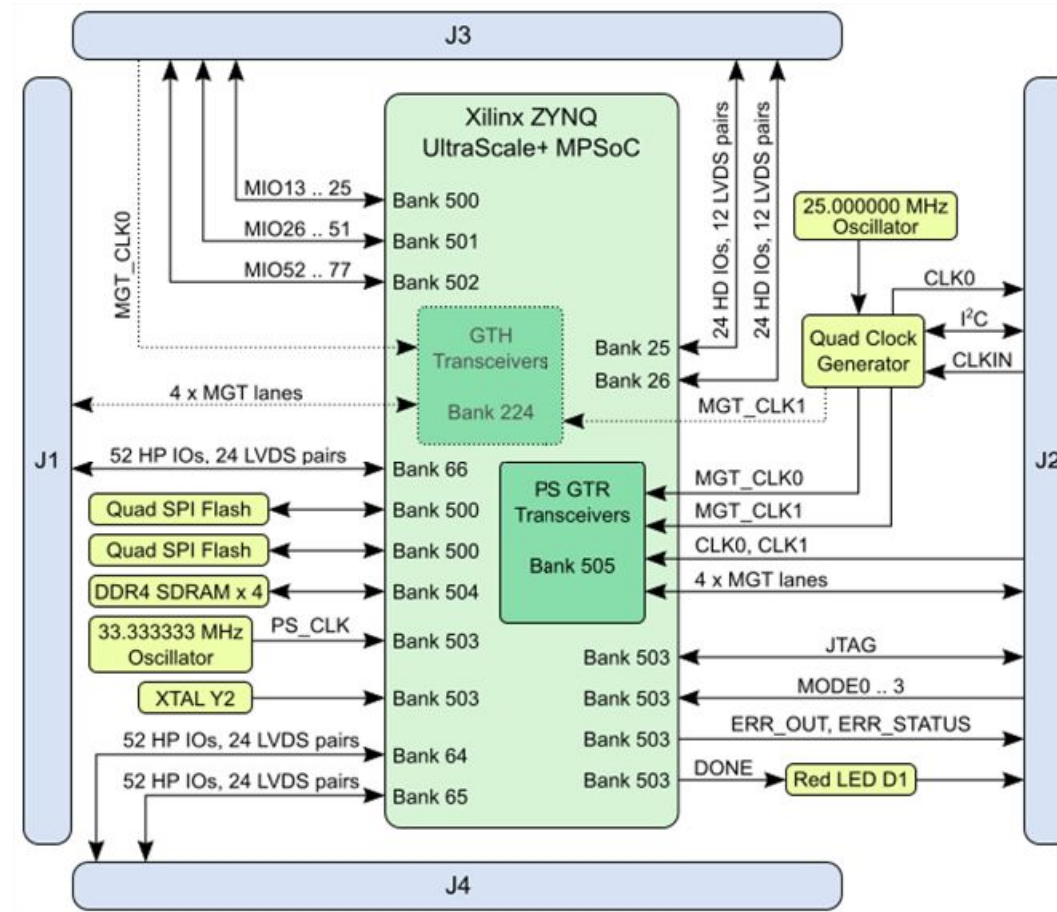



Regarding the usage of our schematics and alike documentation for Trenz module TE0803.

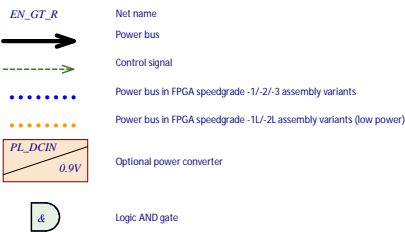
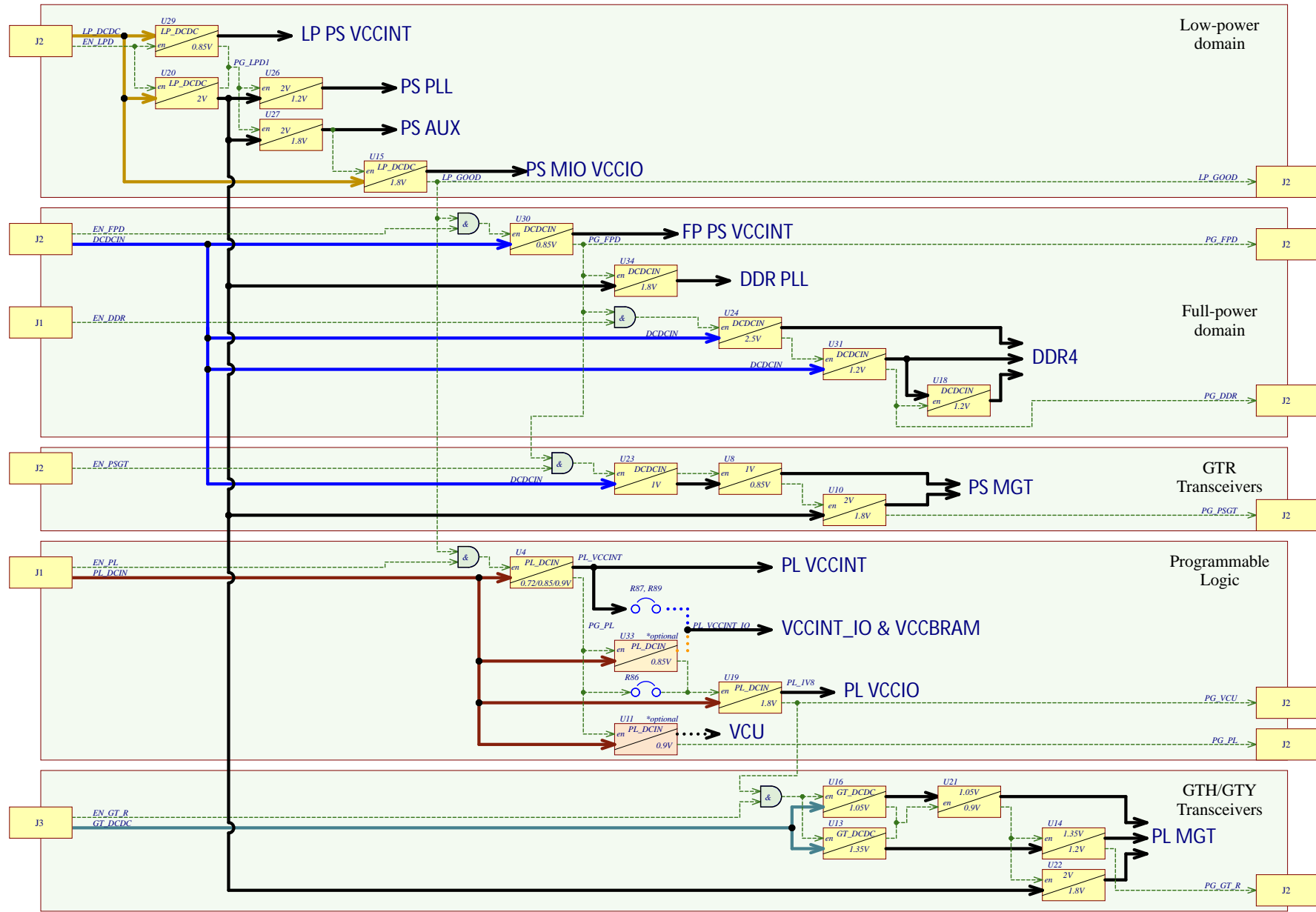
Project is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation, even if the design is just adapted or modified. TE0803 is protected under such right and in case of plagiarism we will have to do anything necessary in order to protect our assets.

Schematics and other handouts serve for informational purposes only!

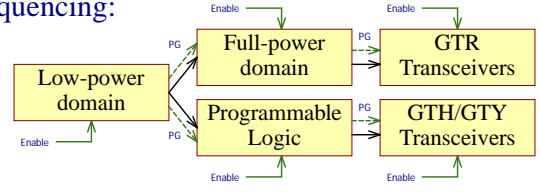
	Title: TE0803		
	A4	Number: TE0803 4BI21-A	Rev. 04
	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 1 of 30
	Filename: Legal Notices Modules.SchDoc		



		Title: TE0803 - System Overview	
		A4	Number: TE0803 4BI21-A
Date: 2021-01-19		Copyright: 2015 Trenz Electronic GmbH	
Filename: TE0803-Overview.SchDoc		Page 2 of 30	



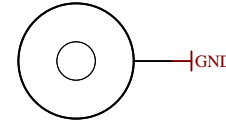
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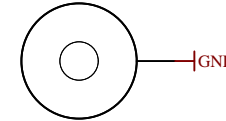
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A3	Number: TE0803 4BI21-A	Rev. 04
Datum: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 3 of 30
Filename: Power_Diagram.SchDoc		

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_4.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 TE0803-Overview.SchDoc
U_PD Power_Diagram.SchDoc	U_DDR4-RAM_4 DDR4-RAM_4.SchDoc	

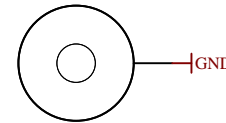
Special notes:



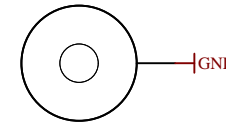
Mount.Hole 3.2mm für Unterlegscheibe



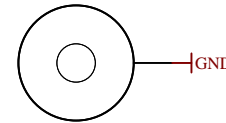
Mount.Hole 3.2mm für Unterlegscheibe



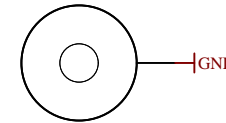
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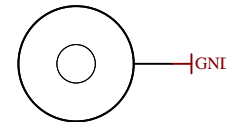
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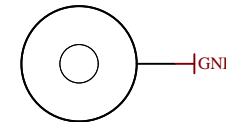
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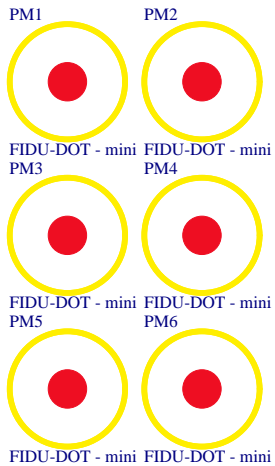
Mount.Hole 3.2mm für Unterlegscheibe



Mount.Hole 3.2mm für Unterlegscheibe



Mount.Hole 3.2mm für Unterlegscheibe



MECH1

TE Address Overlay

LOGO ADDRESS

LOGO1

TE Logo PRINT Layer

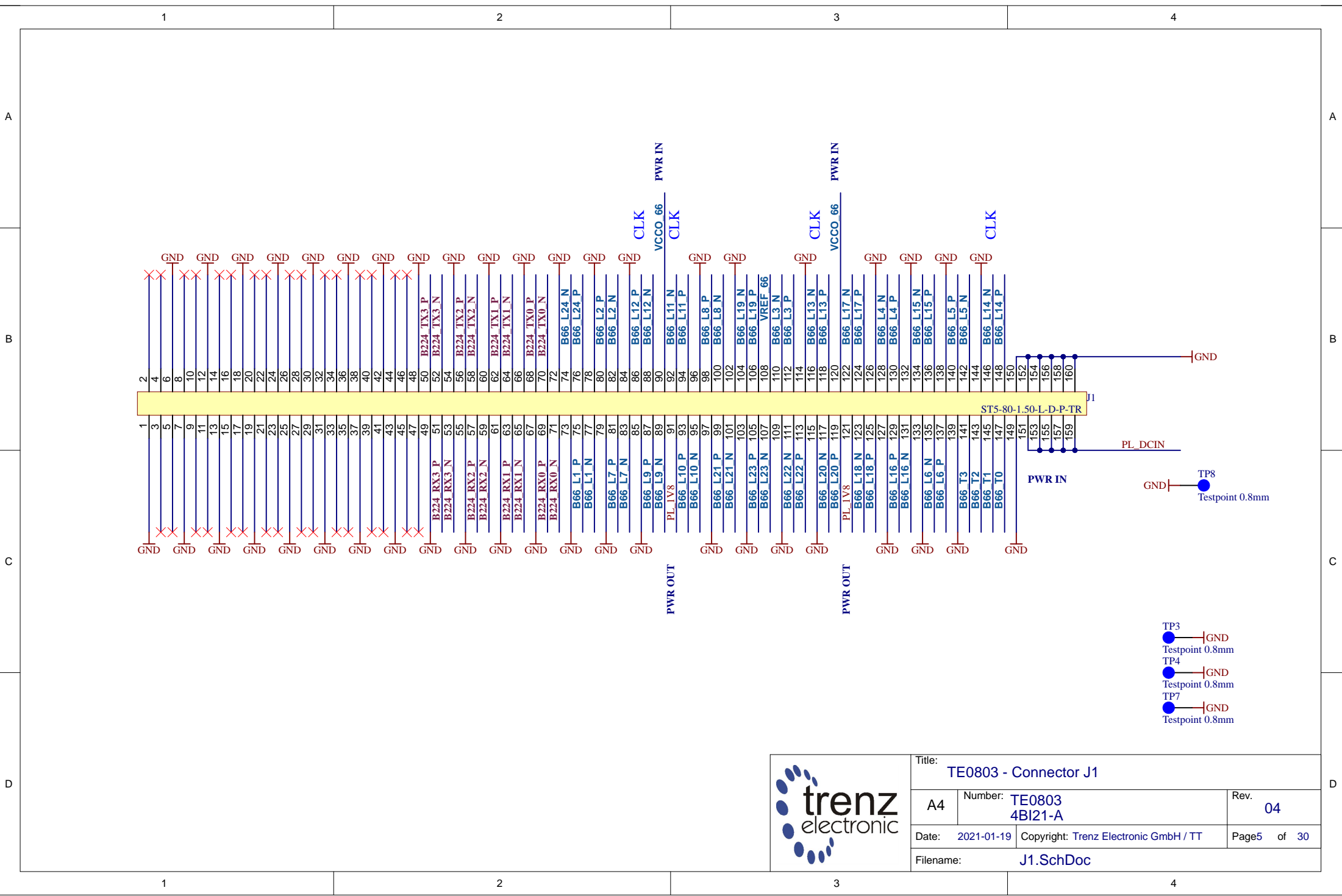
LOGO PRINT

Serial
Serial
Serialnumber 6,3 x 6.3mm

Assembly variant	4BI21-A
Created by	
Modified by	
Modified at	
SVN Revision	11196



