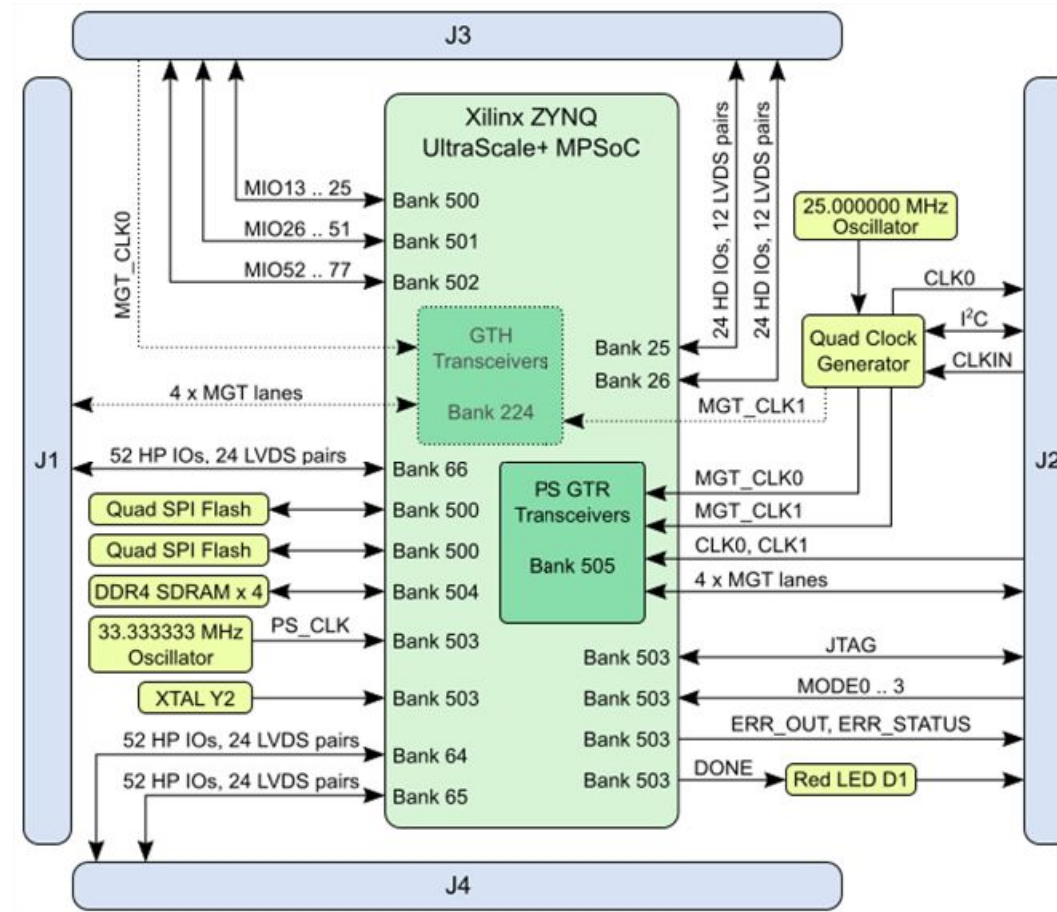



Regarding the usage of our schematics and alike documentation for Trenz module TE0803.

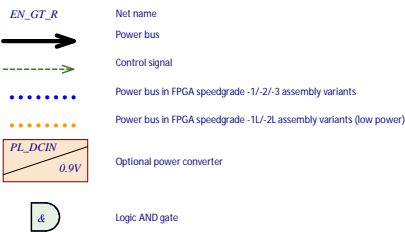
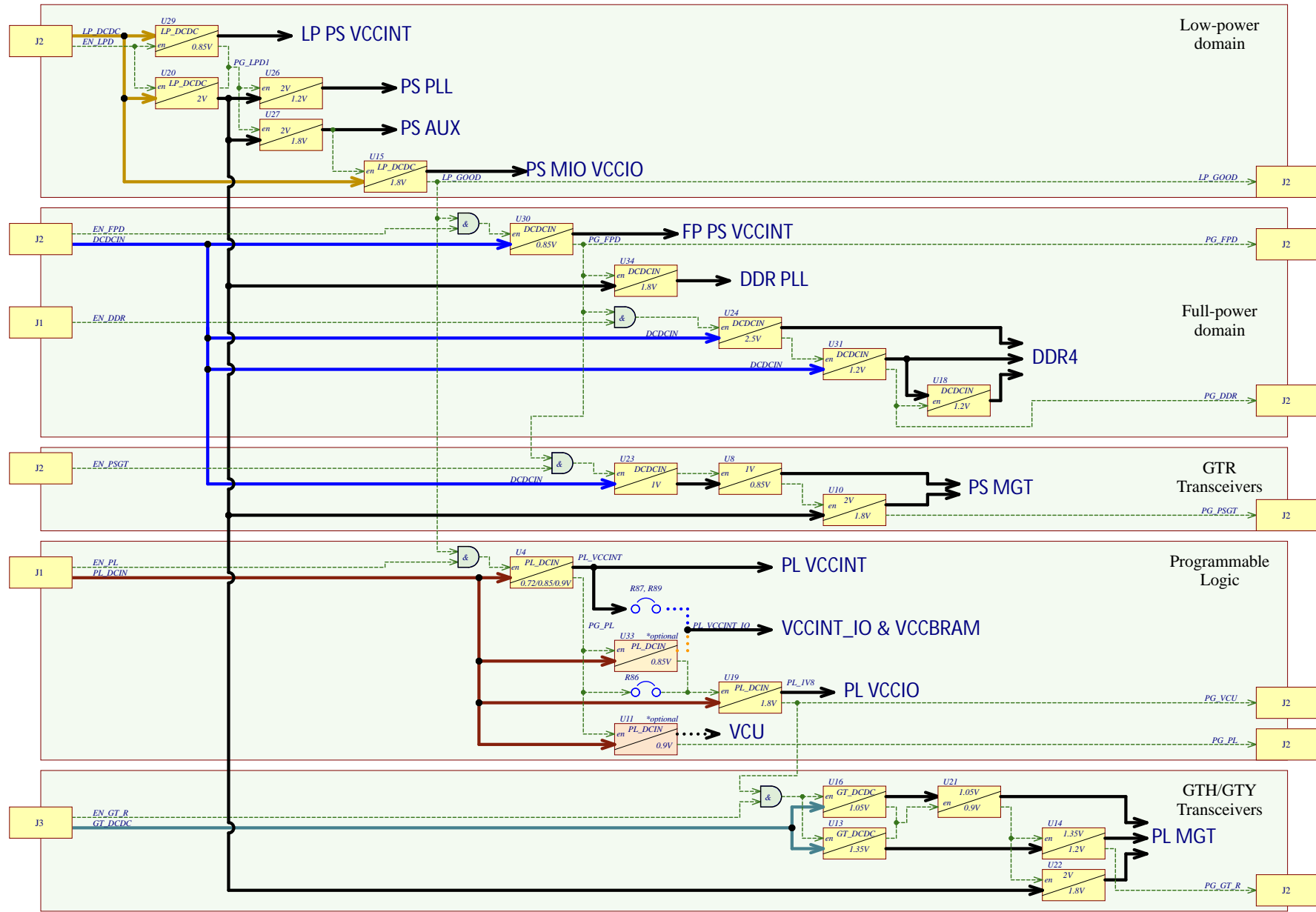
Project is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation, even if the design is just adapted or modified. TE0803 is protected under such right and in case of plagiarism we will have to do anything necessary in order to protect our assets.

Schematics and other handouts serve for informational purposes only!

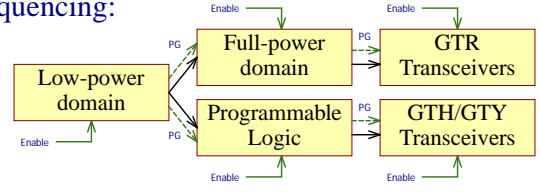
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	A4	Number: TE0803 3BI21-A	Rev. 04
	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 1 of 30
	Filename: Legal Notices Modules.SchDoc		



		Title: TE0803 - System Overview	
		A4	Number: TE0803 3BI21-A
Date: 2021-01-19		Copyright: 2015 Trenz Electronic GmbH	
Filename: TE0803-Overview.SchDoc		Page 2 of 30	



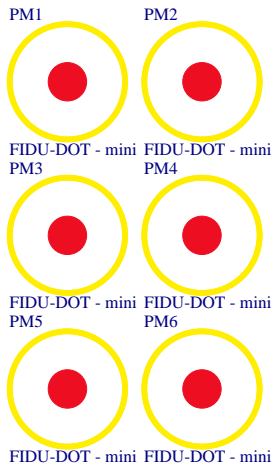
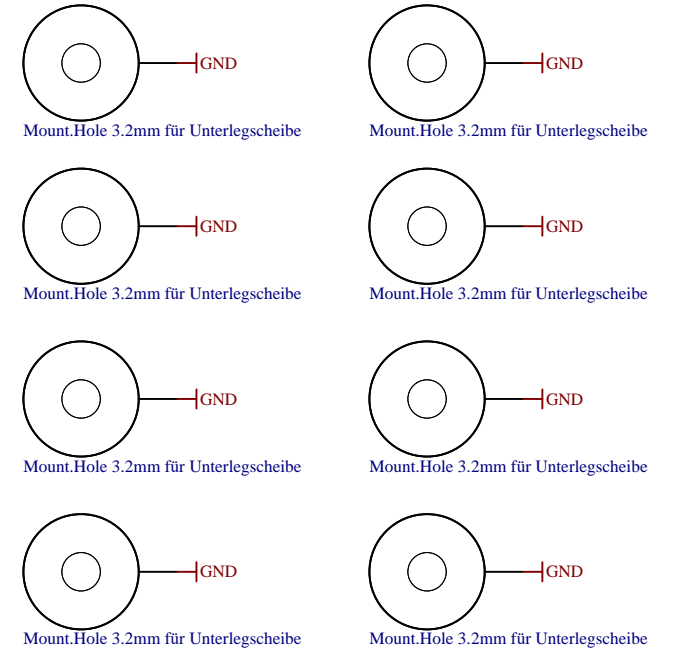
Power-on sequencing:



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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:




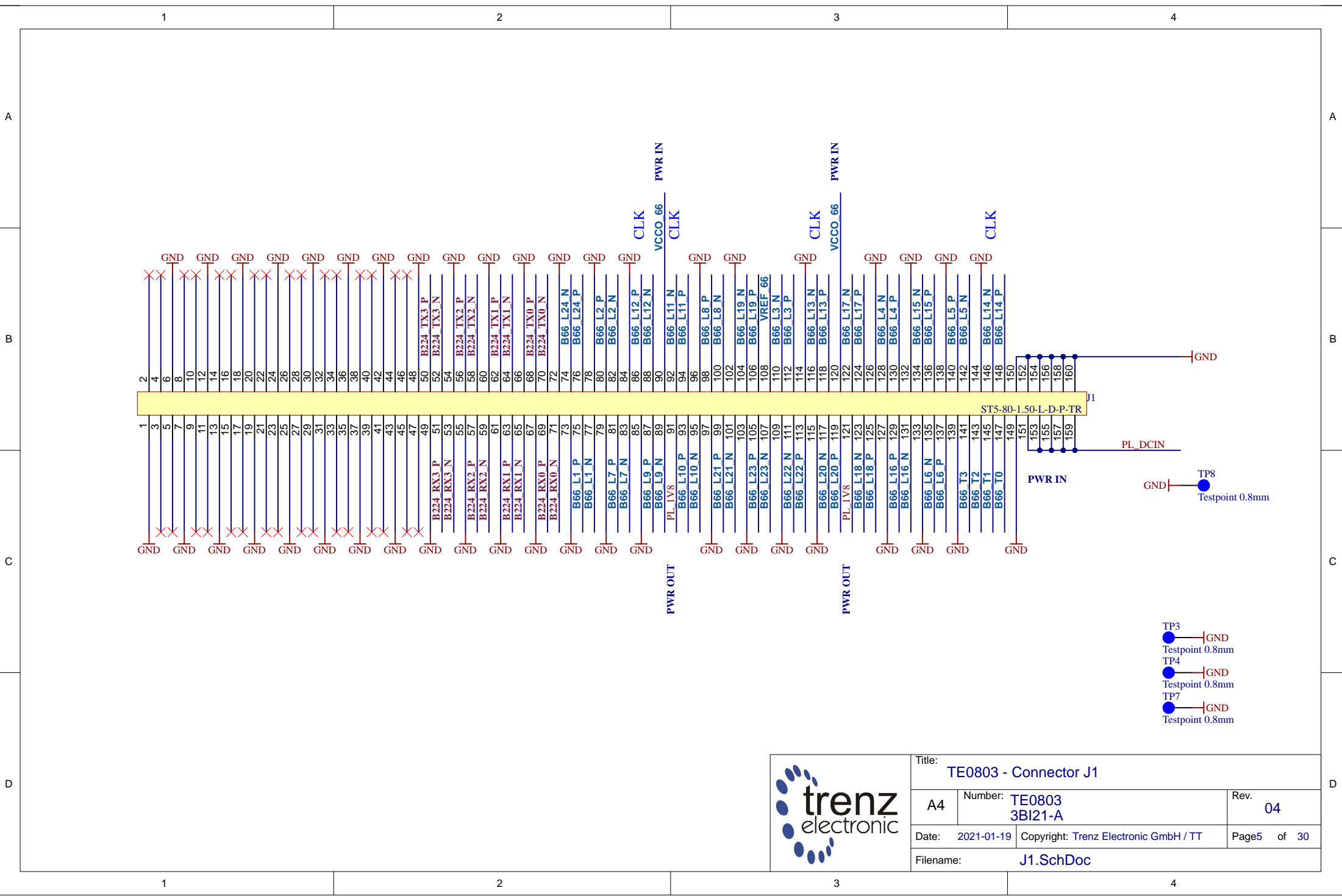
MECH1
TE Address Overlay
LOGO ADDRESS

LOGO1
TE Logo PRINT Layer
LOGO PRINT

Serial
Serial
Serialnumber 6,3 x 6.3mm

Assembly variant	3BI21-A
Created by	VY
Modified by	VY
Modified at	2020-02-13
SVN Revision	11196

