


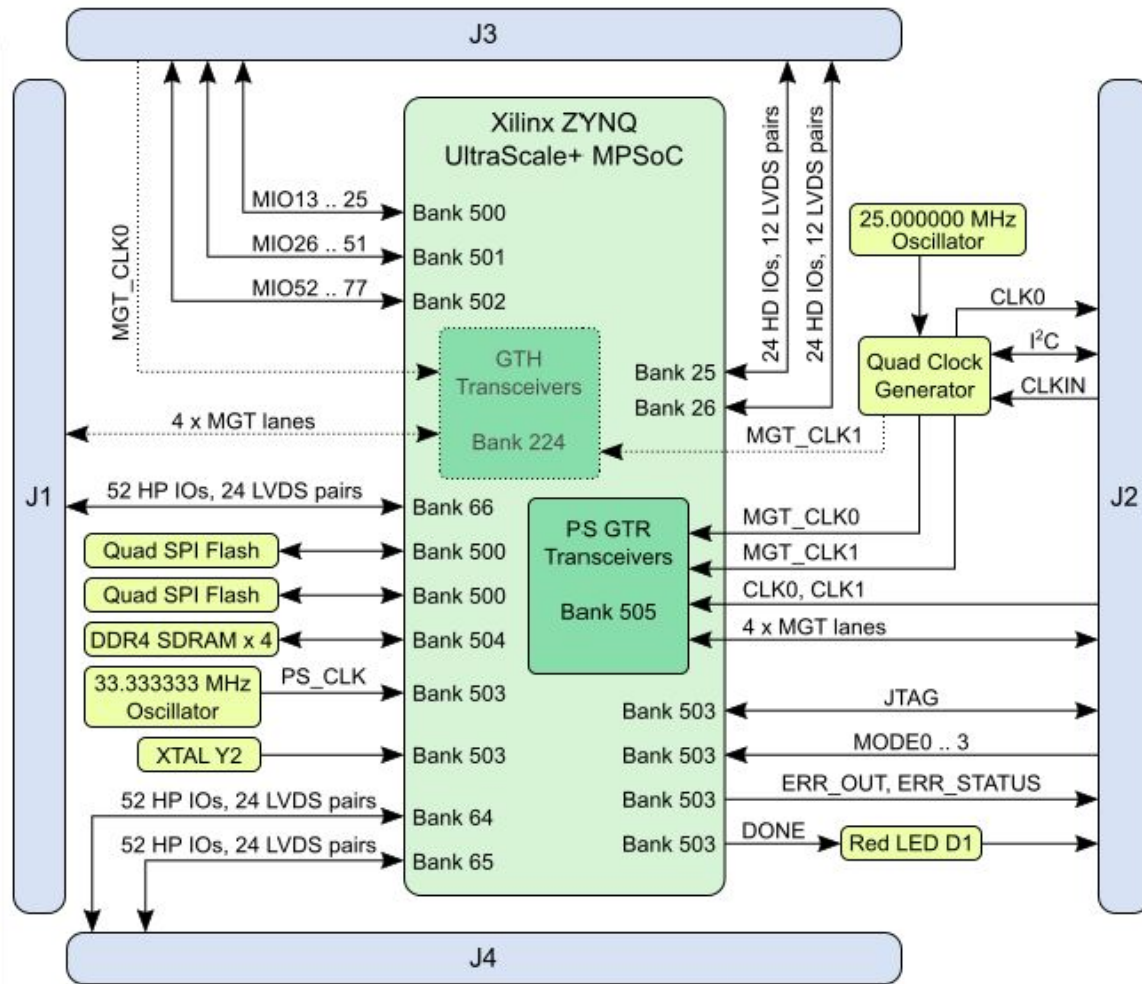
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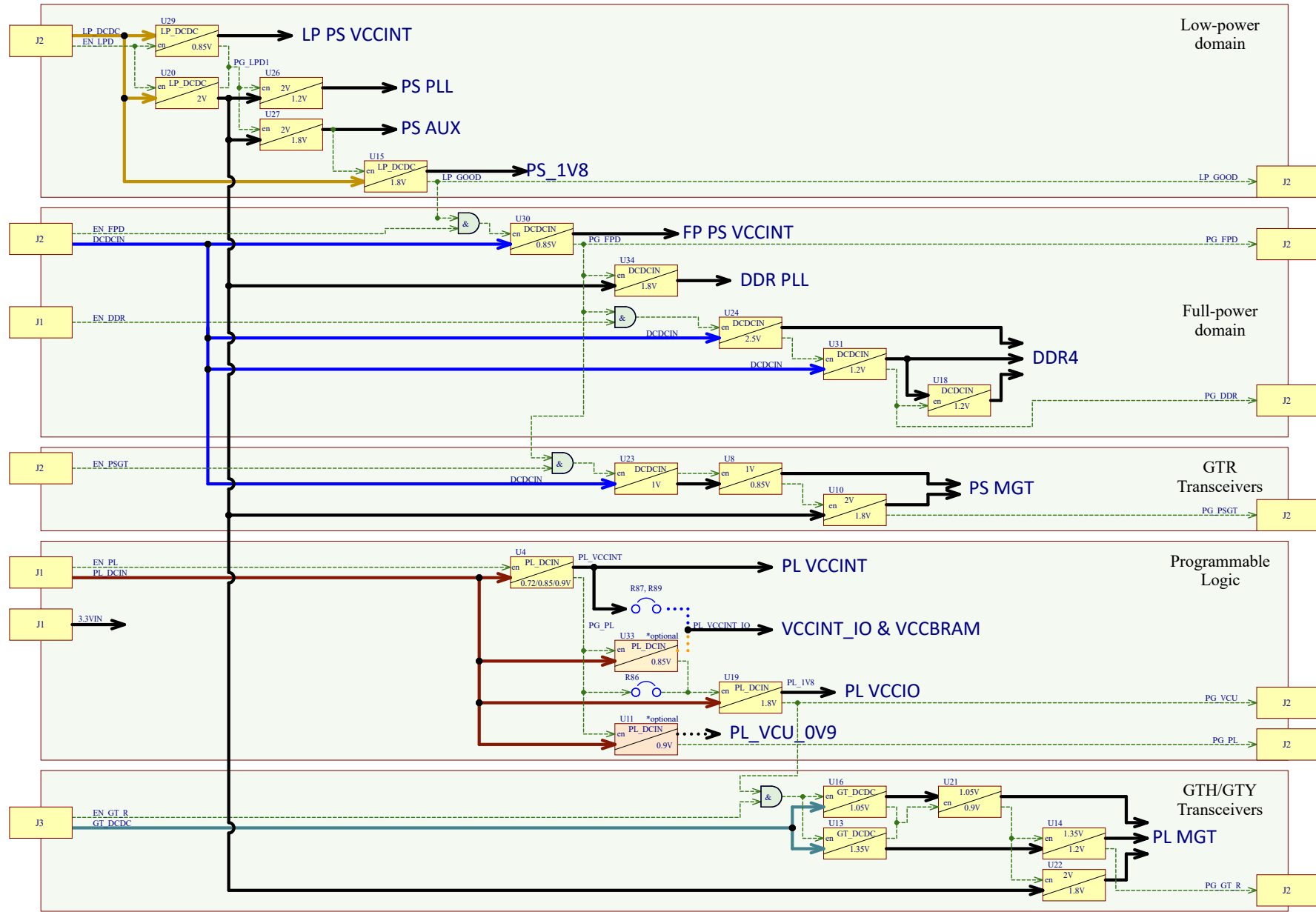
Schematics and other handouts serve for informational purposes only!