Title: TE0803		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page4 of 30
Filename: TE0803.SchDoc		



Title: TE0803 - Connector J1		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page5 of 30
Filename: J1.SchDoc		

1

2

3

4

A

A

B

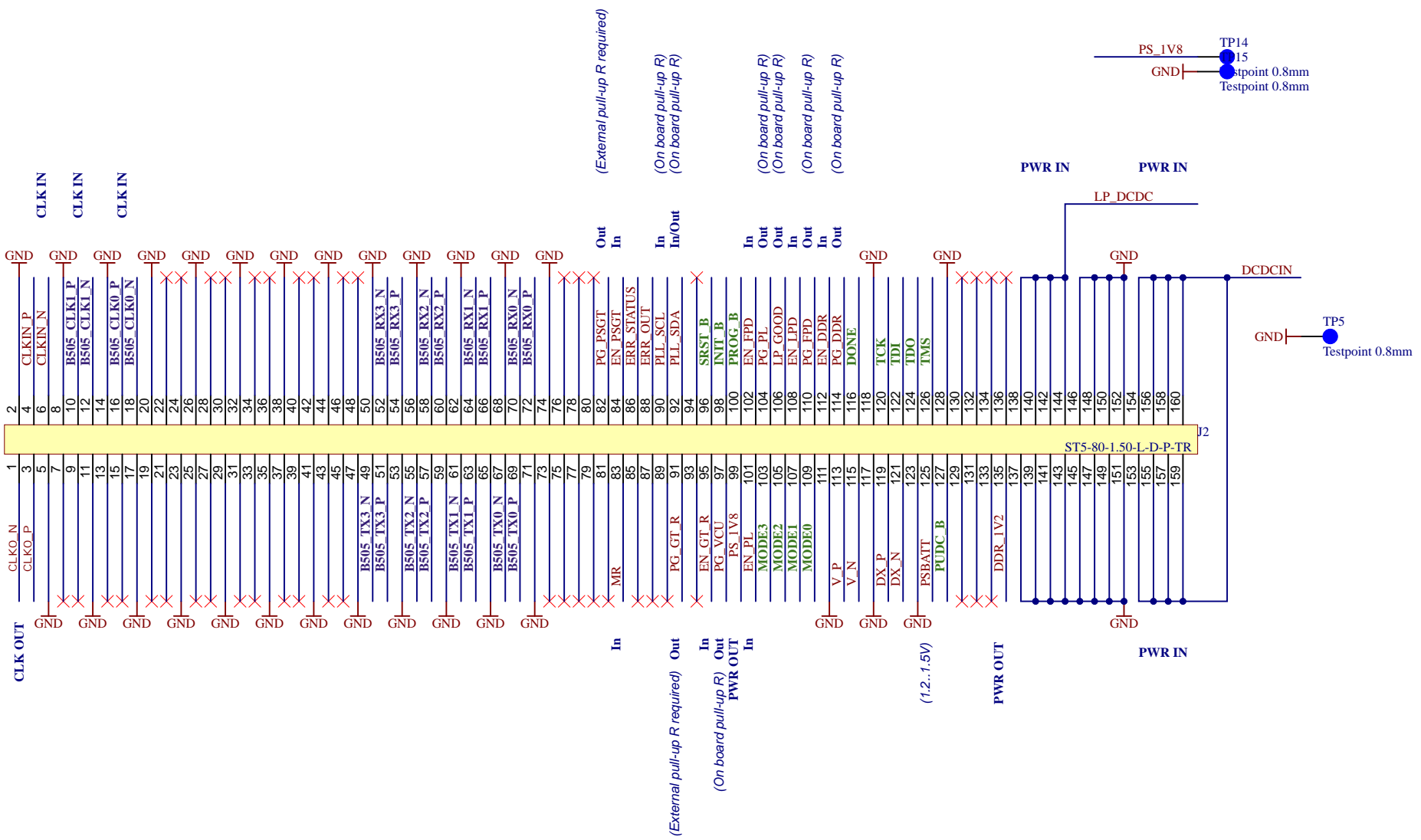
B

C

C

D

D



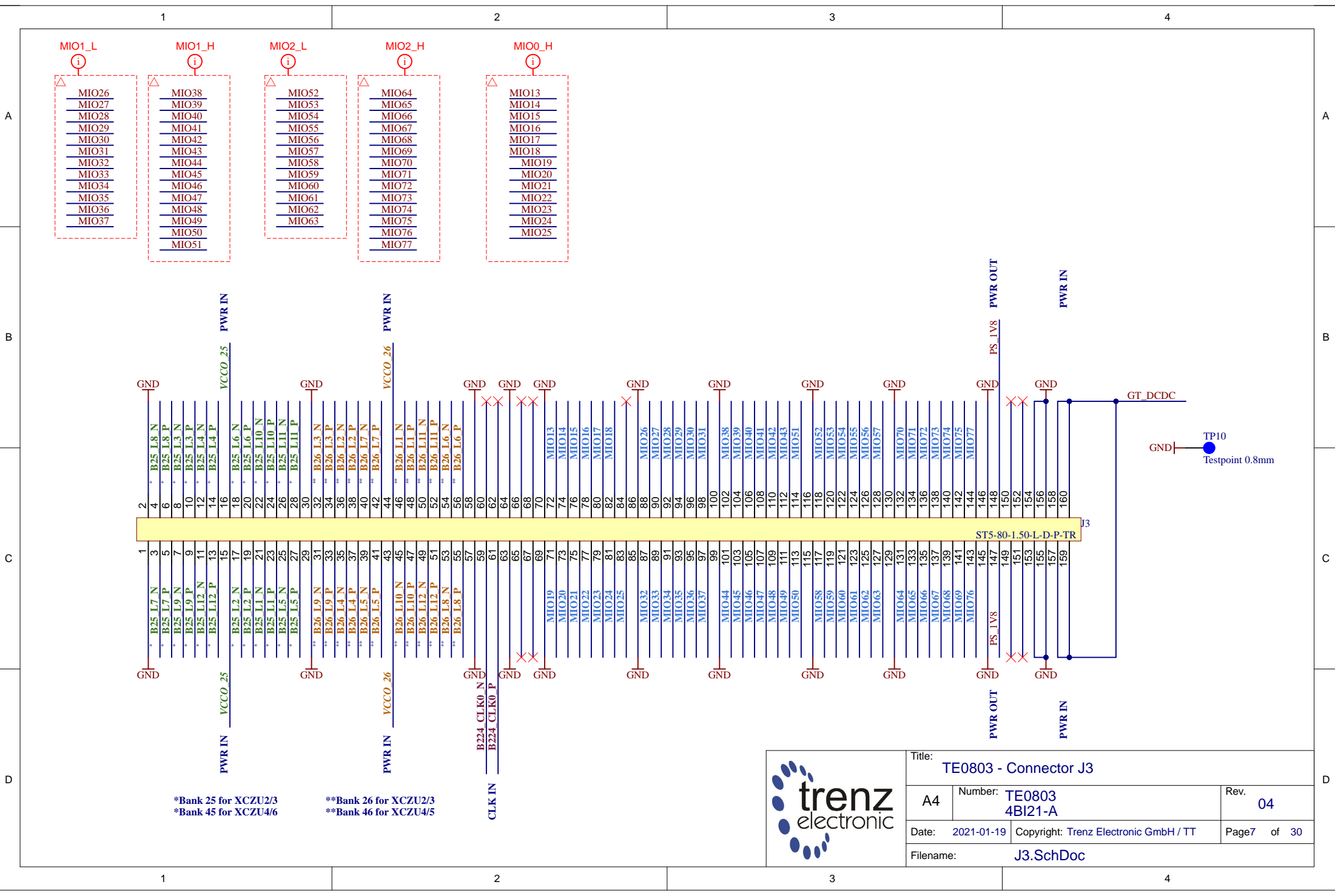
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A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 6 of 30
Filename: J2.SchDoc		