			Title: TE0803	
			A4	Number: TE0803 3BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT		Page4 of 30
Filename: TE0803.SchDoc				



- TP3 Testpoint 0.8mm
- TP4 Testpoint 0.8mm
- TP7 Testpoint 0.8mm
- TP8 Testpoint 0.8mm

			Title: TE0803 - Connector J1	
			A4	Number: TE0803 3BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT		Page5 of 30
Filename: J1.SchDoc				

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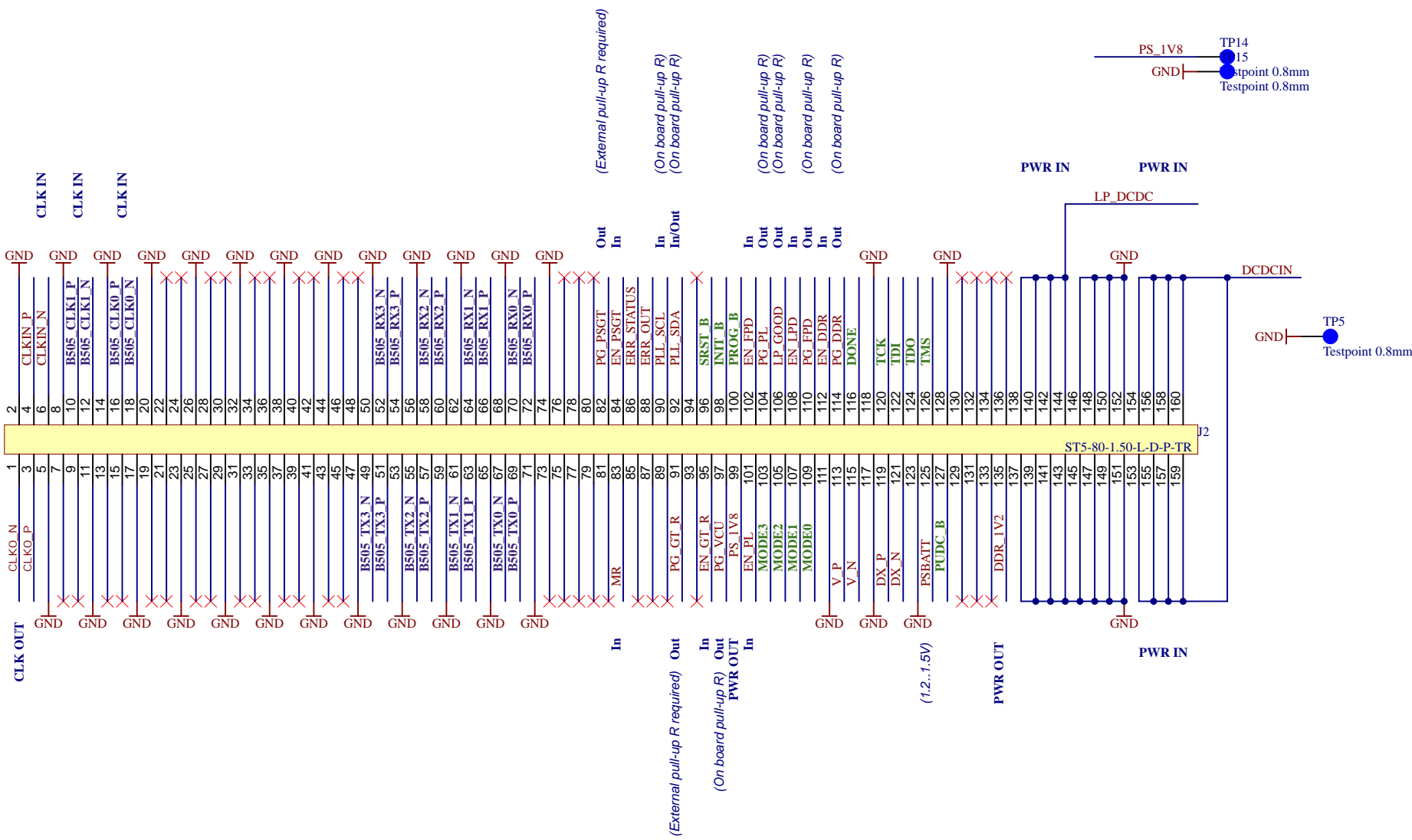
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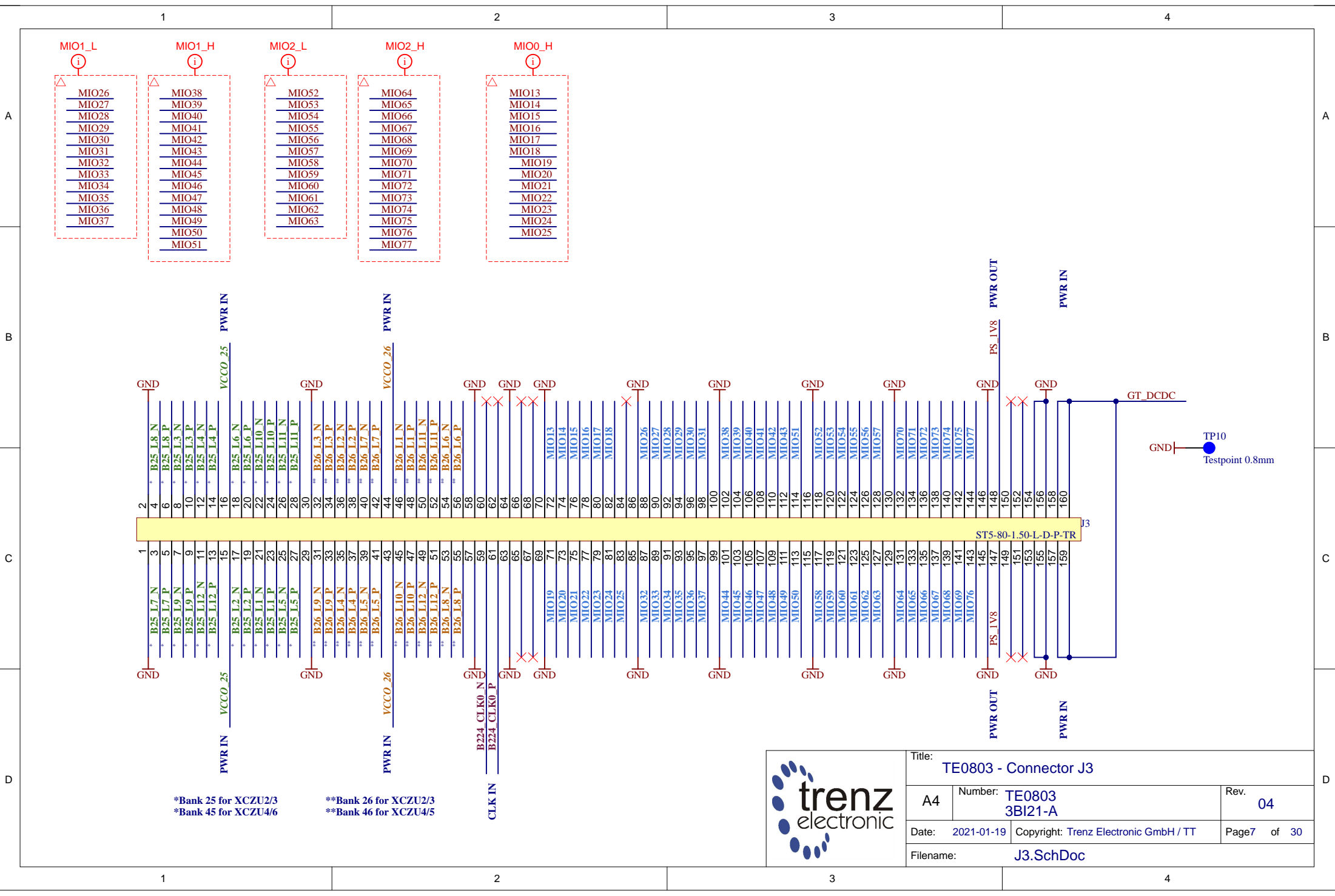
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A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 6 of 30
Filename: J2.SchDoc		

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

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



Title: TE0803 - Connector J3		
A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page7 of 30
Filename: J3.SchDoc		

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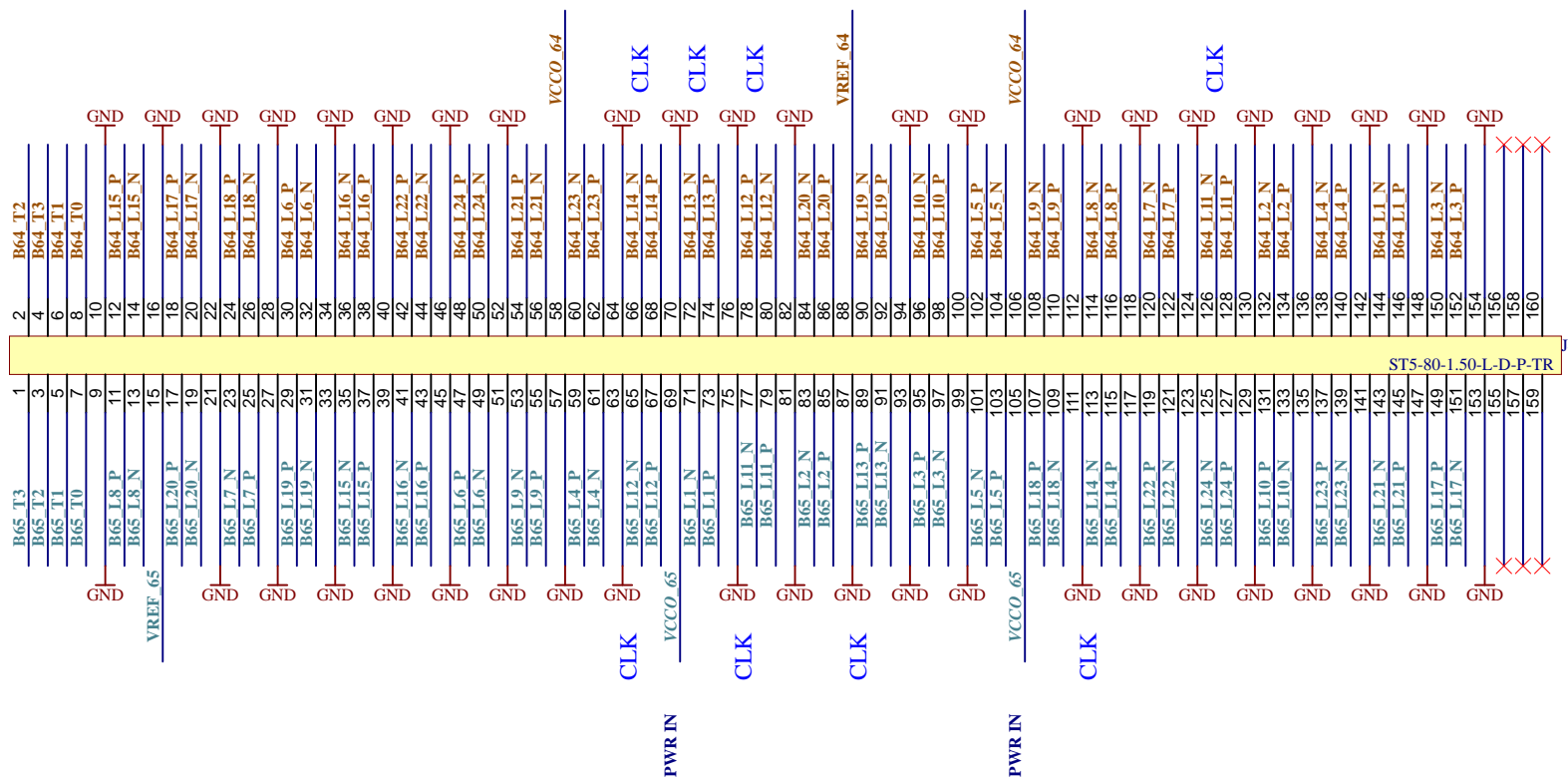
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J4 ST5.80-1.50-L-D-P-TR