	Title: <b>TE0813</b>		Rev. <b>01</b>
	A4	Number: <b>TE0813 5DI21-A</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>		

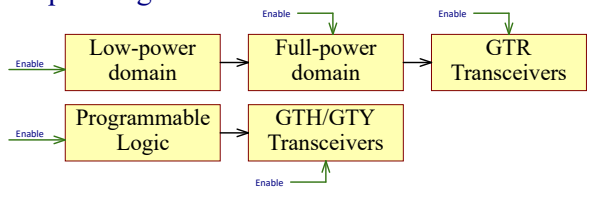
# TE0813-01



		Title: <b>Module TE0813 - System Overview</b>	
		A4	Number: <b>TE0813 5DI21-A</b>
Date: 2021-08-16		Copyright: 2015 Trenz Electronic GmbH	
Filename: <b>TE0813-Overview.SchDoc</b>		Page 2 of 30	



Power-on sequencing:



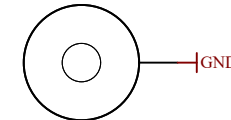
- EN\_GT\_R Net name
- Power bus
- Control signal
- Power bus in FPGA speedgrade -1/-2/-3 assembly variants
- Power bus in FPGA speedgrade -1L/-2L assembly variants (low power)
- Optional power converter
- Logic AND gate



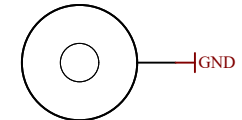
Title: TE0813 - Power Diagram		
A3	Number: TE0813 5DI21-A	Rev. 01
Datum: 2021-01-19	Copyright: Trenz Electronic GmbH / TT	Page 3 of 30
Filename: Power_Diagram.SchDoc		

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	

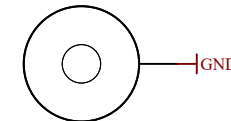
Special notes:



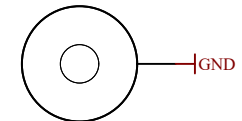
Mount.Hole 3.2mm für Unterlegscheibe



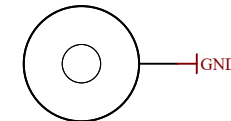
Mount.Hole 3.2mm für Unterlegscheibe



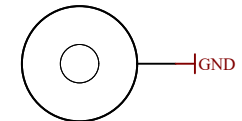
Mount.Hole 3.2mm für Unterlegscheibe



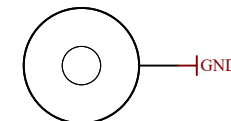
Mount.Hole 3.2mm für Unterlegscheibe



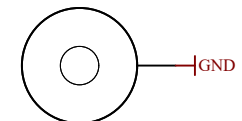
Mount.Hole 3.2mm für Unterlegscheibe



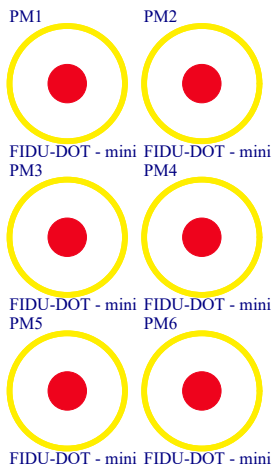
Mount.Hole 3.2mm für Unterlegscheibe



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	5DI21-A
Created by	ED
Modified by	ED
Modified at	2021-07-07
SVN Revision	12304 [Locally Modified]

			Title: TE0813	
			A4	Number: TE0813 5DI21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT		Page 4 of 30
Filename: TE0813.SchDoc				