1

2

3

4

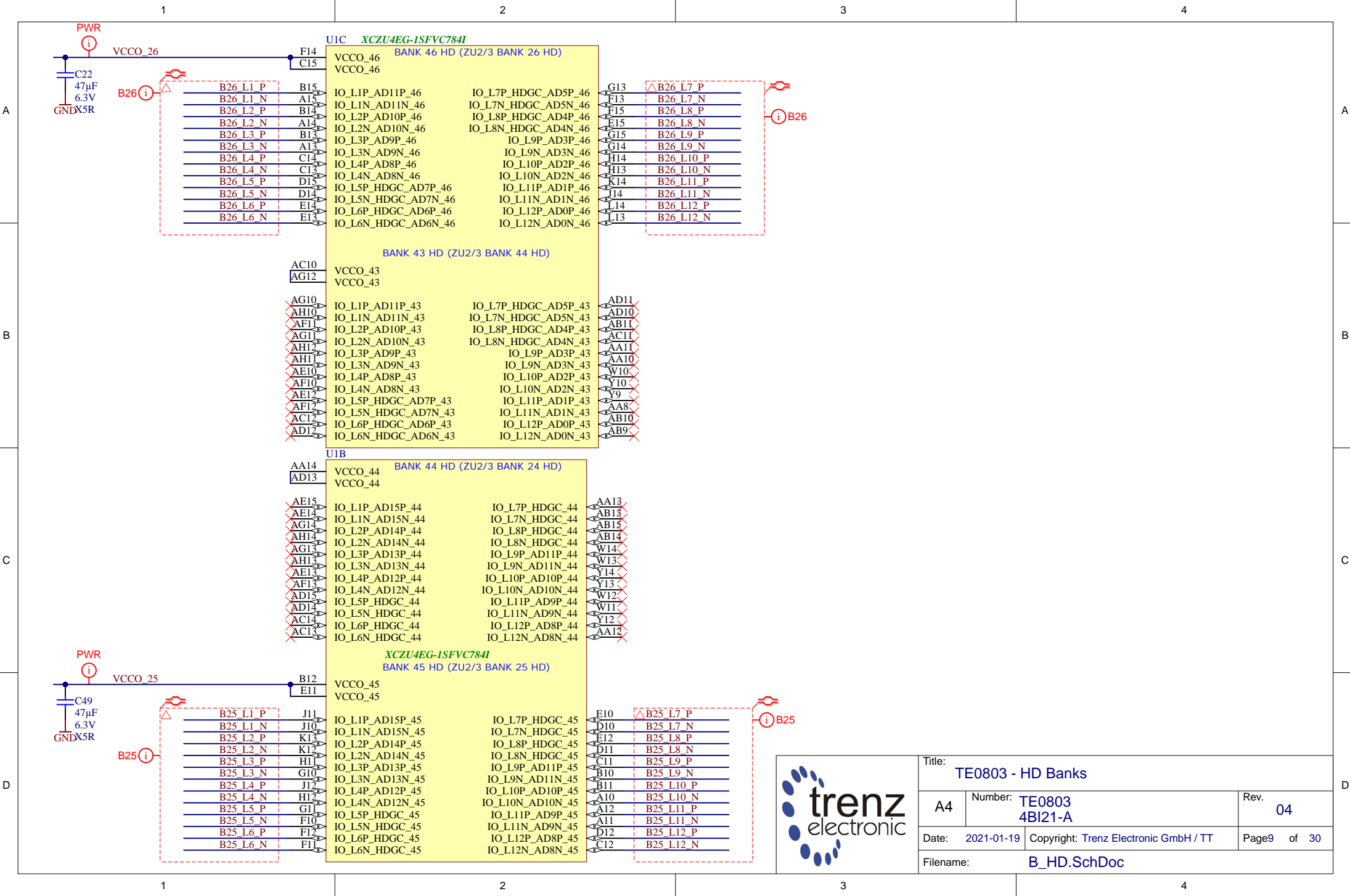


*Bank 25 for XCZU2/3
*Bank 45 for XCZU4/6

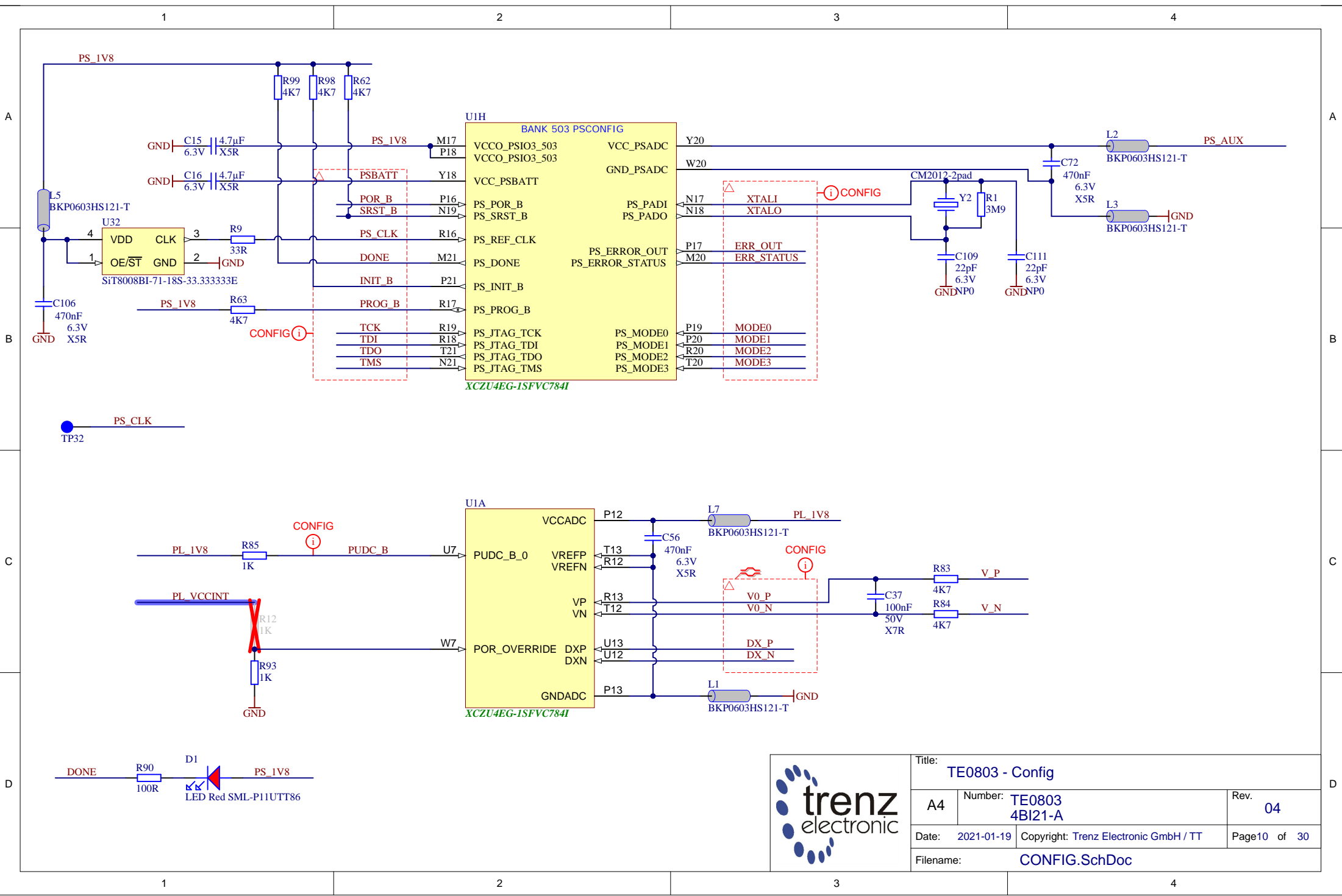
**Bank 26 for XCZU2/3
**Bank 46 for XCZU4/5



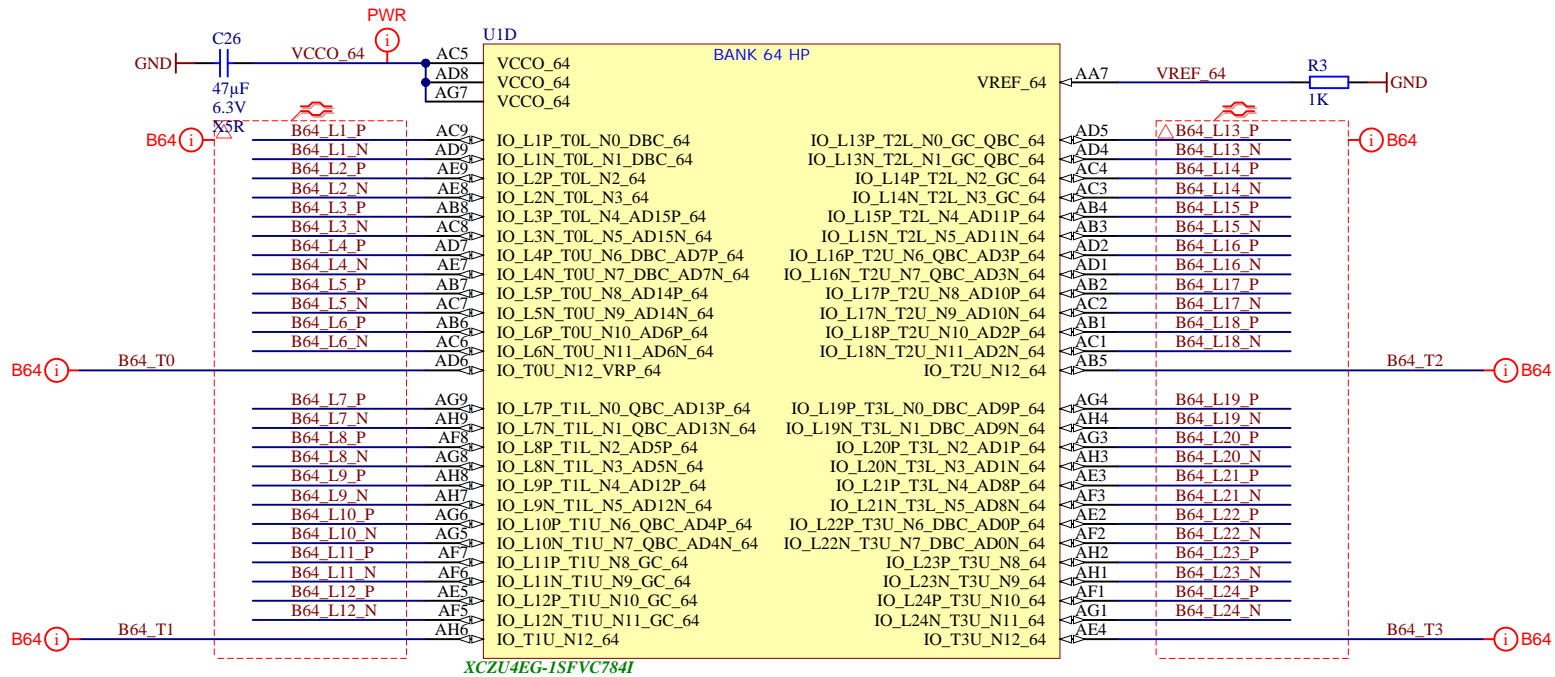
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 7 of 30
Filename: J3.SchDoc		



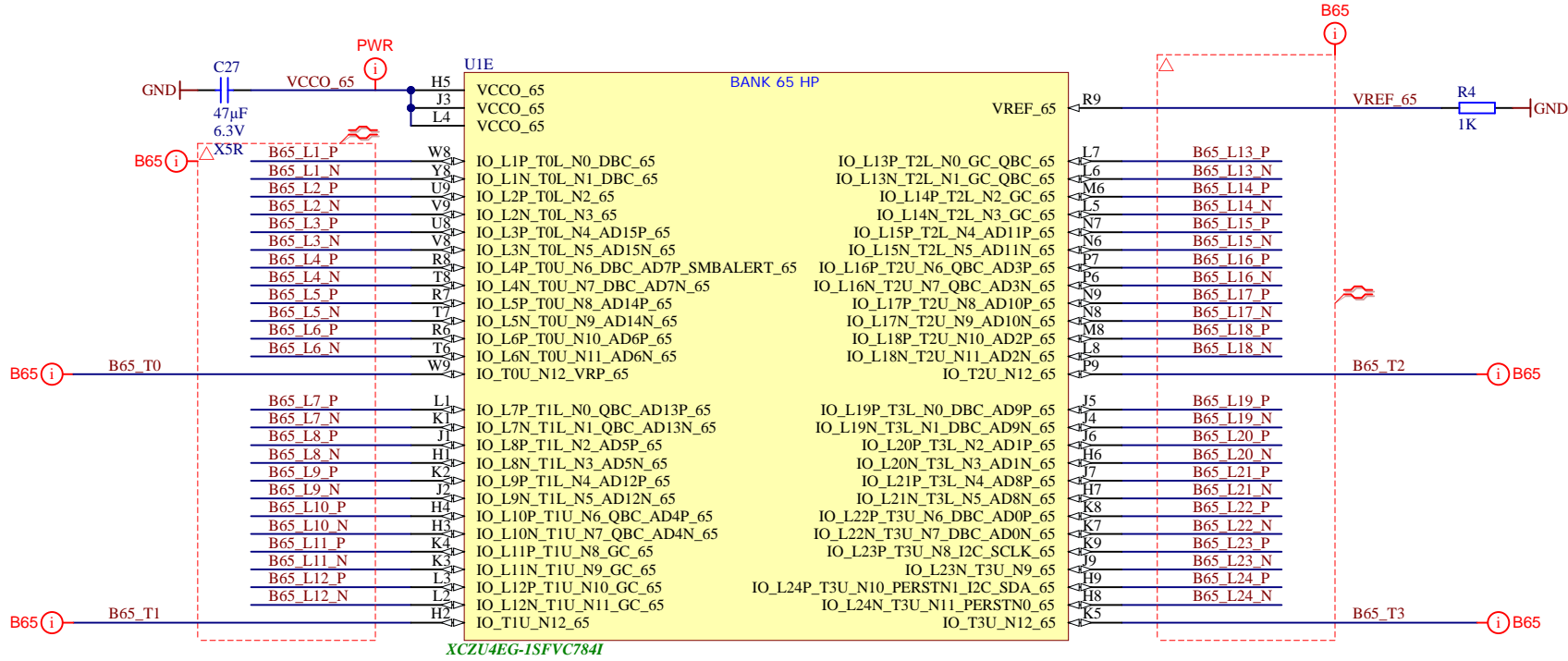
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A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page9 of 30
Filename: B_HD.SchDoc		



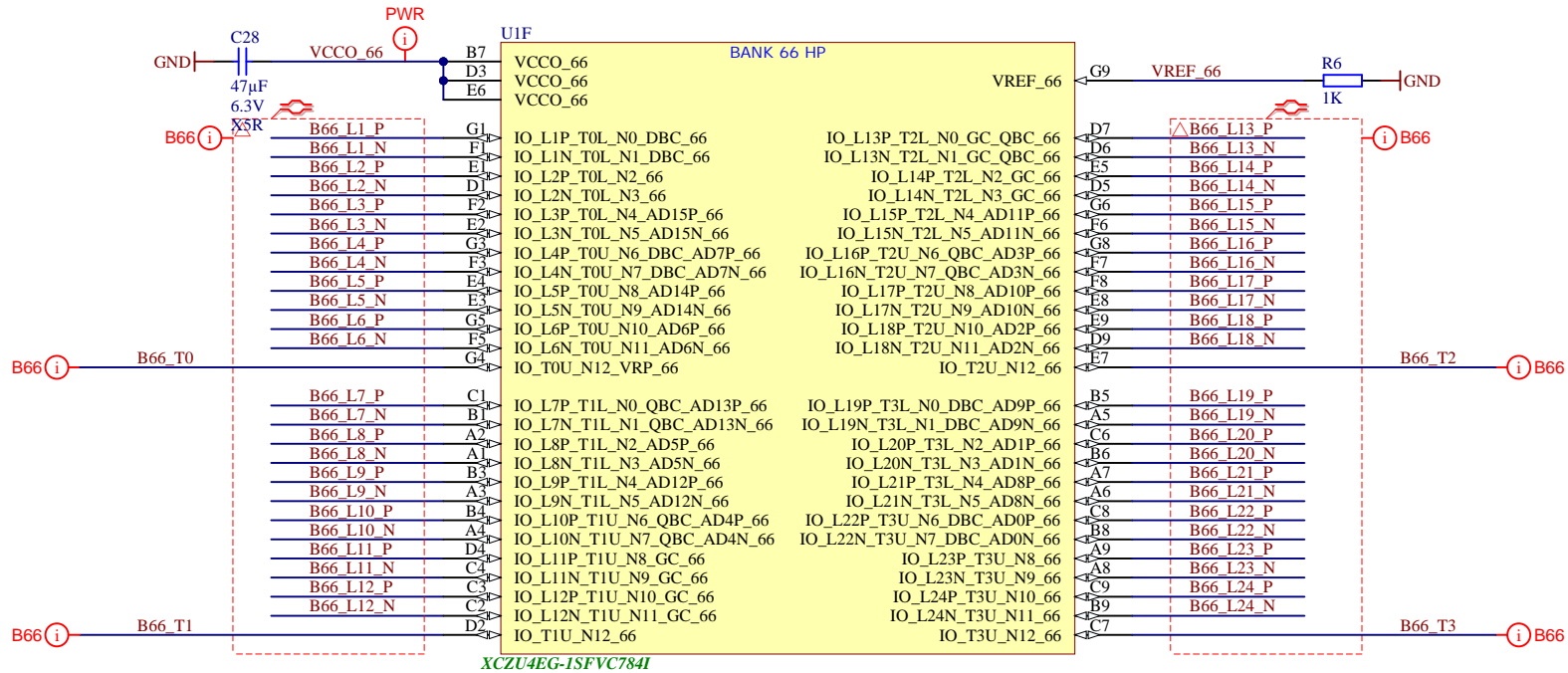
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 10 of 30
Filename: CONFIG.SchDoc		