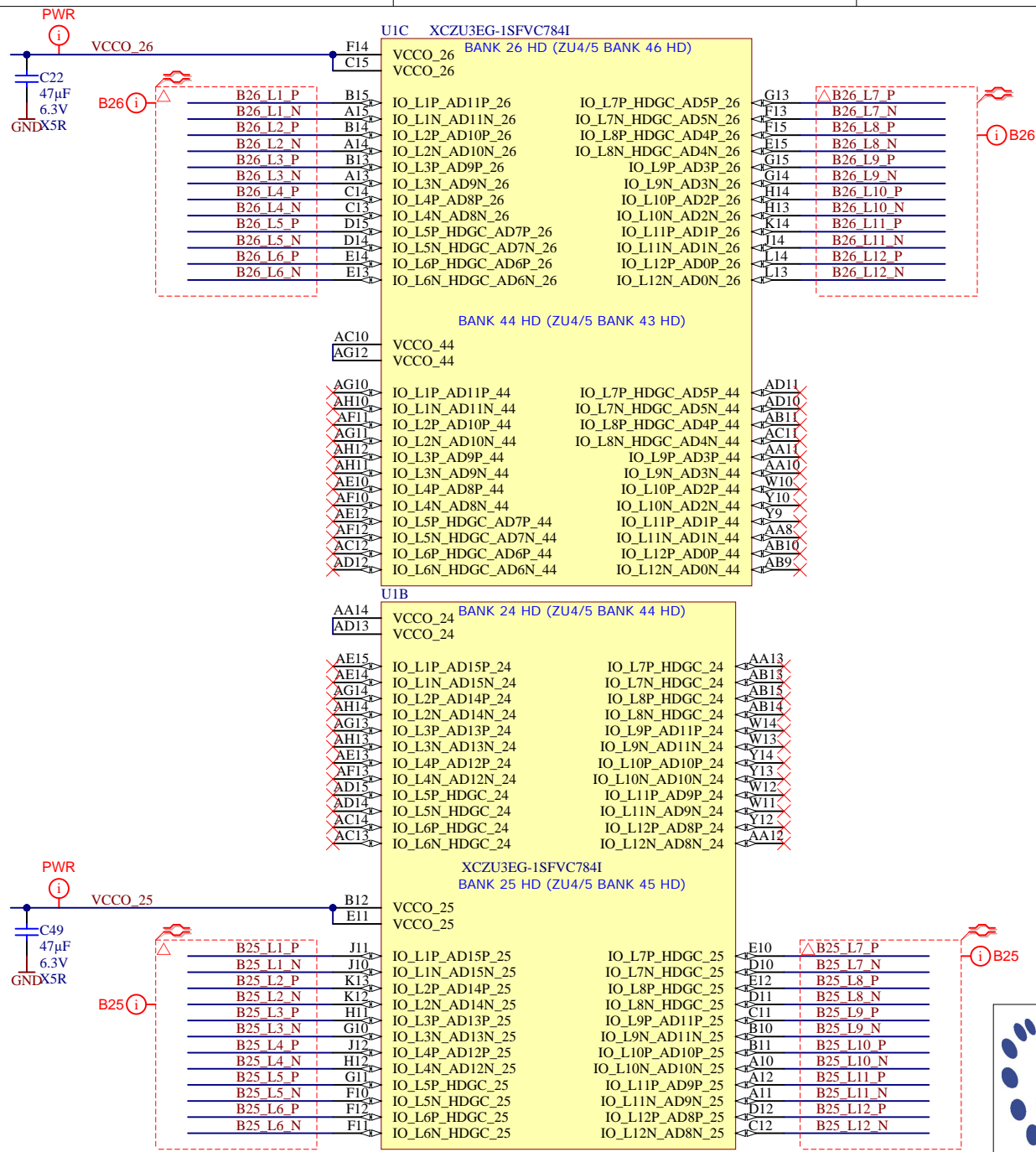
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 8 of 30
Filename: J4.SchDoc		

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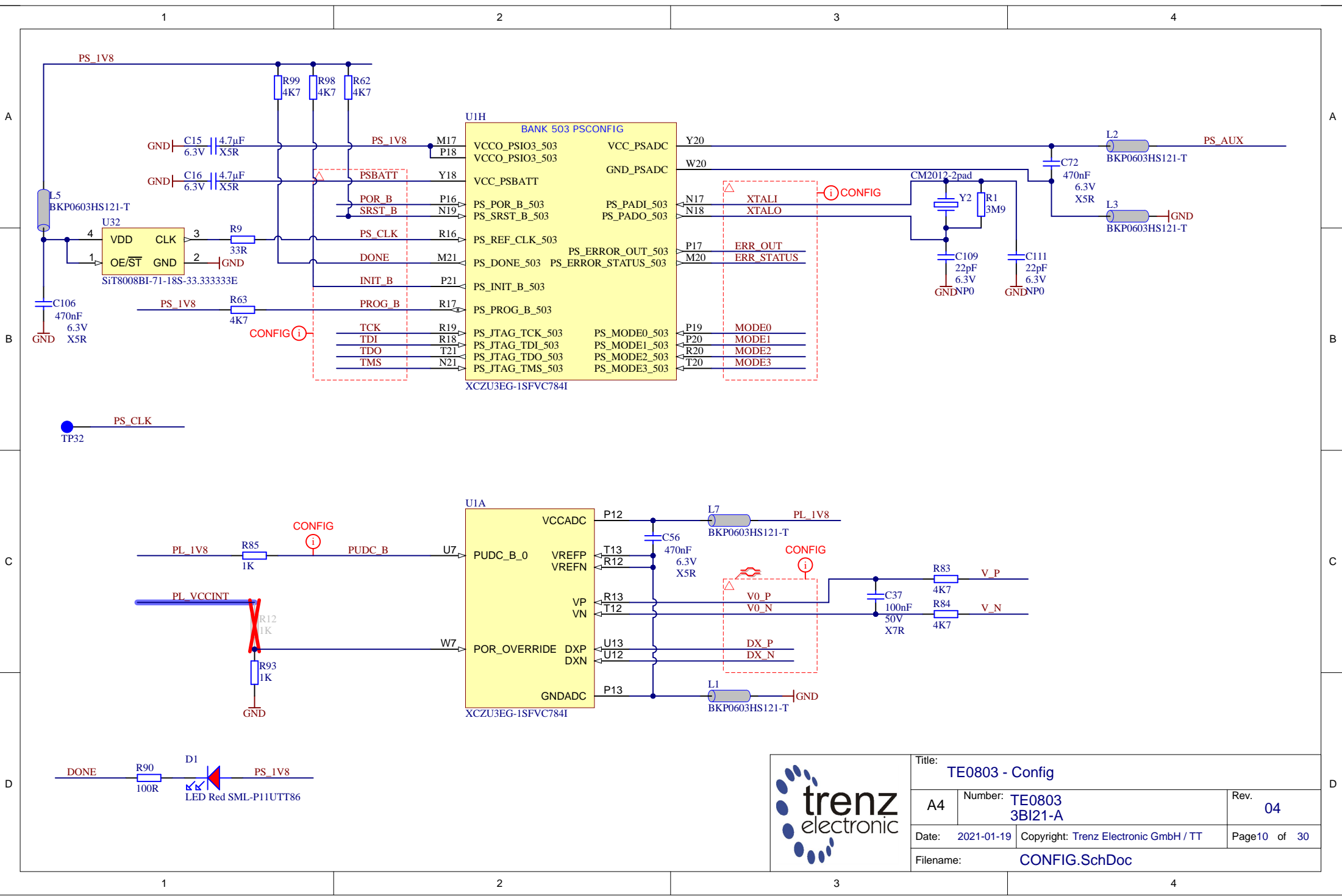
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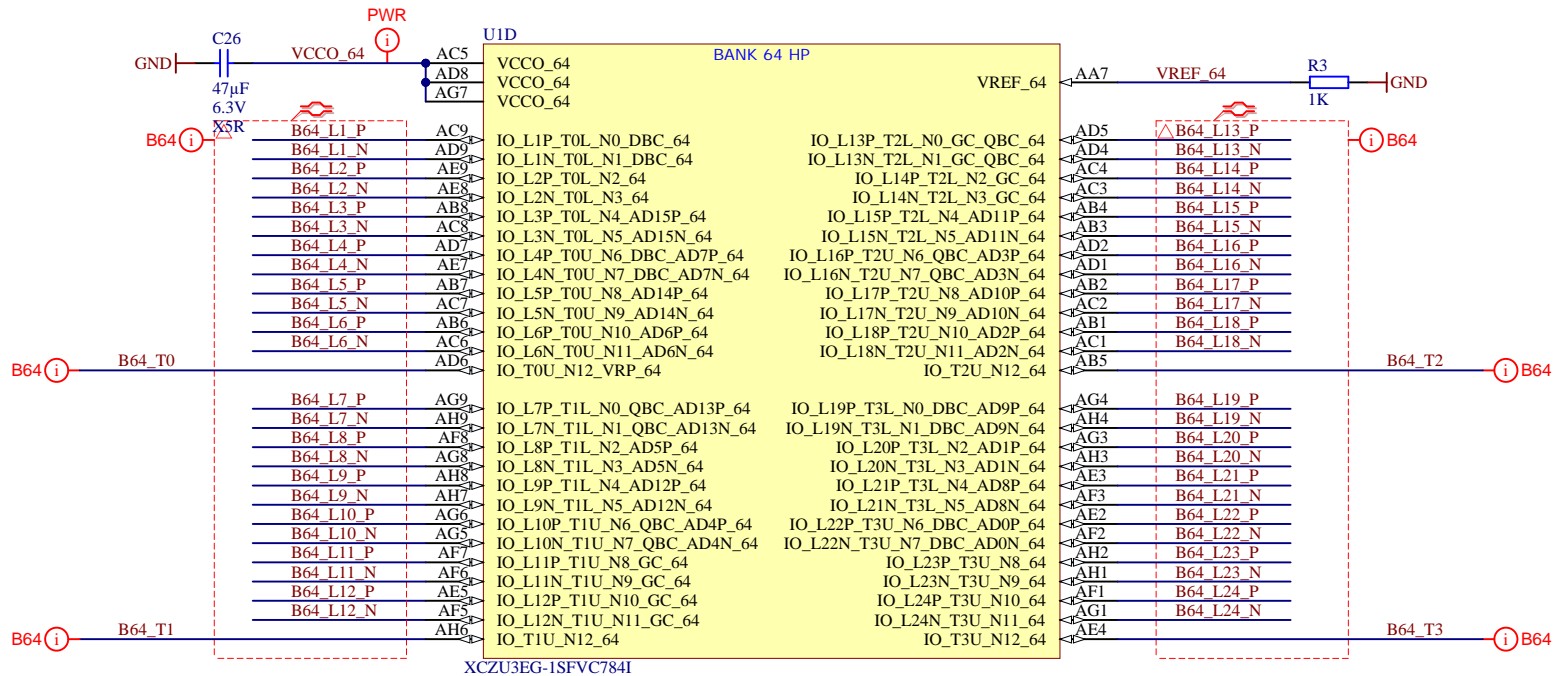
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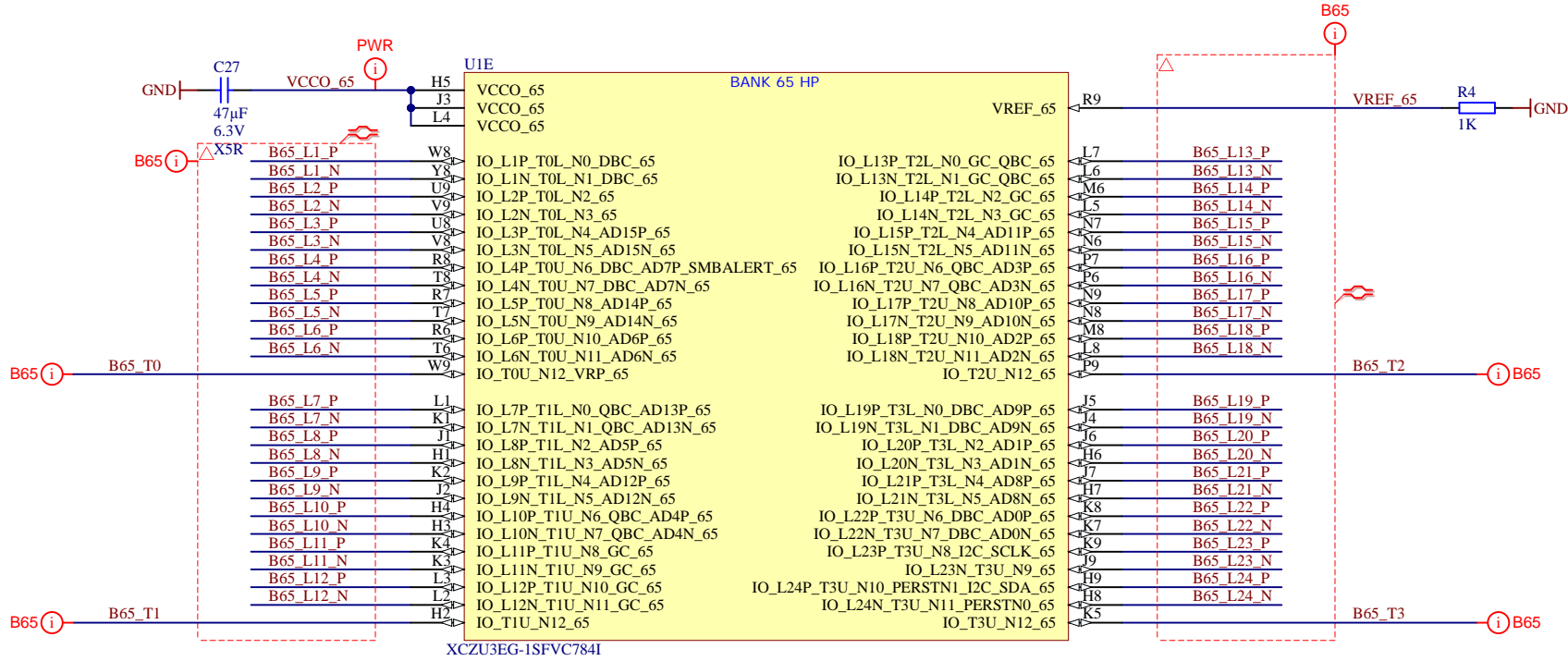
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 9 of 30
Filename: B_HD.SchDoc		



