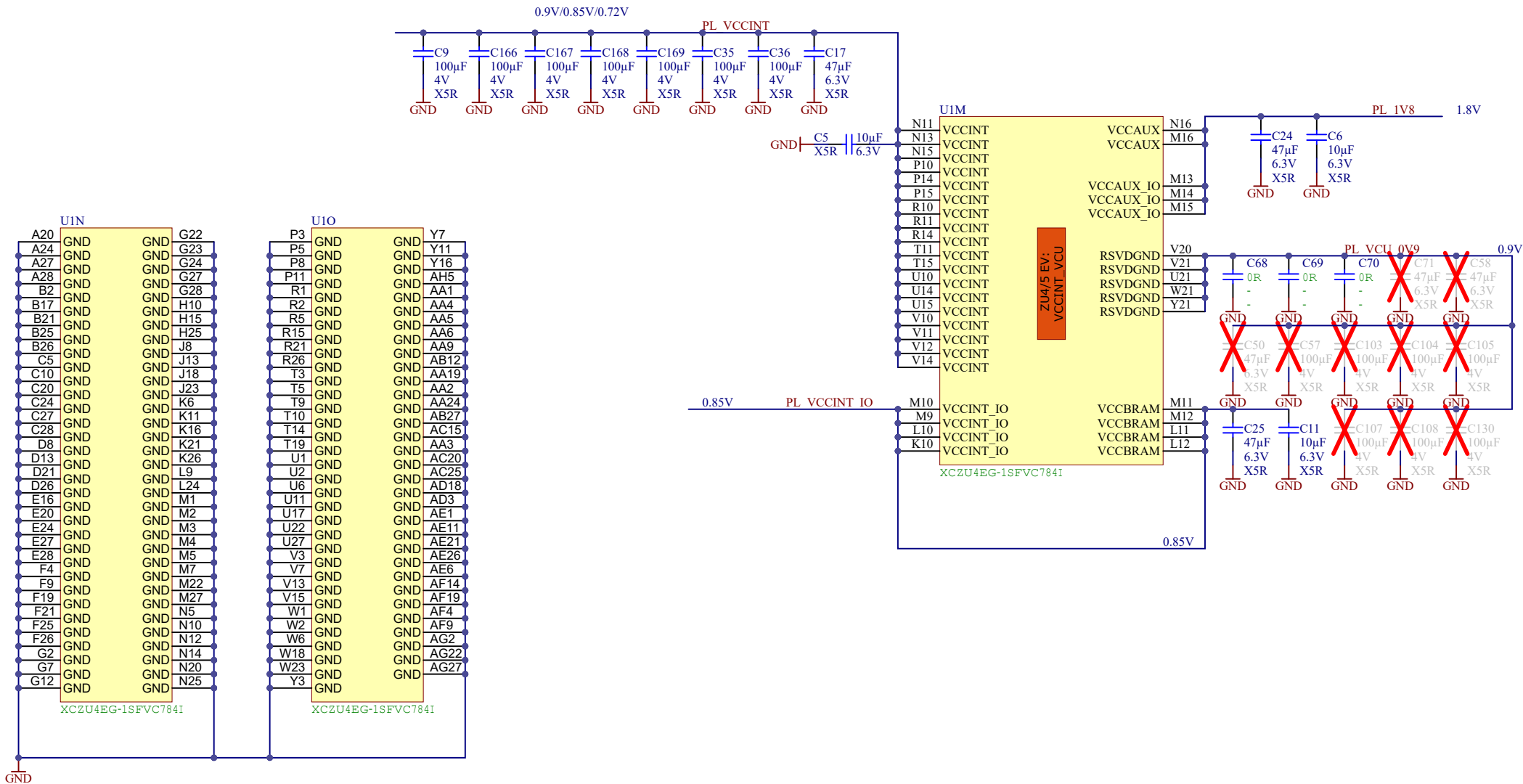








		Title: TE0813 - ZU_PS_POWER	
		A4 Number: TE0813 4BI21-A	Rev. 01
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Filename: ZU_PS_POWER.SchDoc		Page 18 of 30	



		Title: TE0813 - ZU_POWER	
		A4	Number: TE0813 4BI21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Filename: ZU_POWER.SchDoc		Page 19 of 30	