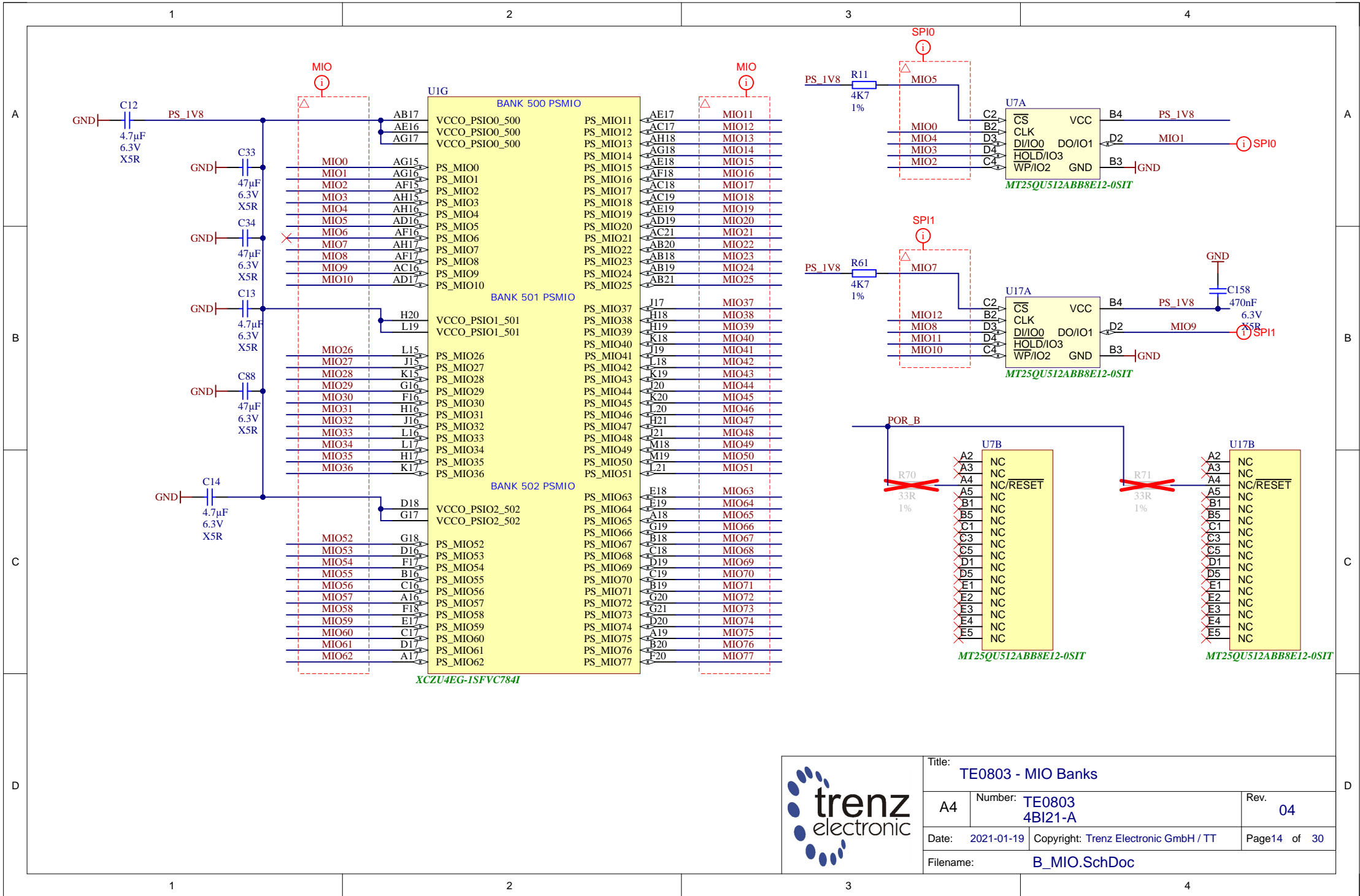
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A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 11 of 30
Filename: B64.SchDoc		




Title: TE0803 - B65		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 12 of 30
Filename: B65.SchDoc		



Title: TE0803 - B66		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page13 of 30
Filename: B66.SchDoc		



			Title: TE0803 - MIO Banks	
			A4	Number: TE0803 4BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT		Page 14 of 30
Filename: B_MIO.SchDoc				

A

B

C

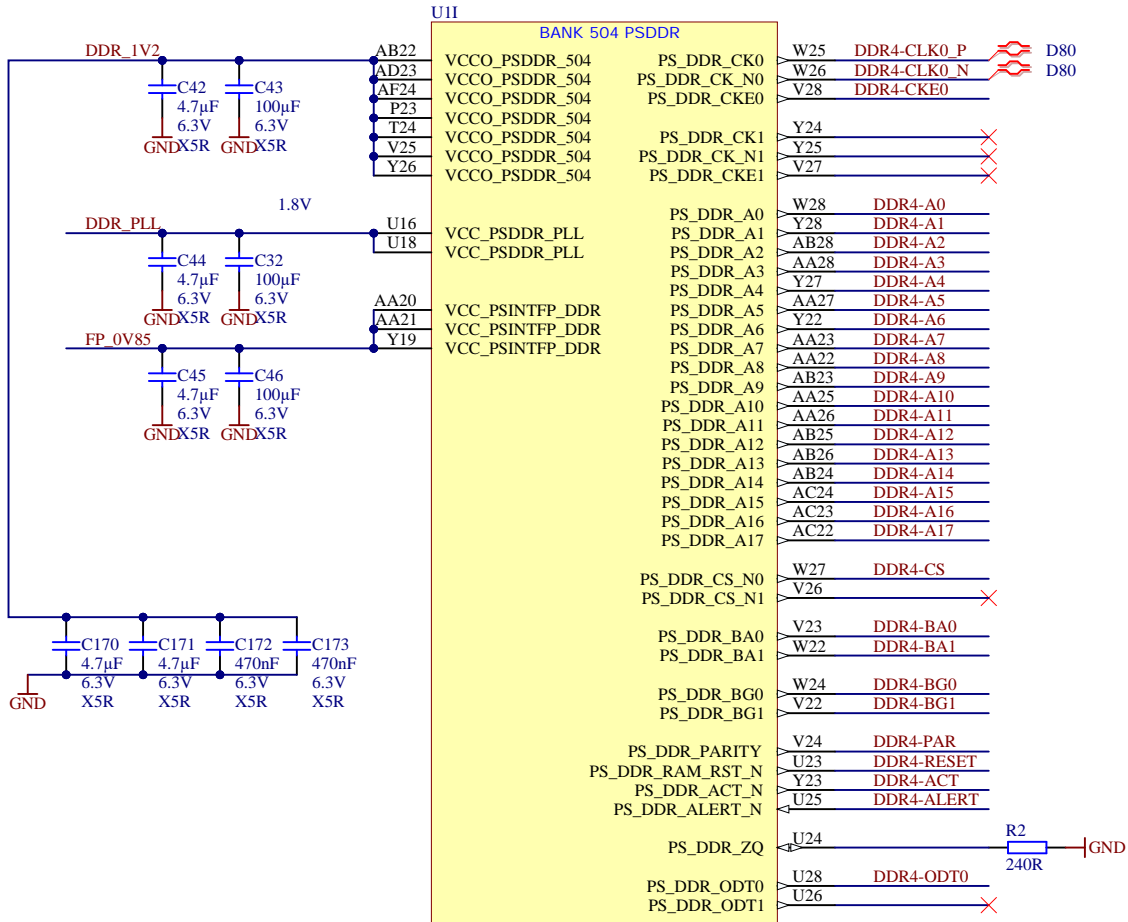
D

A

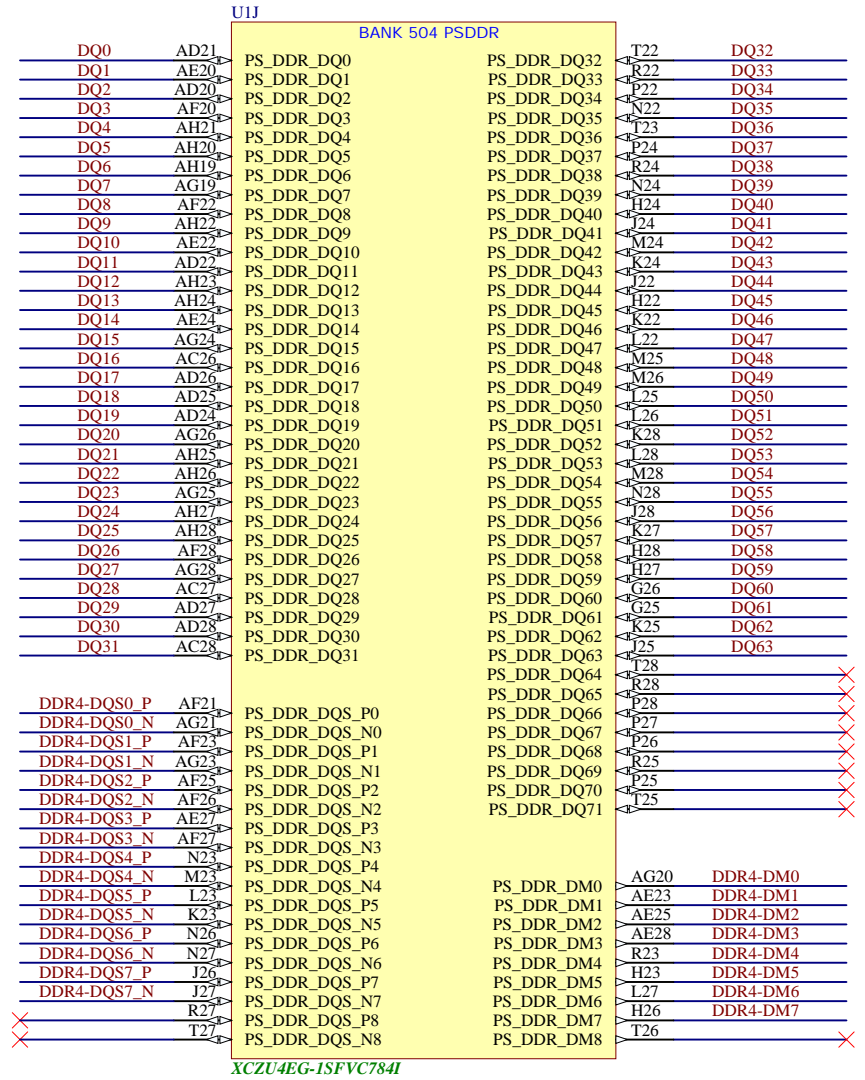
B

C

D



XCZU4EG-1SFVC784I



XCZU4EG-1SFVC784I



Title: TE0803 - PS_DDR		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 15 of 30
Filename: PS_DDR.SchDoc		