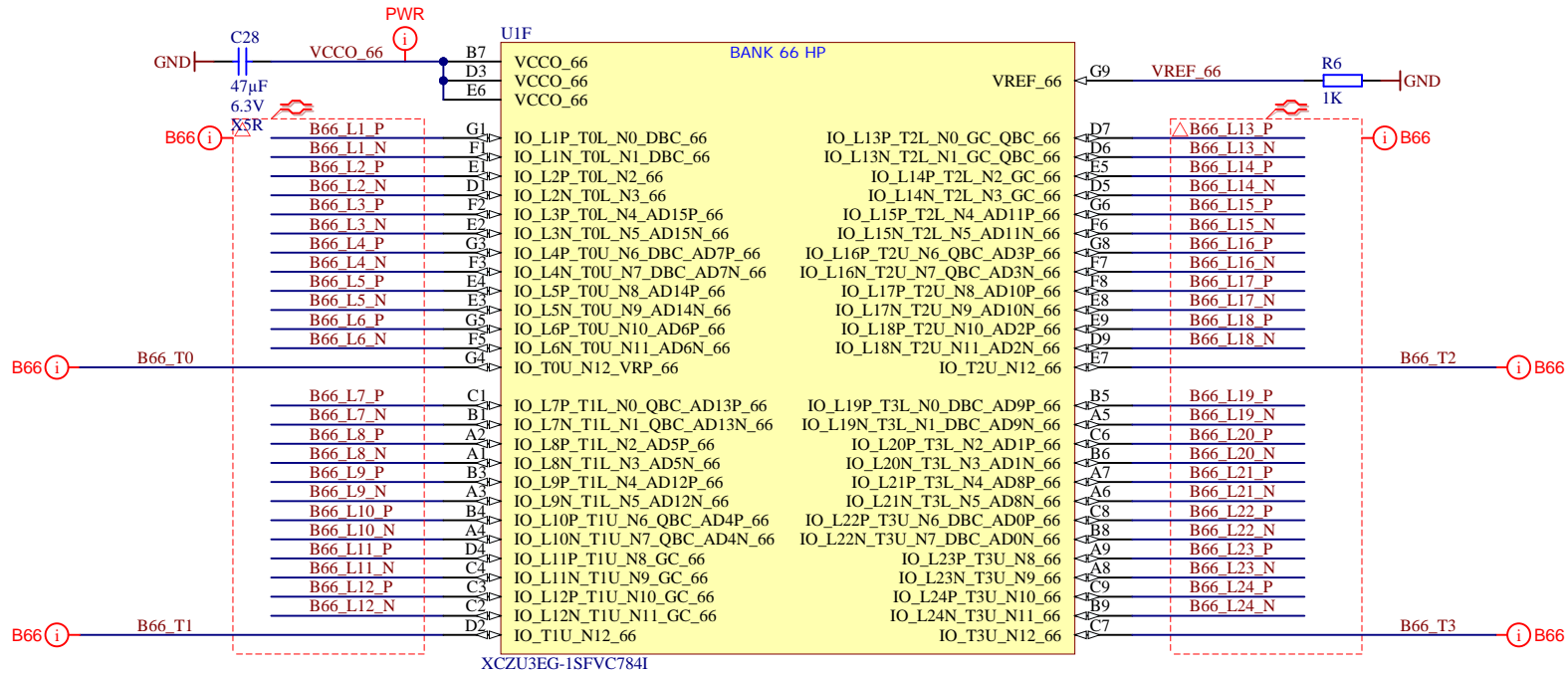
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 10 of 30
Filename: CONFIG.SchDoc		



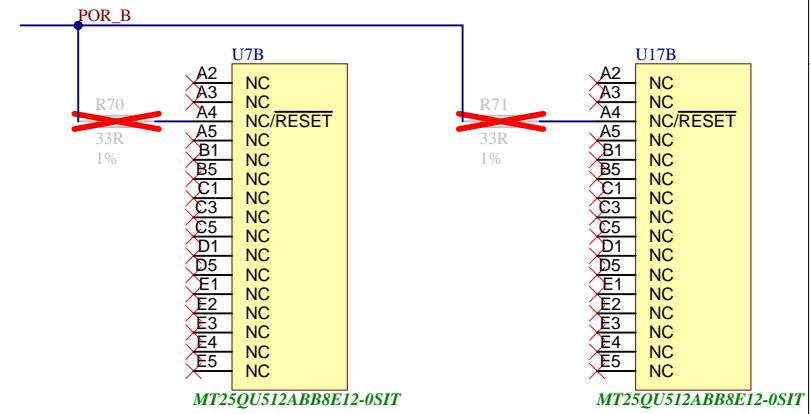
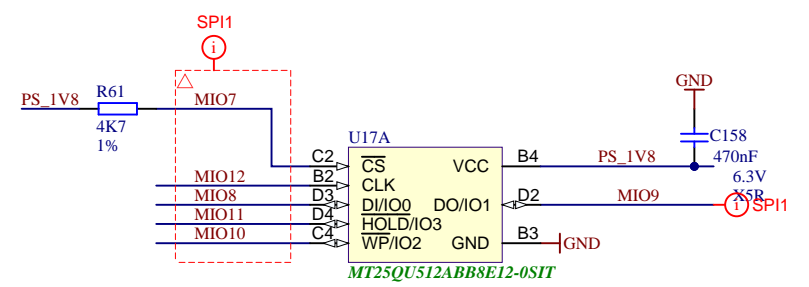
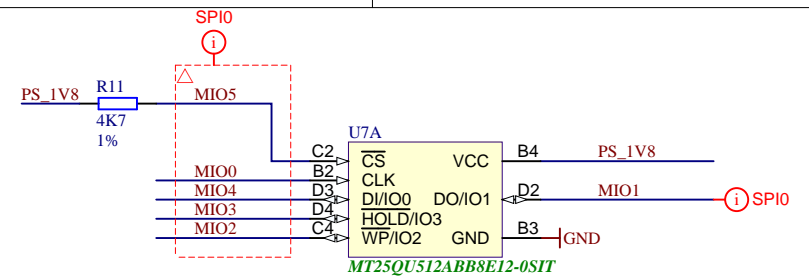
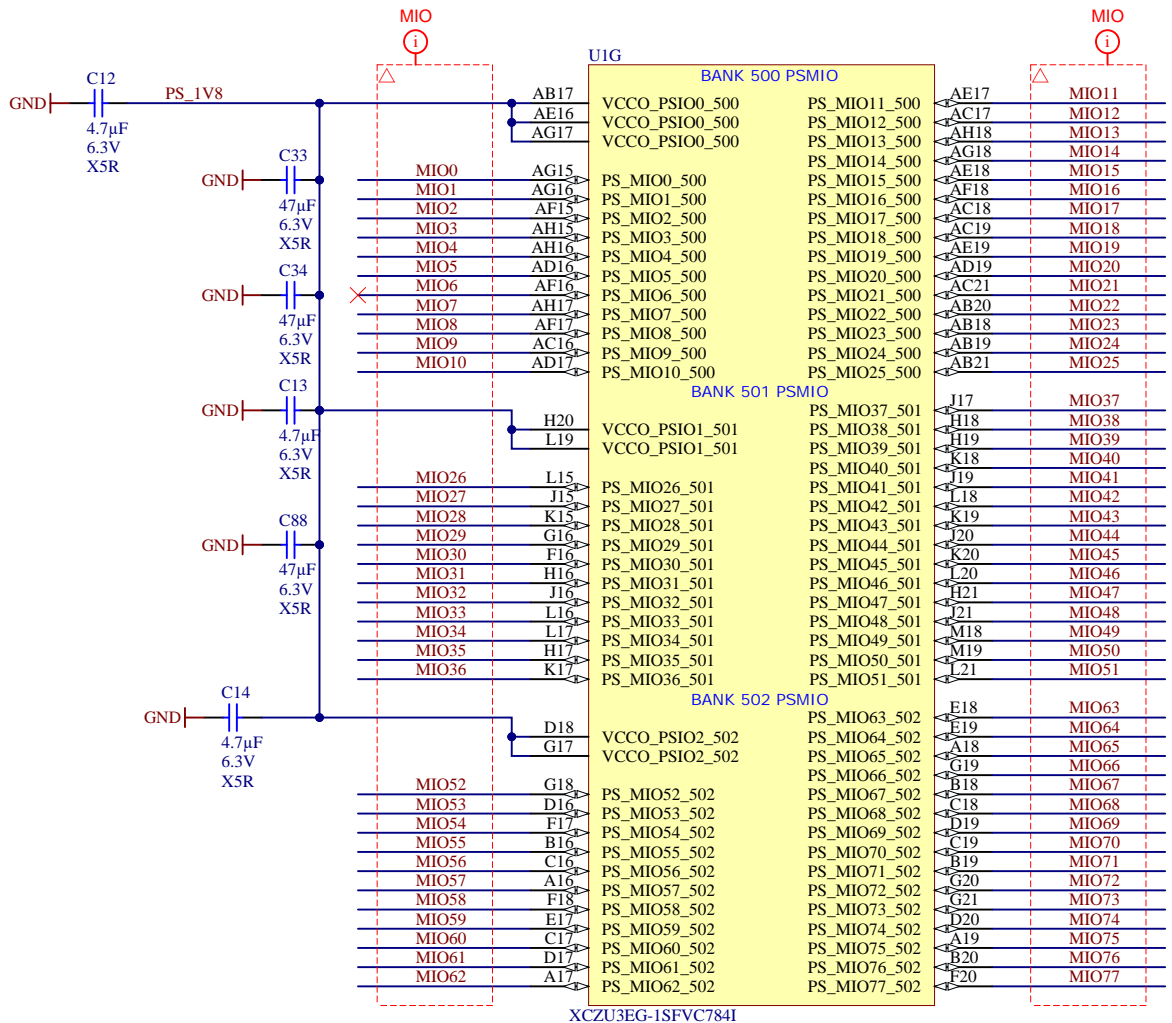
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 11 of 30
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Title: TE0803 - B65		
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 12 of 30
Filename: B65.SchDoc		



Title: TE0803 - B66		
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page13 of 30
Filename: B66.SchDoc		



	Title: TE0803 - MIO Banks		
	A4	Number: TE0803 3BI21-A	Rev. 04
	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 14 of 30
	Filename: B_MIO.SchDoc		

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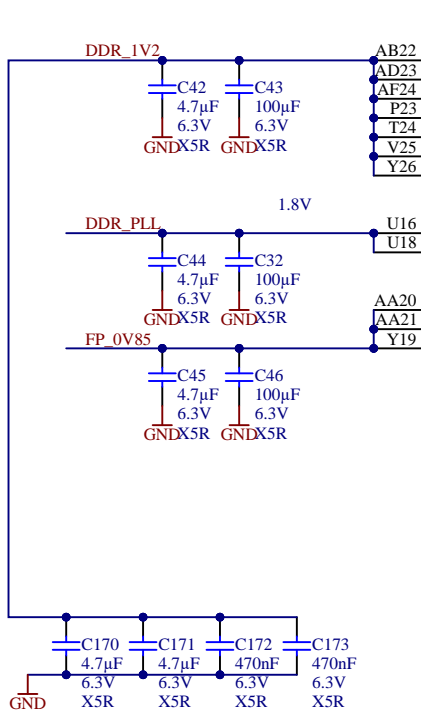
D

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U11

BANK 504 PSDDR

VCCO_PSDDR_504	PS_DDR_CK0_504	W25	DDR4-CLK0_P	D80
VCCO_PSDDR_504	PS_DDR_CK_N0_504	W26	DDR4-CLK0_N	D80
VCCO_PSDDR_504	PS_DDR_CKE0_504	V28	DDR4-CKE0	
VCCO_PSDDR_504	PS_DDR_CK1_504	Y24		✗
VCCO_PSDDR_504	PS_DDR_CK_N1_504	Y25		✗
VCCO_PSDDR_504	PS_DDR_CKE1_504	V27		✗
VCC_PSDDR_PLL	PS_DDR_A0_504	W28	DDR4-A0	
VCC_PSDDR_PLL	PS_DDR_A1_504	Y28	DDR4-A1	
VCC_PSDDR_PLL	PS_DDR_A2_504	AB28	DDR4-A2	
VCC_PSDDR_PLL	PS_DDR_A3_504	AA28	DDR4-A3	
VCC_PSDDR_PLL	PS_DDR_A4_504	Y27	DDR4-A4	
VCC_PSINTFP_DDR	PS_DDR_A5_504	AA27	DDR4-A5	
VCC_PSINTFP_DDR	PS_DDR_A6_504	Y22	DDR4-A6	
VCC_PSINTFP_DDR	PS_DDR_A7_504	AA23	DDR4-A7	
VCC_PSINTFP_DDR	PS_DDR_A8_504	AA22	DDR4-A8	
VCC_PSINTFP_DDR	PS_DDR_A9_504	AB23	DDR4-A9	
VCC_PSINTFP_DDR	PS_DDR_A10_504	AA25	DDR4-A10	
VCC_PSINTFP_DDR	PS_DDR_A11_504	AA26	DDR4-A11	
VCC_PSINTFP_DDR	PS_DDR_A12_504	AB25	DDR4-A12	
VCC_PSINTFP_DDR	PS_DDR_A13_504	AB26	DDR4-A13	
VCC_PSINTFP_DDR	PS_DDR_A14_504	AB24	DDR4-A14	
VCC_PSINTFP_DDR	PS_DDR_A15_504	AC24	DDR4-A15	
VCC_PSINTFP_DDR	PS_DDR_A16_504	AC23	DDR4-A16	
VCC_PSINTFP_DDR	PS_DDR_A17_504	AC22	DDR4-A17	
PS_DDR_CS_N0_504		W27	DDR4-CS	
PS_DDR_CS_N1_504		V26		✗
PS_DDR_BA0_504		V23	DDR4-BA0	
PS_DDR_BA1_504		W22	DDR4-BA1	
PS_DDR_BG0_504		W24	DDR4-BG0	
PS_DDR_BG1_504		V22	DDR4-BG1	
PS_DDR_PARITY_504		V24	DDR4-PAR	
PS_DDR_RAM_RST_N_504		U23	DDR4-RESET	
PS_DDR_ACT_N_504		Y23	DDR4-ACT	
PS_DDR_ALERT_N_504		U25	DDR4-ALERT	
PS_DDR_ZQ_504		U24		R2 240R GND
PS_DDR_ODT0_504		U28	DDR4-ODT0	
PS_DDR_ODT1_504		U26		✗