Title: TE0813 - ZU_POWER

Number: TE0813
4BI21-A

Rev. 01

Date: 2021-08-16 Copyright: Trenz Electronic GmbH / TT

Filename: ZU_POWER.SchDoc

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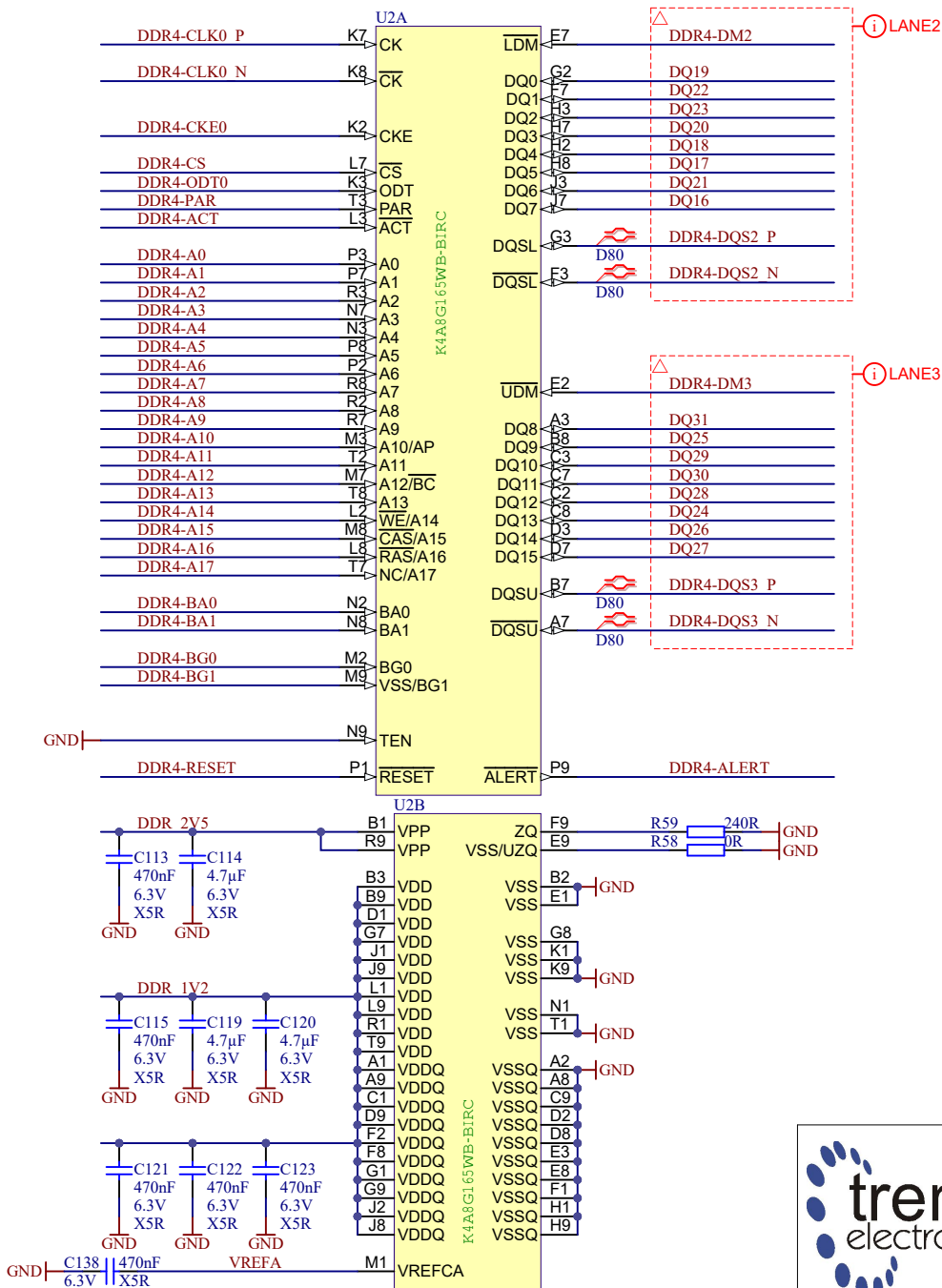
B

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D



Title: TE0813 - DDR4_1_RAM		
A4	Number: TE0813 4BI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 20 of 30
Filename: DDR4-RAM.SchDoc		

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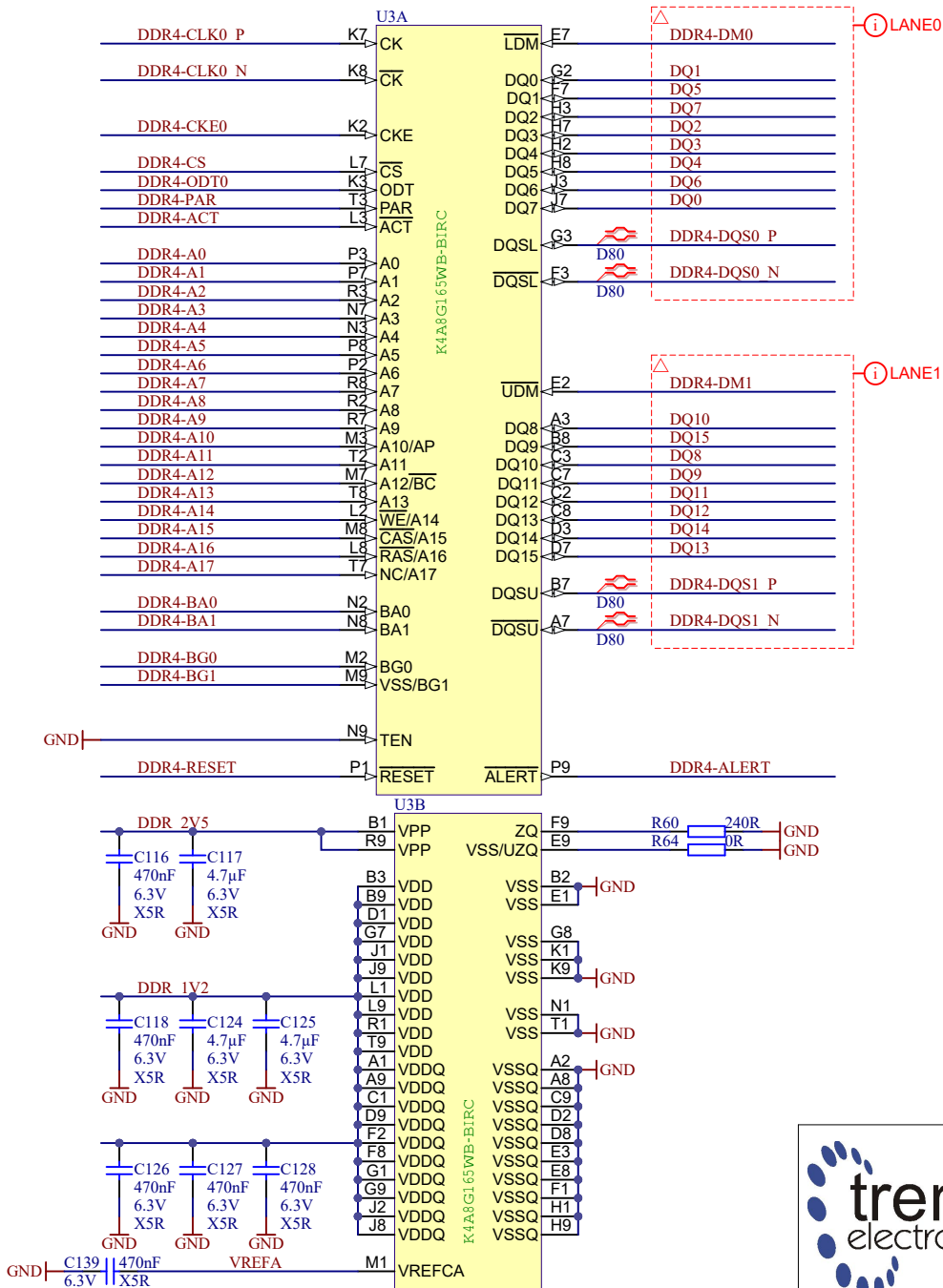
B

