


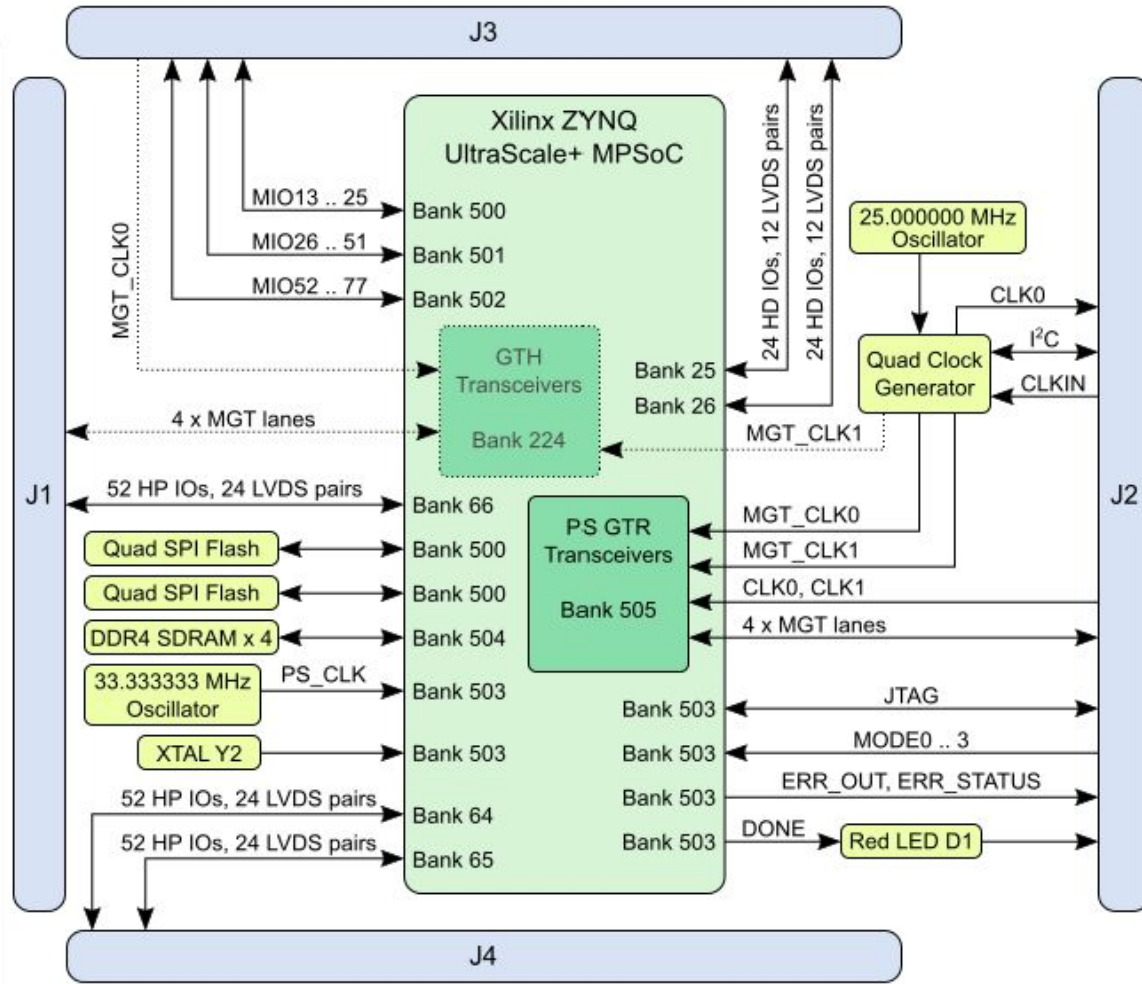
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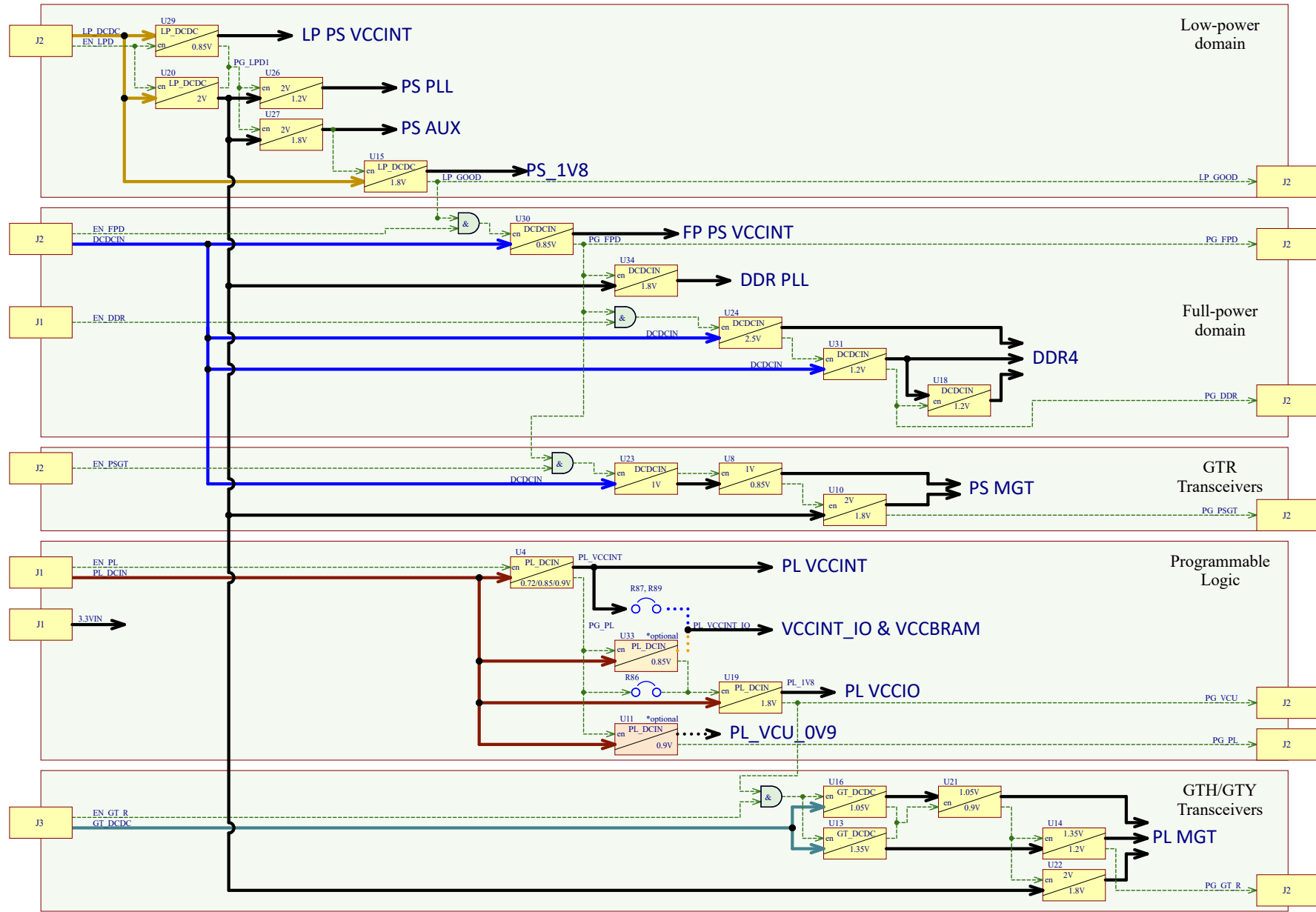
Schematics and other handouts serve for informational purposes only!

	Title: <b>TE0813</b>		
	A4	Number: <b>TE0813 4GE71-A</b>	Rev. <b>01</b>
	Date: <b>2021-08-16</b>	Copyright: <b>Trenz Electronic GmbH / TT</b>	Page <b>1</b> of <b>30</b>
	Filename: <b>Legal Notices Modules.SchDoc</b>		

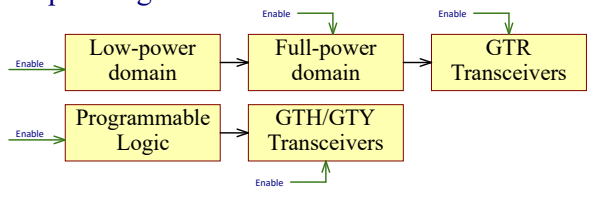
# TE0813-01



		Title: <b>Module TE0813 - System Overview</b>	
		A4	Number: <b>TE0813 4GE71-A</b>
Date: 2021-08-16		Copyright: 2015 Trenz Electronic GmbH	
Filename: <b>TE0813-Overview.SchDoc</b>		Page 2 of 30	



Power-on sequencing:



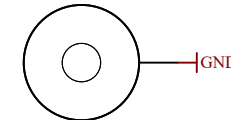
- EN\_GT\_R Net name
- Power bus
- Control signal
- Power bus in FPGA speedgrade -1/-2/-3 assembly variants
- Power bus in FPGA speedgrade -1L/-2L assembly variants (low power)
- Optional power converter
- Logic AND gate



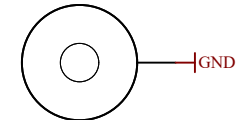
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A3	Number: TE0813 4GE71-A	Rev. 01
Datum: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 3 of 30
Filename: Power_Diagram.SchDoc		

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	

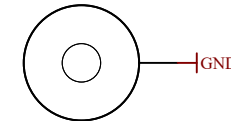
Special notes:



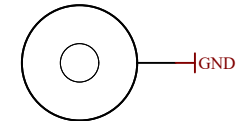
Mount.Hole 3.2mm für Unterlegscheibe



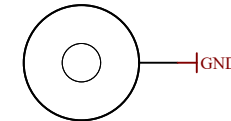
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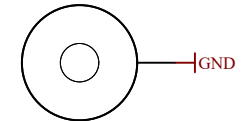
Mount.Hole 3.2mm für Unterlegscheibe



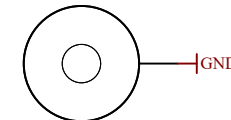
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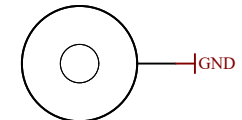
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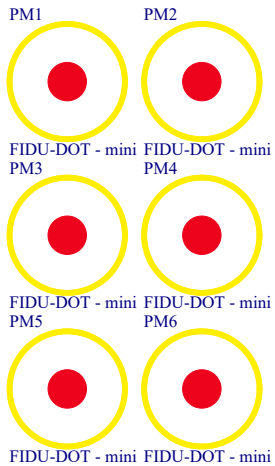
Mount.Hole 3.2mm für Unterlegscheibe



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	4GE71-A
Created by	VT
Modified by	VT
Modified at	2021-05-27
SVN Revision	12304 [Locally Modified]



Title: TE0813		
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1

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4

A

A

B

B

C

C

D

D

JM1A

JM1B

ADM6-60-01.5-L-4-2

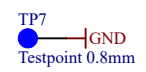
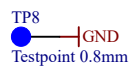
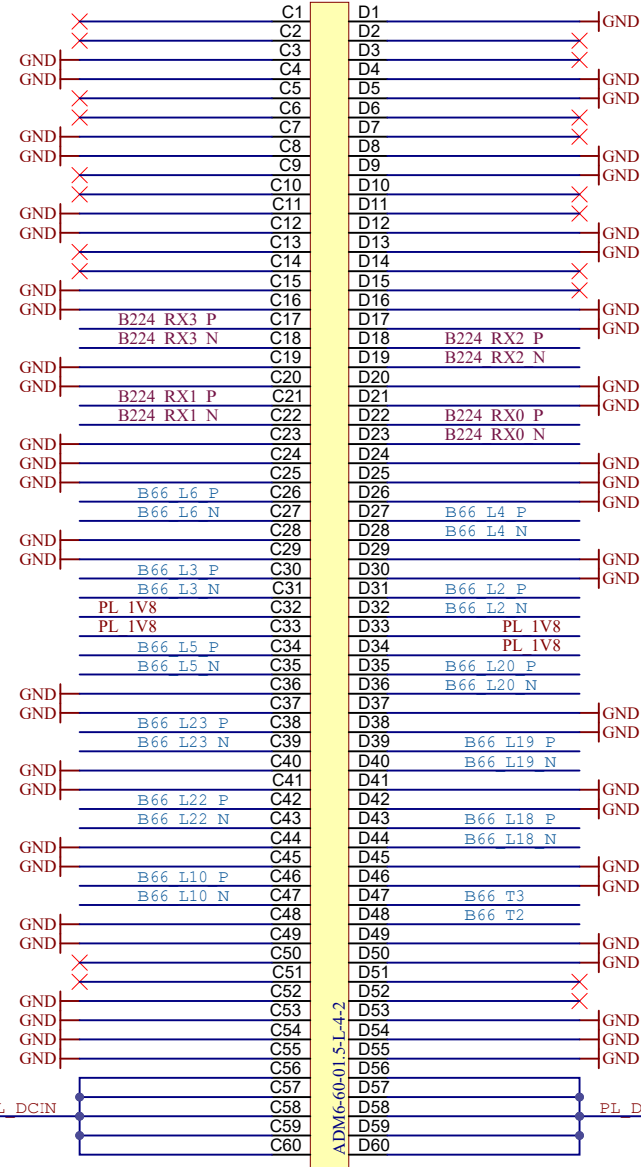
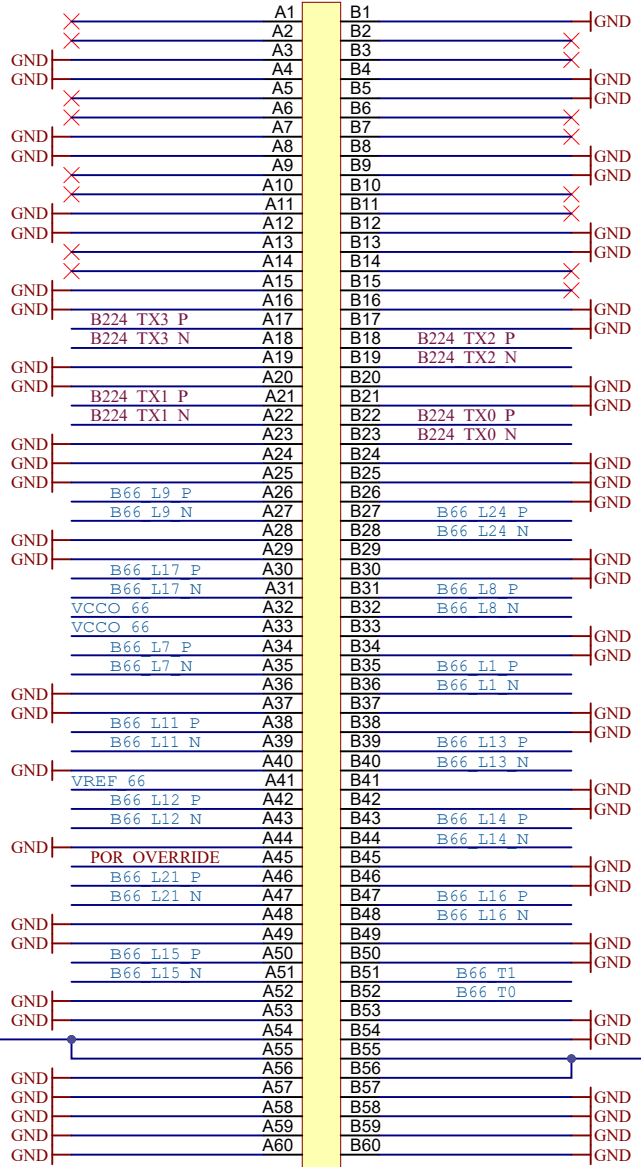
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3.3VIN