XCZU3EG-1SFVC784I

U1J

BANK 504 PSDDR

DQ0	AD21	PS_DDR_DQ0_504	PS_DDR_DQ32_504	T22	DQ32
DQ1	AE20	PS_DDR_DQ1_504	PS_DDR_DQ33_504	R22	DQ33
DQ2	AD20	PS_DDR_DQ2_504	PS_DDR_DQ34_504	P22	DQ34
DQ3	AF20	PS_DDR_DQ3_504	PS_DDR_DQ35_504	N22	DQ35
DQ4	AH21	PS_DDR_DQ4_504	PS_DDR_DQ36_504	T23	DQ36
DQ5	AH20	PS_DDR_DQ5_504	PS_DDR_DQ37_504	P24	DQ37
DQ6	AH19	PS_DDR_DQ6_504	PS_DDR_DQ38_504	R24	DQ38
DQ7	AG19	PS_DDR_DQ7_504	PS_DDR_DQ39_504	N24	DQ39
DQ8	AF22	PS_DDR_DQ8_504	PS_DDR_DQ40_504	H24	DQ40
DQ9	AH22	PS_DDR_DQ9_504	PS_DDR_DQ41_504	J24	DQ41
DQ10	AE22	PS_DDR_DQ10_504	PS_DDR_DQ42_504	M24	DQ42
DQ11	AD23	PS_DDR_DQ11_504	PS_DDR_DQ43_504	K24	DQ43
DQ12	AH23	PS_DDR_DQ12_504	PS_DDR_DQ44_504	J22	DQ44
DQ13	AH24	PS_DDR_DQ13_504	PS_DDR_DQ45_504	H22	DQ45
DQ14	AE24	PS_DDR_DQ14_504	PS_DDR_DQ46_504	K22	DQ46
DQ15	AG24	PS_DDR_DQ15_504	PS_DDR_DQ47_504	J22	DQ47
DQ16	AC26	PS_DDR_DQ16_504	PS_DDR_DQ48_504	M25	DQ48
DQ17	AD26	PS_DDR_DQ17_504	PS_DDR_DQ49_504	M26	DQ49
DQ18	AD25	PS_DDR_DQ18_504	PS_DDR_DQ50_504	L25	DQ50
DQ19	AD24	PS_DDR_DQ19_504	PS_DDR_DQ51_504	L26	DQ51
DQ20	AG26	PS_DDR_DQ20_504	PS_DDR_DQ52_504	K28	DQ52
DQ21	AH25	PS_DDR_DQ21_504	PS_DDR_DQ53_504	L28	DQ53
DQ22	AH26	PS_DDR_DQ22_504	PS_DDR_DQ54_504	M28	DQ54
DQ23	AG25	PS_DDR_DQ23_504	PS_DDR_DQ55_504	N28	DQ55
DQ24	AH27	PS_DDR_DQ24_504	PS_DDR_DQ56_504	J28	DQ56
DQ25	AH28	PS_DDR_DQ25_504	PS_DDR_DQ57_504	K27	DQ57
DQ26	AF28	PS_DDR_DQ26_504	PS_DDR_DQ58_504	H28	DQ58
DQ27	AG28	PS_DDR_DQ27_504	PS_DDR_DQ59_504	H27	DQ59
DQ28	AC27	PS_DDR_DQ28_504	PS_DDR_DQ60_504	G26	DQ60
DQ29	AD27	PS_DDR_DQ29_504	PS_DDR_DQ61_504	G25	DQ61
DQ30	AD28	PS_DDR_DQ30_504	PS_DDR_DQ62_504	K25	DQ62
DQ31	AC28	PS_DDR_DQ31_504	PS_DDR_DQ63_504	J25	DQ63
		PS_DDR_DQ64_504	PS_DDR_DQ64_504	T28	
		PS_DDR_DQ65_504	PS_DDR_DQ65_504	R28	
DDR4-DQS0_P	AF21	PS_DDR_DQS_P0_504	PS_DDR_DQ66_504	P28	
DDR4-DQS0_N	AG21	PS_DDR_DQS_N0_504	PS_DDR_DQ67_504	P27	
DDR4-DQS1_P	AF23	PS_DDR_DQS_P1_504	PS_DDR_DQ68_504	P26	
DDR4-DQS1_N	AG23	PS_DDR_DQS_N1_504	PS_DDR_DQ69_504	R25	
DDR4-DQS2_P	AF25	PS_DDR_DQS_P2_504	PS_DDR_DQ70_504	P25	
DDR4-DQS2_N	AF26	PS_DDR_DQS_N2_504	PS_DDR_DQ71_504	T25	
DDR4-DQS3_P	AE27	PS_DDR_DQS_P3_504			
DDR4-DQS3_N	AF27	PS_DDR_DQS_N3_504			
DDR4-DQS4_P	N23	PS_DDR_DQS_P4_504			
DDR4-DQS4_N	M23	PS_DDR_DQS_N4_504			
DDR4-DQS5_P	L23	PS_DDR_DQS_P5_504	PS_DDR_DM0_504	AG20	DDR4-DM0
DDR4-DQS5_N	K23	PS_DDR_DQS_N5_504	PS_DDR_DM1_504	AE23	DDR4-DM1
DDR4-DQS6_P	N26	PS_DDR_DQS_P6_504	PS_DDR_DM2_504	AE25	DDR4-DM2
DDR4-DQS6_N	N27	PS_DDR_DQS_N6_504	PS_DDR_DM3_504	AE28	DDR4-DM3
DDR4-DQS7_P	J26	PS_DDR_DQS_P7_504	PS_DDR_DM4_504	R23	DDR4-DM4
DDR4-DQS7_N	J27	PS_DDR_DQS_N7_504	PS_DDR_DM5_504	H23	DDR4-DM5
	R27	PS_DDR_DQS_P8_504	PS_DDR_DM6_504	L27	DDR4-DM6
	T27	PS_DDR_DQS_N8_504	PS_DDR_DM7_504	H26	DDR4-DM7
			PS_DDR_DM8_504	T26	

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Title: TE0803 - PS_DDR		
A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 15 of 30
Filename: PS_DDR.SchDoc		