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A

A

B

B

C

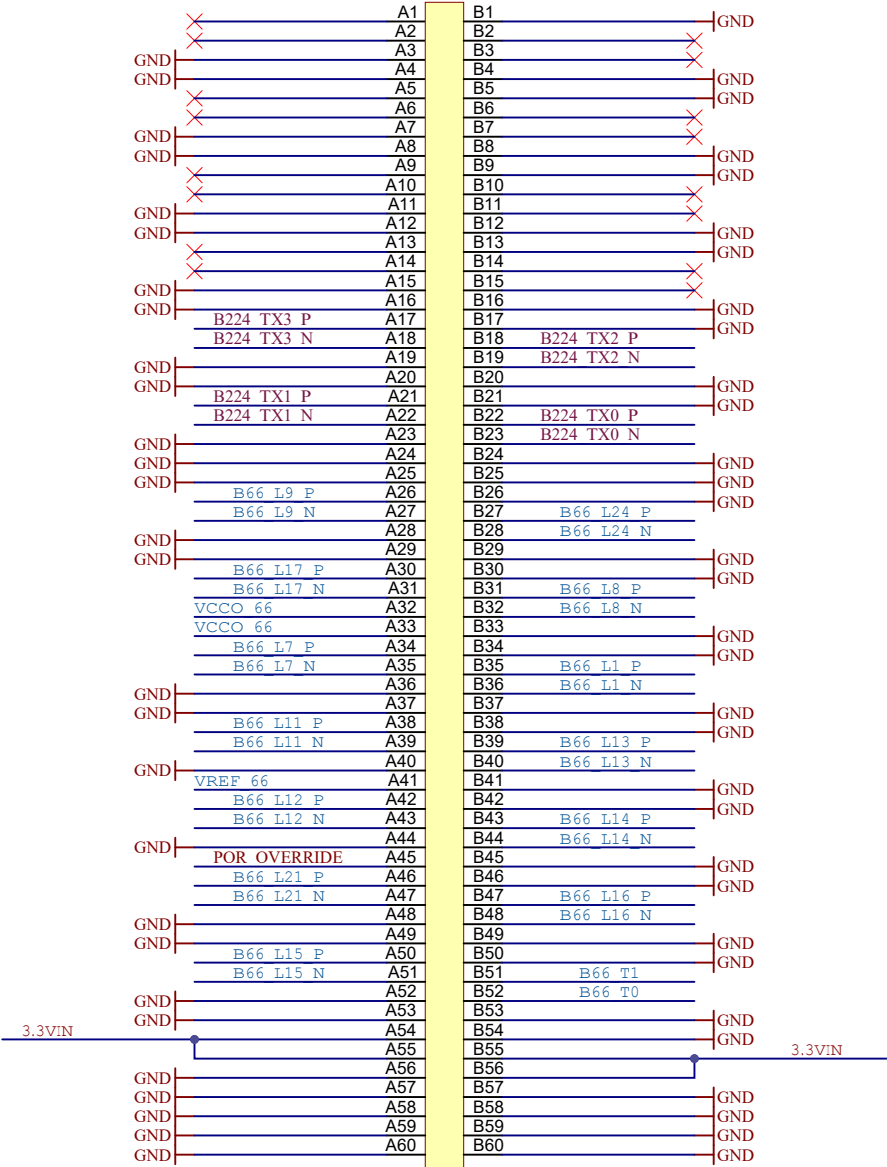
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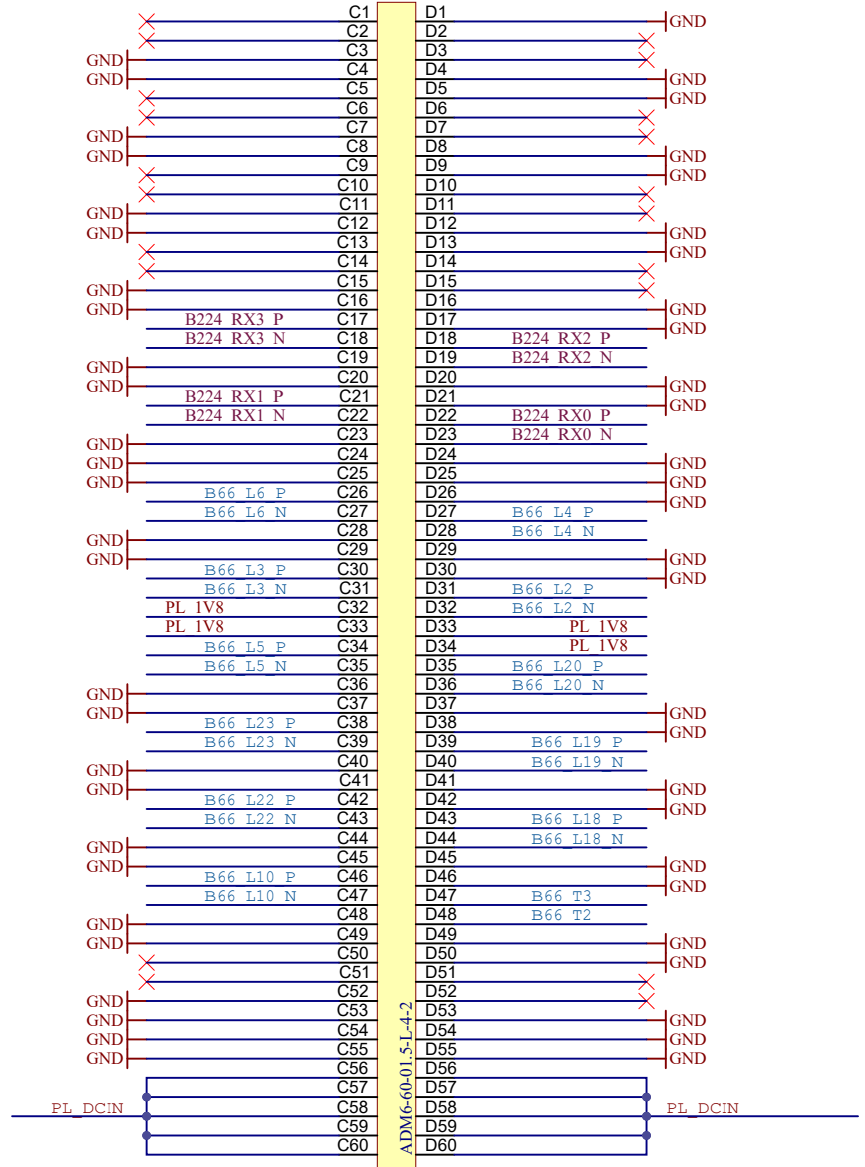
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JM1A

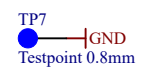
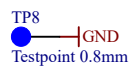
JM1B