3.3VIN

PL\_DCIN

PL\_DCIN



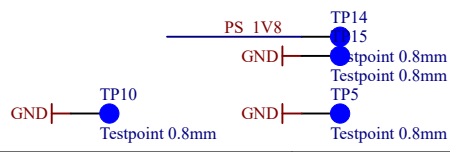
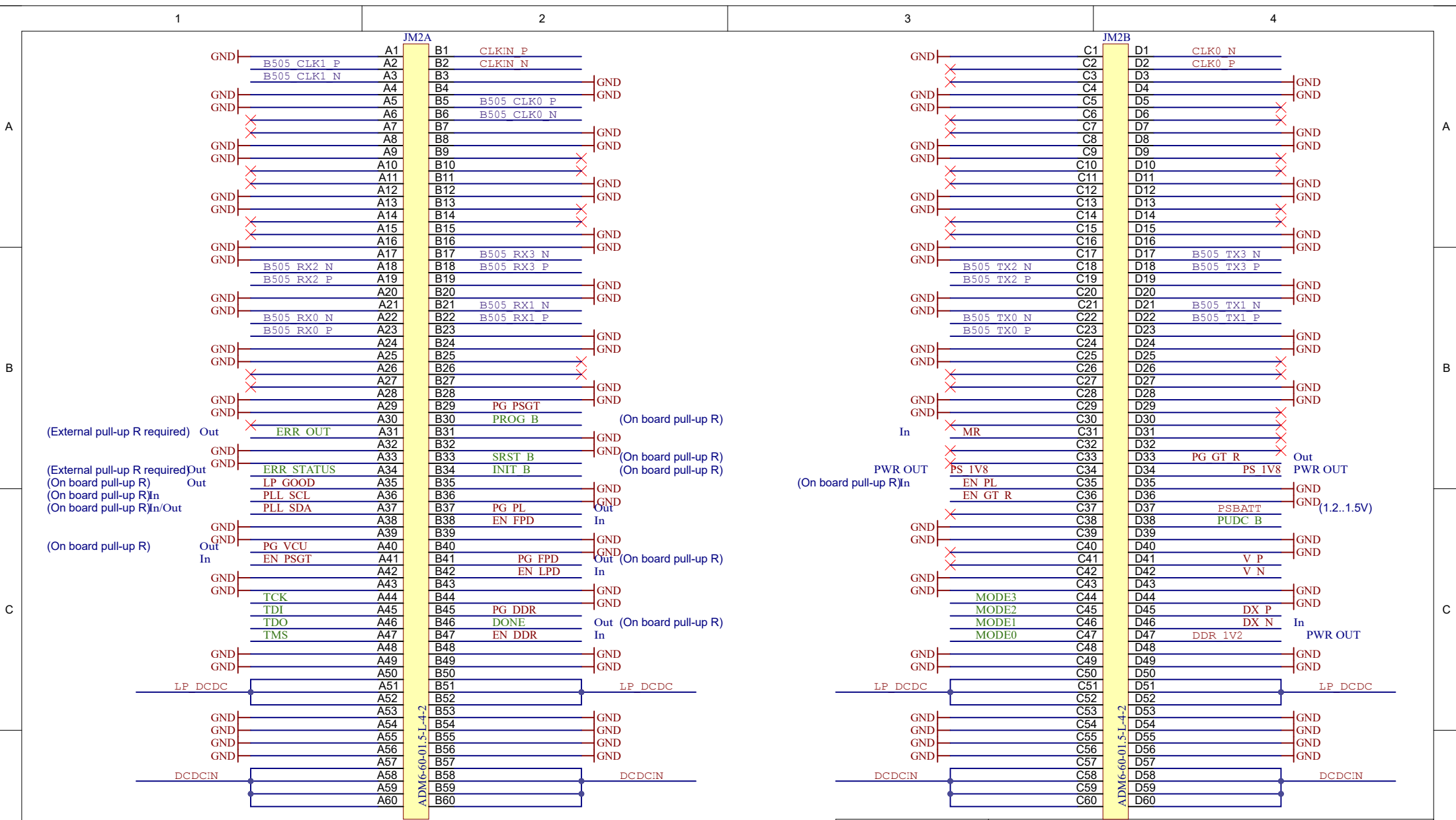
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A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 5 of 30
Filename: J1.SchDoc		

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Title: TE0813 - Connector J2

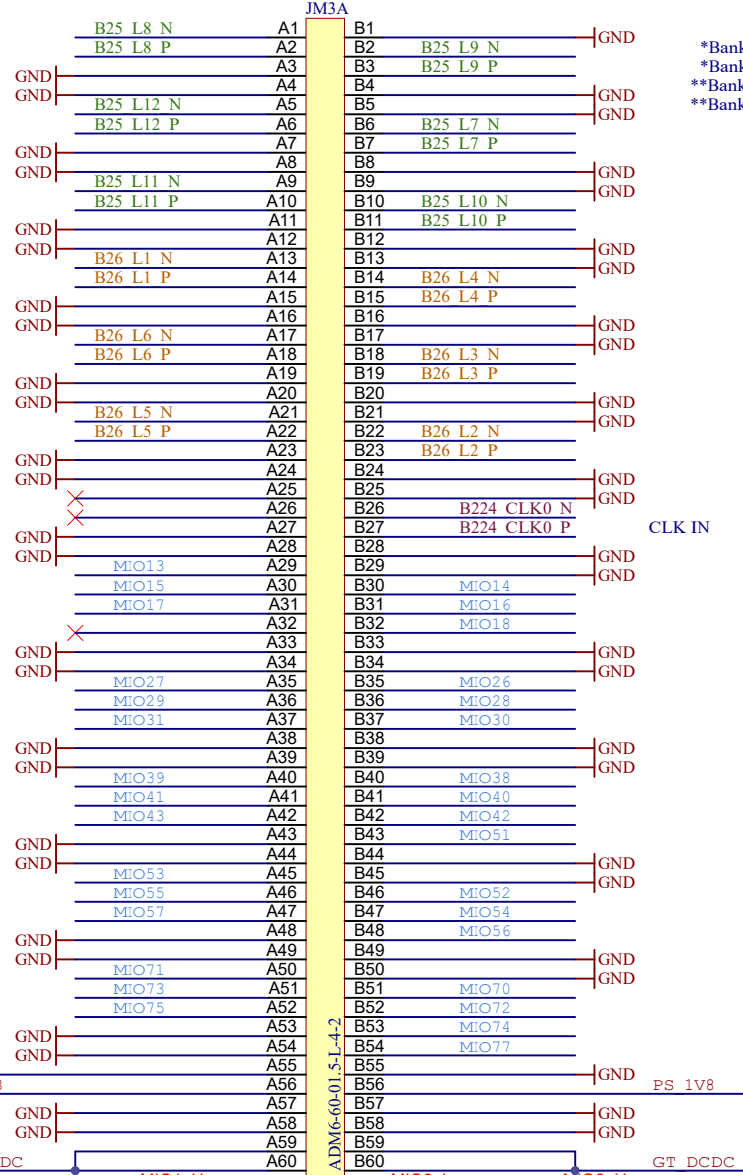
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 6 of 30
Filename: J2.SchDoc		

1

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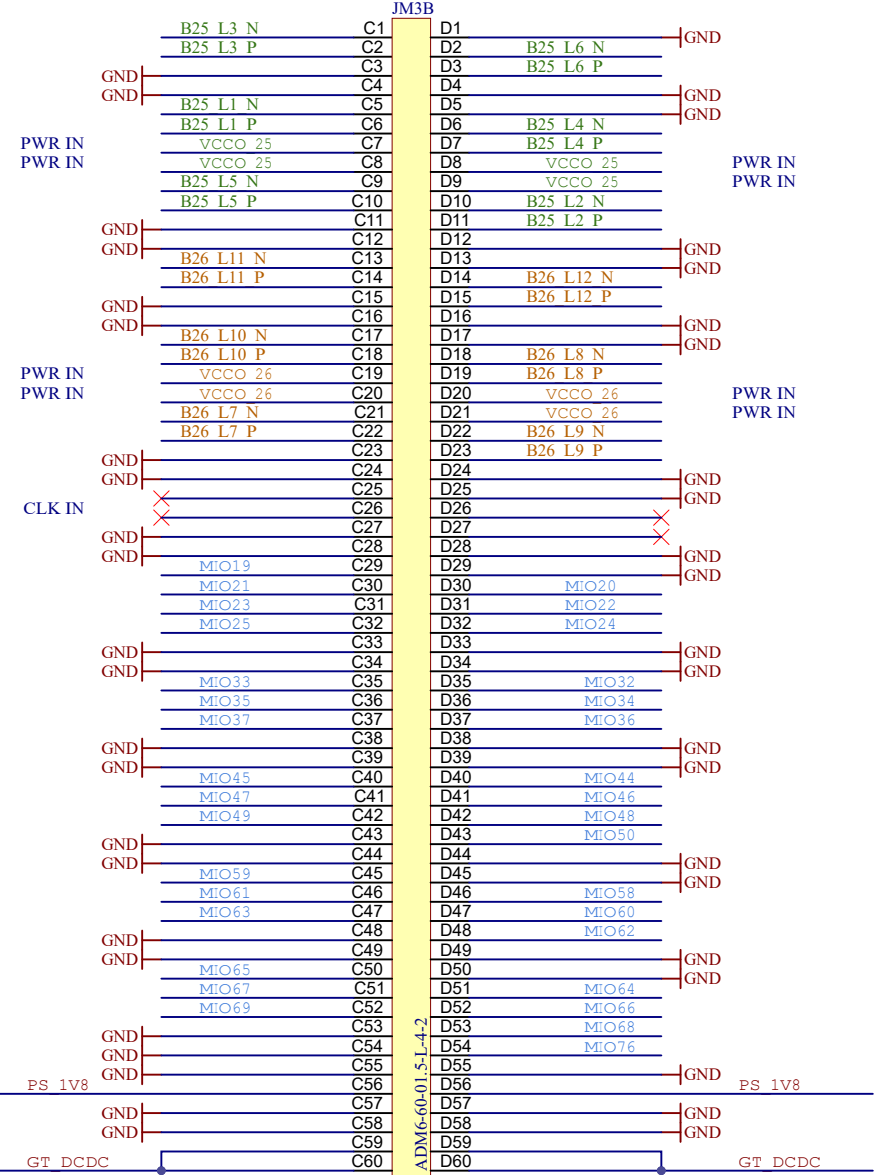
4



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

CLK IN

JM3B



A

A

B

B

C

C

D

D

MIO26	MIO32	MIO38	MIO45	MIO52	MIO58	MIO64	MIO71	MIO13	MIO19
MIO27	MIO33	MIO39	MIO46	MIO53	MIO59	MIO65	MIO72	MIO14	MIO20
MIO28	MIO34	MIO40	MIO47	MIO54	MIO60	MIO66	MIO73	MIO15	MIO21
MIO29	MIO35	MIO41	MIO48	MIO55	MIO61	MIO67	MIO74	MIO16	MIO22
MIO30	MIO36	MIO42	MIO49	MIO56	MIO62	MIO68	MIO75	MIO17	MIO23
MIO31	MIO37	MIO43	MIO50	MIO57	MIO63	MIO69	MIO76	MIO18	MIO24
		MIO44	MIO51			MIO70	MIO77		MIO25



Title: TE0813 - Connector J3		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 7 of 30
Filename: J3.SchDoc		

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A

A

B

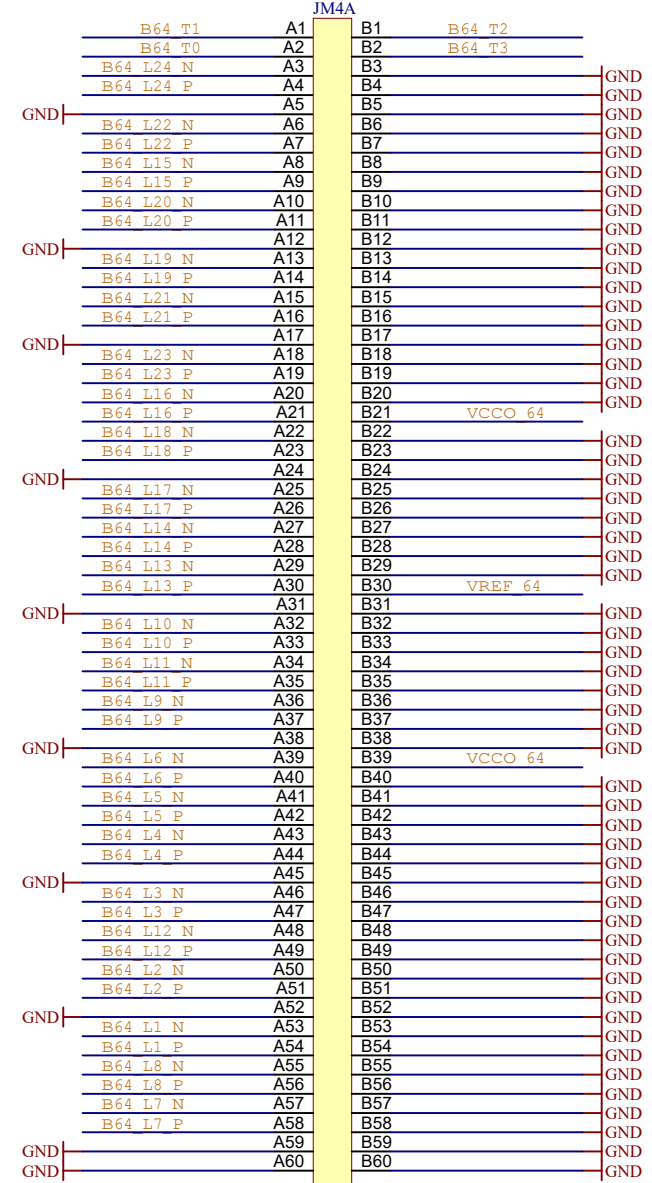
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C