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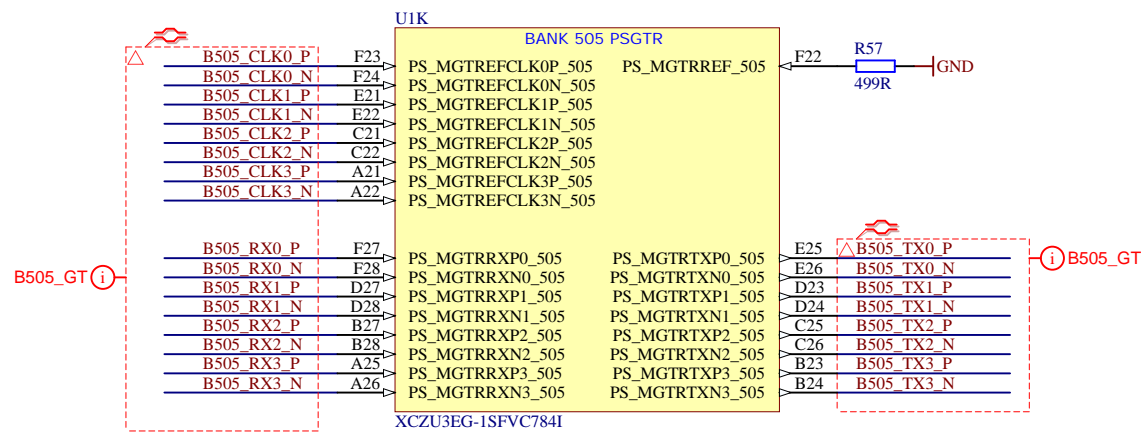
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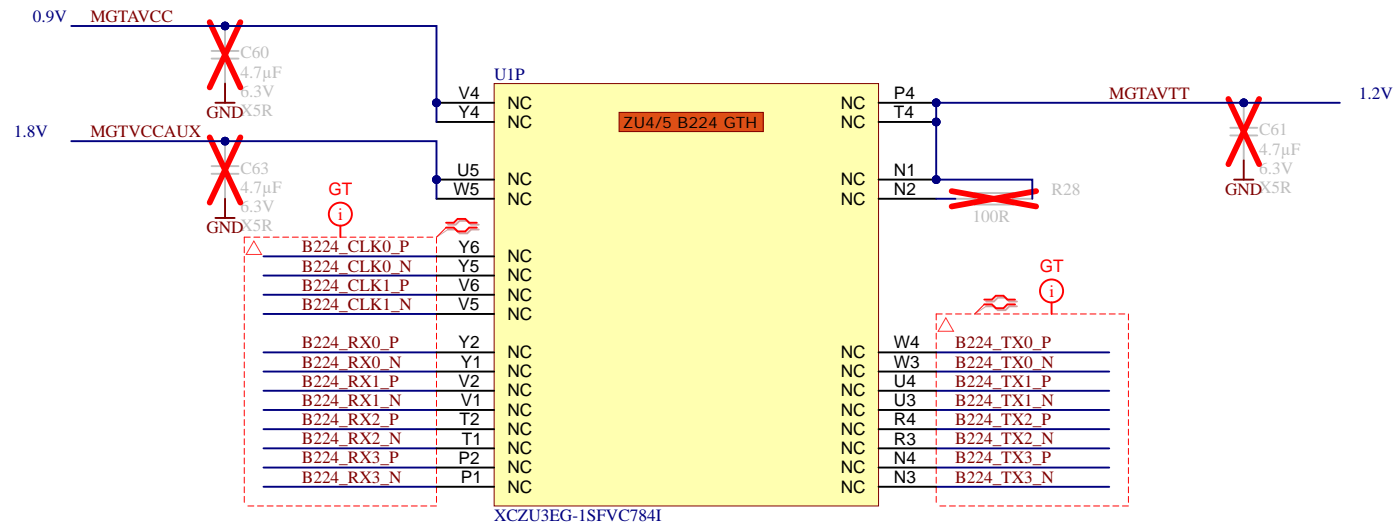
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	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 16 of 30
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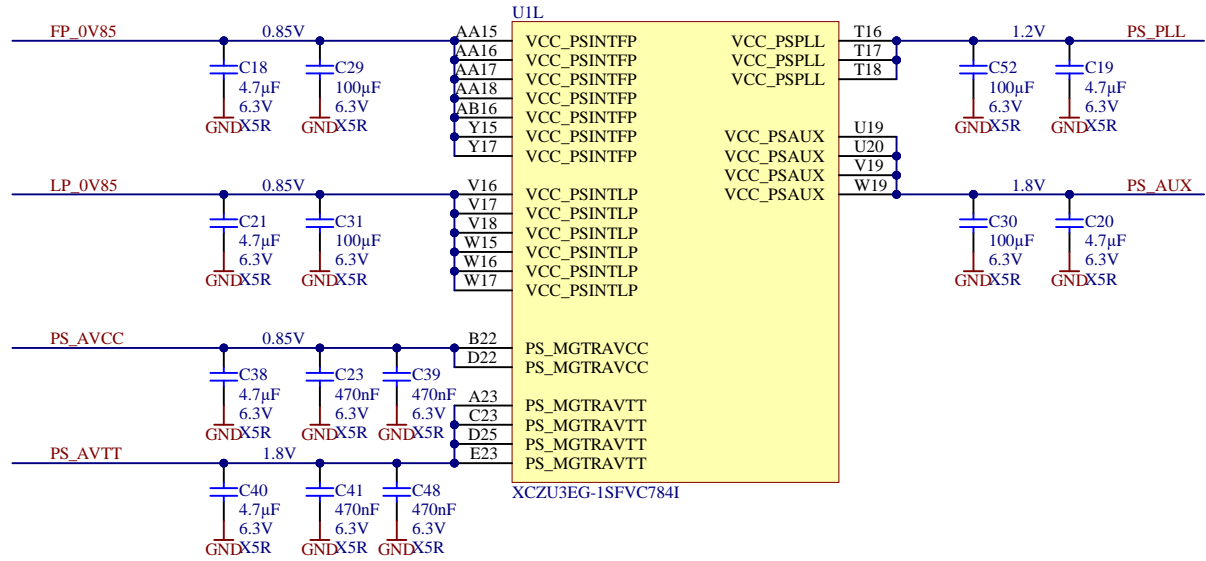
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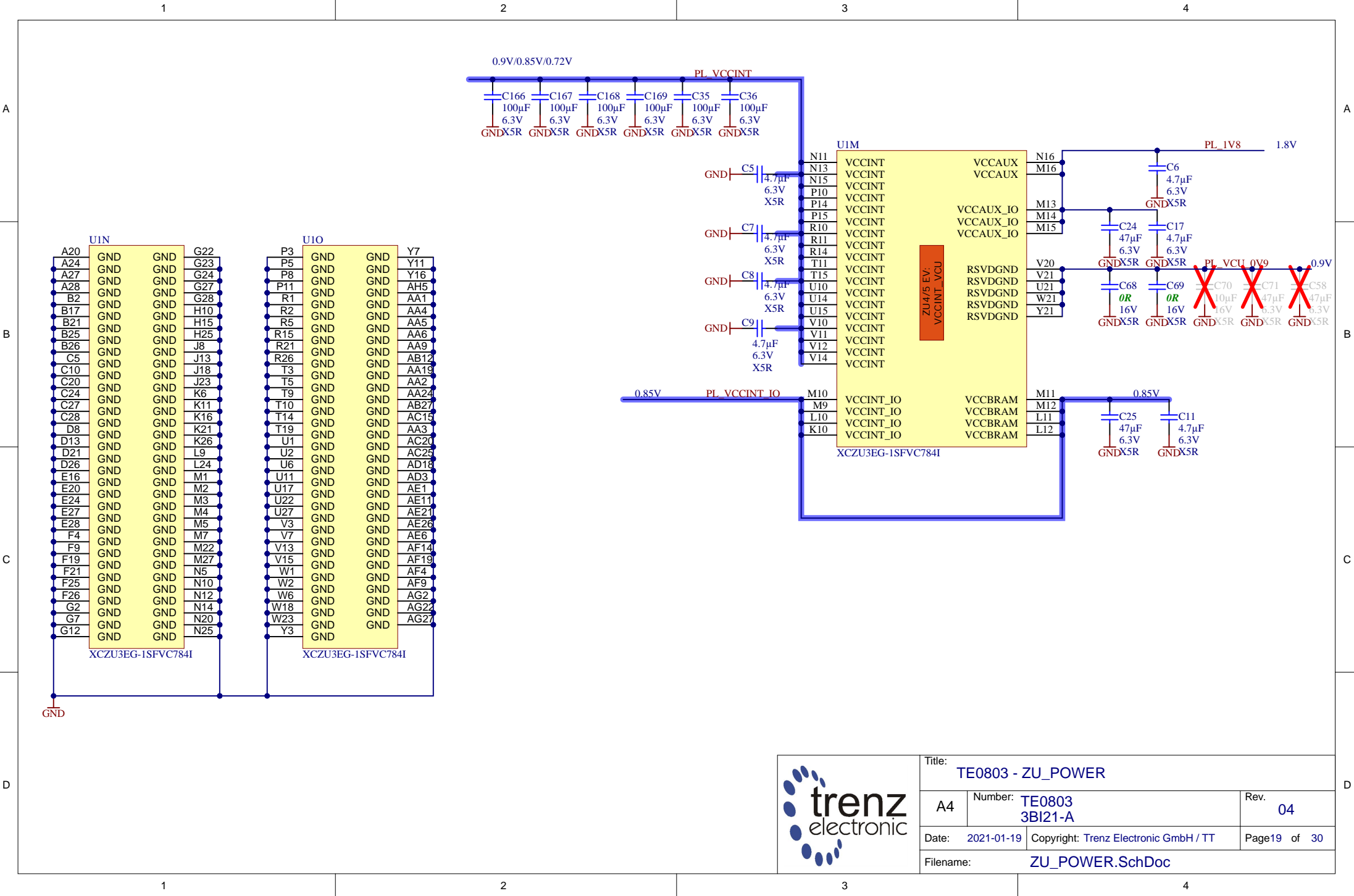
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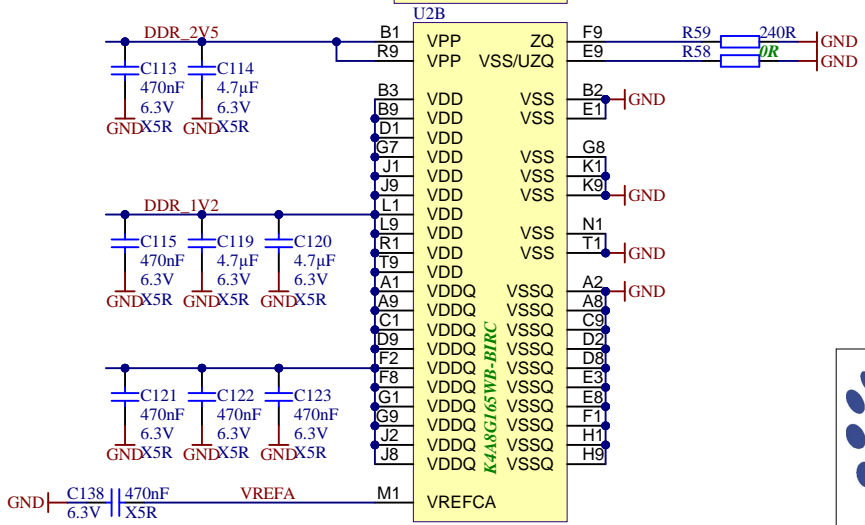
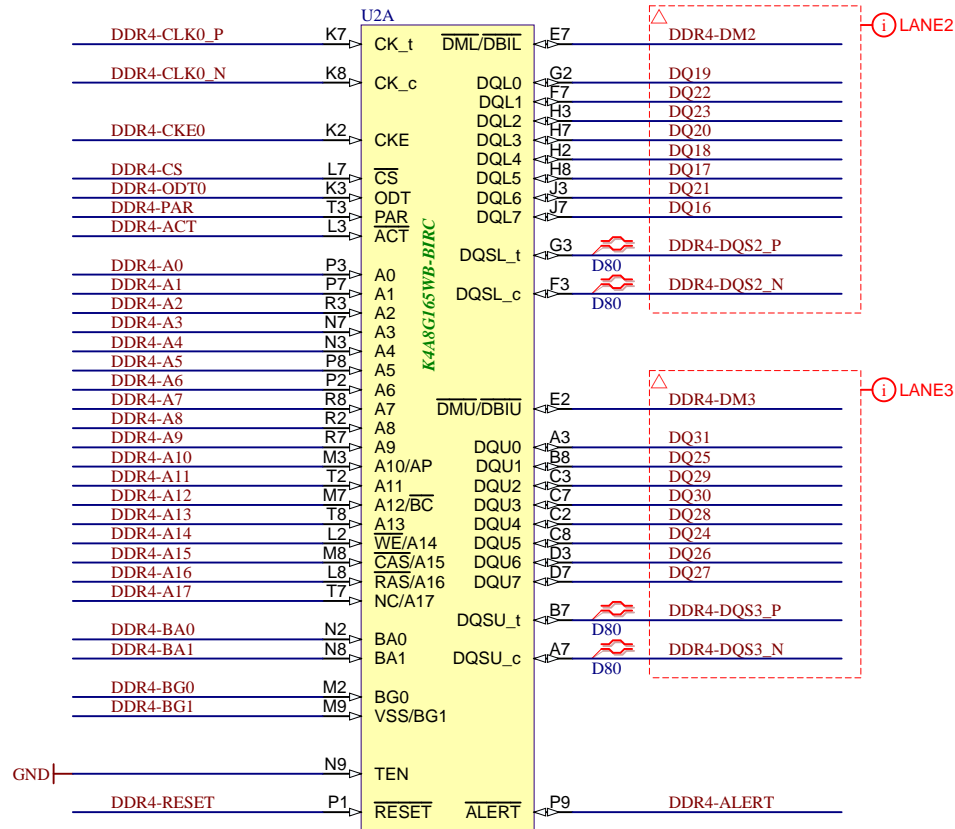
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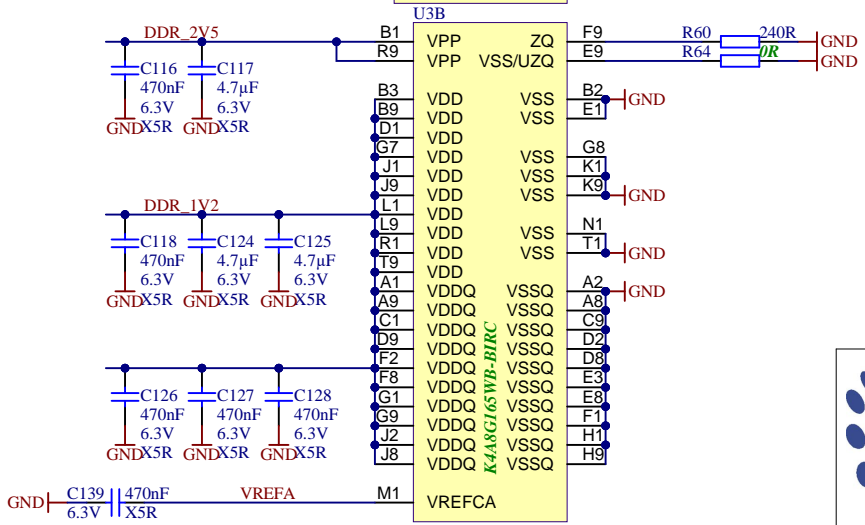
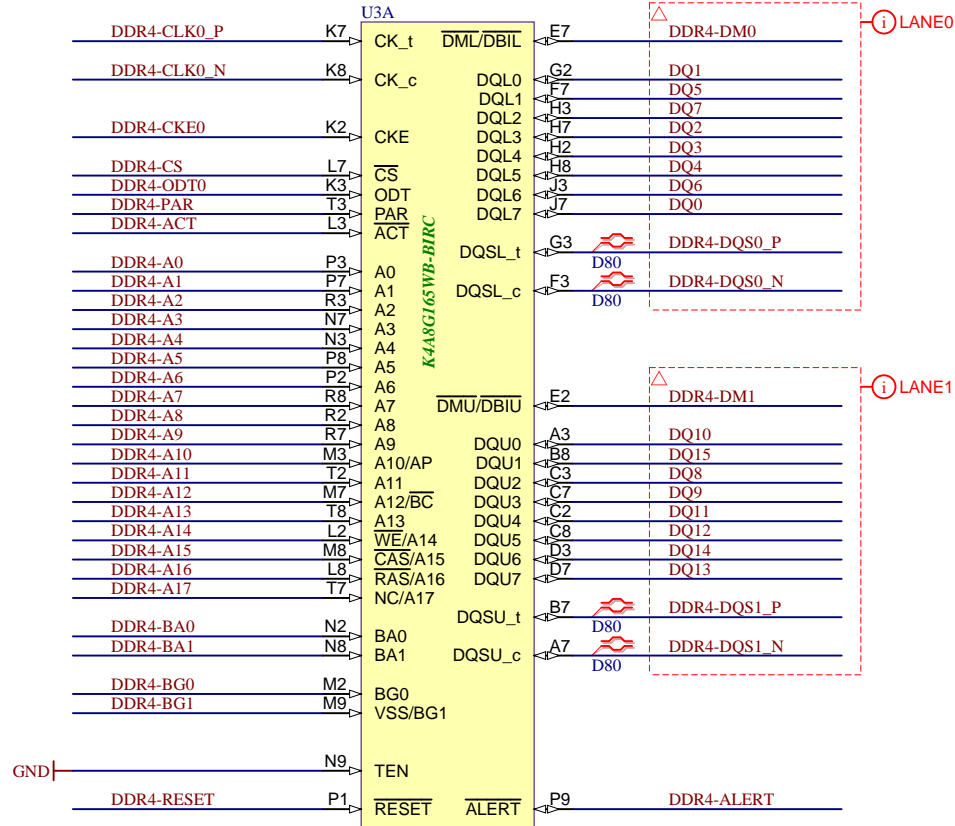
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	Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	
	Page 18 of 30		
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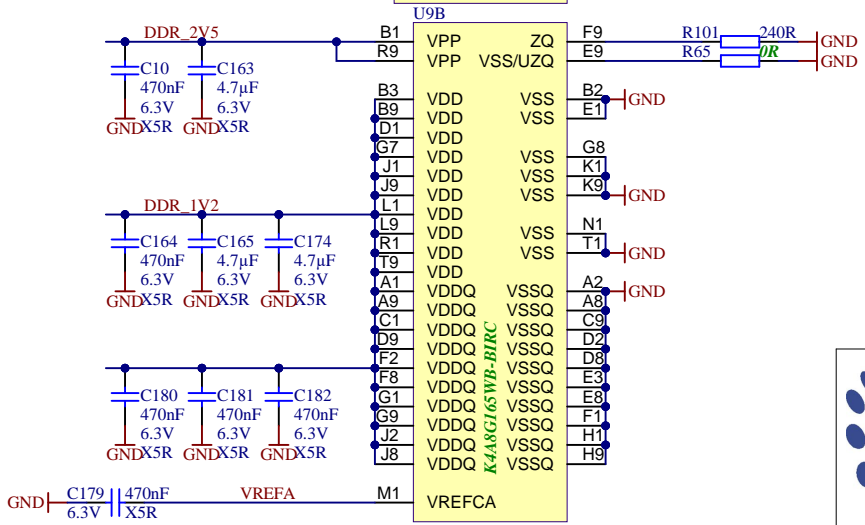
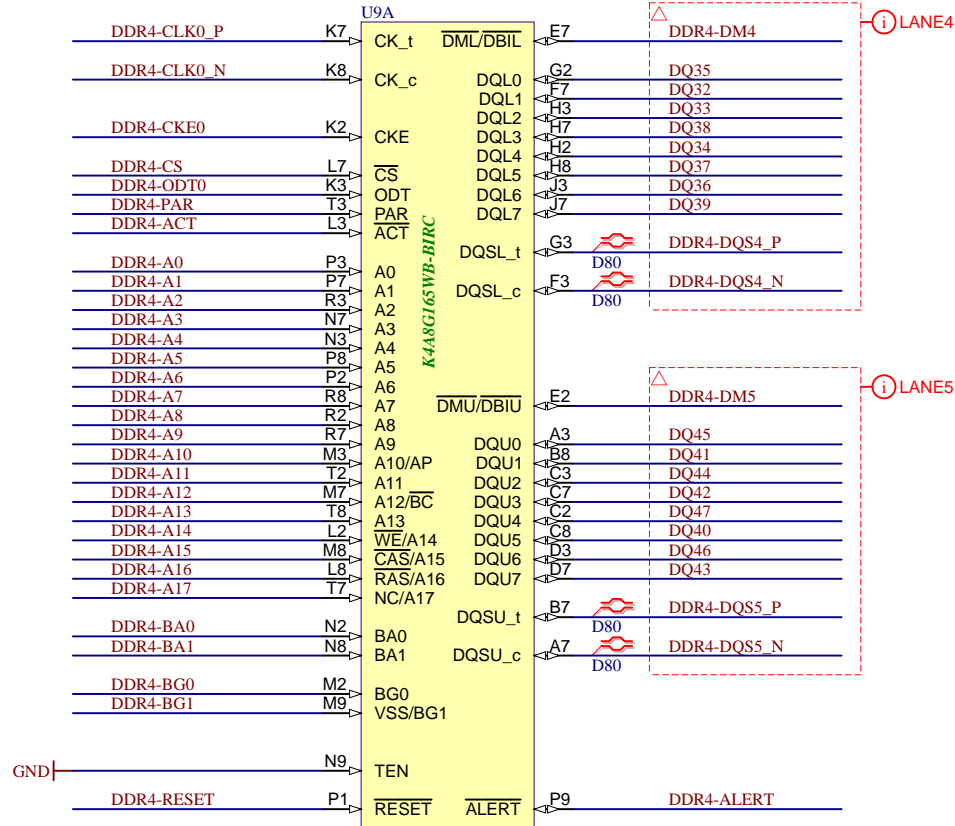
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Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT		Page 19 of 30
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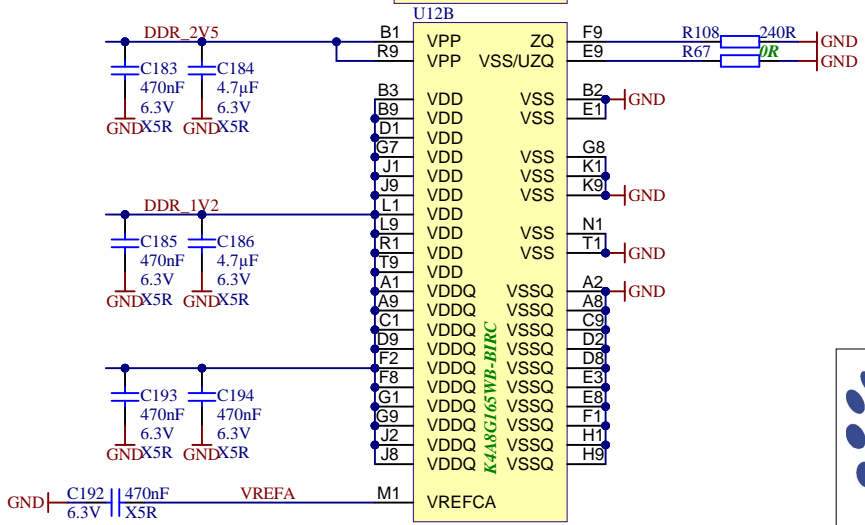
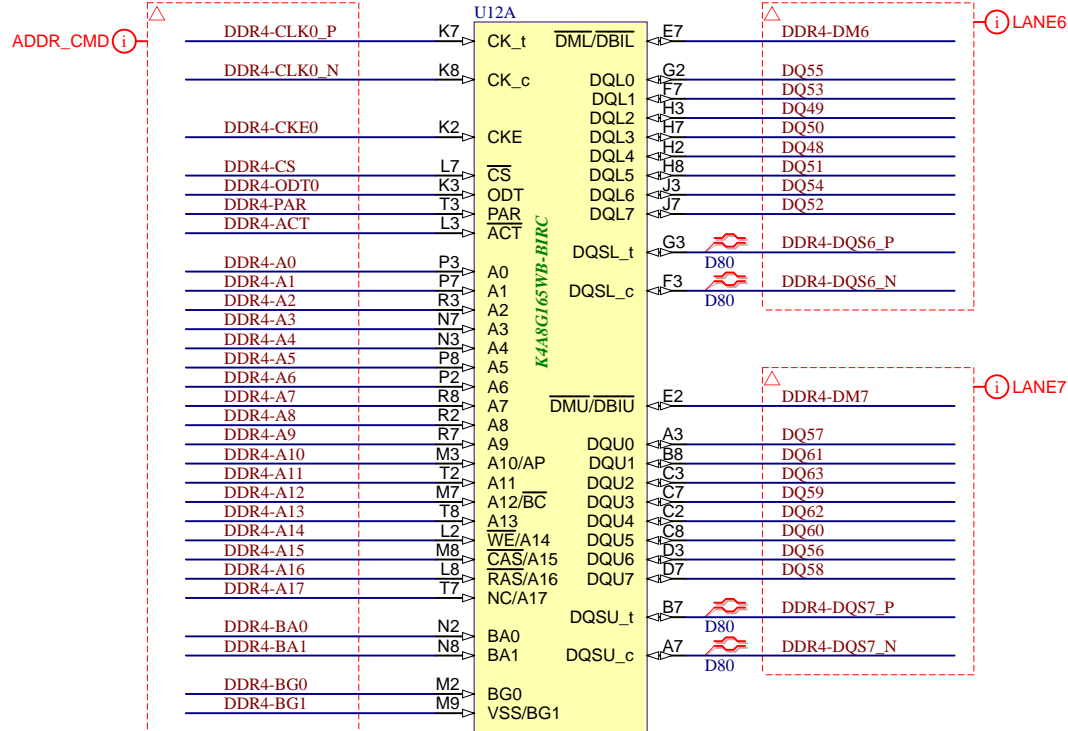