1

2

3

4

A

A

B

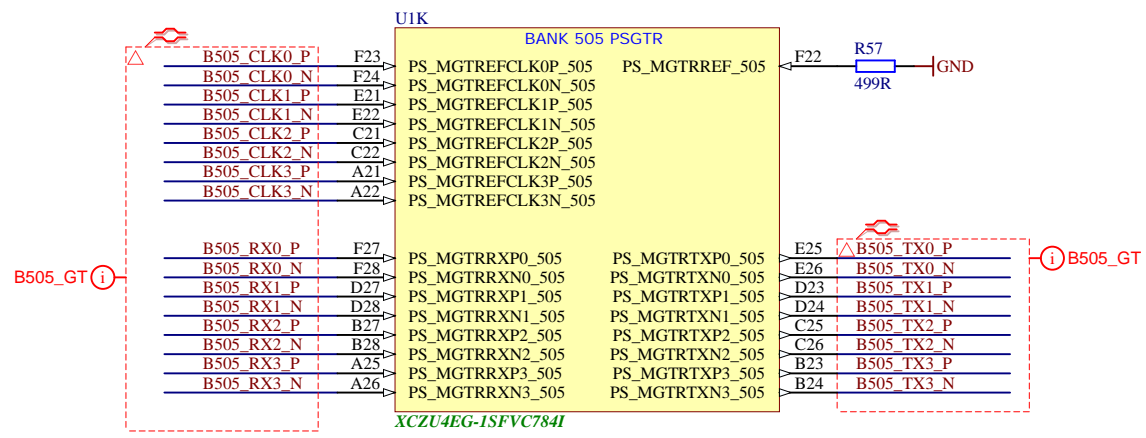
B

C

C

D

D



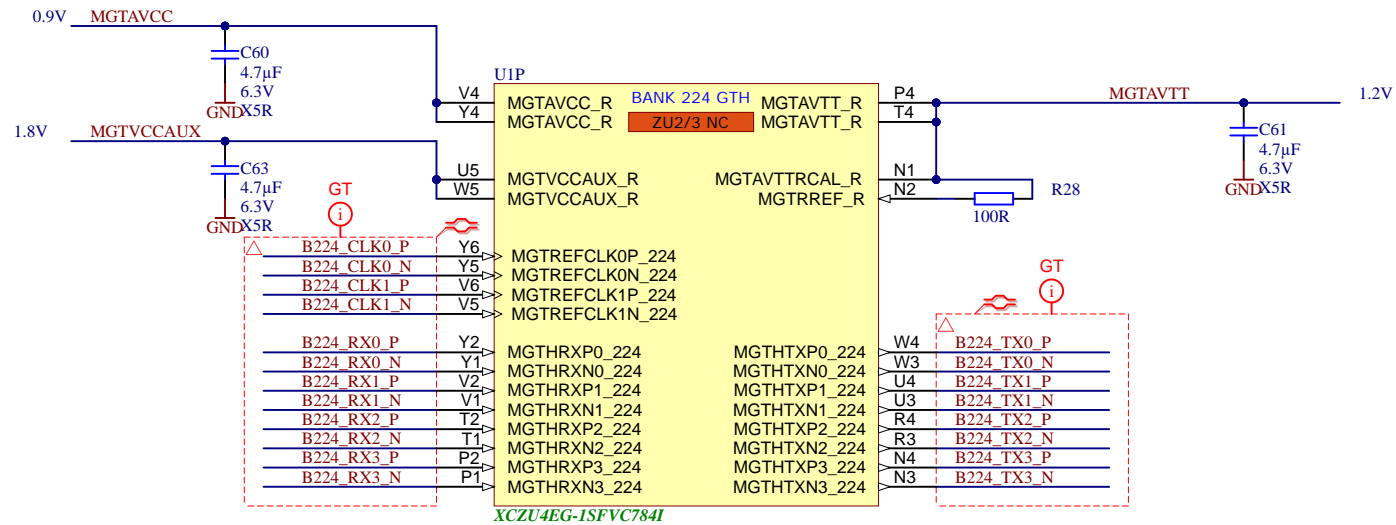
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	A4	Number: TE0803 4BI21-A	Rev. 04
	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 16 of 30
	Filename: B_PS_GT.SchDoc		


1

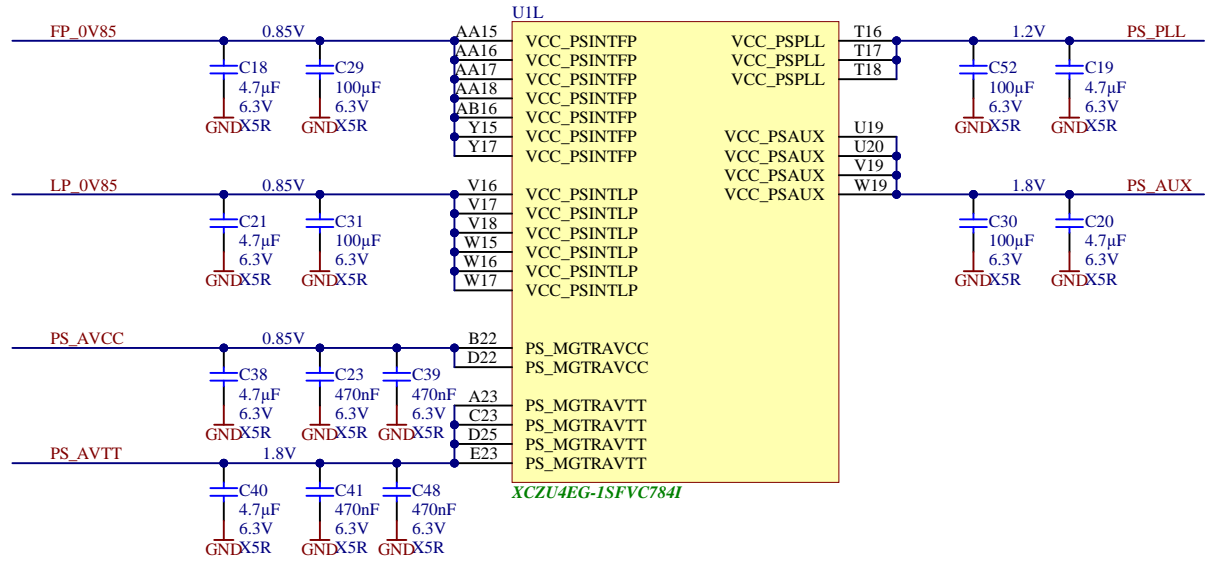
2


3

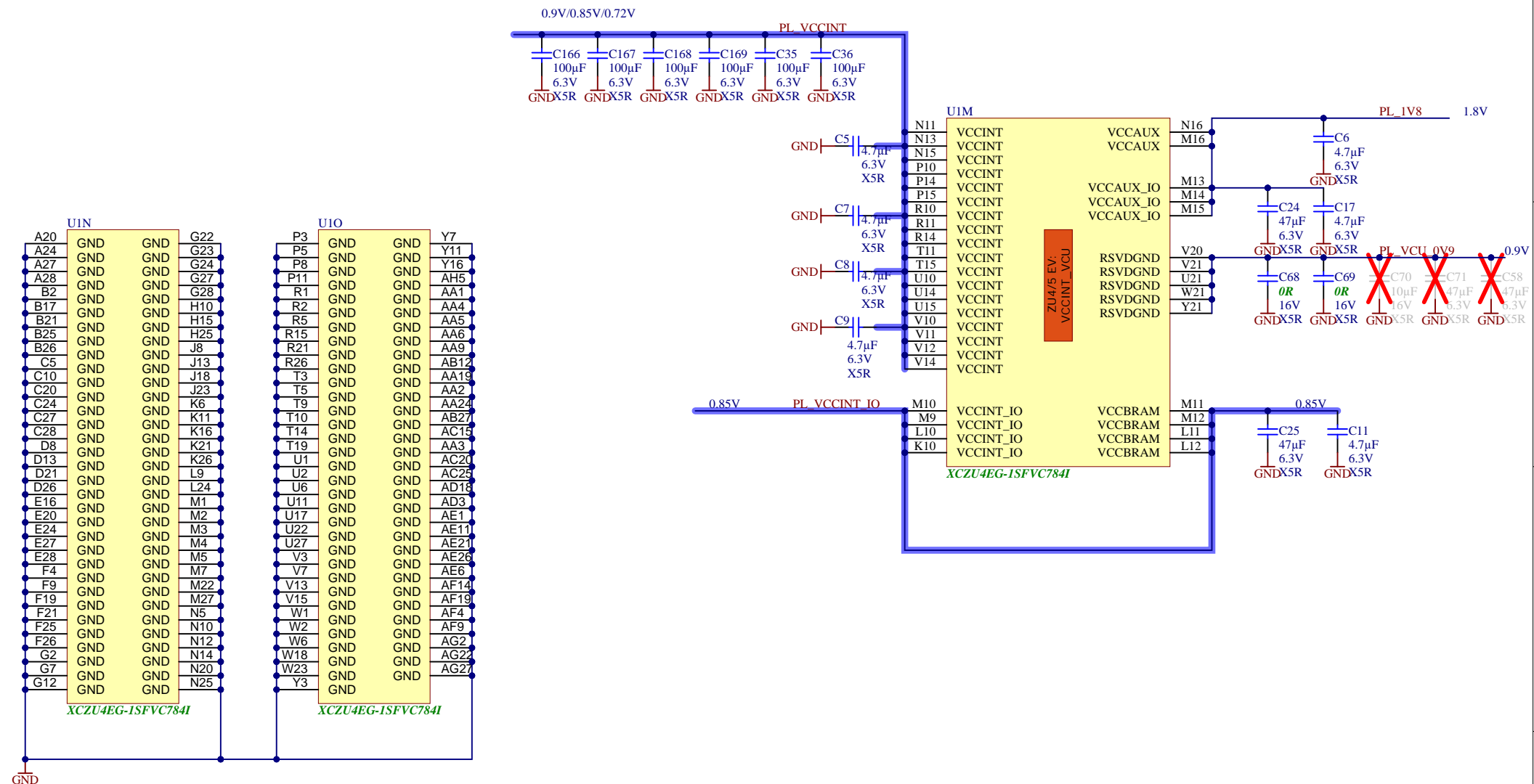
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		Title: TE0803 - B224GTH	
		A4	Number: TE0803 4BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT	
Filename: B_GT.SchDoc		Page 17 of 30	

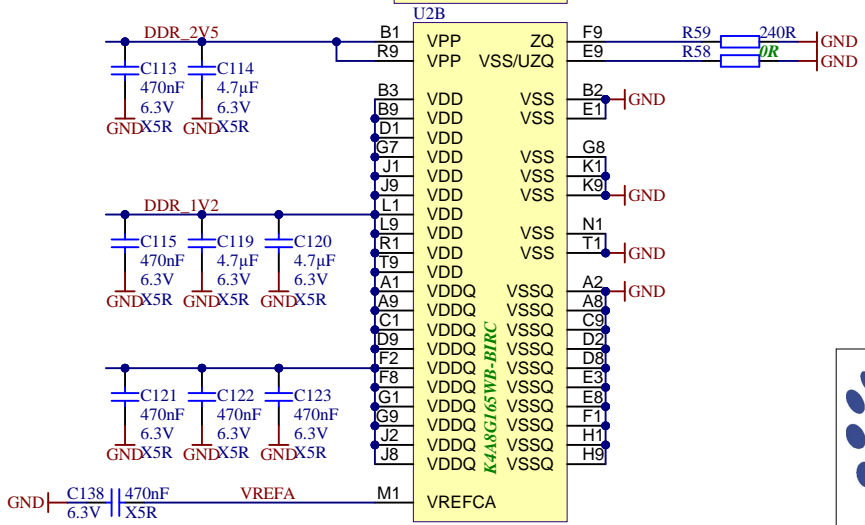
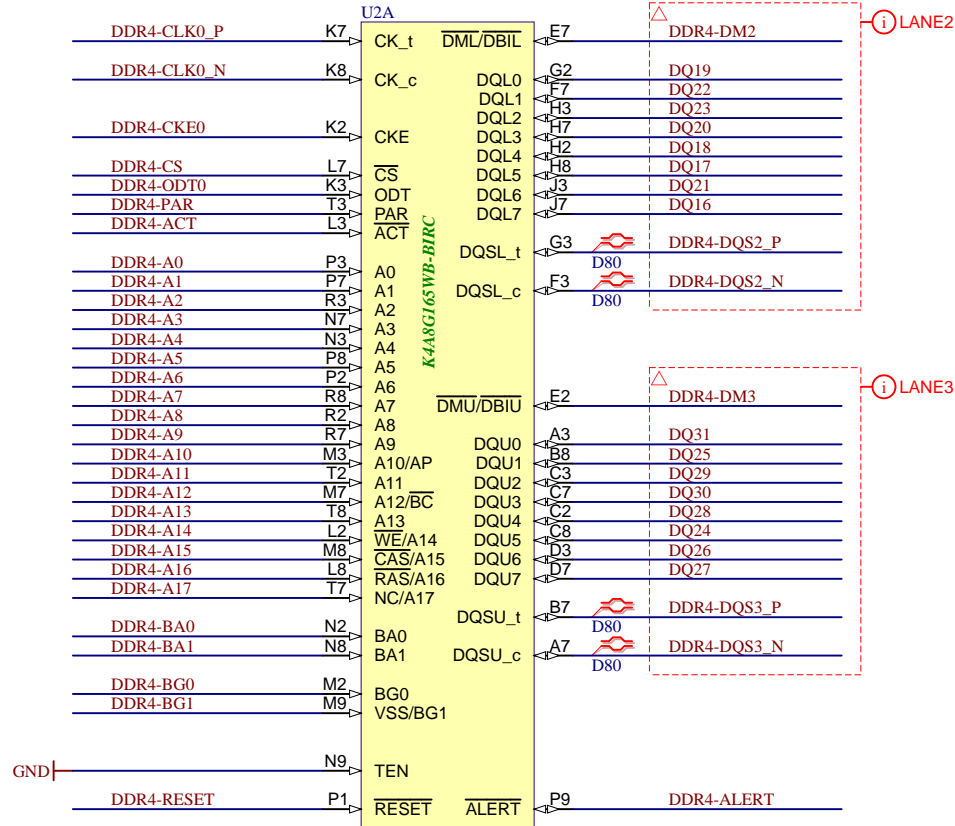