ADM6-60-01.5-L-4-2



ADM6-60-01.5-L-4-2



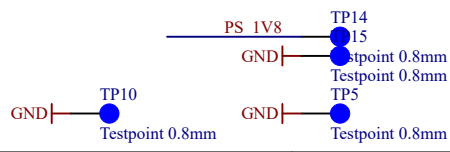
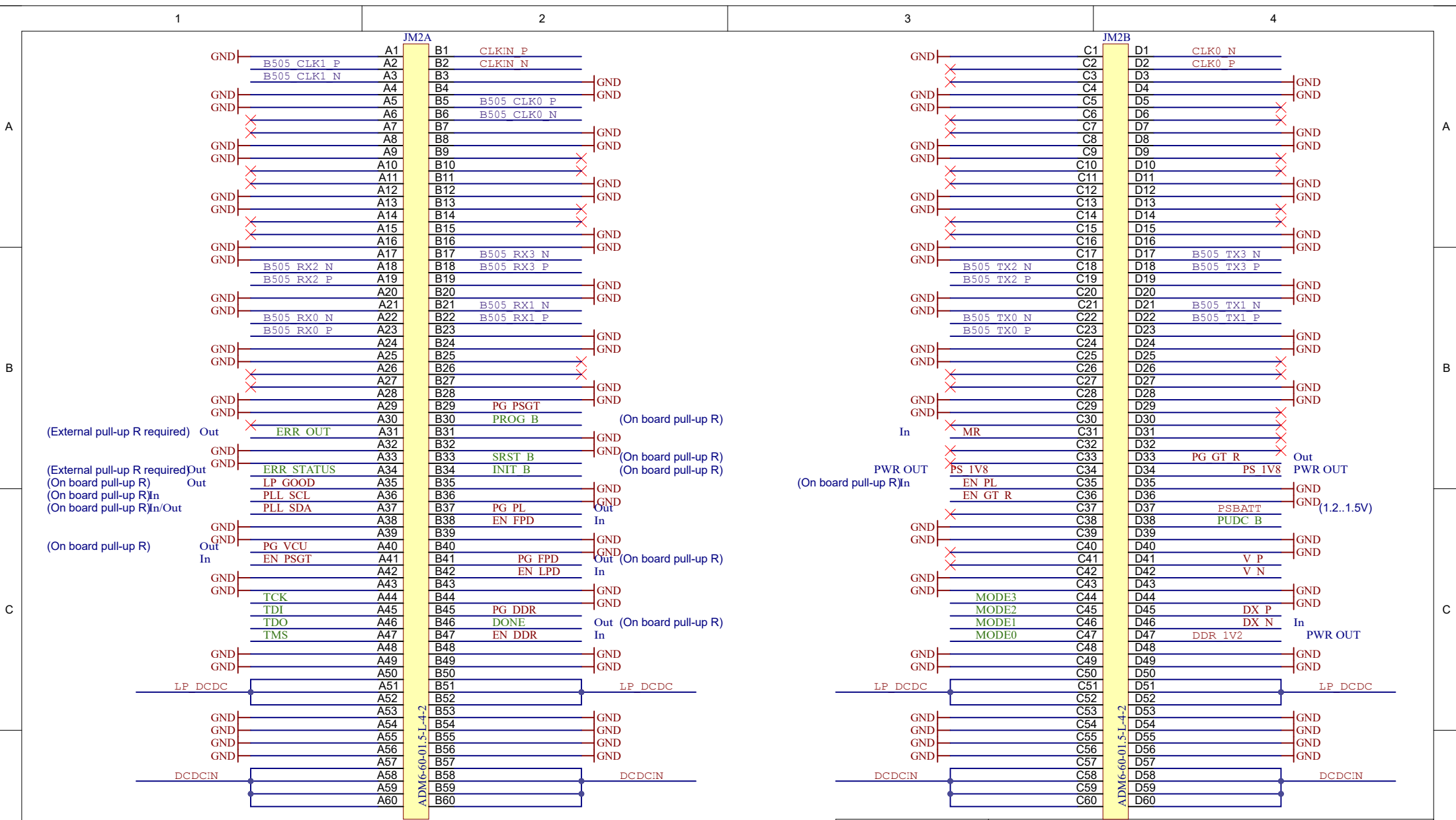
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A4	Number: <b>TE0813 5DI21-A</b>	Rev. <b>01</b>
Date: <b>2021-08-16</b>	Copyright: <b>Trenz Electronic GmbH / TT</b>	Page <b>5</b> of <b>30</b>
Filename: <b>J1.SchDoc</b>		

1

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Title: TE0813 - Connector J2

A4	Number: TE0813 5DI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 6 of 30
Filename: J2.SchDoc		