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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page20 of 30
Filename: DDR4-RAM.SchDoc		



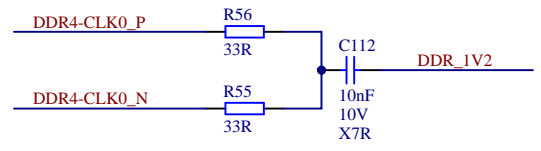
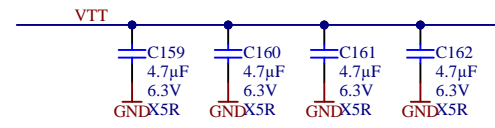
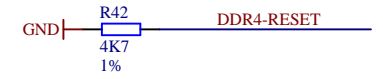
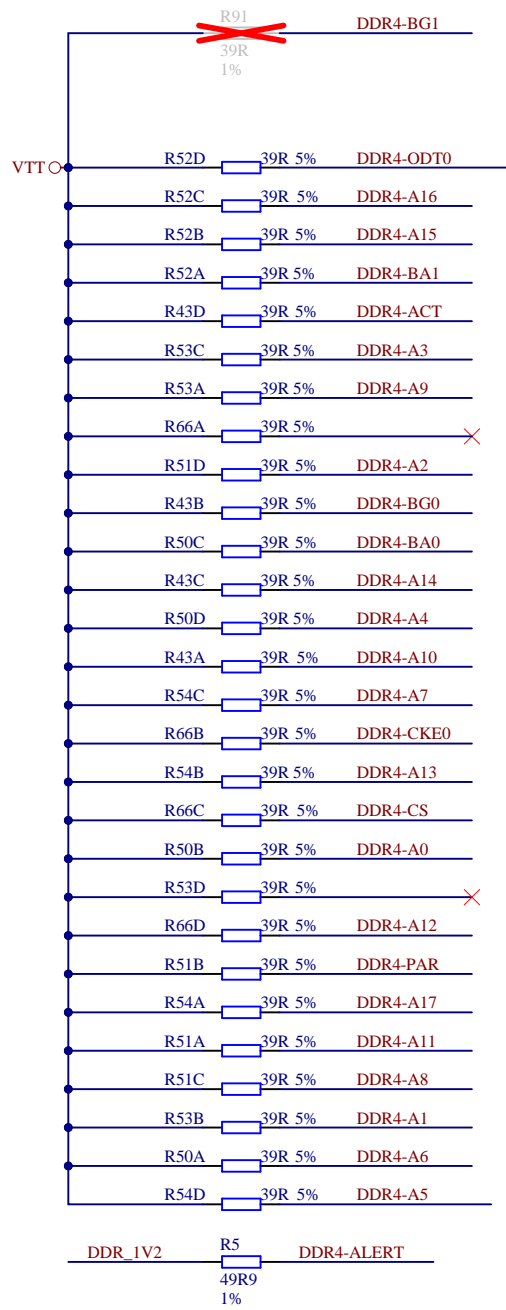
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A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page21 of 30
Filename: DDR4-RAM_2.SchDoc		



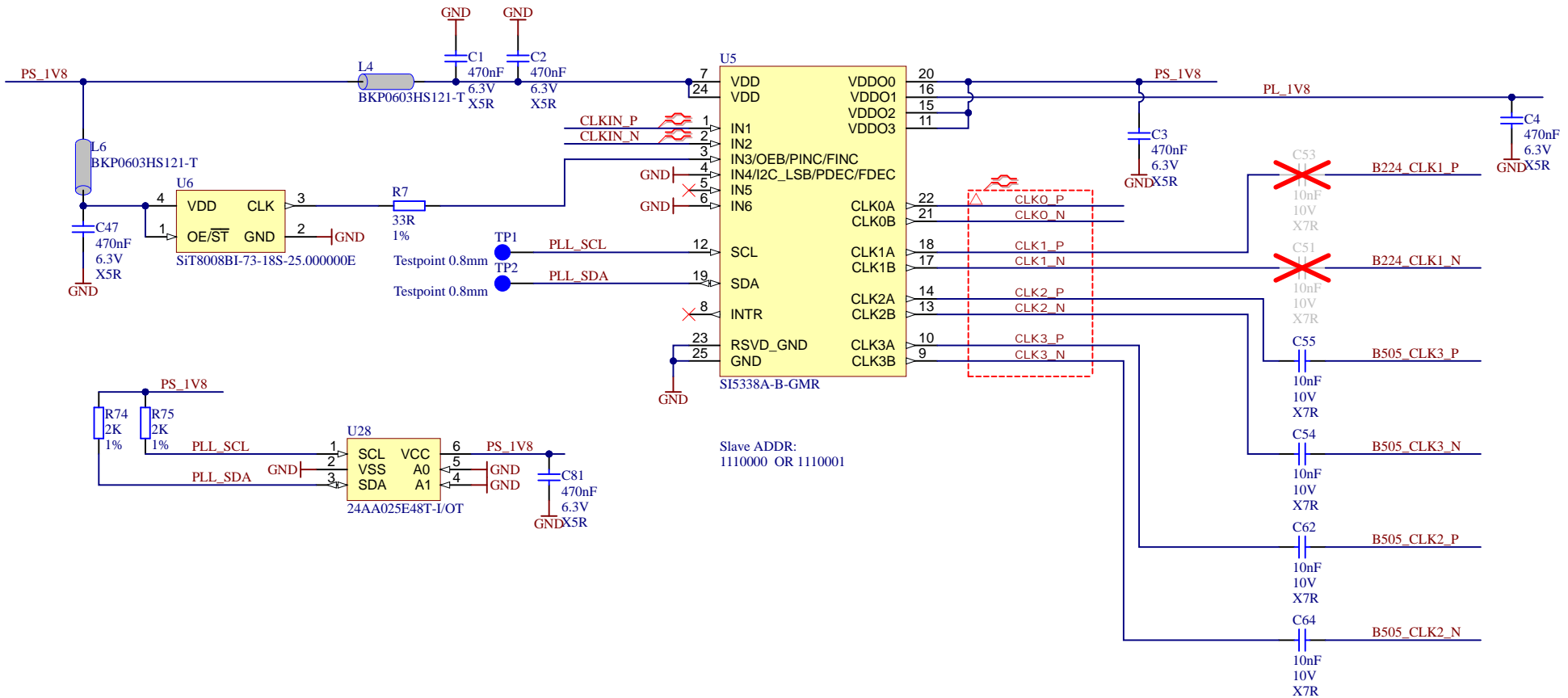
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Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page22 of 30
Filename: DDR4-RAM_3.SchDoc		





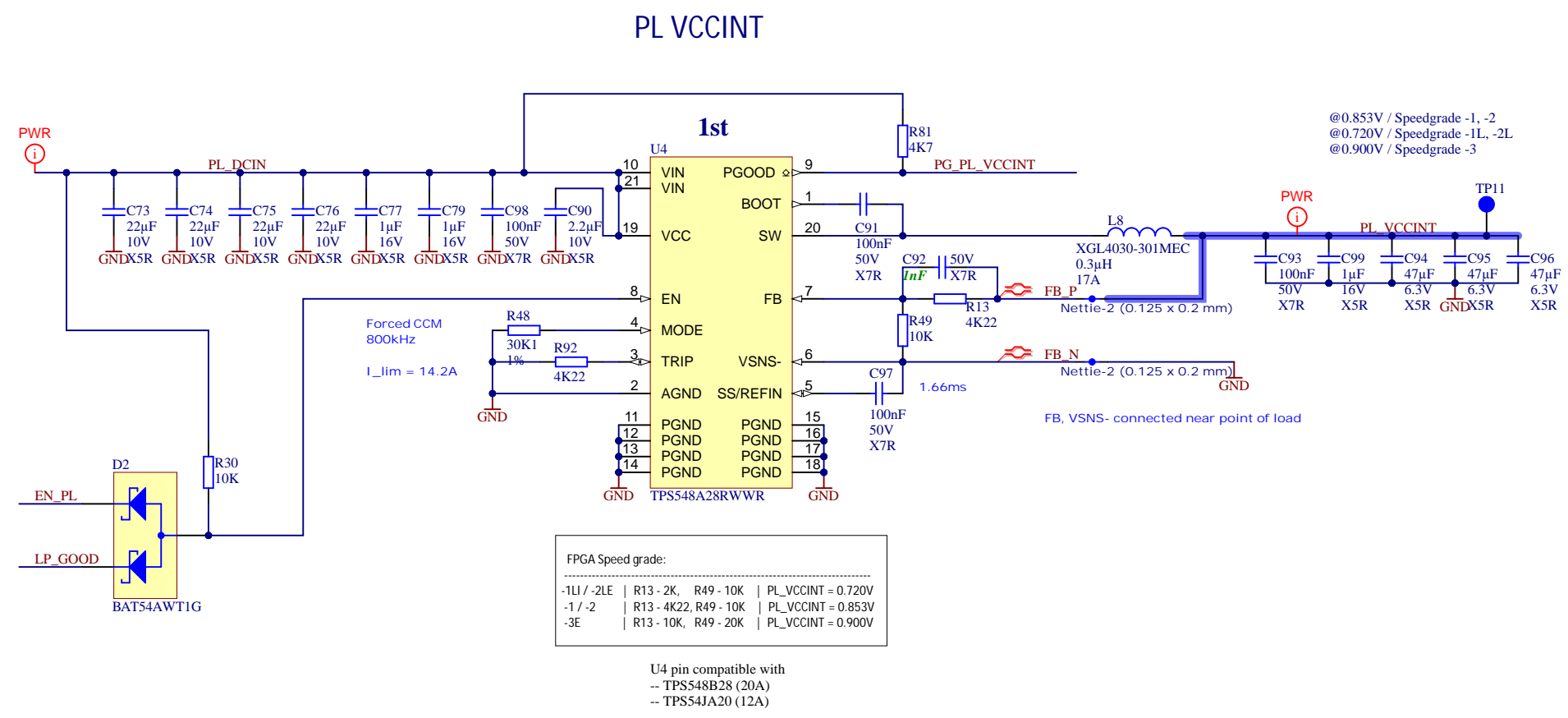
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A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 23 of 30
Filename: DDR4-RAM_4.SchDoc		