	Title: TE0803 - ZU_PS_POWER		
	A4	Number: TE0803 4BI21-A	Rev. 04
	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 18 of 30
	Filename: ZU_PS_POWER.SchDoc		

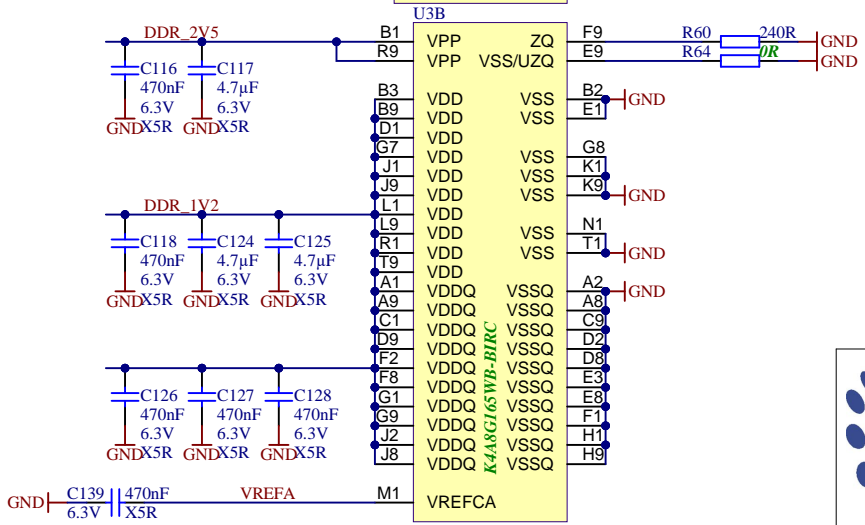
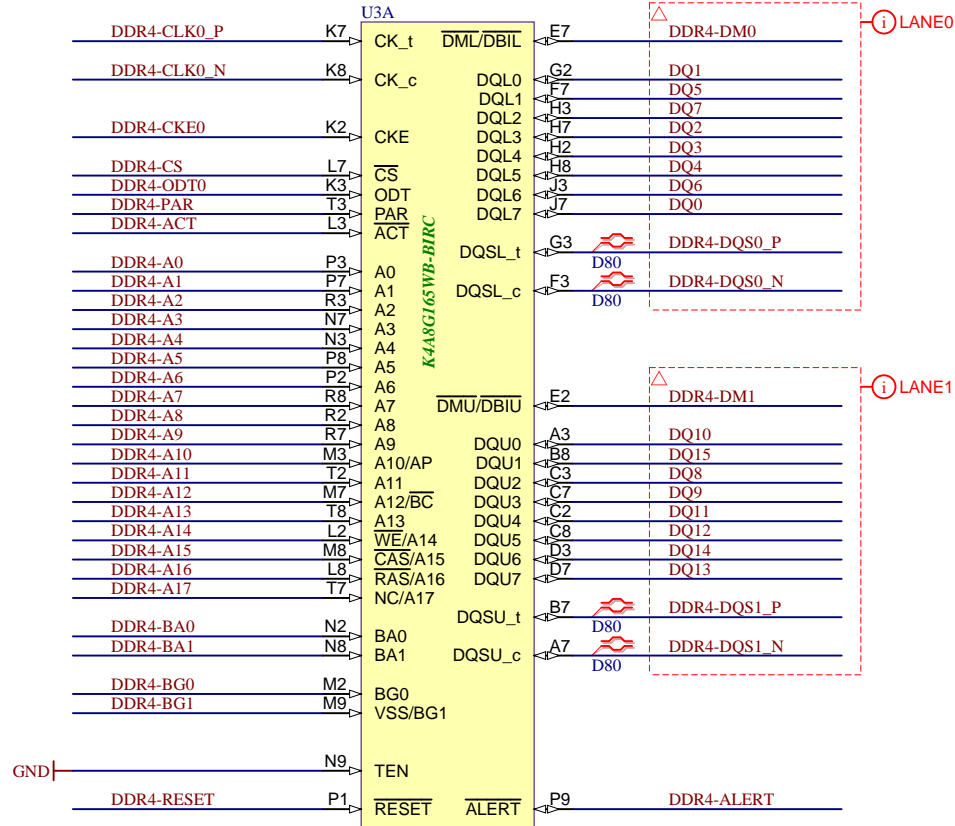



UIN			UIO		
A20	GND	GND	G22	P3	GND
A24	GND	GND	G23	P5	GND
A27	GND	GND	G24	P8	GND
A28	GND	GND	G27	P11	GND
B2	GND	GND	G28	R1	GND
B17	GND	GND	H10	R2	GND
B21	GND	GND	H15	R5	GND
B25	GND	GND	H25	R15	GND
B26	GND	GND	J8	R21	GND
C5	GND	GND	J13	R26	GND
C10	GND	GND	J18	T3	GND
C20	GND	GND	J23	T5	GND
C24	GND	GND	K6	T9	GND
C27	GND	GND	K11	T10	GND
C28	GND	GND	K16	T14	GND
D8	GND	GND	K21	T19	GND
D13	GND	GND	K26	U1	GND
D21	GND	GND	L9	U2	GND
D26	GND	GND	L24	U6	GND
E16	GND	GND	M1	U11	GND
E20	GND	GND	M2	U17	GND
E24	GND	GND	M3	U22	GND
E27	GND	GND	M4	U27	GND
E28	GND	GND	M5	V3	GND
F4	GND	GND	M7	V7	GND
F9	GND	GND	M22	V13	GND
F19	GND	GND	M27	V15	GND
F21	GND	GND	N5	W1	GND
F25	GND	GND	N10	W2	GND
F26	GND	GND	N12	W6	GND
G2	GND	GND	N14	W18	GND
G7	GND	GND	N20	W23	GND
G12	GND	GND	N25	Y3	GND
				Y7	GND
				Y11	GND
				Y16	GND
				AH5	GND
				AA1	GND
				AA4	GND
				AA5	GND
				AA6	GND
				AA9	GND
				AB12	GND
				AA19	GND
				AA2	GND
				AA24	GND
				AB27	GND
				AC15	GND
				AA3	GND
				AC20	GND
				AC25	GND
				AD18	GND
				AD3	GND
				AE1	GND
				AE11	GND
				AE21	GND
				AE26	GND
				AE6	GND
				AF14	GND
				AF19	GND
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				AF9	GND
				AG2	GND
				AG22	GND
				AG27	GND

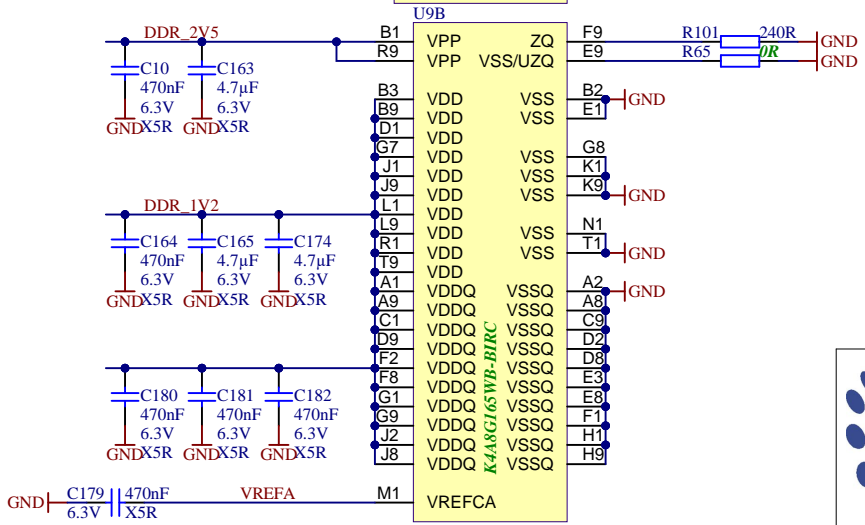
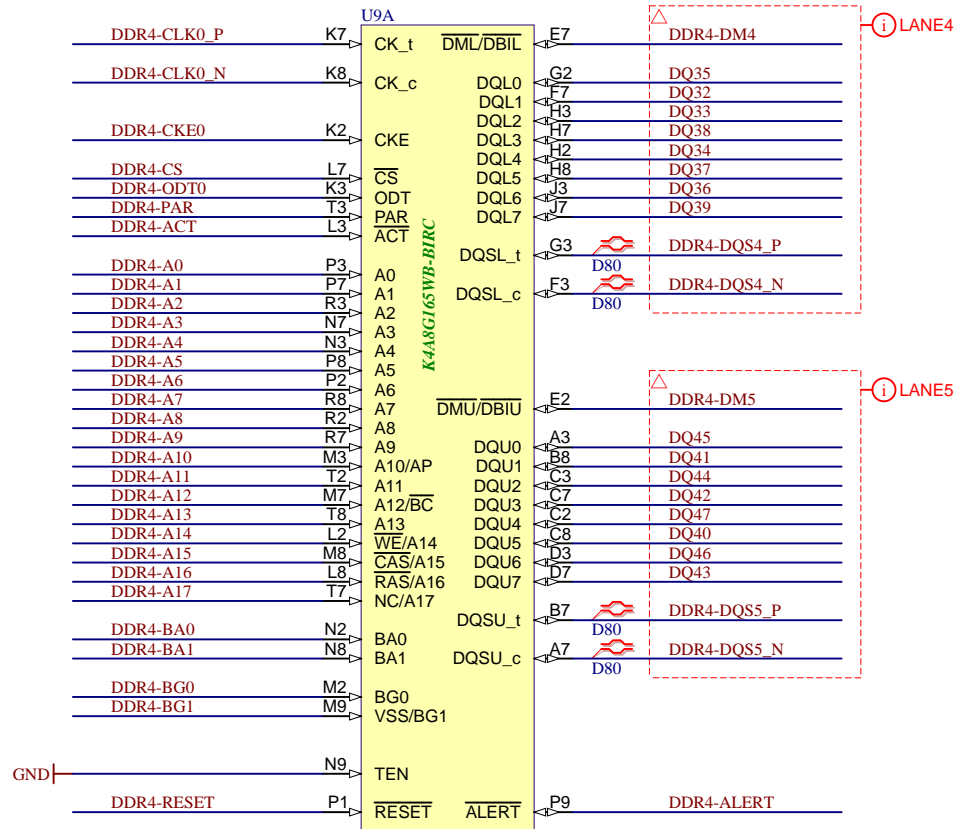

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		A4	Number: TE0803 4BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT	
Filename: ZU_POWER.SchDoc		Page 19 of 30	