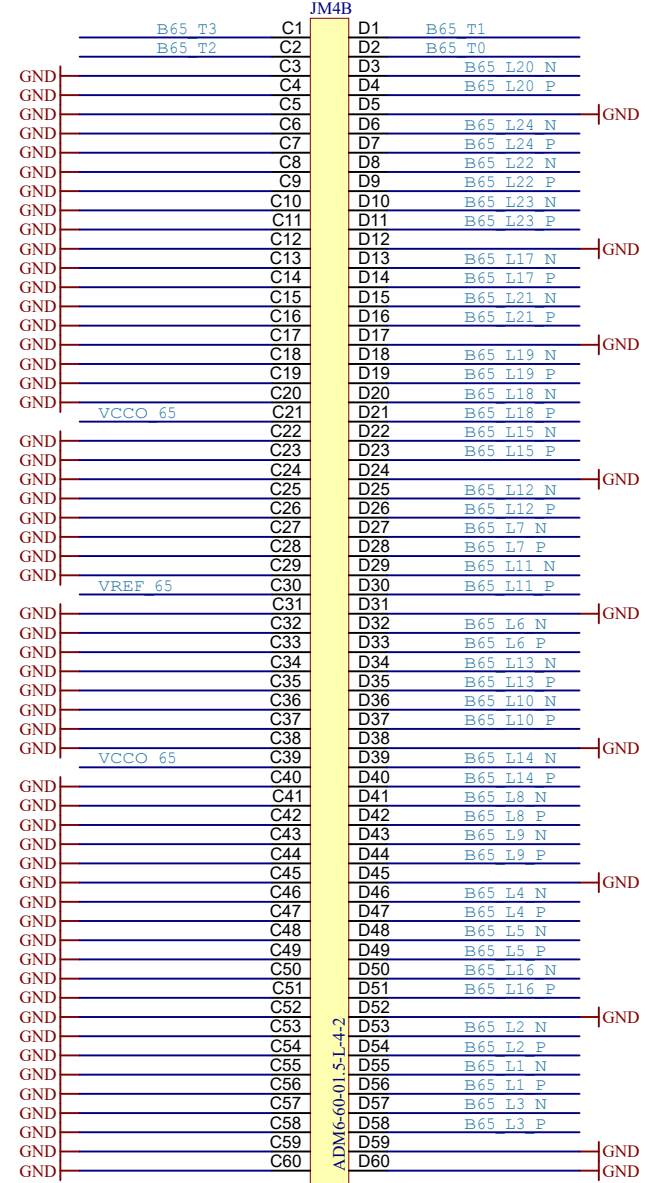
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D

D



ADM6-60-01.5-L-4-2



ADM6-60-01.5-L-4-2



Title: <b>TE0813 - Connector J4</b>		
A4	Number: <b>TE0813 4GE71-A</b>	Rev. <b>01</b>
Date: <b>2021-08-16</b>	Copyright: <b>Trenz Electronic GmbH / TT</b>	Page <b>8</b> of <b>30</b>
Filename: <b>J4.SchDoc</b>		

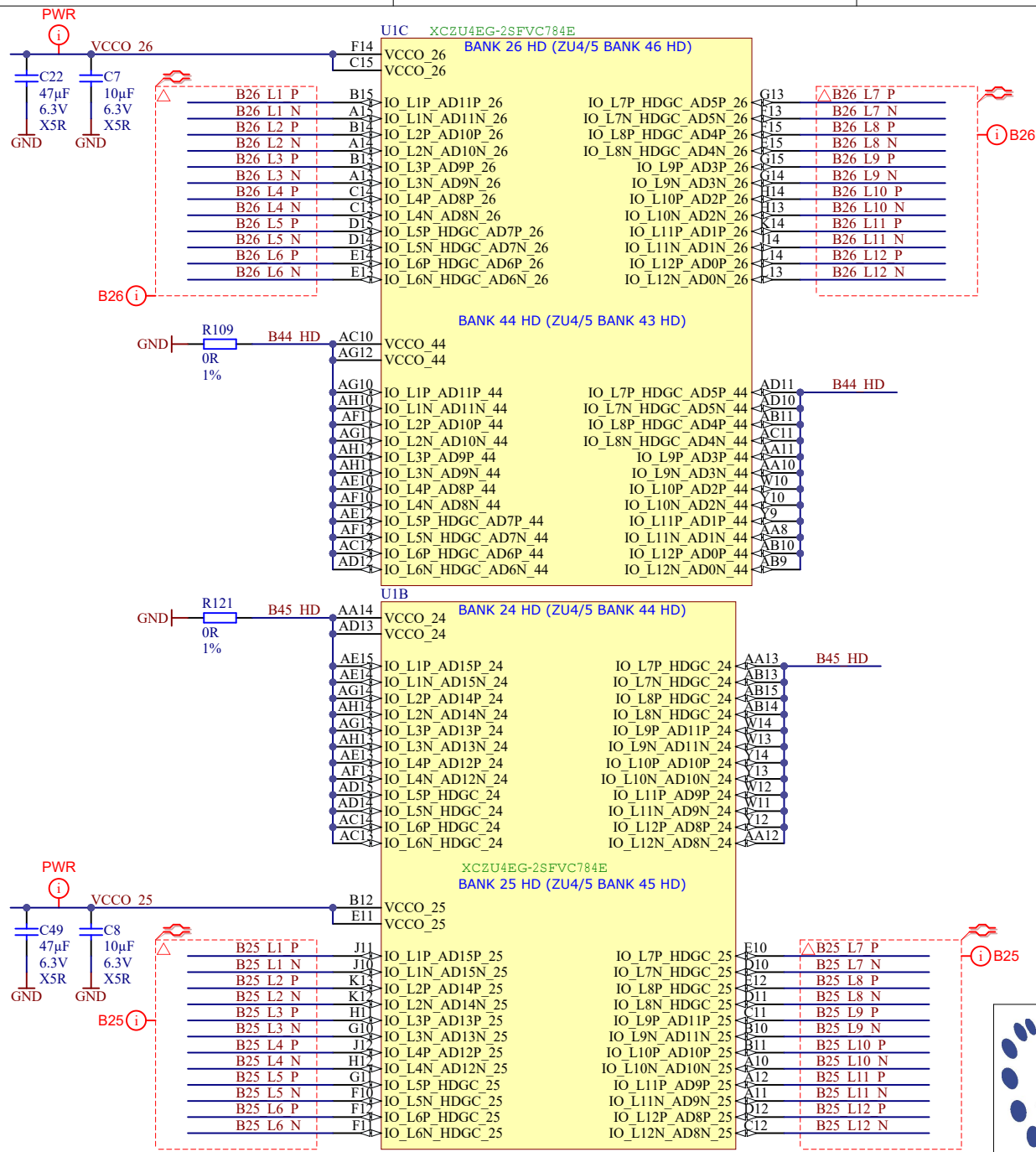
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2

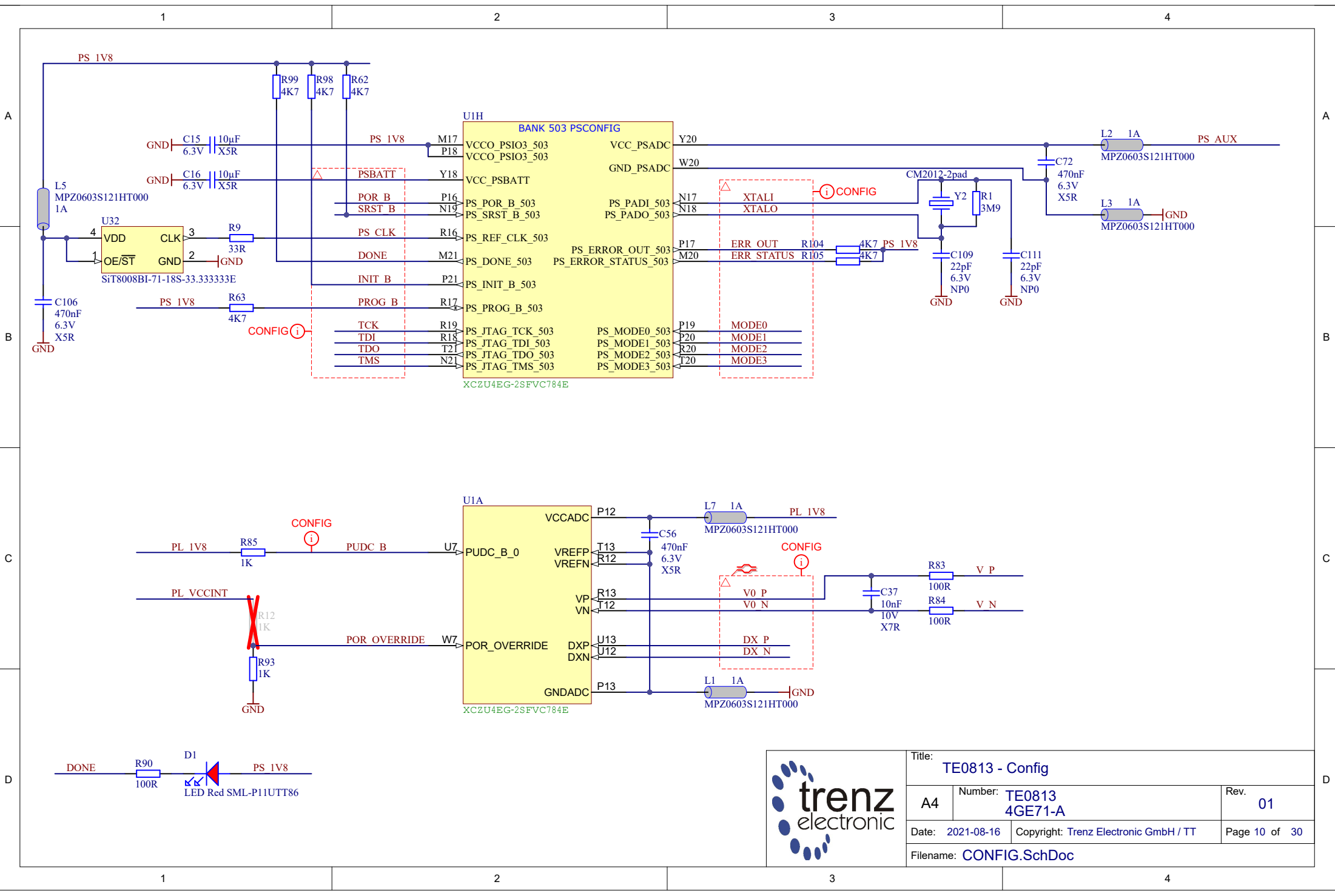
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4