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D



Title: TE0813 - DDR4_2_RAM		
A4	Number: TE0813 4BI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 21 of 30
Filename: DDR4-RAM_2.SchDoc		

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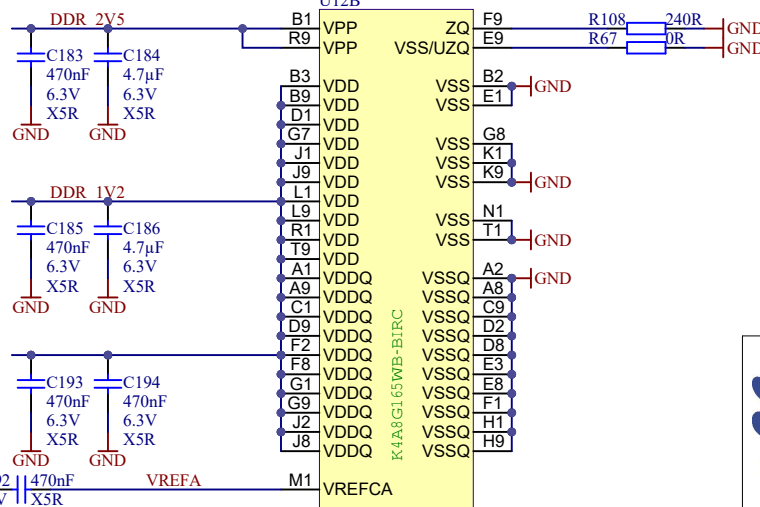
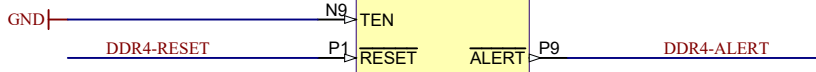
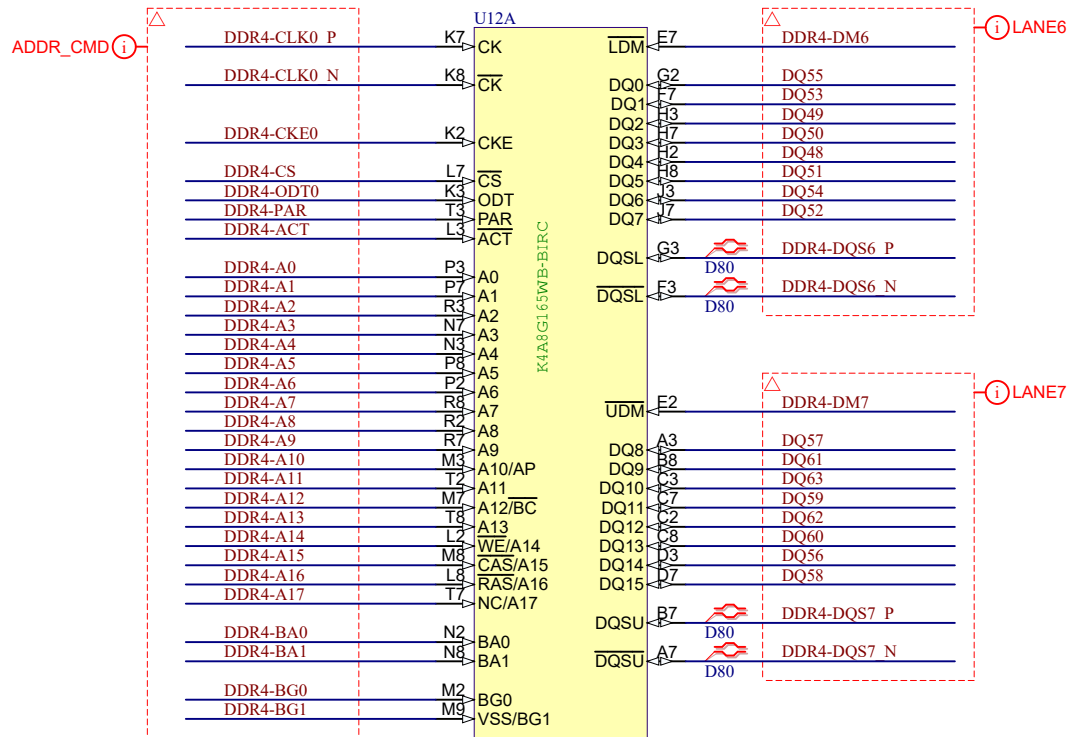
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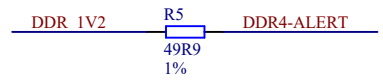
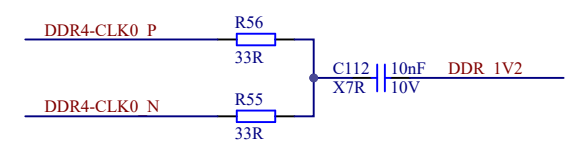
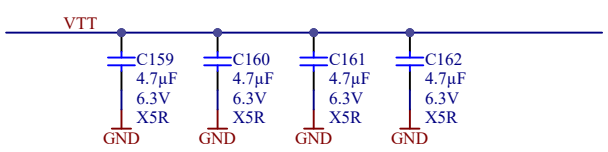
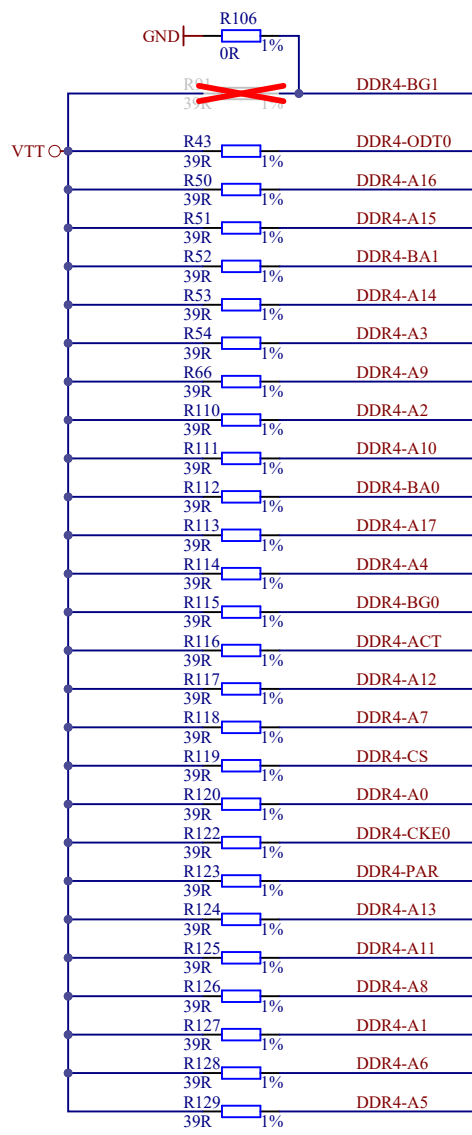
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A4	Number: TE0813 4BI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 23 of 30
Filename: DDR4-RAM_4.SchDoc		