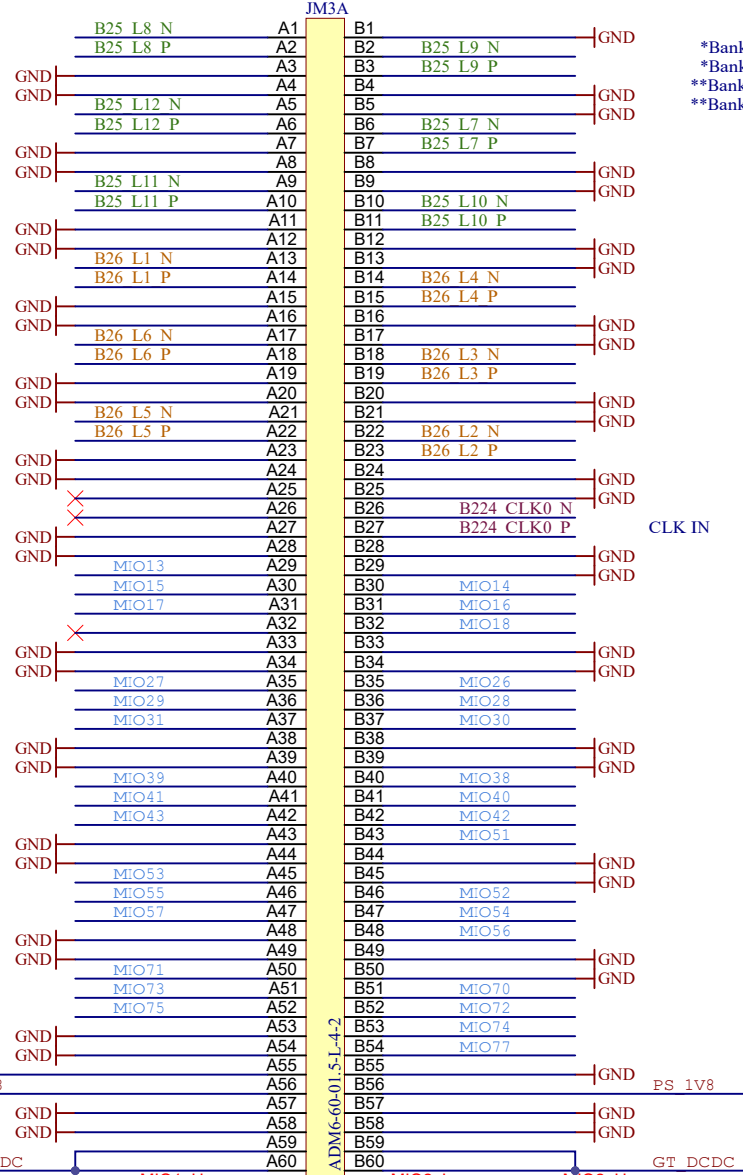


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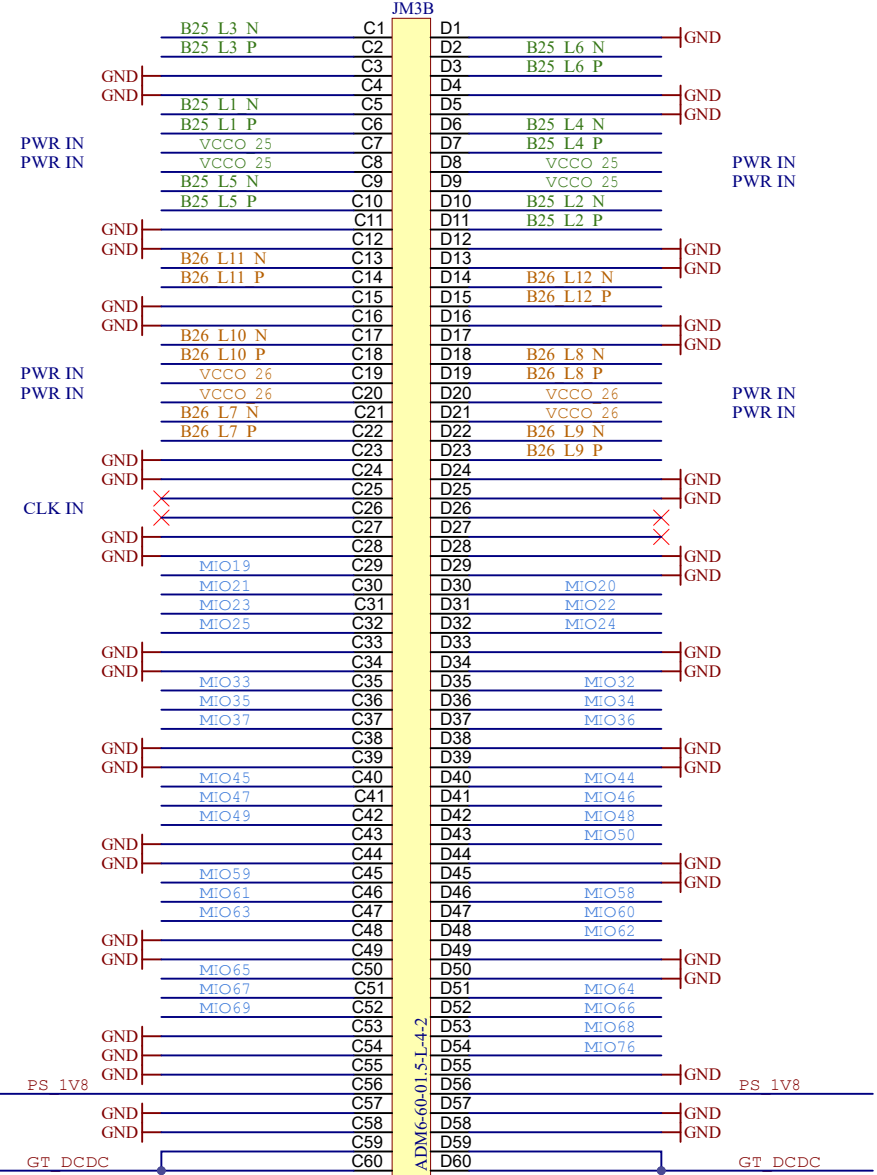
\*Bank 25 for XCZU2/3  
 \*Bank 45 for XCZU4/6  
 \*\*Bank 26 for XCZU2/3  
 \*\*Bank 46 for XCZU4/5

CLK IN

PS 1V8

GT DCDC

JM3B



PWR IN

PWR IN

CLK IN

PS 1V8

GT DCDC

MIO1_L	MIO1_H	MIO2_L	MIO2_H	MIO0_H
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 5DI21-A	Rev. 01
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Filename: J3.SchDoc		

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A

A

B

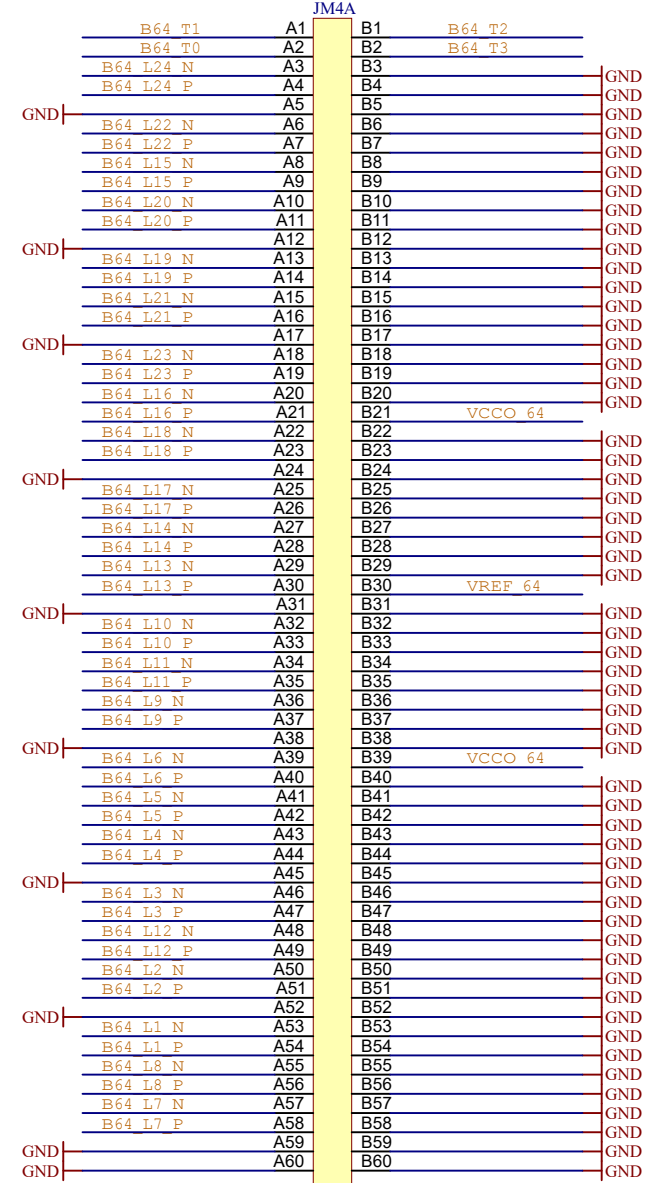
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C