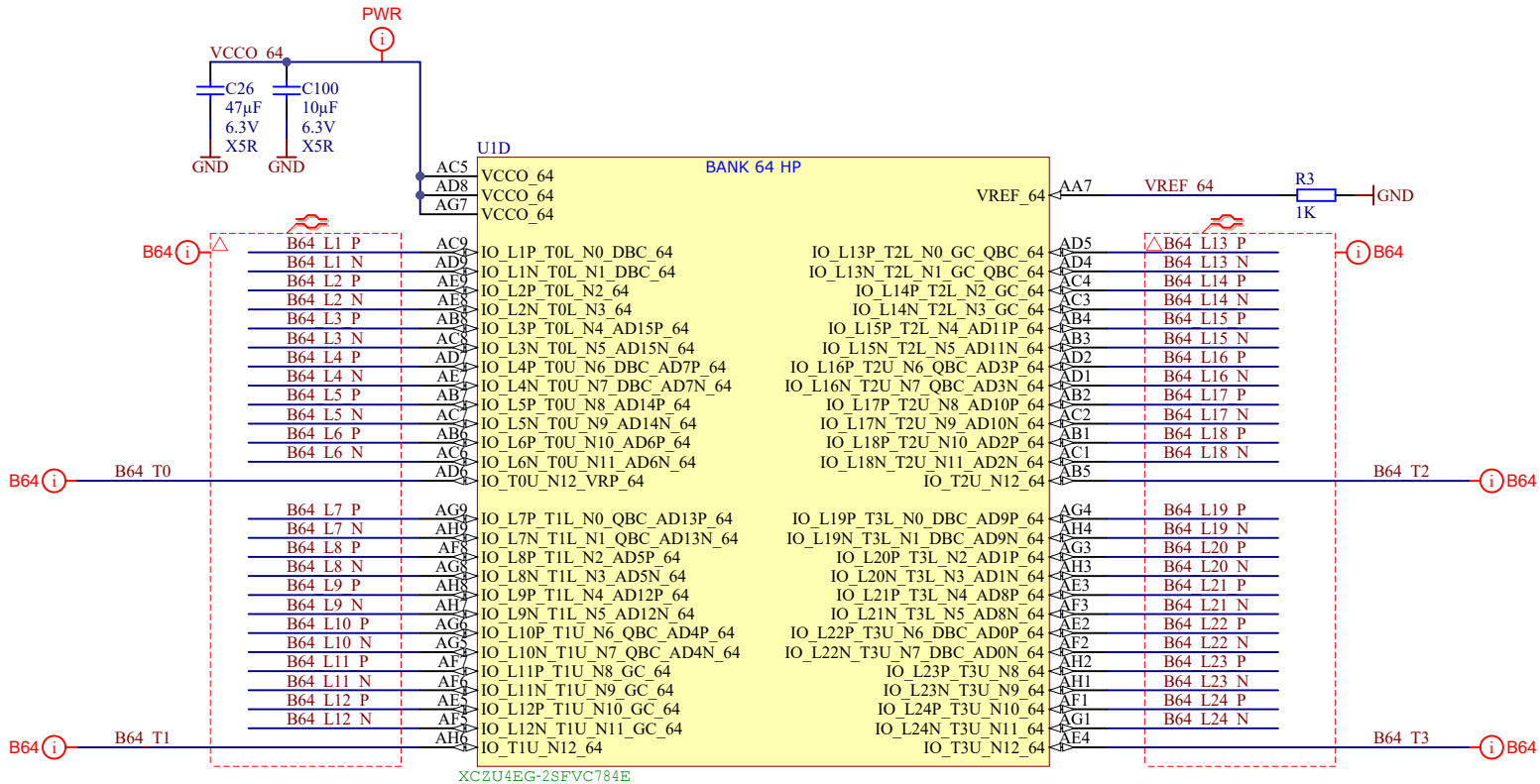




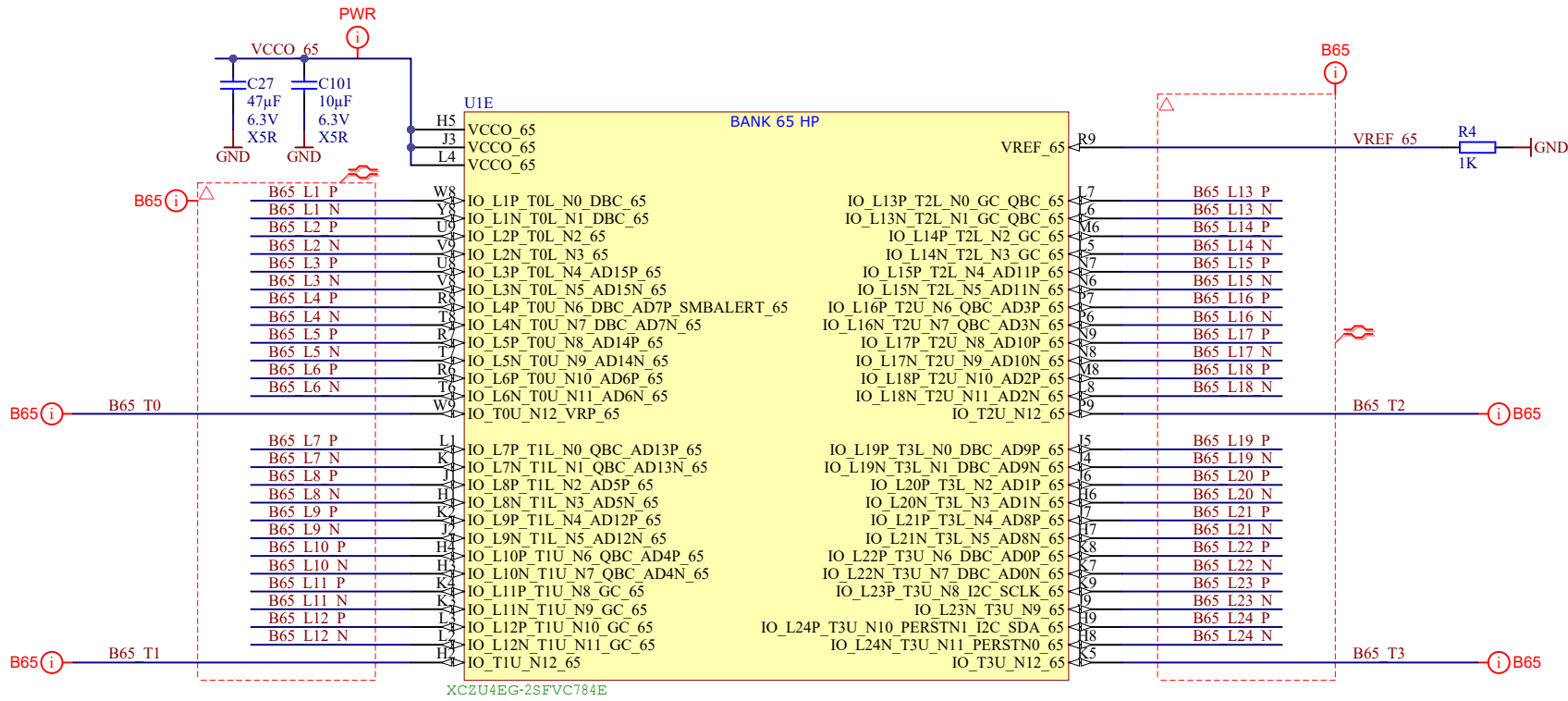
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A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 9 of 30
Filename: B_HD.SchDoc		



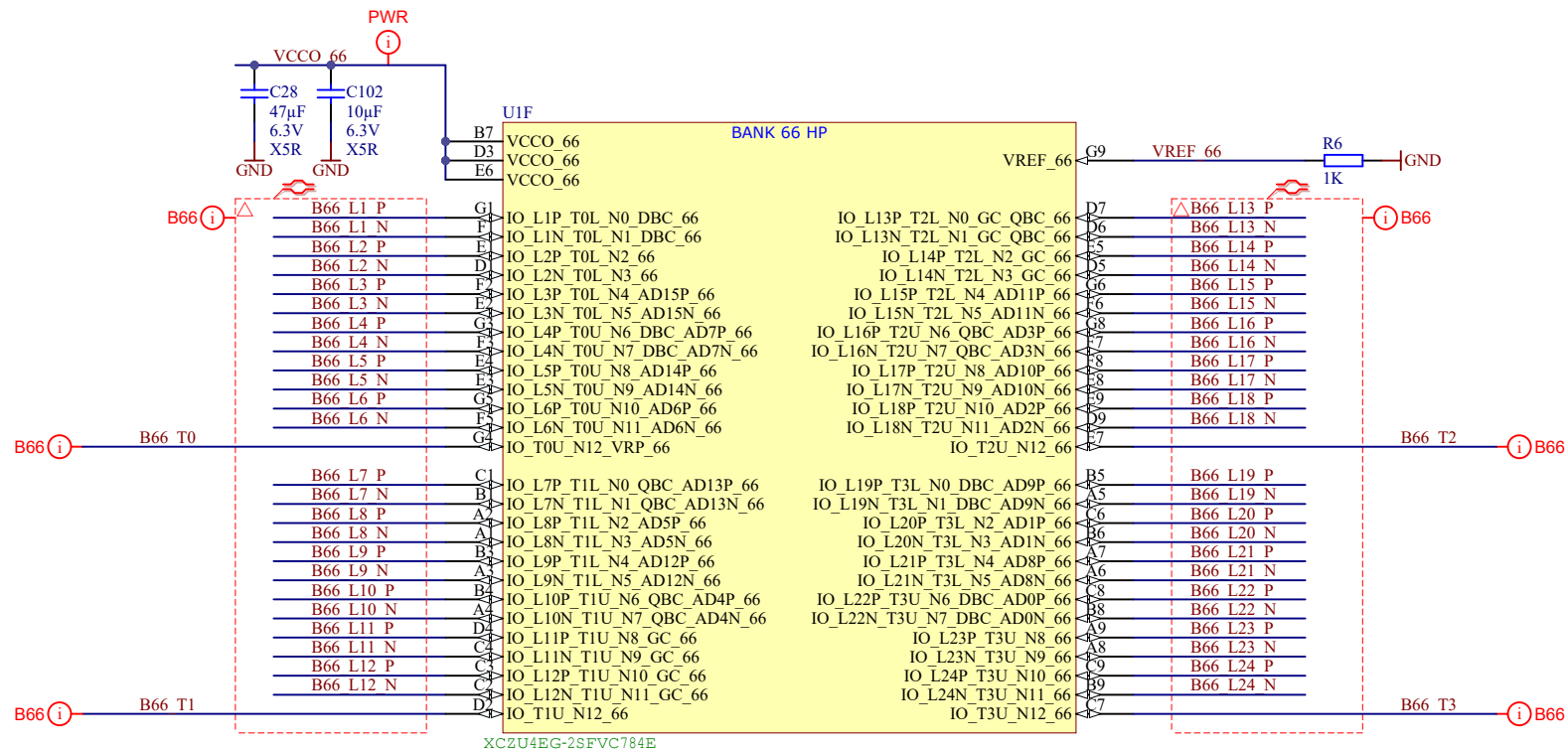

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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 10 of 30
Filename: CONFIG.SchDoc		



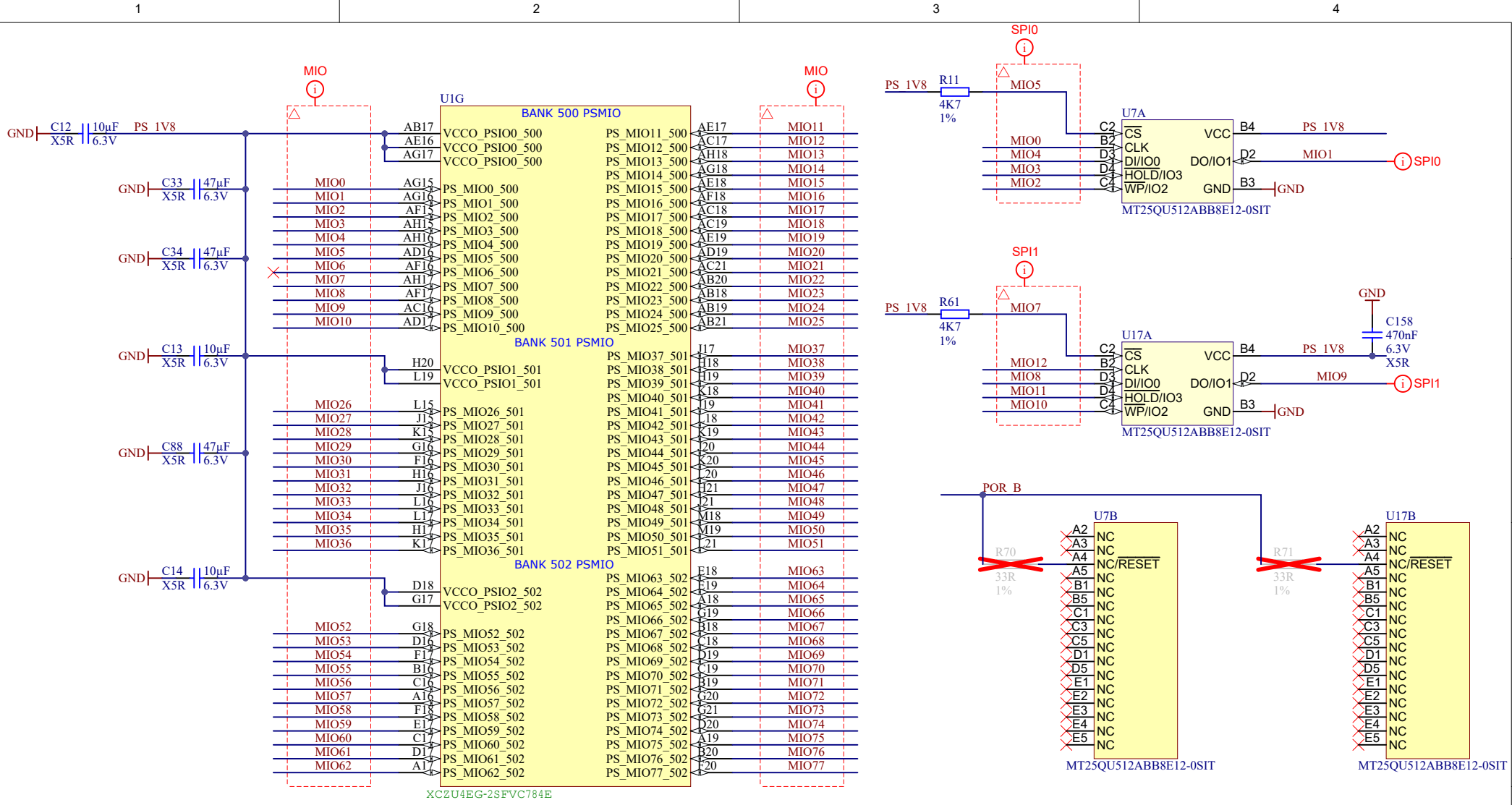
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 11 of 30
Filename: B64.SchDoc		




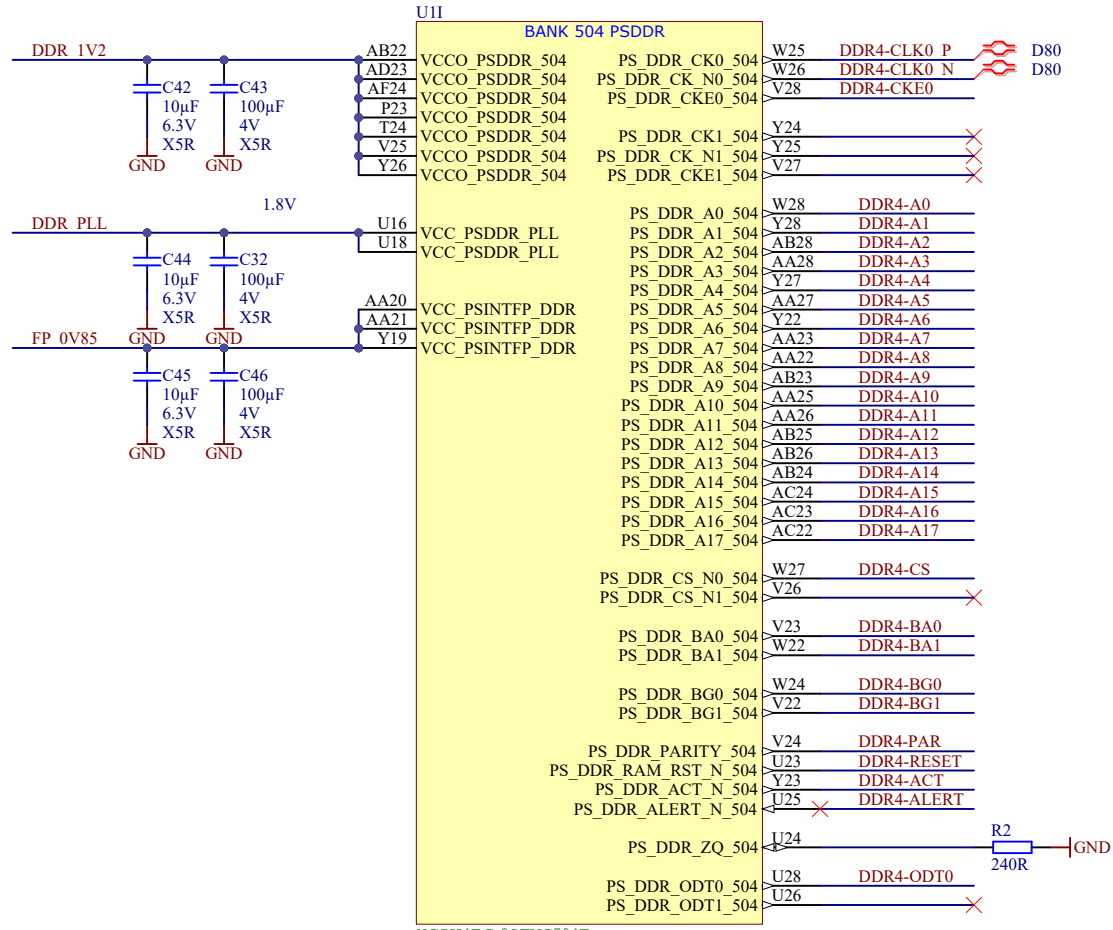
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 12 of 30
Filename: B65.SchDoc		