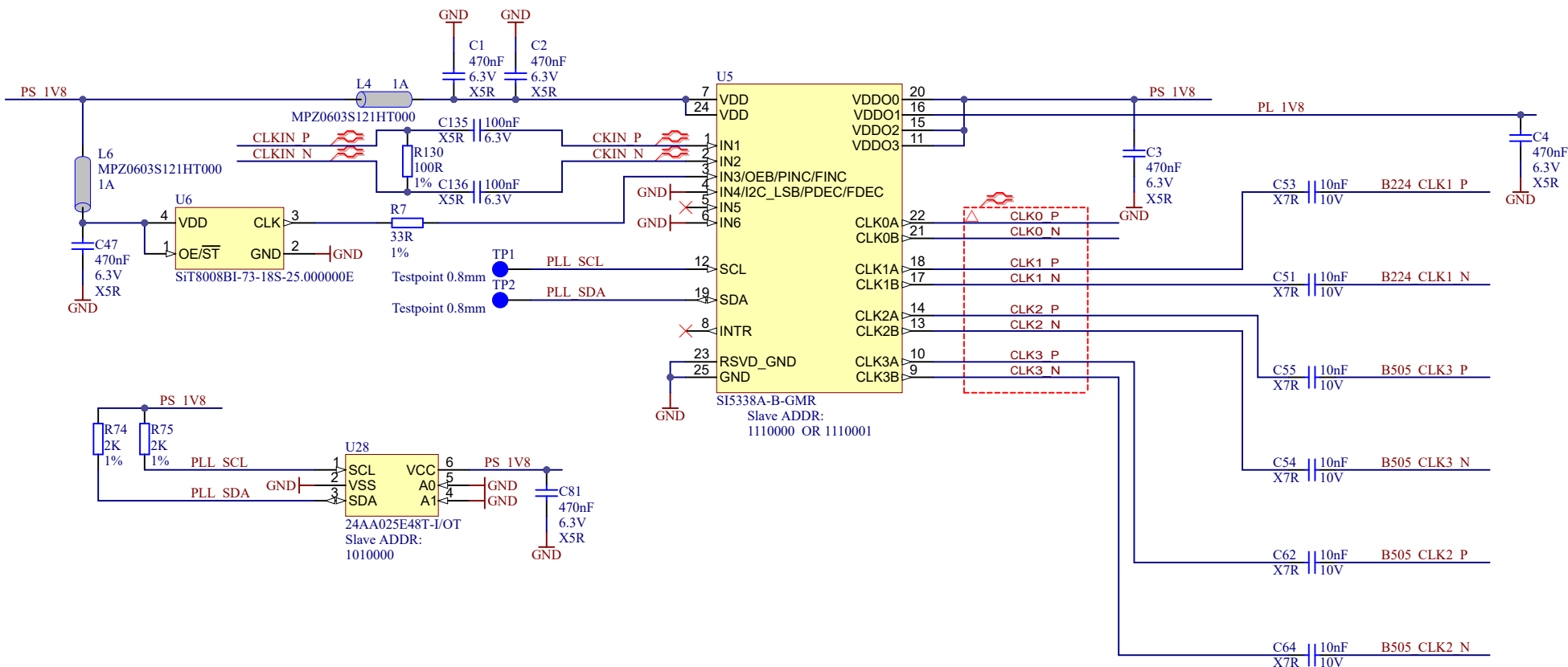
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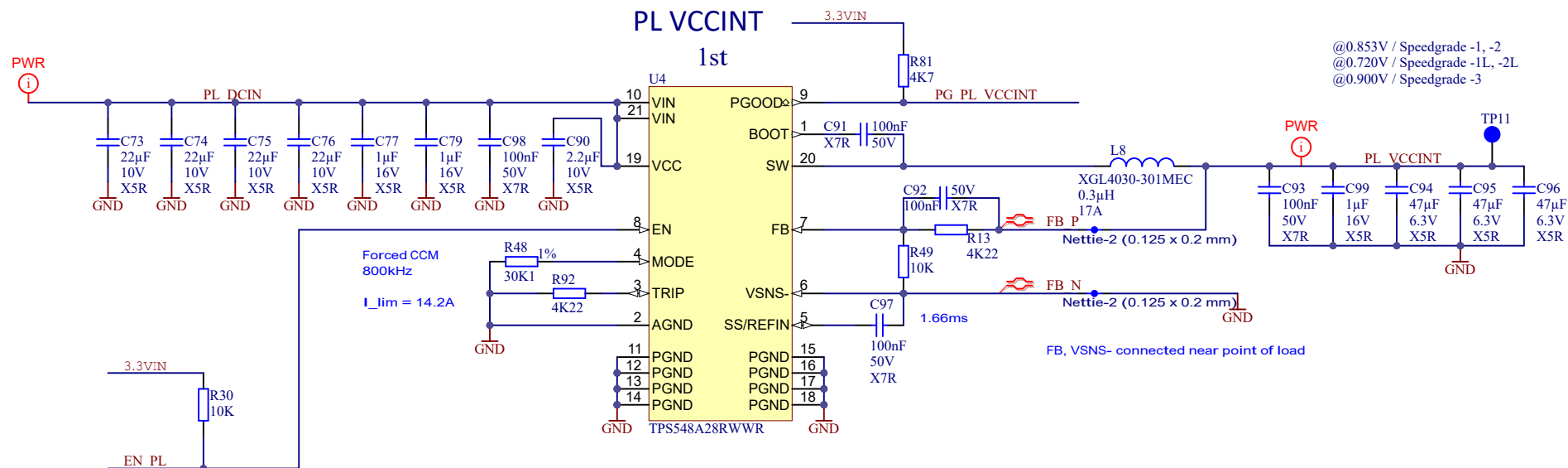
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	Title: TE0813 - CLOCK		
	A4	Number: TE0813 4BI21-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 25 of 30
	Filename: Clock.SchDoc		