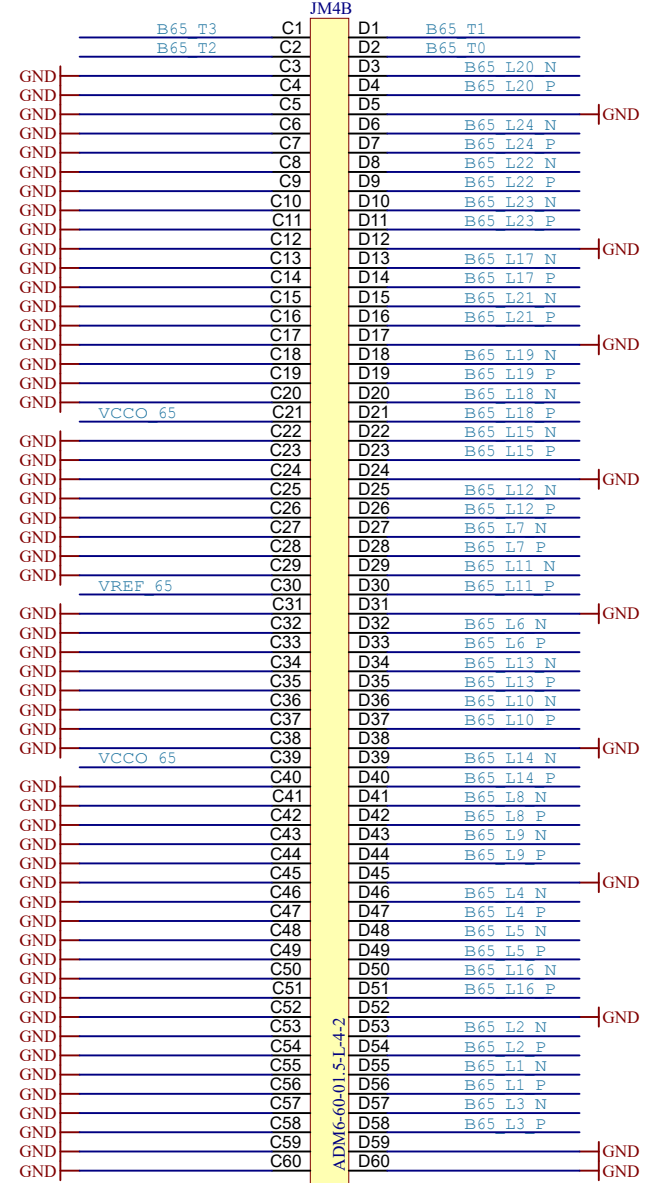
C

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 5DI21-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>		

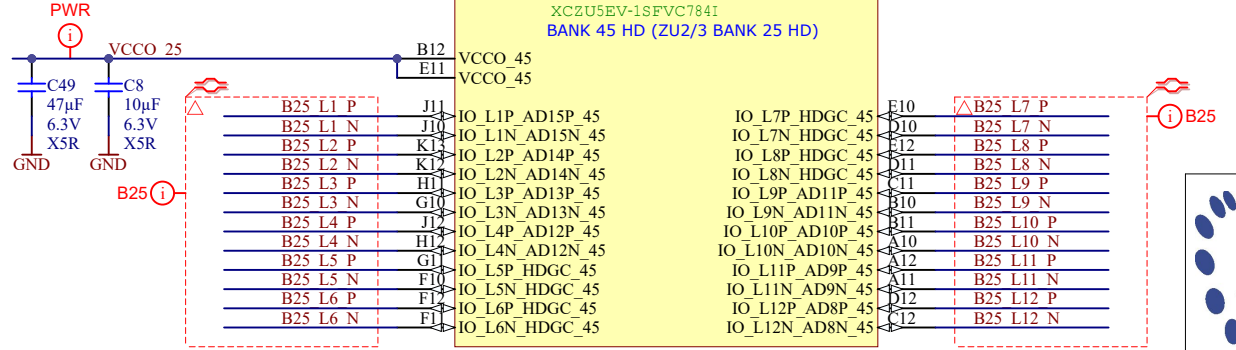
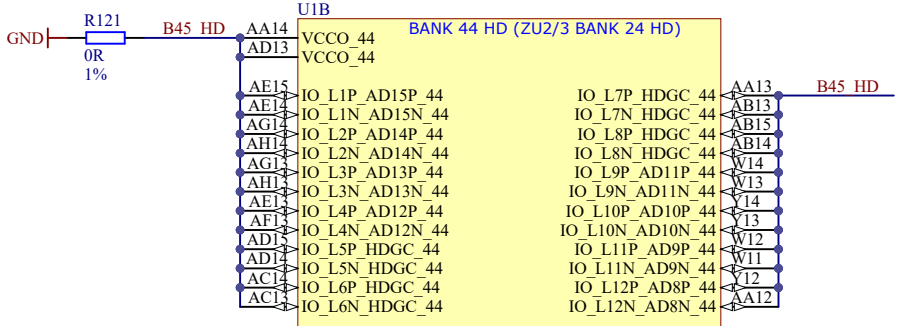
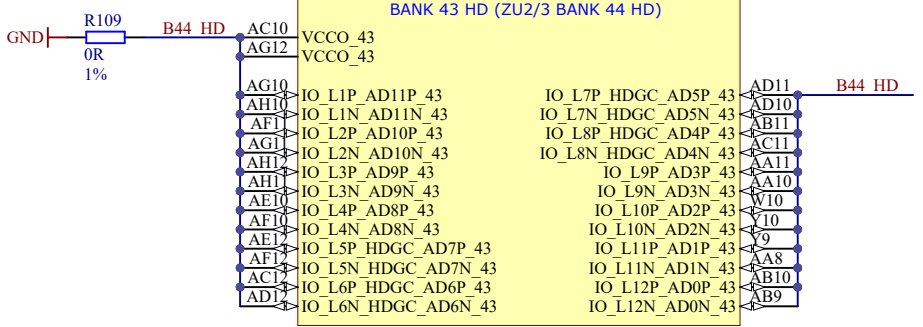
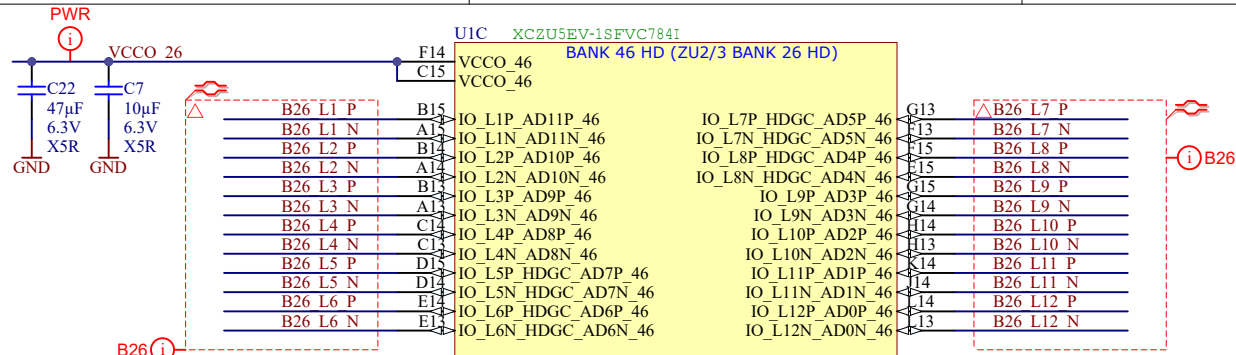
1