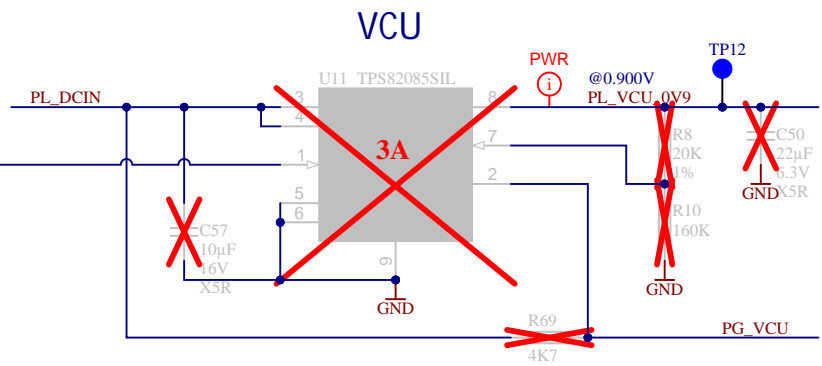
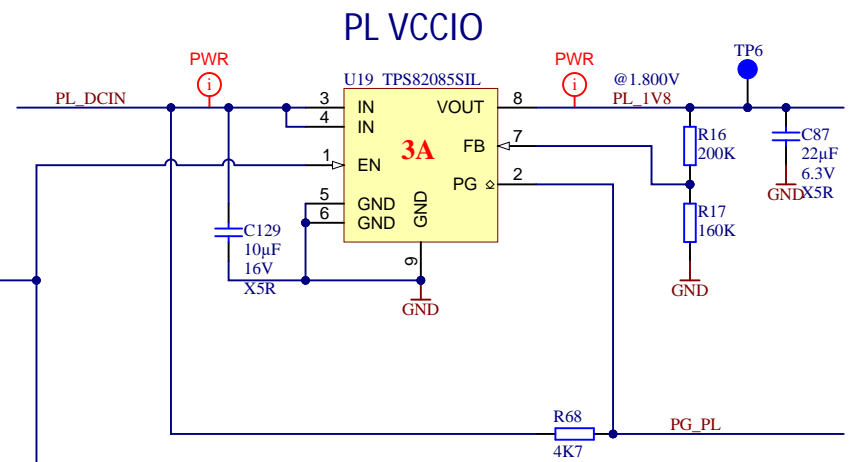
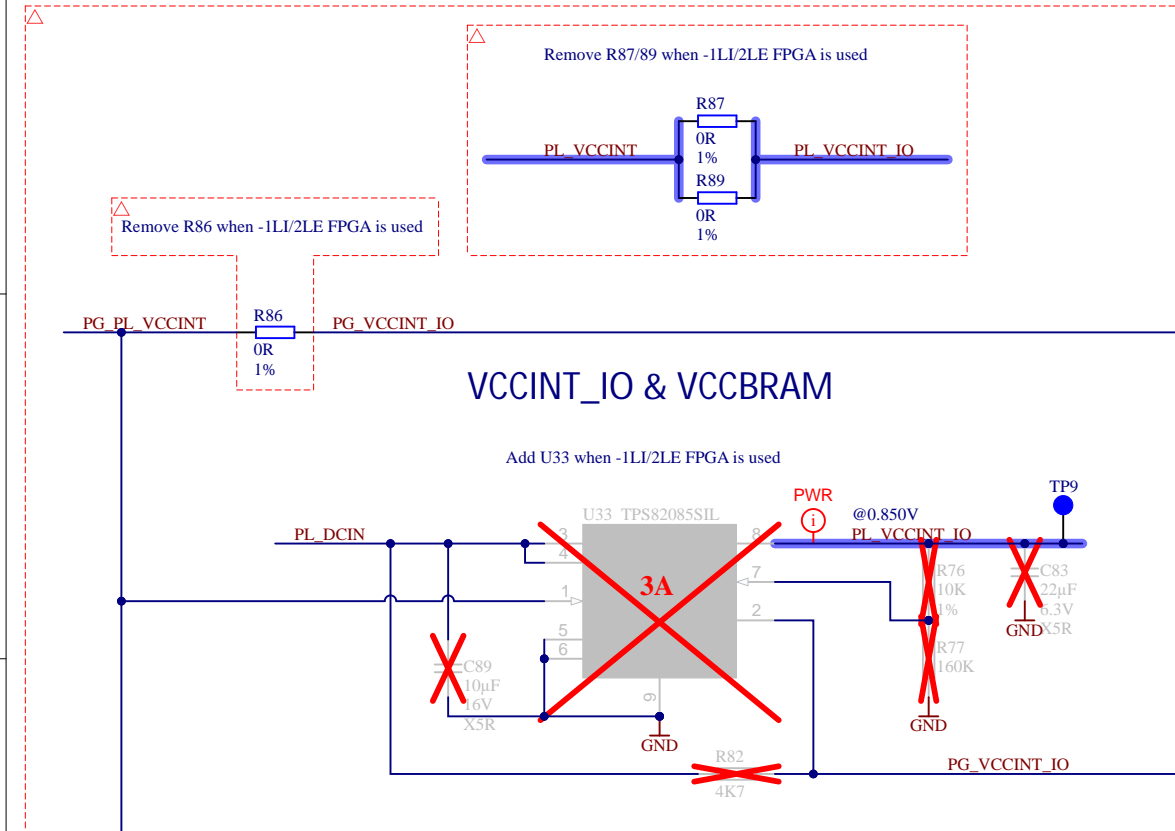
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A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page24 of 30
Filename: DDR4-TERM.SchDoc		



		Title: TE0803 - CLOCK	
		A4	Number: TE0803 3BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH / TT	
Page 25 of 30		Page 25 of 30	
Filename: Clock.SchDoc			



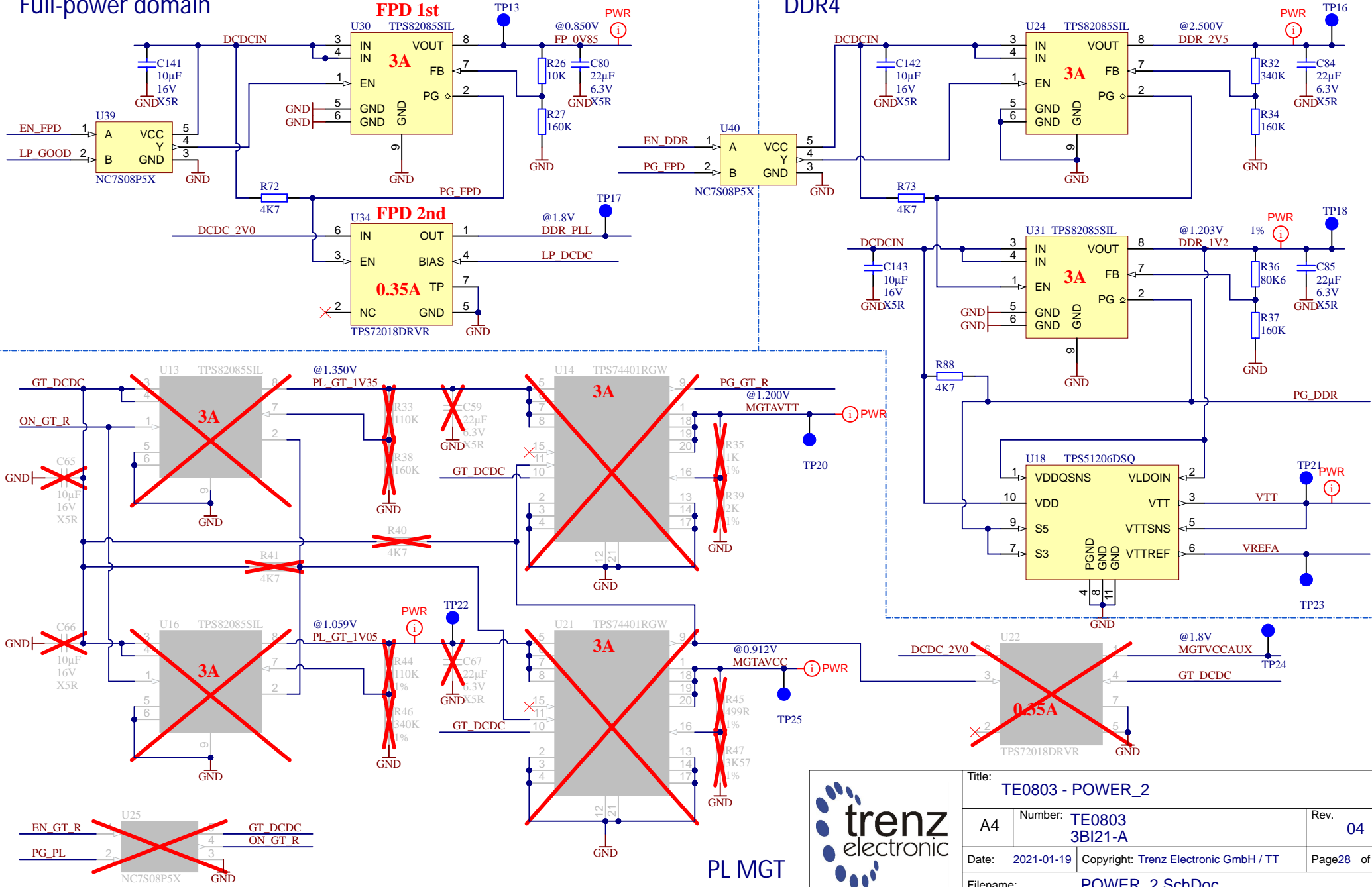
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A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 26 of 30
Filename: POWER.SchDoc		



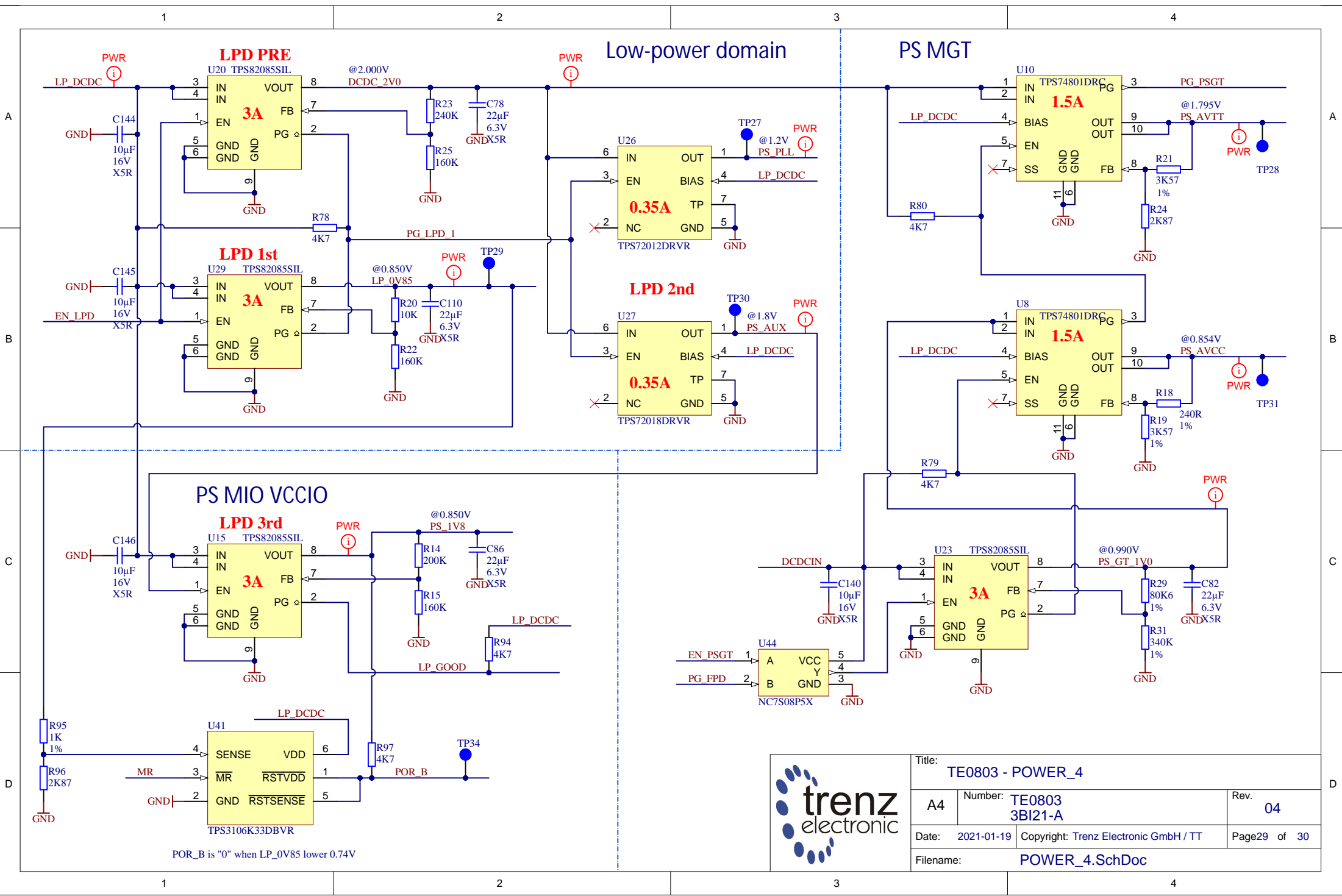
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A4	Number: TE0803 3BI21-A	Rev. 04
Date: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 27 of 30
Filename: POWER_1.SchDoc		

Full-power domain

DDR4



Title: TE0803 - POWER_2		
A4	Number: TE0803 3BI21-A	Rev. 04
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Filename: POWER_2.SchDoc		




POR_B is "0" when LP_OV85 lower 0.74V



Title: TE0803 - POWER_4		
A4	Number: TE0803 3BI21-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

		Title: TE0803 - Revision History	
		A4	Number: TE0803 3BI21-A
Date: 2021-01-19		Copyright: Trenz Electronic GmbH	
Page 30 of 30		Filename: Revision Changes.SchDoc	
Drawn by: VY			