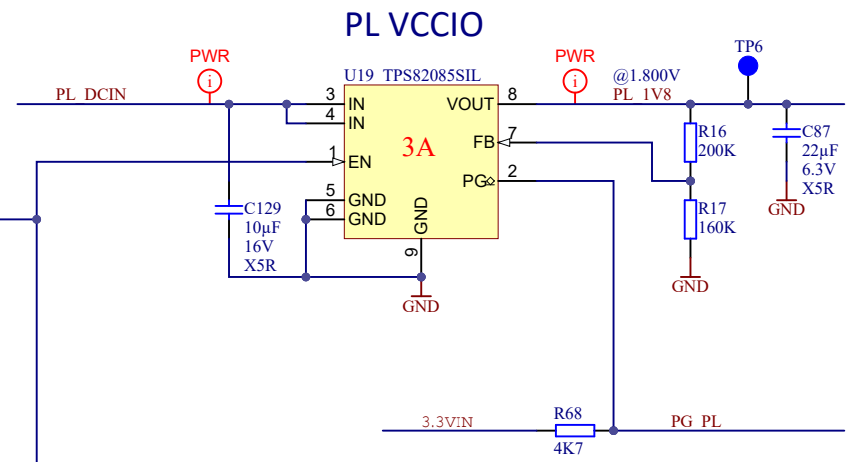
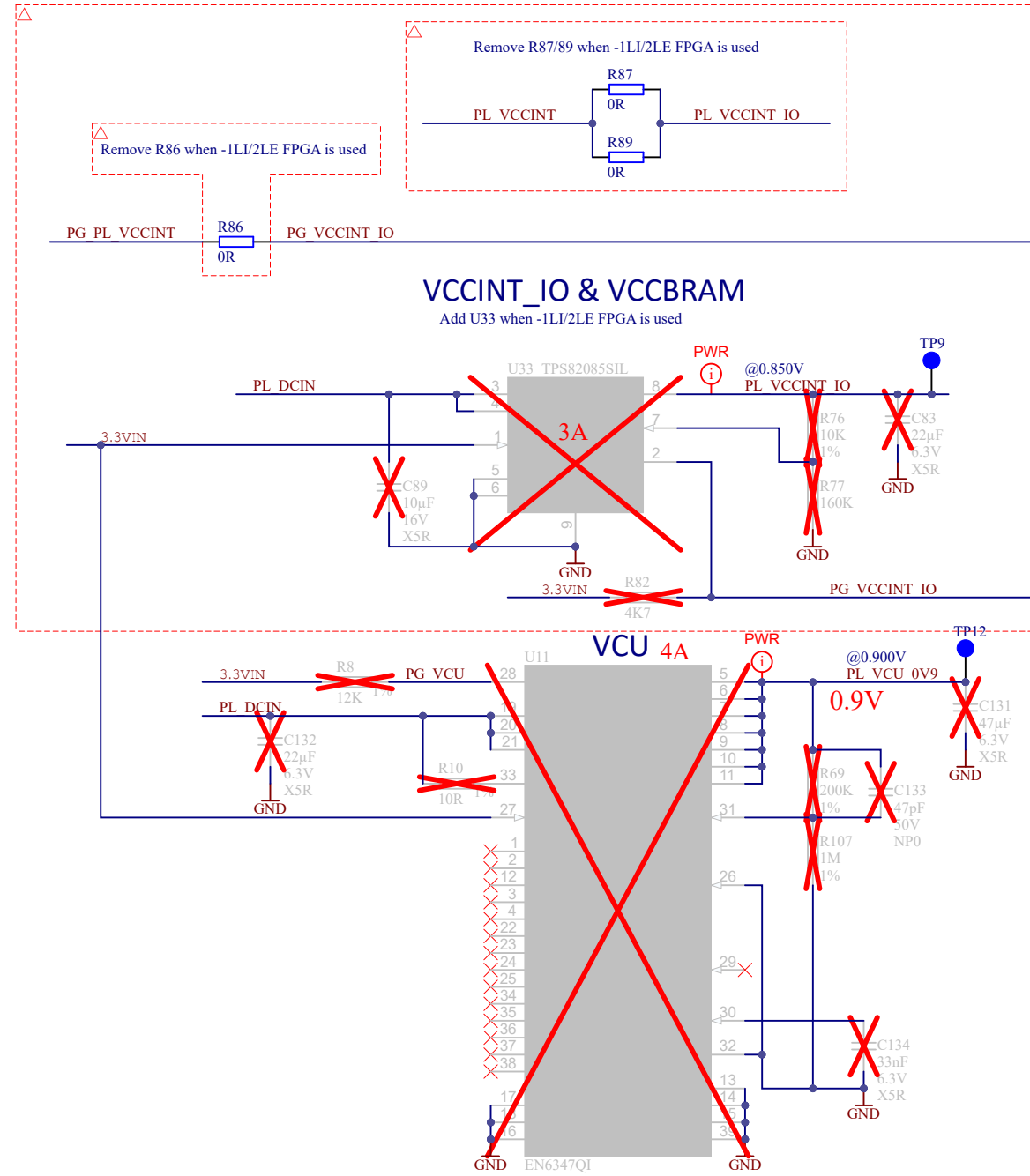