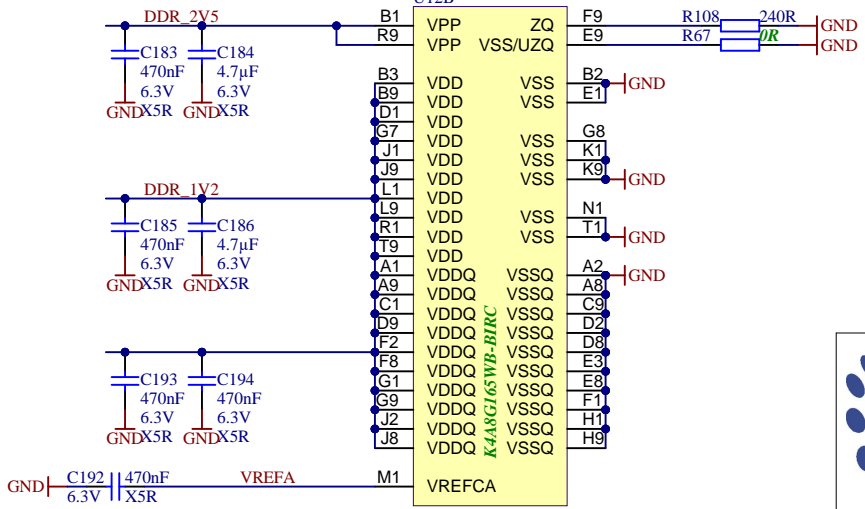
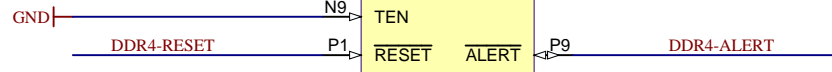
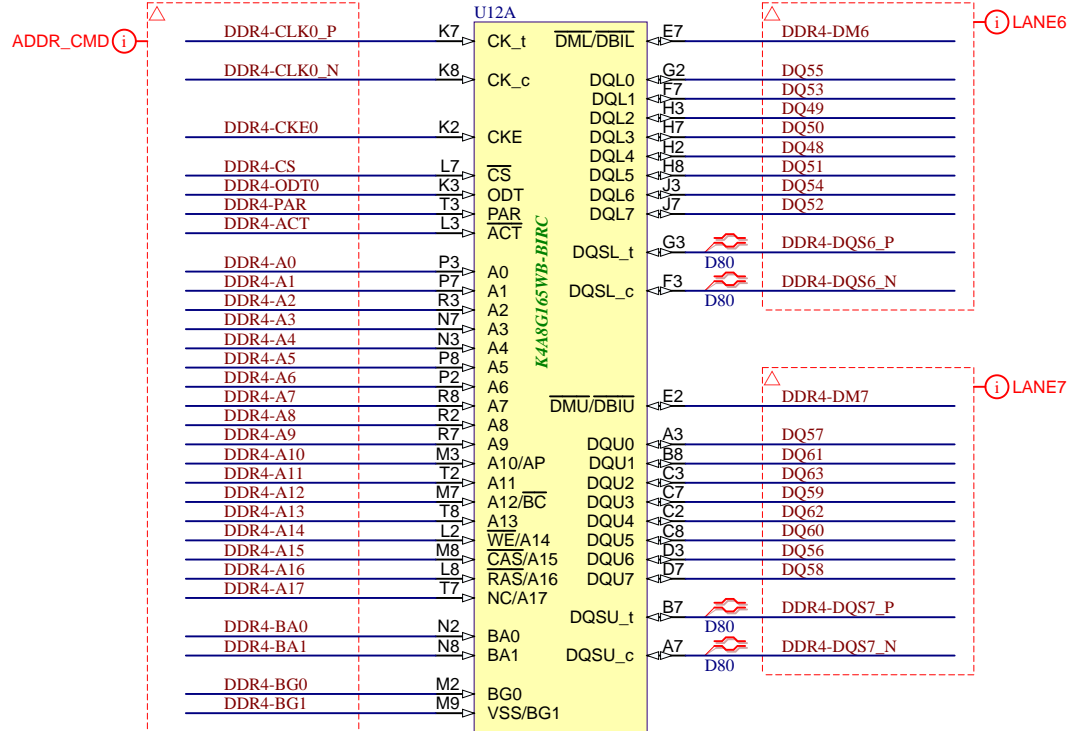
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A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page20 of 30
Filename: DDR4-RAM.SchDoc		

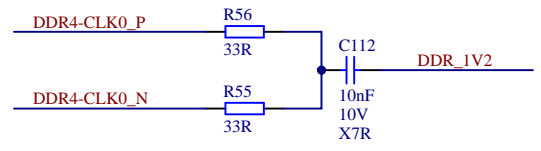
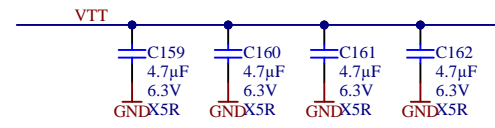
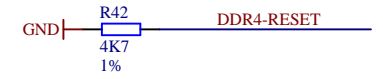
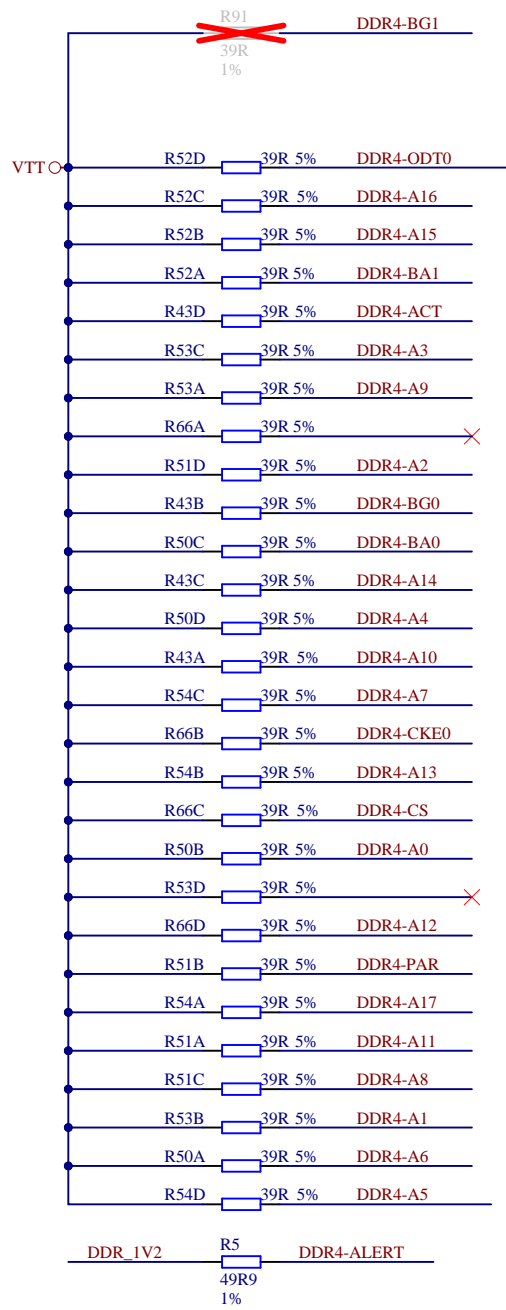
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A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page21 of 30
Filename: DDR4-RAM_2.SchDoc		

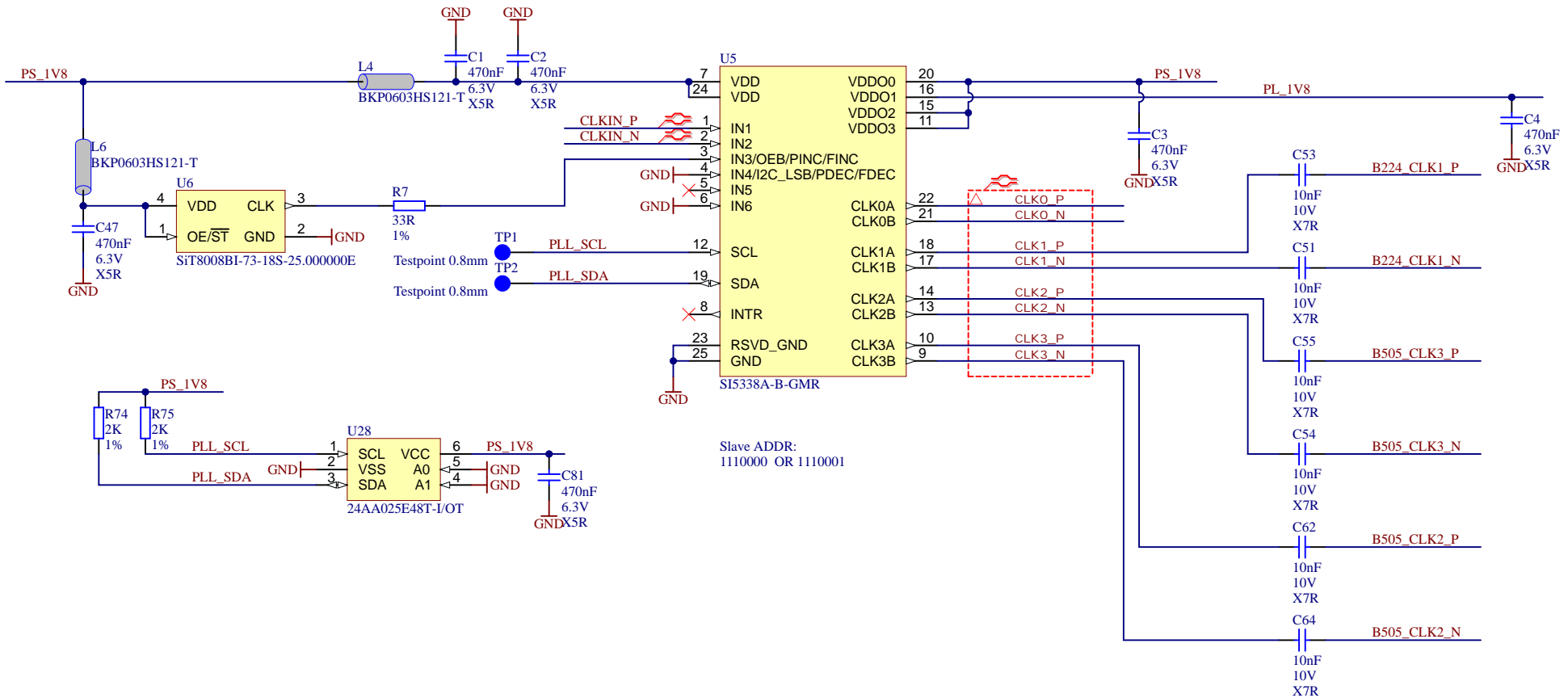
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A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 22 of 30
Filename: DDR4-RAM_3.SchDoc		




Title: TE0803 - DDR4_4_RAM		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 23 of 30
Filename: DDR4-RAM_4.SchDoc		



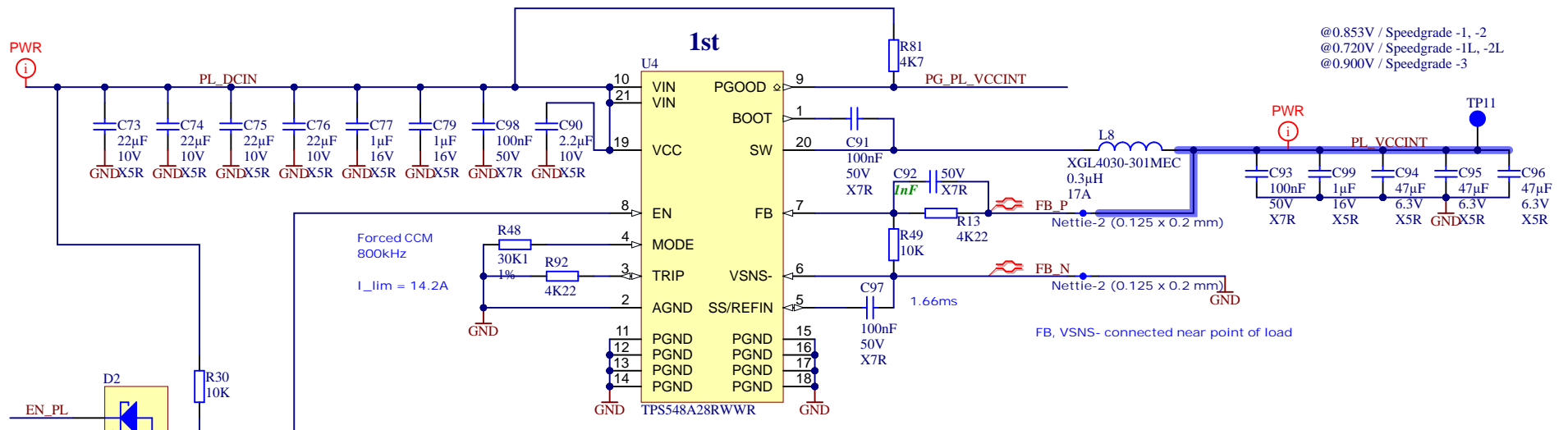
Title: TE0803 - DDR4_TERM		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page24 of 30
Filename: DDR4-TERM.SchDoc		



Slave ADDR:
1110000 OR 1110001

		Title: TE0803 - CLOCK	
		A4	Number: TE0803 4BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT	
Page 25 of 30		Page 25 of 30	
Filename: Clock.SchDoc		Filename: Clock.SchDoc	