Title: TE0813 - B66		
A4	Number: TE0813 4GE71-A	Rev. 01
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Filename: B66.SchDoc		



		Title: <b>TE0813 - MIO Banks</b>	
		A4	Number: <b>TE0813 4GE71-A</b>
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Filename: <b>B_MIO.SchDoc</b>			



XCZU4EG-2SFVC784E

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	T22	DQ33
DQ2	AD20	PS_DDR_DQ2_504	PS_DDR_DQ34_504	T22	DQ34
DQ3	AF20	PS_DDR_DQ3_504	PS_DDR_DQ35_504	T22	DQ35
DQ4	AH20	PS_DDR_DQ4_504	PS_DDR_DQ36_504	T23	DQ36
DQ5	AH20	PS_DDR_DQ5_504	PS_DDR_DQ37_504	T24	DQ37
DQ6	AH19	PS_DDR_DQ6_504	PS_DDR_DQ38_504	T24	DQ38
DQ7	AG1	PS_DDR_DQ7_504	PS_DDR_DQ39_504	T24	DQ39
DQ8	AF20	PS_DDR_DQ8_504	PS_DDR_DQ40_504	T24	DQ40
DQ9	AH20	PS_DDR_DQ9_504	PS_DDR_DQ41_504	T24	DQ41
DQ10	AE20	PS_DDR_DQ10_504	PS_DDR_DQ42_504	T24	DQ42
DQ11	AD20	PS_DDR_DQ11_504	PS_DDR_DQ43_504	T24	DQ43
DQ12	AH20	PS_DDR_DQ12_504	PS_DDR_DQ44_504	T22	DQ44
DQ13	AH20	PS_DDR_DQ13_504	PS_DDR_DQ45_504	T22	DQ45
DQ14	AE20	PS_DDR_DQ14_504	PS_DDR_DQ46_504	T22	DQ46
DQ15	AG20	PS_DDR_DQ15_504	PS_DDR_DQ47_504	T22	DQ47
DQ16	AC20	PS_DDR_DQ16_504	PS_DDR_DQ48_504	T25	DQ48
DQ17	AD20	PS_DDR_DQ17_504	PS_DDR_DQ49_504	T26	DQ49
DQ18	AD20	PS_DDR_DQ18_504	PS_DDR_DQ50_504	T25	DQ50
DQ19	AD20	PS_DDR_DQ19_504	PS_DDR_DQ51_504	T26	DQ51
DQ20	AG20	PS_DDR_DQ20_504	PS_DDR_DQ52_504	T28	DQ52
DQ21	AH20	PS_DDR_DQ21_504	PS_DDR_DQ53_504	T28	DQ53
DQ22	AH20	PS_DDR_DQ22_504	PS_DDR_DQ54_504	T28	DQ54
DQ23	AG20	PS_DDR_DQ23_504	PS_DDR_DQ55_504	T28	DQ55
DQ24	AH20	PS_DDR_DQ24_504	PS_DDR_DQ56_504	T28	DQ56
DQ25	AH20	PS_DDR_DQ25_504	PS_DDR_DQ57_504	T27	DQ57
DQ26	AF20	PS_DDR_DQ26_504	PS_DDR_DQ58_504	T28	DQ58
DQ27	AG20	PS_DDR_DQ27_504	PS_DDR_DQ59_504	T27	DQ59
DQ28	AC20	PS_DDR_DQ28_504	PS_DDR_DQ60_504	T26	DQ60
DQ29	AD20	PS_DDR_DQ29_504	PS_DDR_DQ62_504	T25	DQ61
DQ30	AD20	PS_DDR_DQ30_504	PS_DDR_DQ61_504	T25	DQ62
DQ31	AC20	PS_DDR_DQ31_504	PS_DDR_DQ62_504	T25	DQ63
DDR4-DQS0 P	AF21	PS_DDR_DQS_P0_504	PS_DDR_DQ63_504	T28	
DDR4-DQS0 N	AG20	PS_DDR_DQS_N0_504	PS_DDR_DQ64_504	T28	
DDR4-DQS1 P	AF20	PS_DDR_DQS_P1_504	PS_DDR_DQ65_504	T27	
DDR4-DQS1 N	AG20	PS_DDR_DQS_N1_504	PS_DDR_DQ66_504	T26	
DDR4-DQS2 P	AF20	PS_DDR_DQS_P2_504	PS_DDR_DQ67_504	T25	
DDR4-DQS2 N	AF20	PS_DDR_DQS_N2_504	PS_DDR_DQ68_504	T25	
DDR4-DQS3 P	AE20	PS_DDR_DQS_P3_504	PS_DDR_DQ69_504	T25	
DDR4-DQS3 N	AF20	PS_DDR_DQS_N3_504	PS_DDR_DQ70_504	T25	
DDR4-DQS4 P	N2	PS_DDR_DQS_P4_504	PS_DDR_DQ71_504	T25	
DDR4-DQS4 N	M2	PS_DDR_DQS_N4_504			
DDR4-DQS5 P	L2	PS_DDR_DQS_P5_504	PS_DDR_DM0_504	AG20	DDR4-DM0
DDR4-DQS5 N	K2	PS_DDR_DQS_N5_504	PS_DDR_DM1_504	AE23	DDR4-DM1
DDR4-DQS6 P	N2	PS_DDR_DQS_P6_504	PS_DDR_DM2_504	AE25	DDR4-DM2
DDR4-DQS6 N	N2	PS_DDR_DQS_N6_504	PS_DDR_DM3_504	AE28	DDR4-DM3
DDR4-DQS7 P	J2	PS_DDR_DQS_P7_504	PS_DDR_DM4_504	R23	DDR4-DM4
DDR4-DQS7 N	J2	PS_DDR_DQS_N7_504	PS_DDR_DM5_504	H23	DDR4-DM5
	R2	PS_DDR_DQS_P8_504	PS_DDR_DM6_504	L27	DDR4-DM6
	T2	PS_DDR_DQS_N8_504	PS_DDR_DM7_504	H26	DDR4-DM7
			PS_DDR_DM8_504	T26	

XCZU4EG-2SFVC784E

Title: <b>TE0813 - PS_DDR</b>		
A4	Number: <b>TE0813 4GE71-A</b>	Rev. <b>01</b>
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 15 of 30
Filename: <b>PS_DDR.SchDoc</b>		

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A

A

B

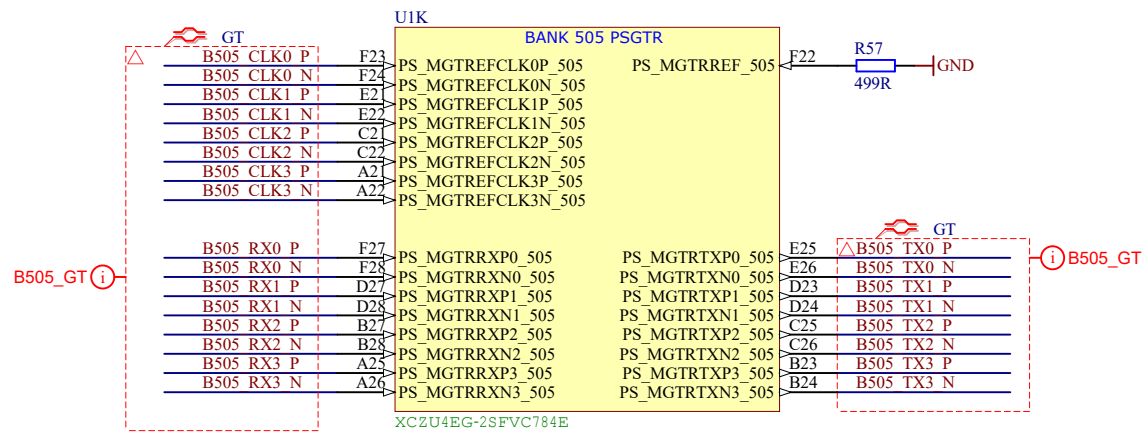
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C

C

D

D



	Title: TE0813 - PS_GT		
	A4	Number: TE0813 4GE71-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 16 of 30
	Filename: B_PS_GT.SchDoc		

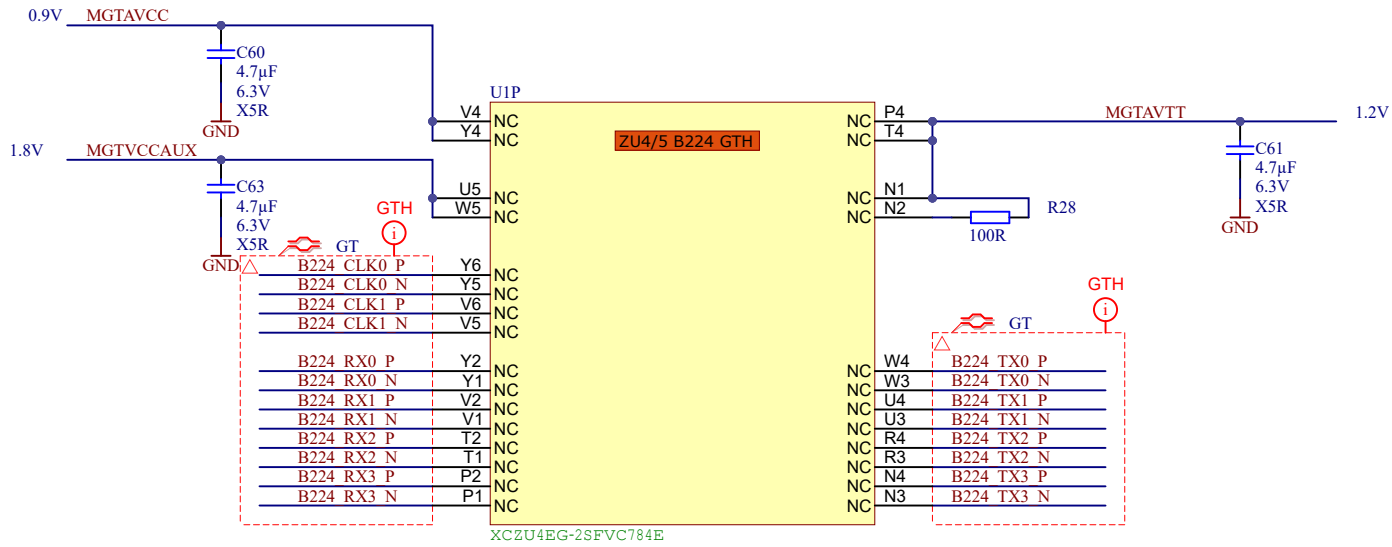
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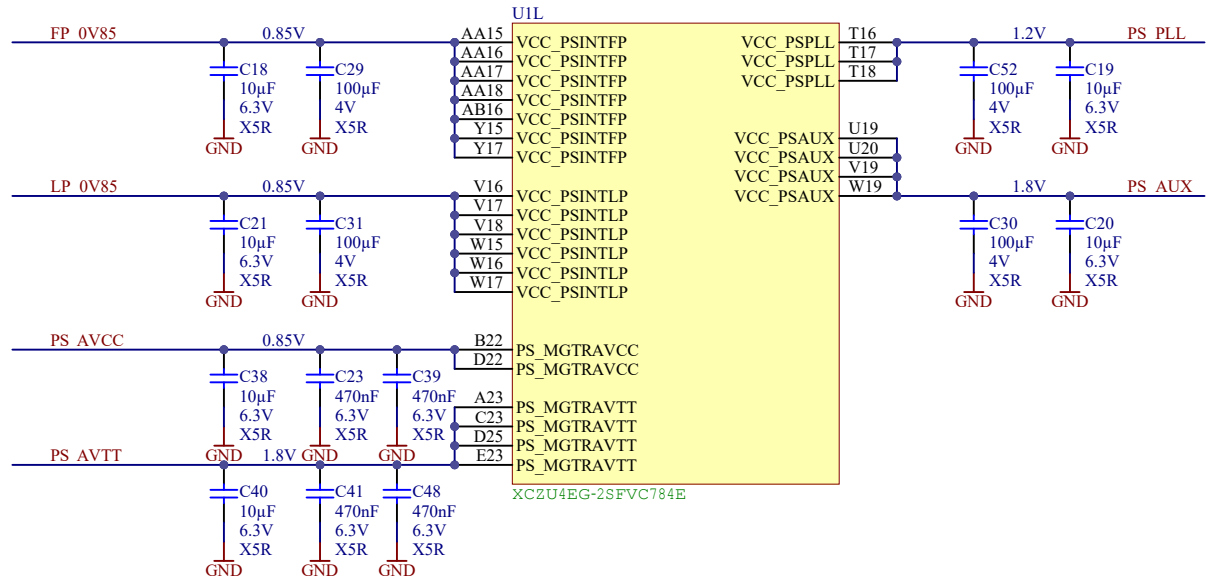
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		A4	Number: TE0813 4GE71-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Filename: B_GT.SchDoc		Page 17 of 30	



	Title: TE0813 - ZU_PS_POWER		
	A4	Number: TE0813 4GE71-A	Rev. 01
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 18 of 30
	Filename: ZU_PS_POWER.SchDoc		