FPGA Speed grade:		
-1LI / -2LE	R13 - 2K, R49 - 10K	PL_VCCINT = 0.720V
-1 / -2	R13 - 4K22, R49 - 10K	PL_VCCINT = 0.853V
-3E	R13 - 10K, R49 - 20K	PL_VCCINT = 0.900V

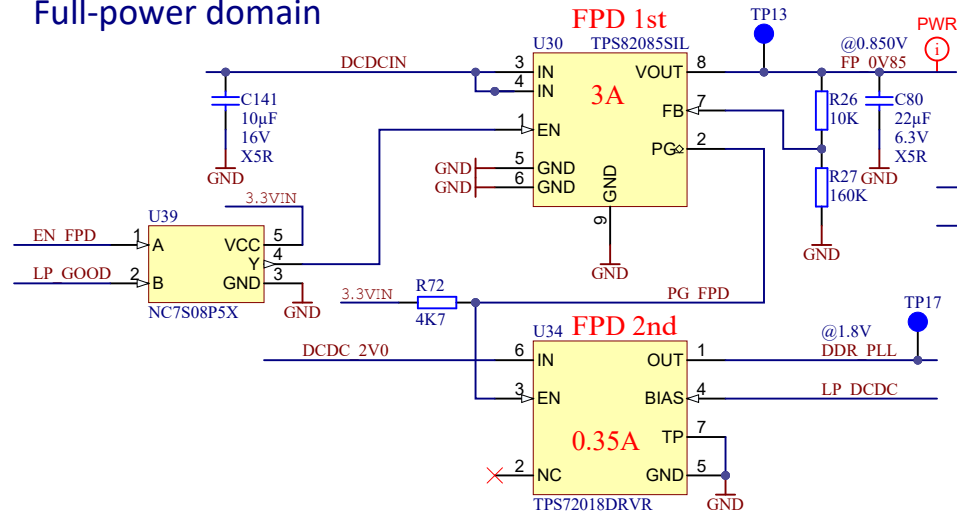
U4 pin compatible with
 -- TPS548B28 (20A)
 -- TPS54JA20 (12A)