2

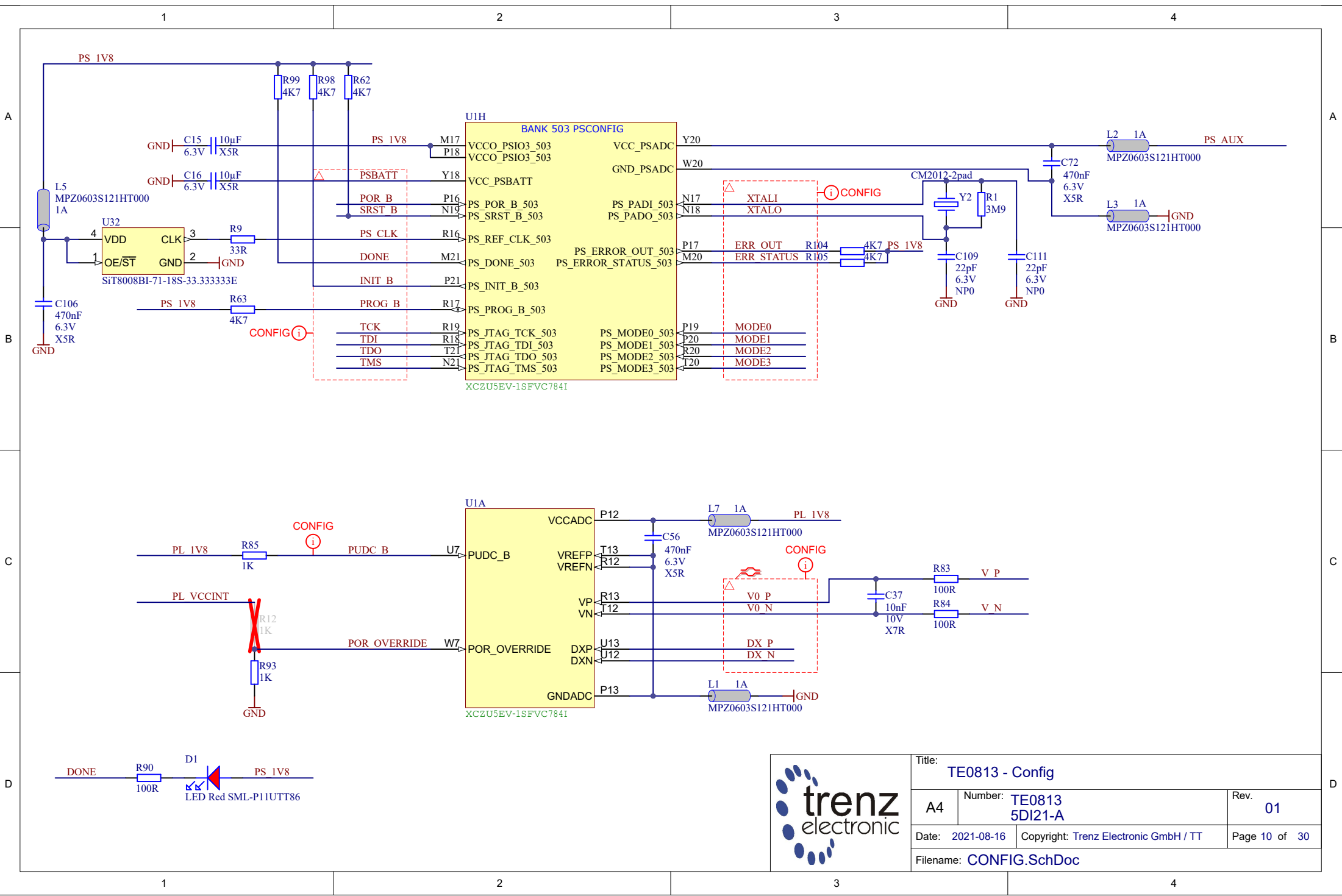
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4