1

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A

A

B

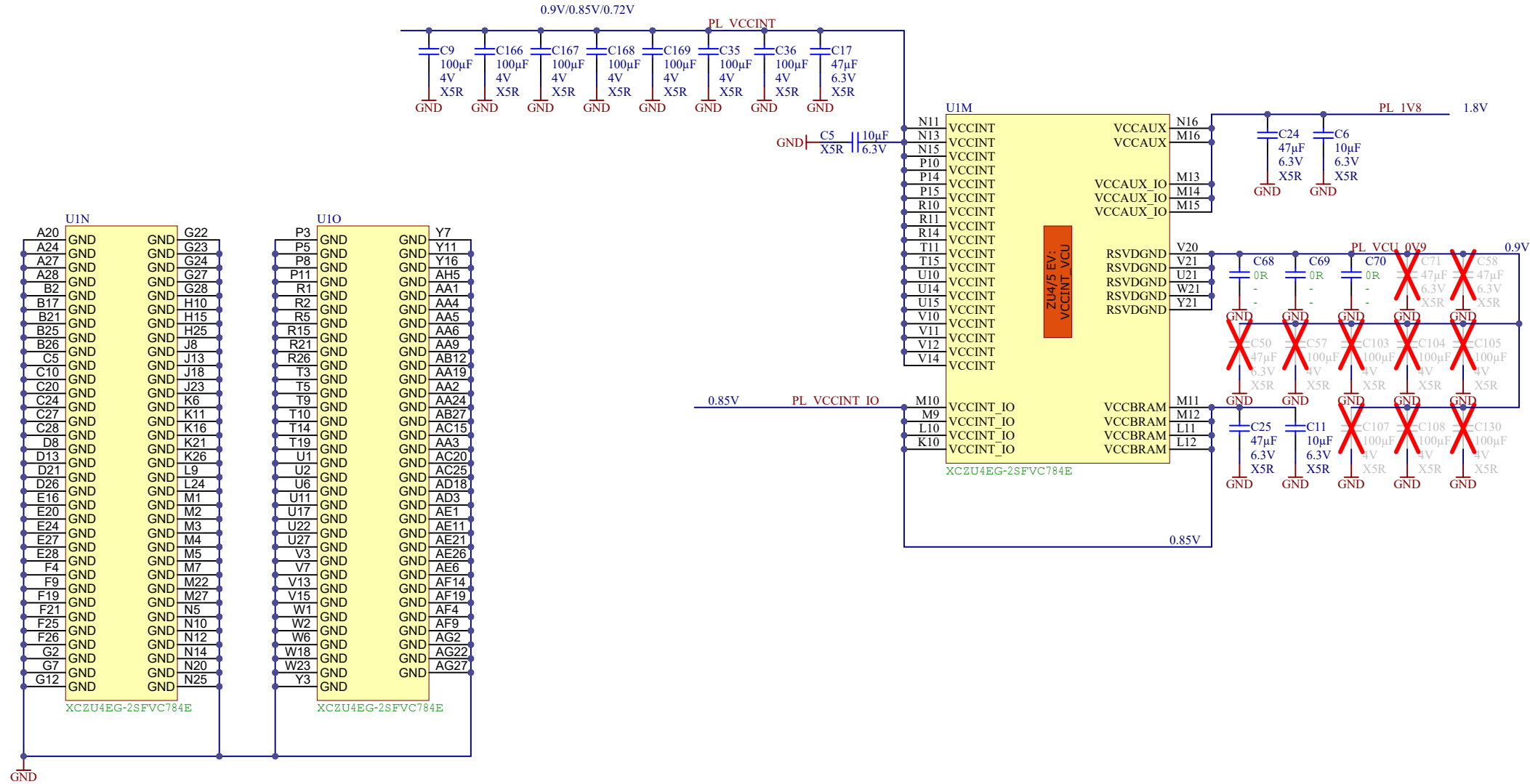
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C

C

D

D



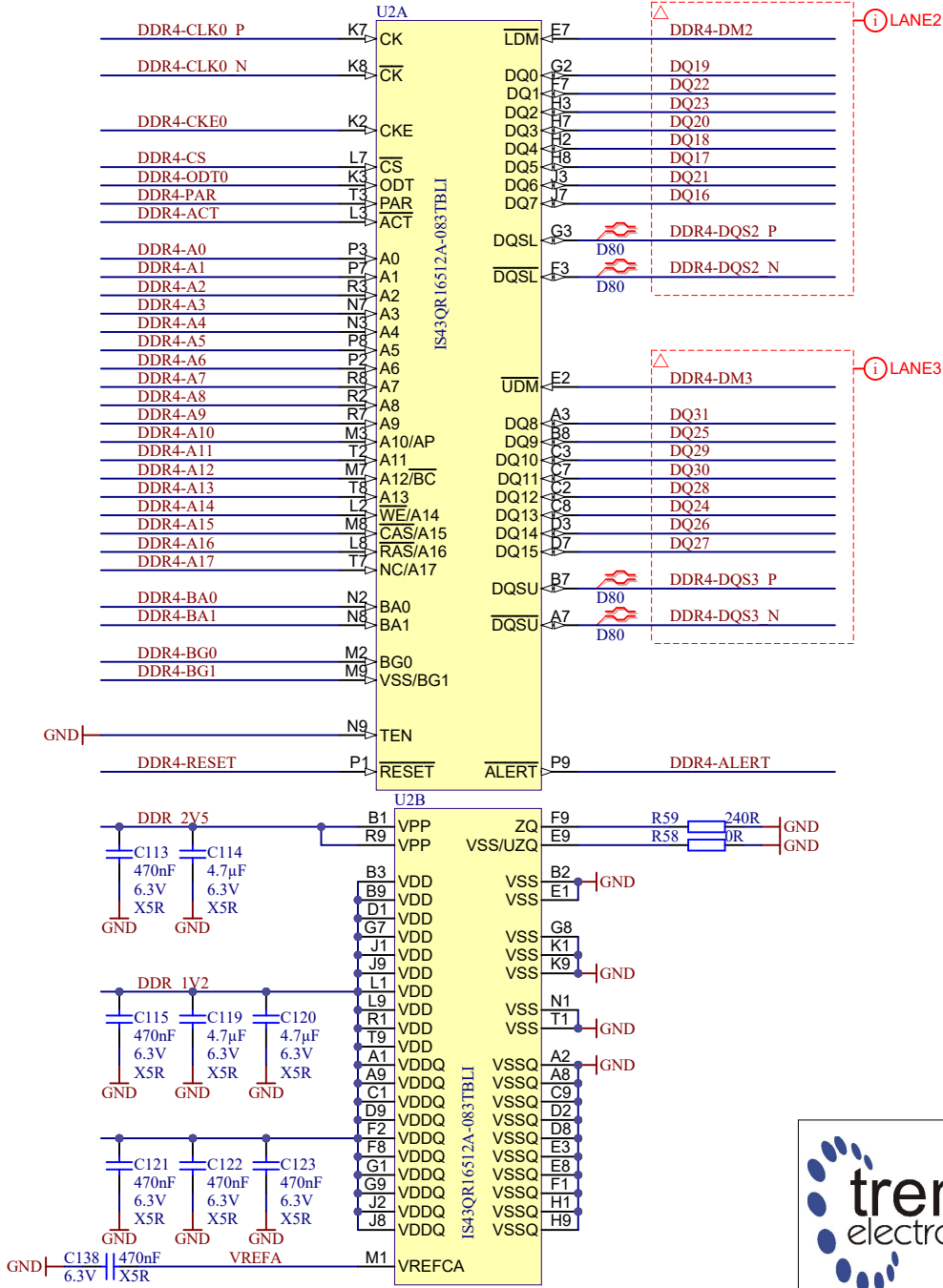
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Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Filename: ZU_POWER.SchDoc		Page 19 of 30	