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

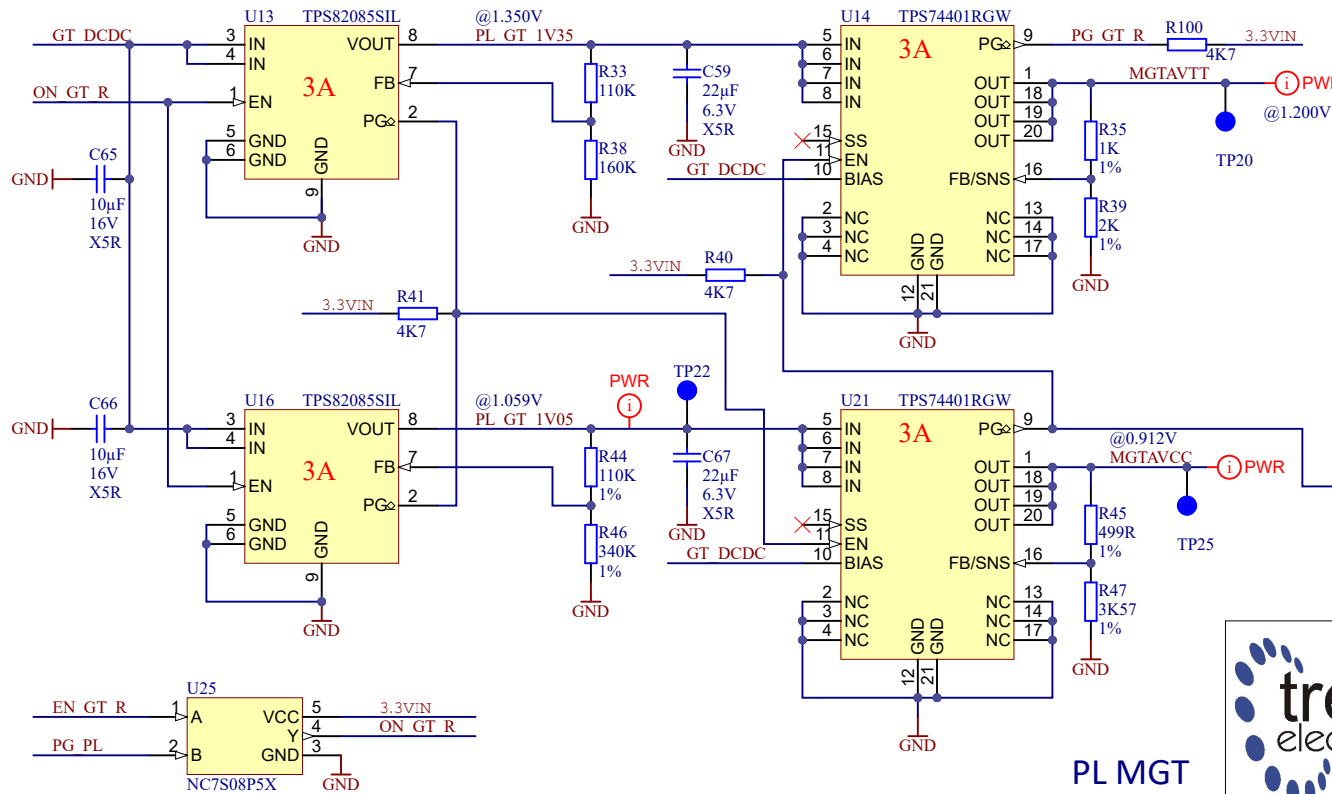
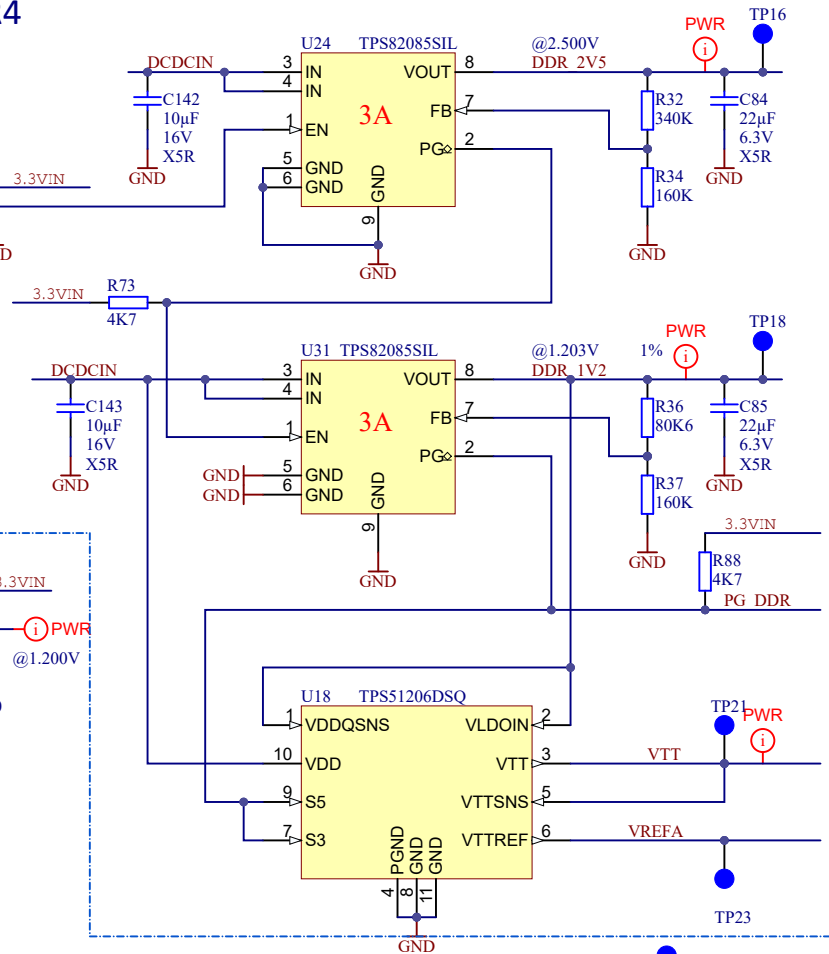