PL VCCINT



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

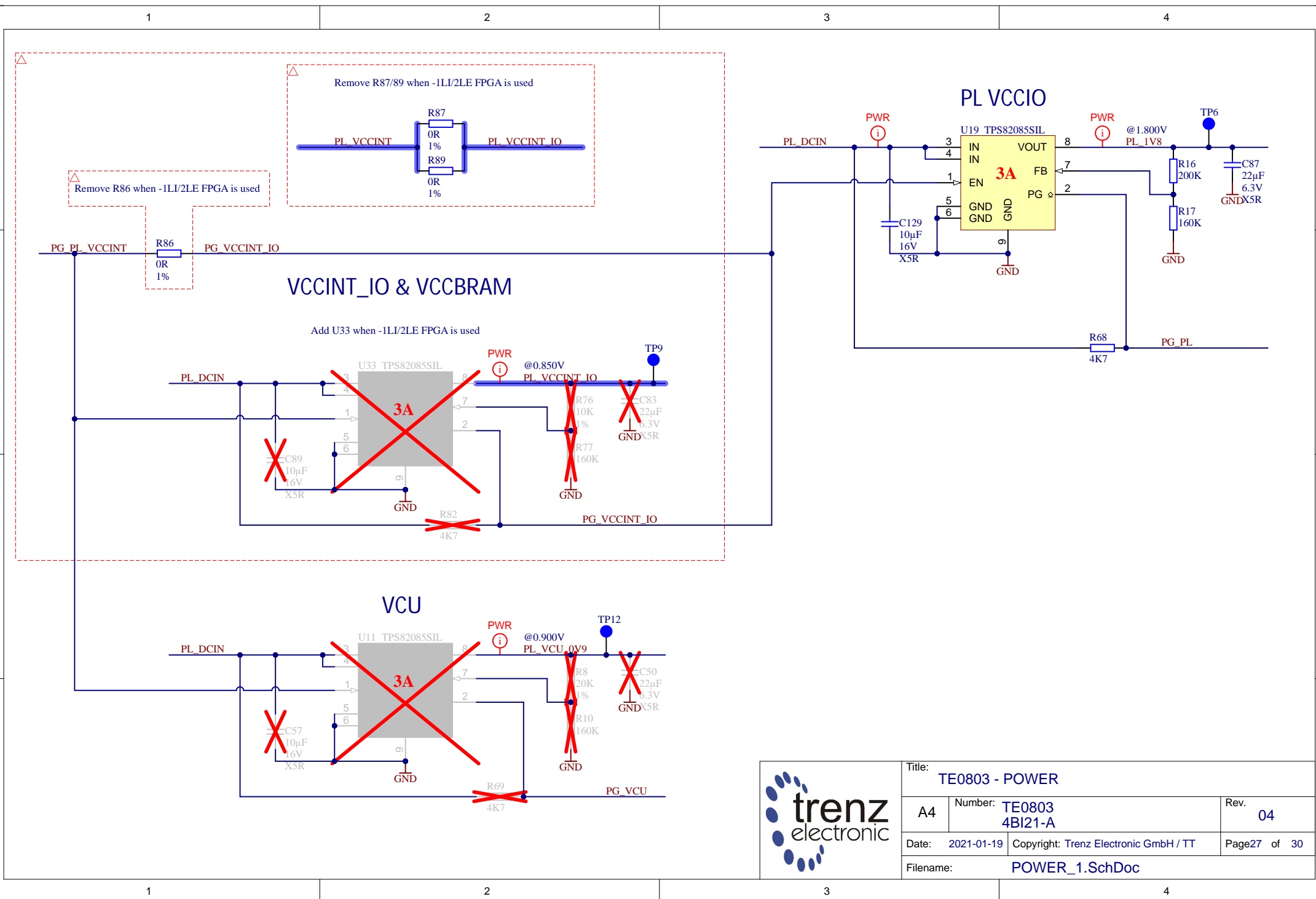
FPGA Speed grade:

-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)



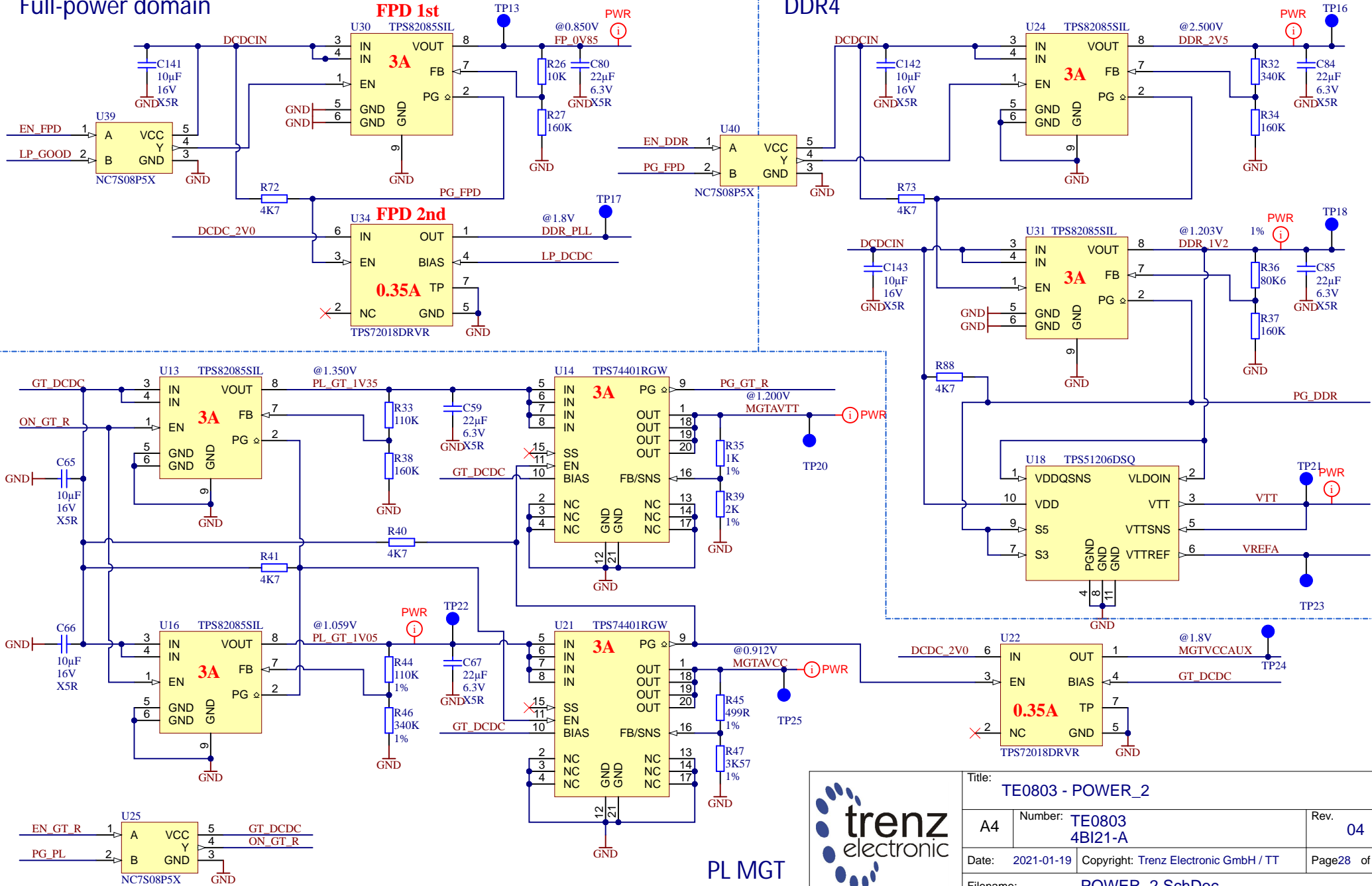
Title: TE0803 - POWER		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page26 of 30
Filename: POWER.SchDoc		



Title: TE0803 - POWER		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 27 of 30
Filename: POWER_1.SchDoc		

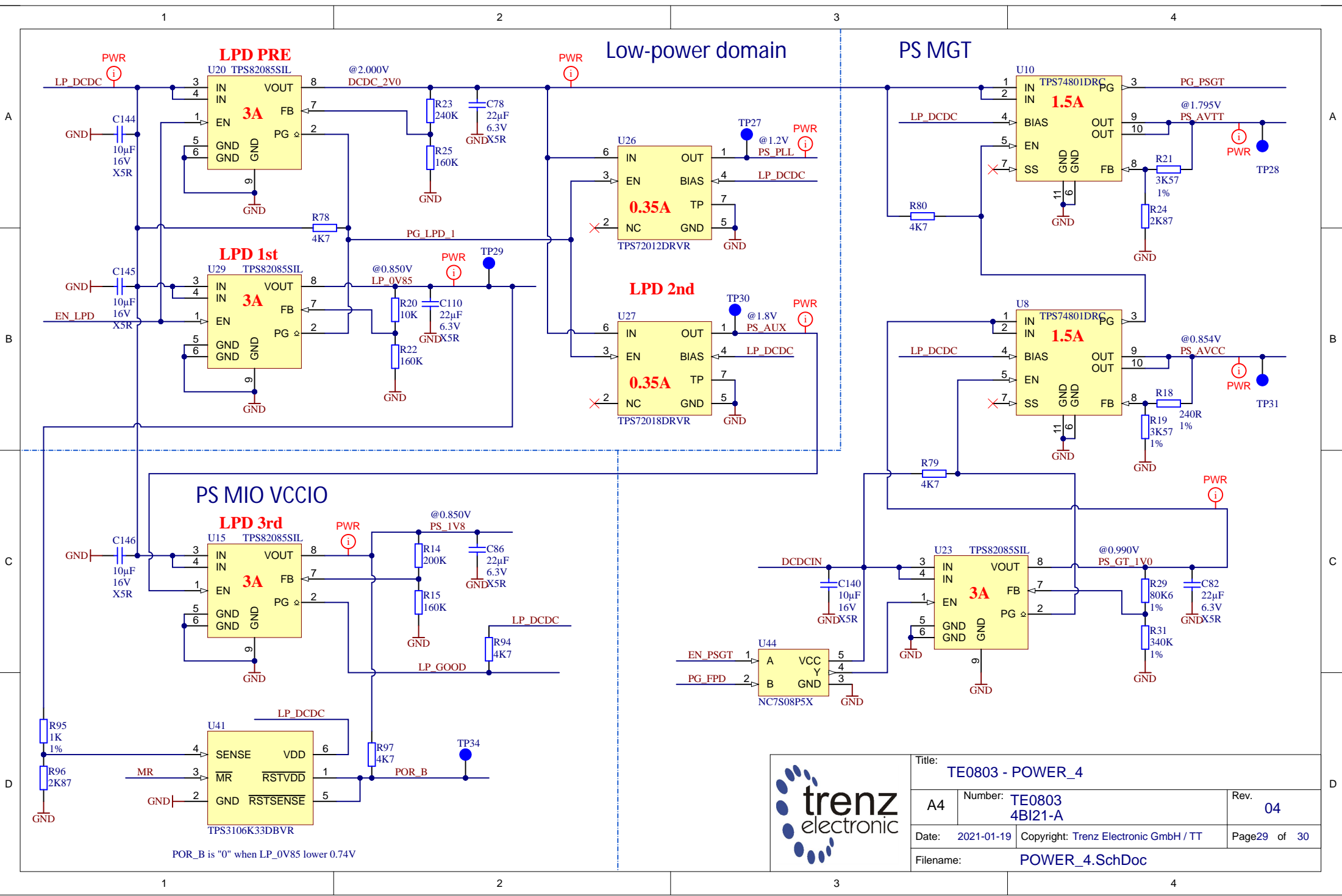
Full-power domain

DDR4



Title: TE0803 - POWER_2		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 28 of 30
Filename: POWER_2.SchDoc		

PL MGT




POR_B is "0" when LP_0V85 lower 0.74V



Title: TE0803 - POWER_4		
A4	Number: TE0803 4BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 29 of 30
Filename: POWER_4.SchDoc		

REV	DATE	Description	
-01		Initial revision	VT
-01a	20.11.2017	1. VCU voltage set to 0.9V, R20 changed to 40K , PL_VCU_1V0 renamed to PL_VCU_0V9.	VT
-02	20.06.2018	1. Added LDO to DDR_PLL 2. All differential pairs wath length matched with tollerance 0.1mm (excluding package delays) 3. Added MAC EEPROM U28 4. VPS_MGTRAVCC set to 0.85V 5. Added pull-up resistors R68,R69	VT
-03	21.02.2019	1. Added support of DDP DDR4 2. Added support of Low power FPGA (-L1/L2). 3. Revised testpoints 4. Revised J1-J4 connectors net label style	VY
-04	15.12.2020	1. Revised PL_VCCINT power supply. EN63A0QI replaced by TPS548A28RWWR. PCB: revised routing and components placement; 2. Added support of wide SDRAM DDR4 packages. PCB: revised routing and components placement; 3. Added option to select POR_OVERRIDE level (R12 and R93) 4. VCCO pins if unused Bank 44 connected together. Same for unused Bank 24 (UG583 recomendation) 5. PCB: updated signal trace lengths. 6. PCB: updated silkscreen. Added company address, CE and WEEE symbols; 7. PCB: added module orientation rectangle poiner 8. Changed resistors value of R29, R31, R35, R39, R44-R47 (BOM optimization) 9. Removed traceability part (Obsolete component)	VY
-04	23.02.2022	10. Changed capacitor C92 for all variants from 100 nF to 1 nF.	ED

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