1

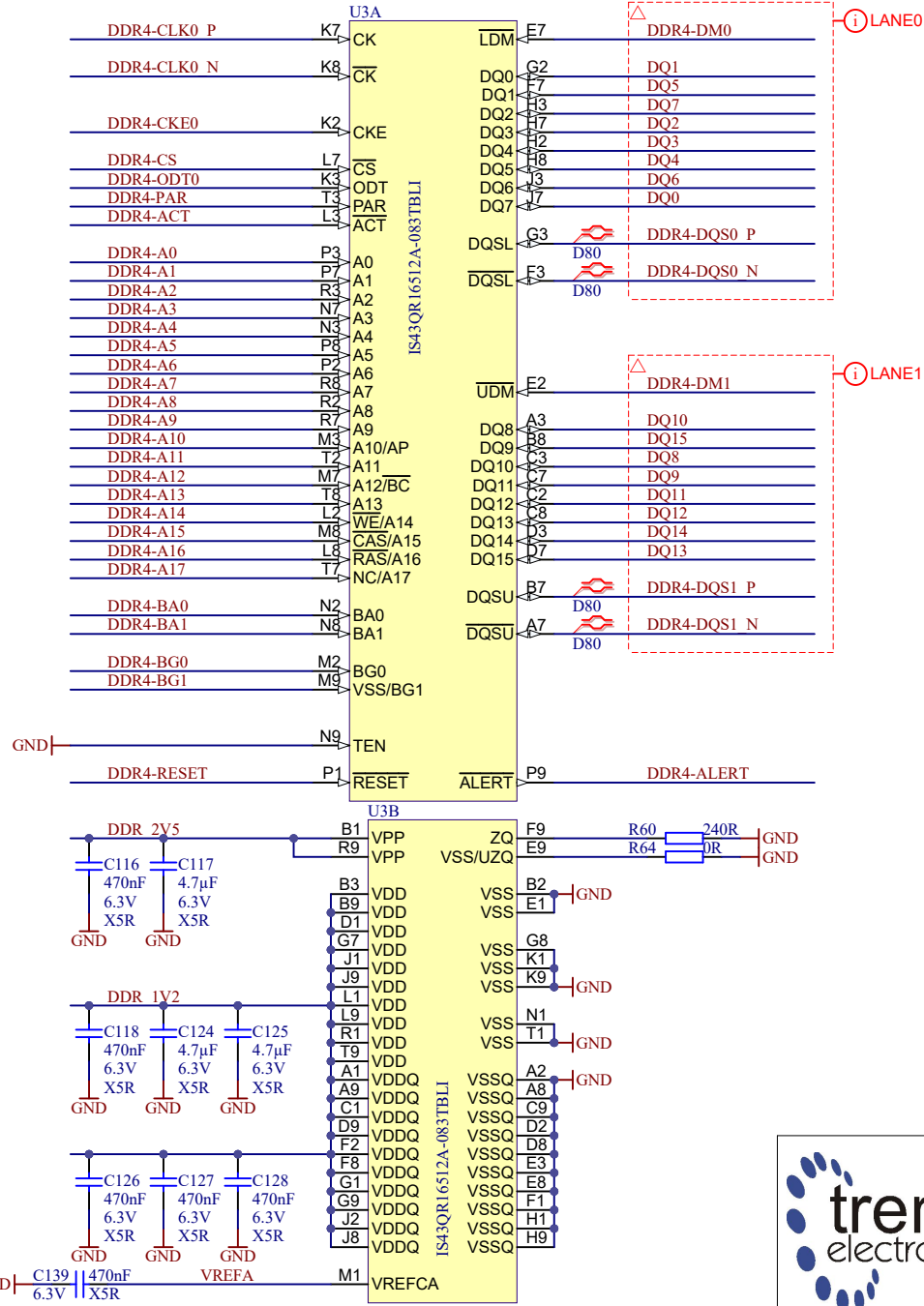

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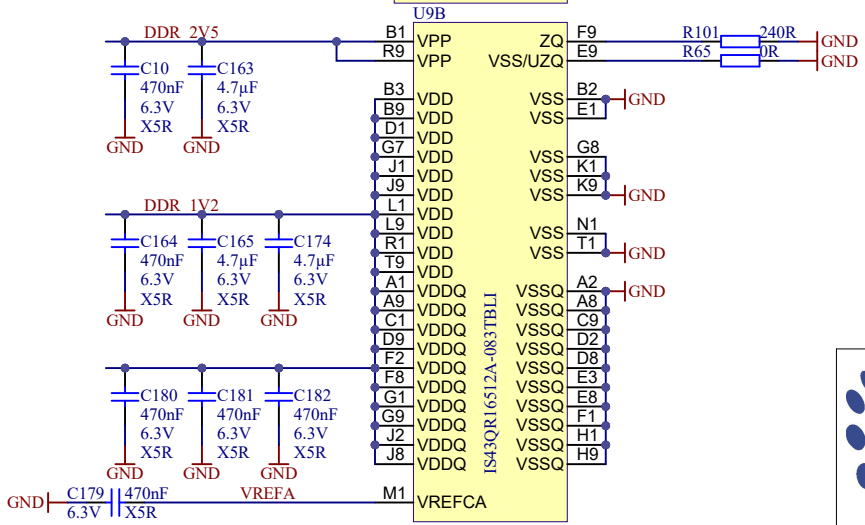
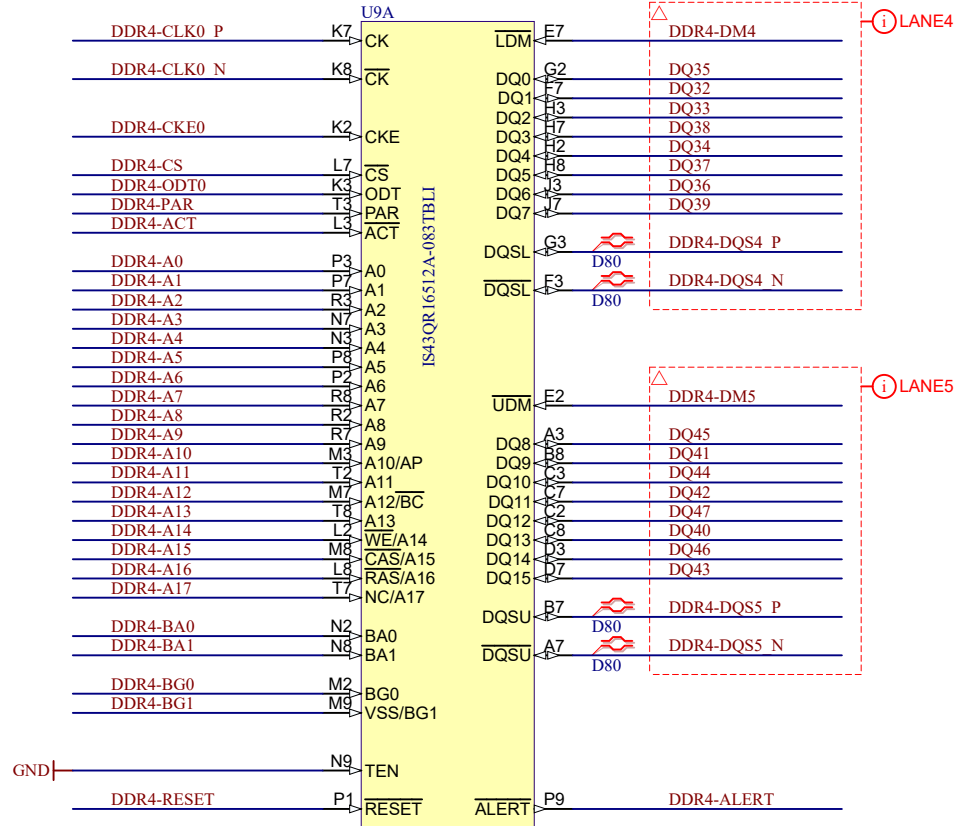
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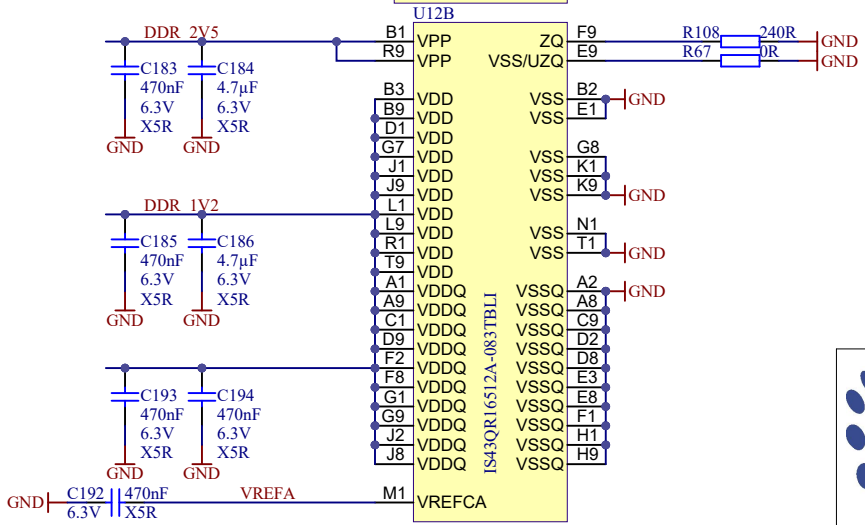
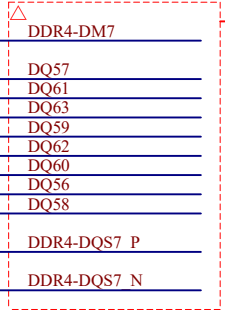
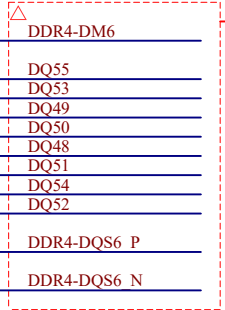
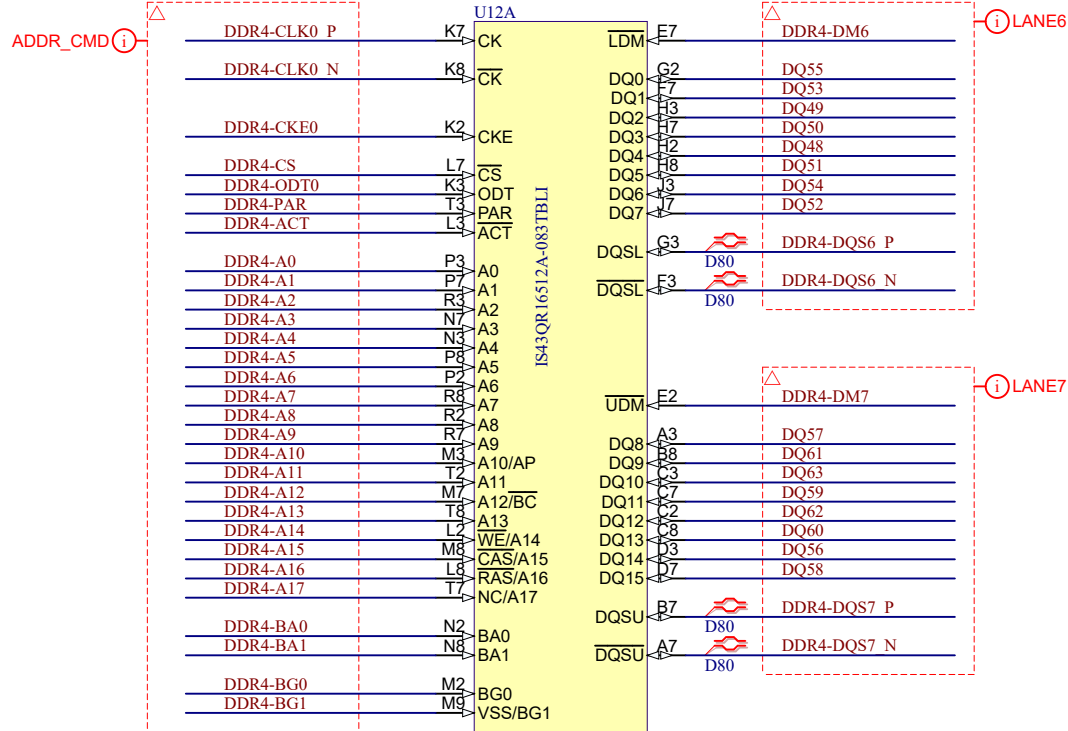

Title: TE0813 - DDR4_1_RAM		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 20 of 30
Filename: DDR4-RAM.SchDoc		

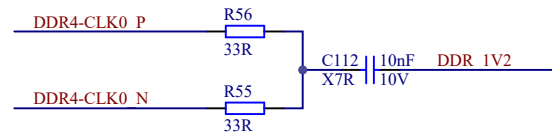
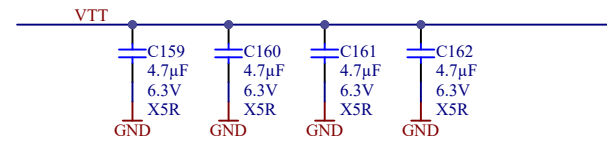
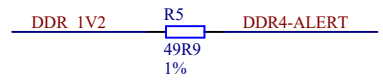
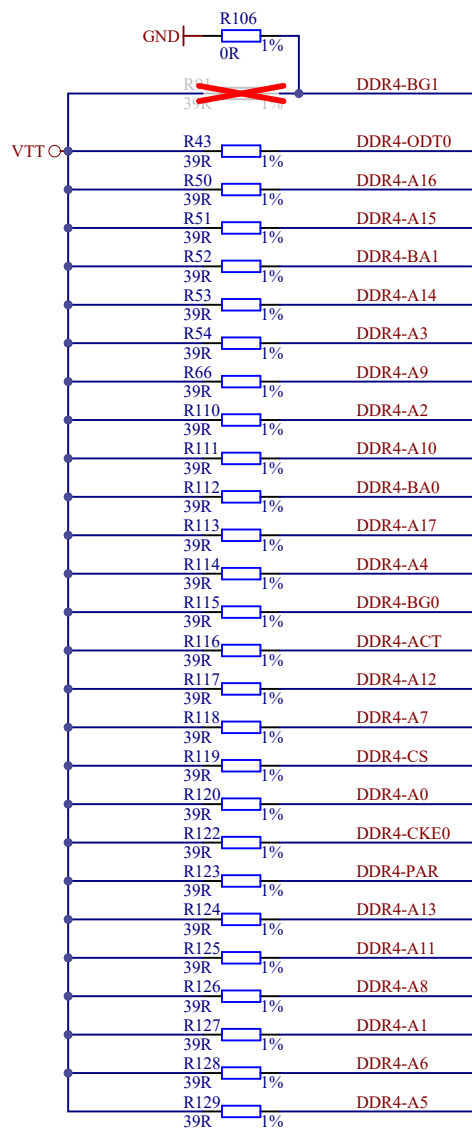
Title: TE0813 - DDR4_2_RAM		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 21 of 30
Filename: DDR4-RAM_2.SchDoc		



Title: TE0813 - DDR4_3_RAM		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 22 of 30
Filename: DDR4-RAM_3.SchDoc		

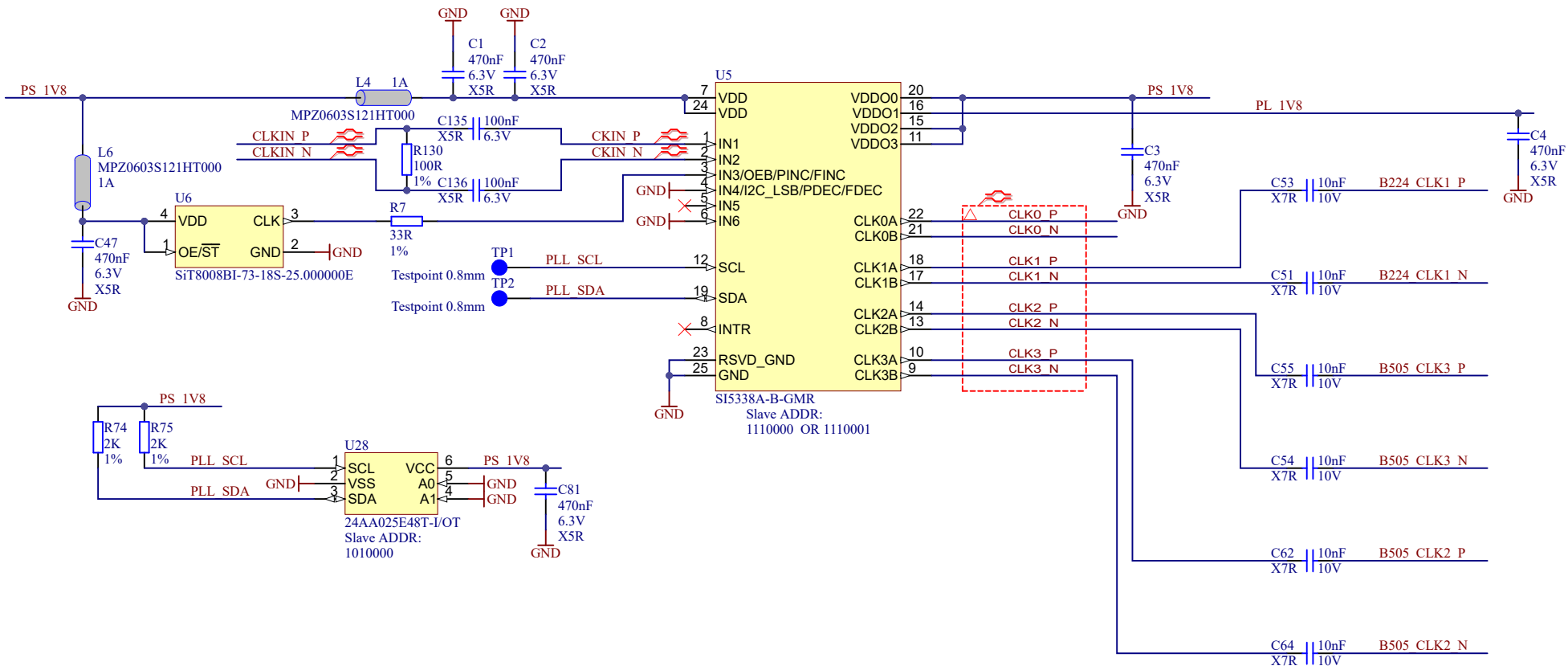




Title: TE0813 - DDR4_4_RAM		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 23 of 30
Filename: DDR4-RAM_4.SchDoc		

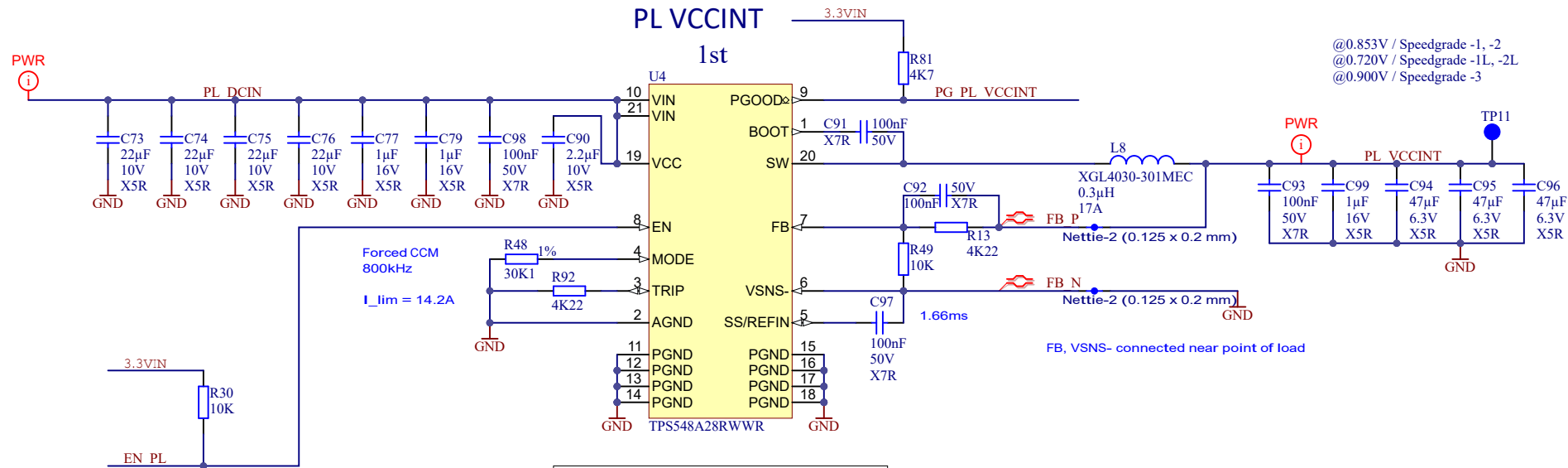


Title: TE0813 - DDR4_TERM		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 24 of 30
Filename: DDR4-TERM.SchDoc		





			Title: TE0813 - CLOCK	
			A4	Number: TE0813 4GE71-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT		Page 25 of 30
Filename: Clock.SchDoc				



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: <b>TE0813 - POWER</b>		
	A4	Number: <b>TE0813 4GE71-A</b>	Rev. <b>01</b>
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	
	Filename: <b>POWER.SchDoc</b>		