	Title: TE0813 - POWER		
	A4	Number: TE0813 4BI21-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 27 of 30
	Filename: POWER_1.SchDoc		

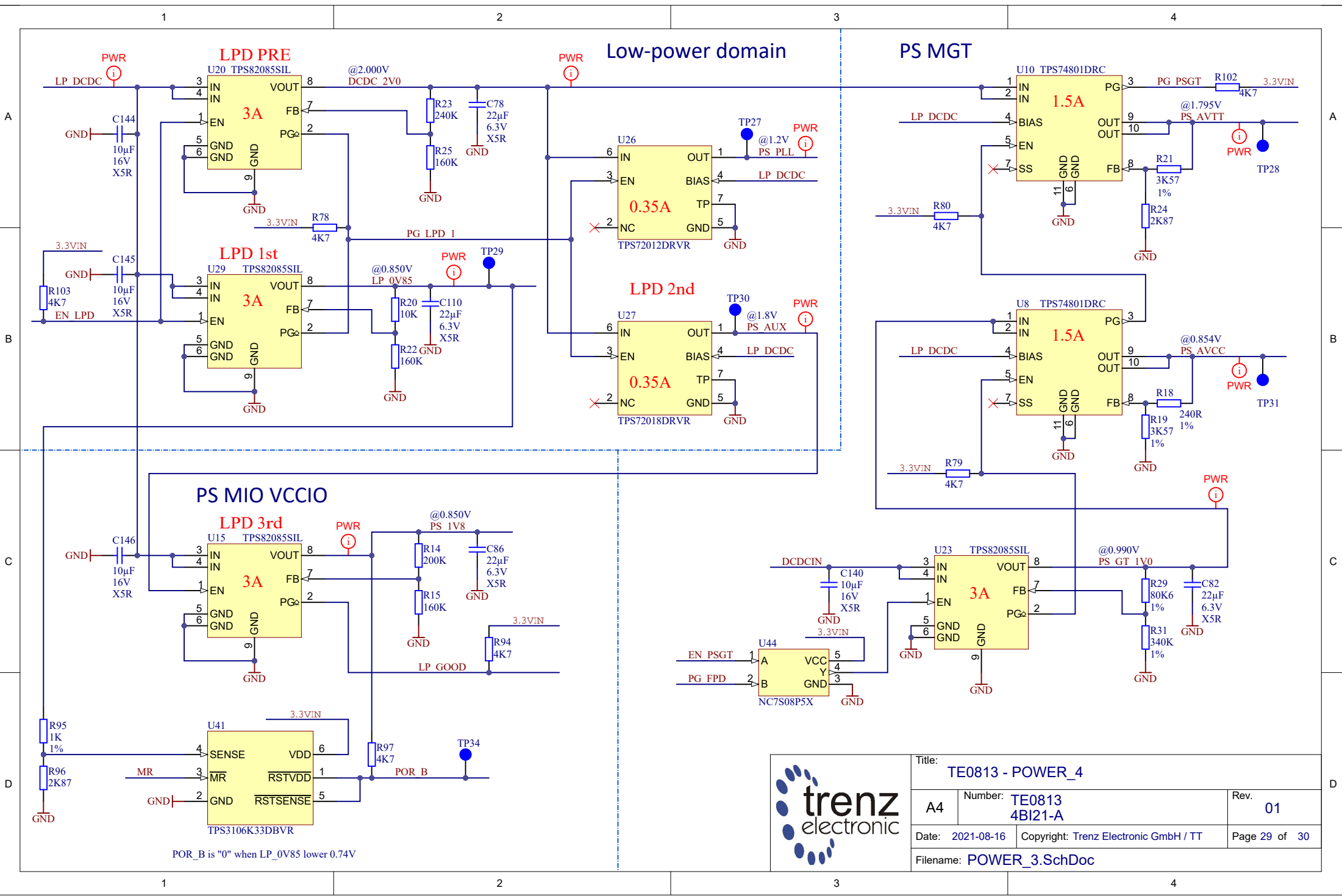
Full-power domain



DDR4



Title: TE0813 - POWER_2		
A4	Number: TE0813 4BI21-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 4BI21-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	<table><tr><td>REV</td><td>DATE</td><td>Description</td><td></td></tr><tr><td>-01</td><td>2021-05</td><td>Initial revision</td><td>VT</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>				REV	DATE	Description		-01	2021-05	Initial revision	VT																
REV	DATE	Description																										
-01	2021-05	Initial revision	VT																									
B																												
C																												
D	 Title: TE0813 - Revision History A4 Number: TE0813 4BI21-A Rev. 01 Date: 2021-07-26 Copyright: Trenz Electronic GmbH Page 30 of 30 Filename: Revision Changes.SchDoc																											
	1	2	3	4																								