1

2

3

4

A

A

B

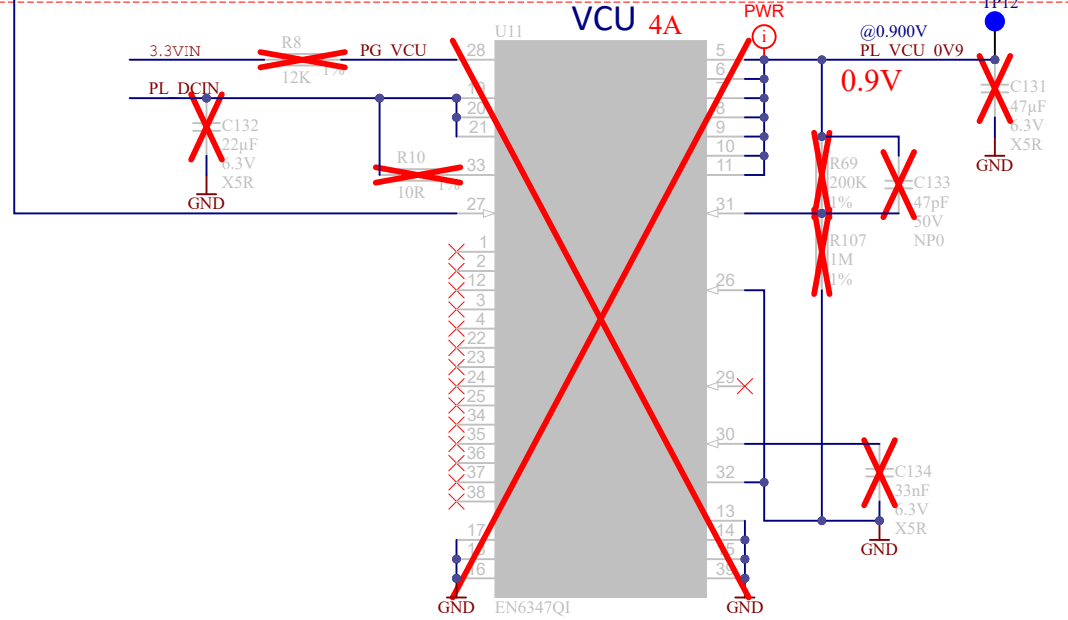
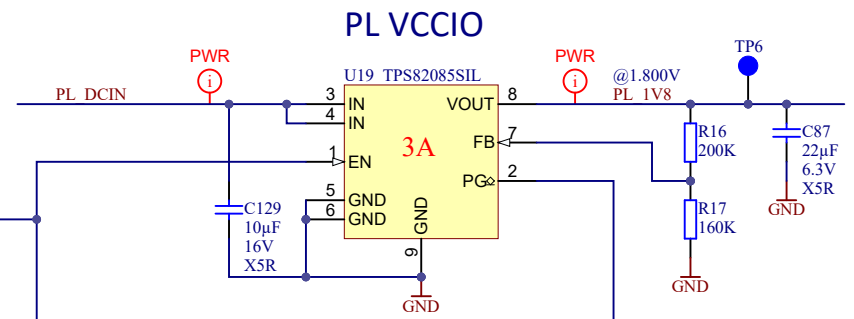
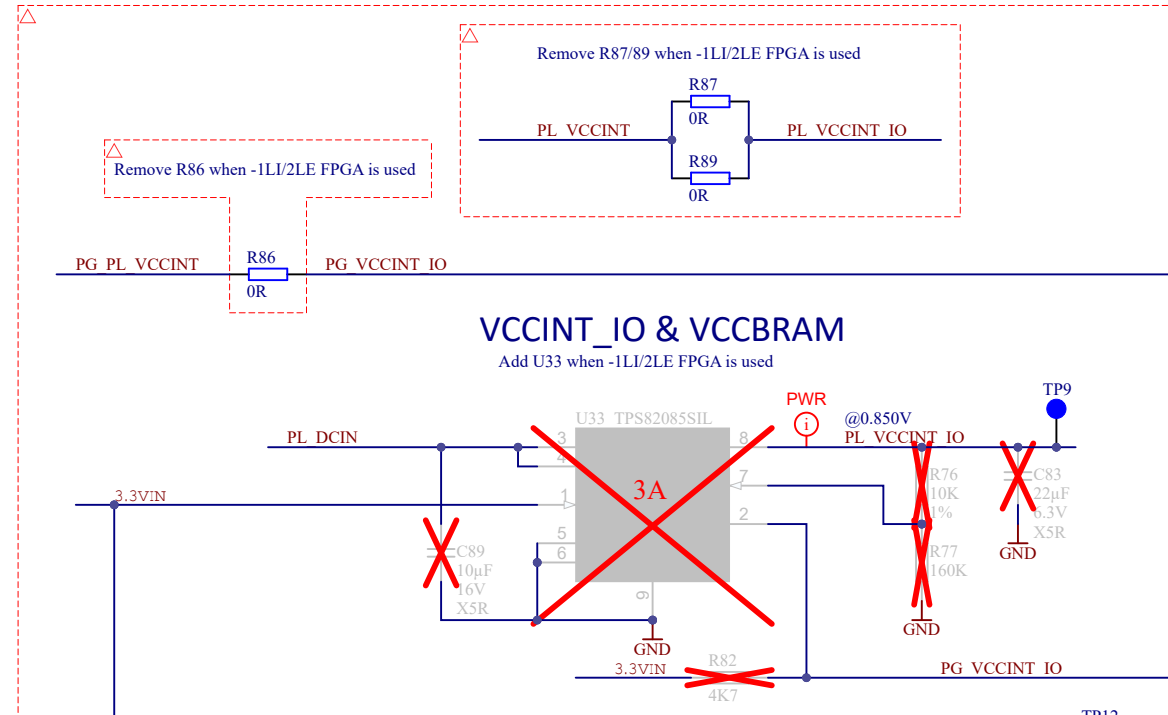
B

C

C

D

D



Title: TE0813 - POWER		
A4	Number: TE0813 4GE71-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 27 of 30
Filename: POWER_1.SchDoc		

1

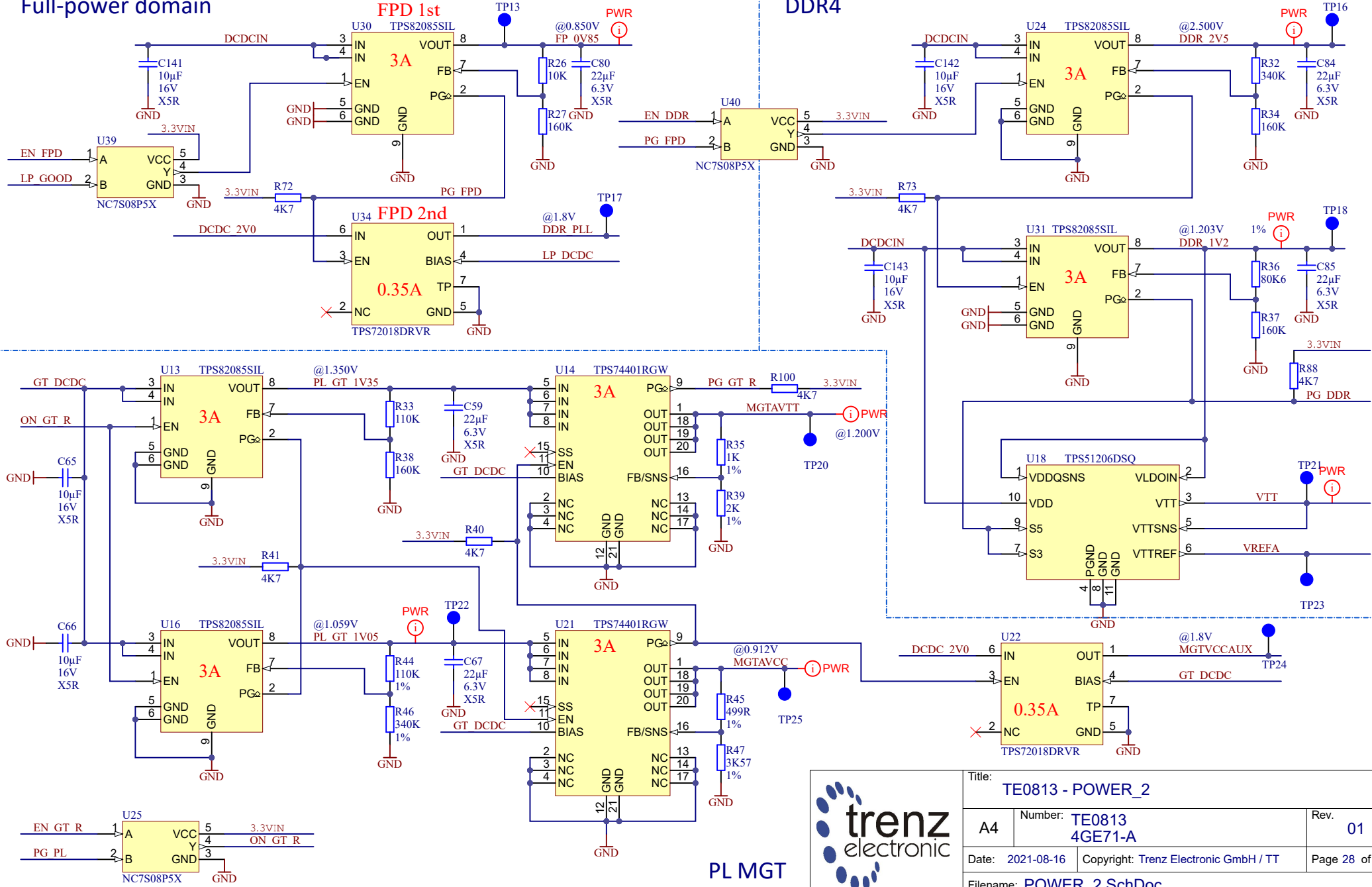
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3

4

# Full-power domain

# DDR4



Title: <b>TE0813 - POWER_2</b>		
A4	Number: <b>TE0813 4GE71-A</b>	Rev. <b>01</b>
Date: <b>2021-08-16</b>	Copyright: Trenz Electronic GmbH / TT	
Filename: <b>POWER_2.SchDoc</b>		Page 28 of 30

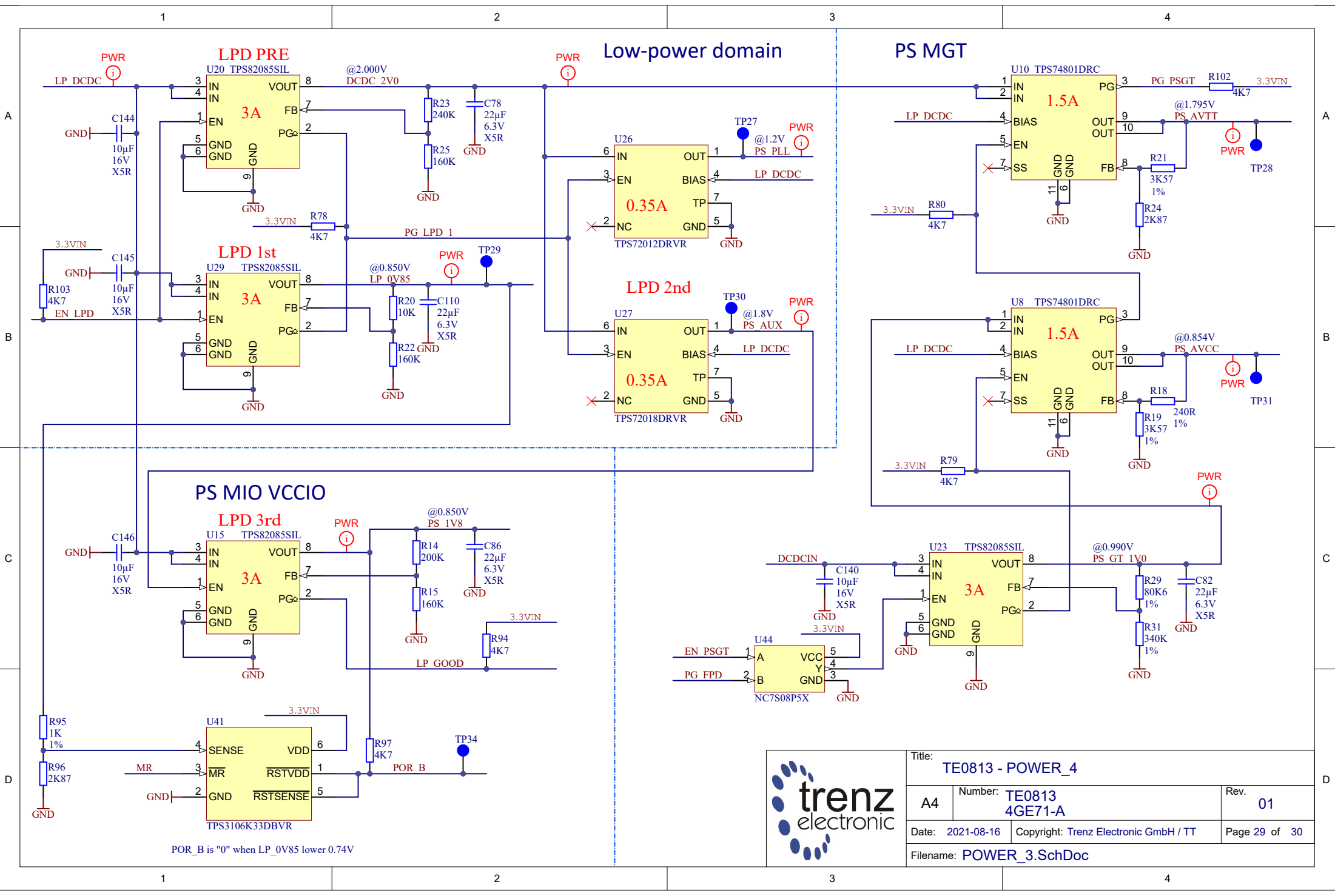
1

2

3

4

PL MGT



Low-power domain

PS MGT

PS MIO VCCIO

POR\_B is "0" when LP\_0V85 lower 0.74V



Title: TE0813 - POWER_4		
A4	Number: TE0813 4GE71-A	Rev. 01
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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: <b>TE0813 - Revision History</b>		
	A4	Number: <b>TE0813 4GE71-A</b>	Rev. <b>01</b>
	Date: <b>2021-07-26</b>	Copyright: <b>Trenz Electronic GmbH</b>	Page <b>30</b> of <b>30</b>
	Filename: <b>Revision Changes.SchDoc</b>		

1

2

3

4