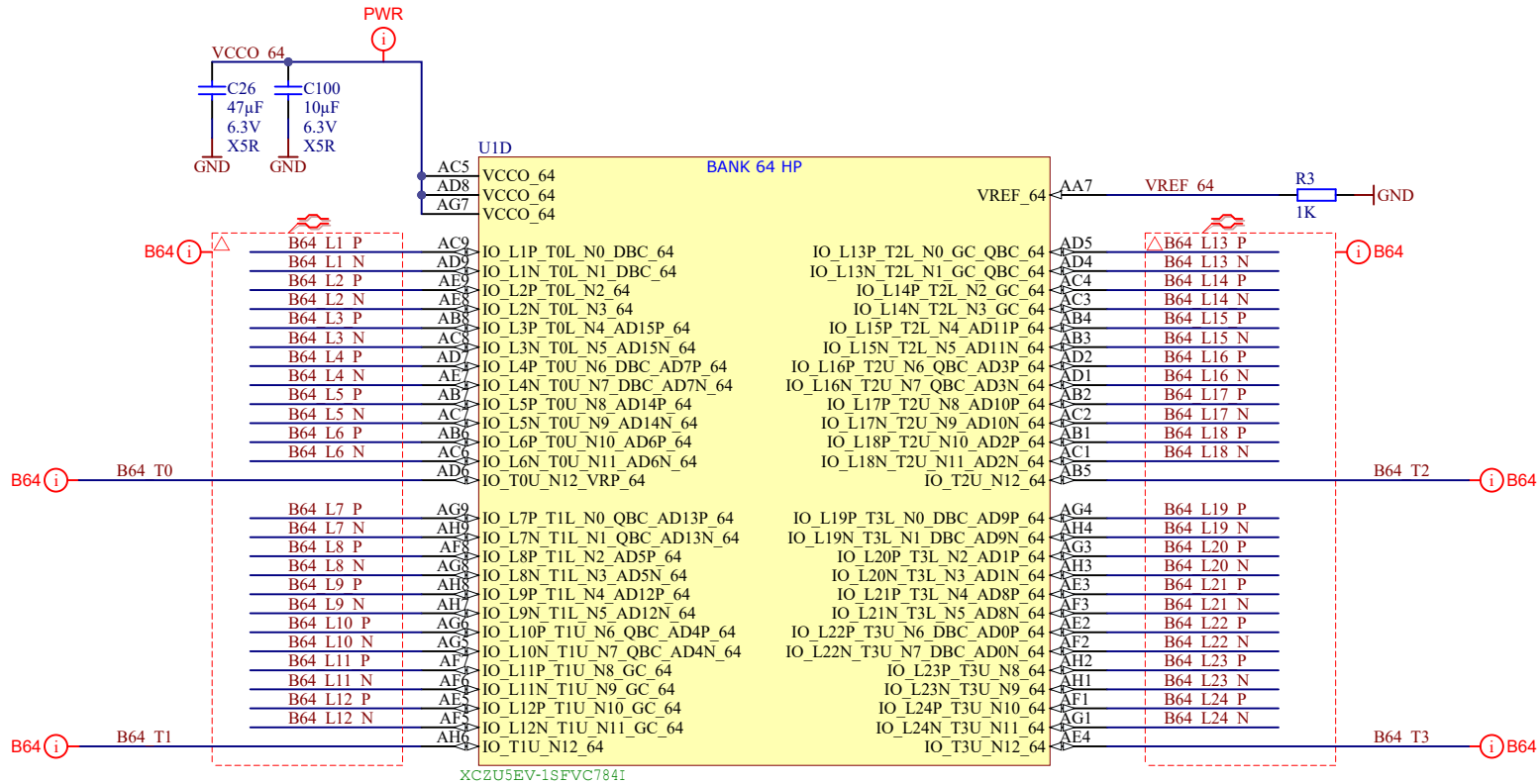




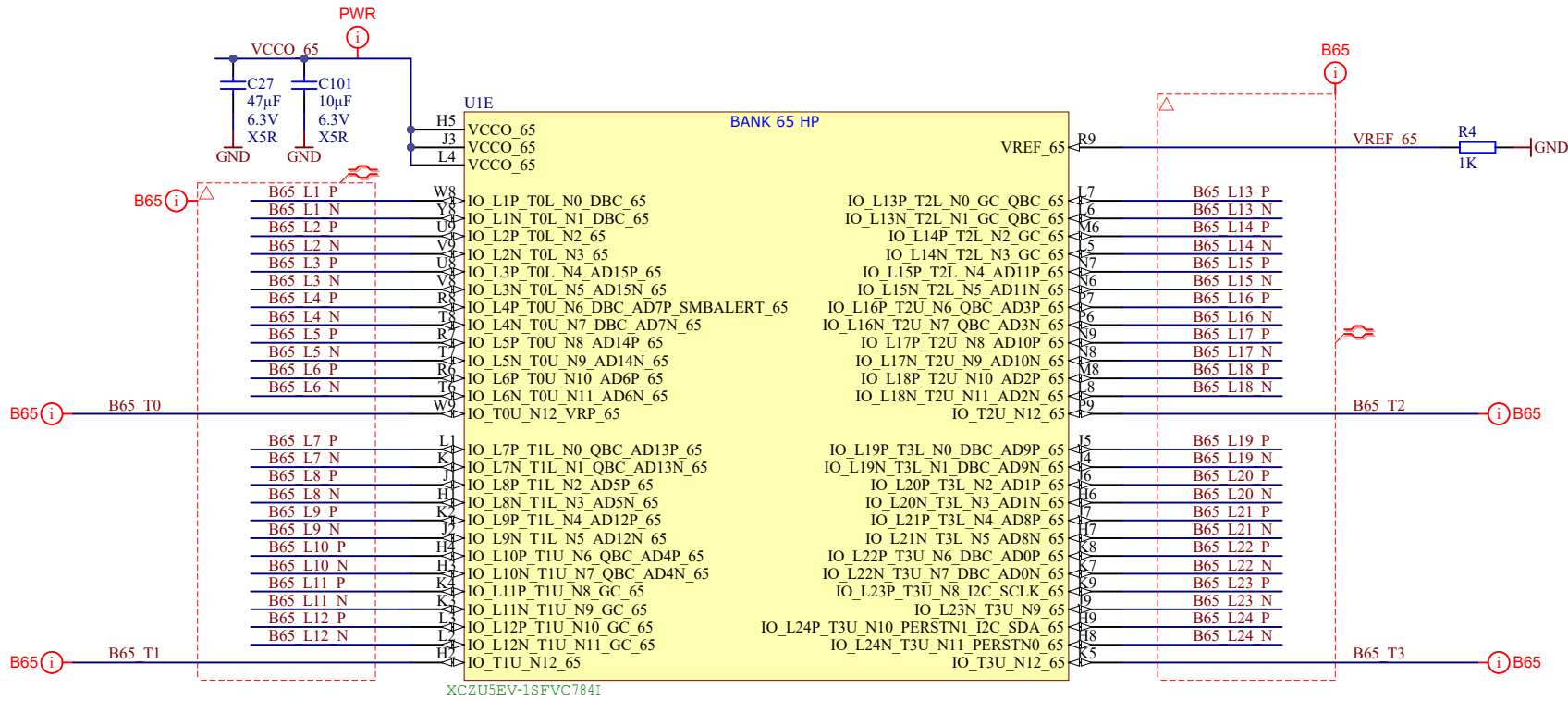
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A4	Number: <b>TE0813 5DI21-A</b>	Rev. <b>01</b>
Date: <b>2021-08-16</b>	Copyright: <b>Trenz Electronic GmbH / TT</b>	Page <b>9</b> of <b>30</b>
Filename: <b>B_HD.SchDoc</b>		



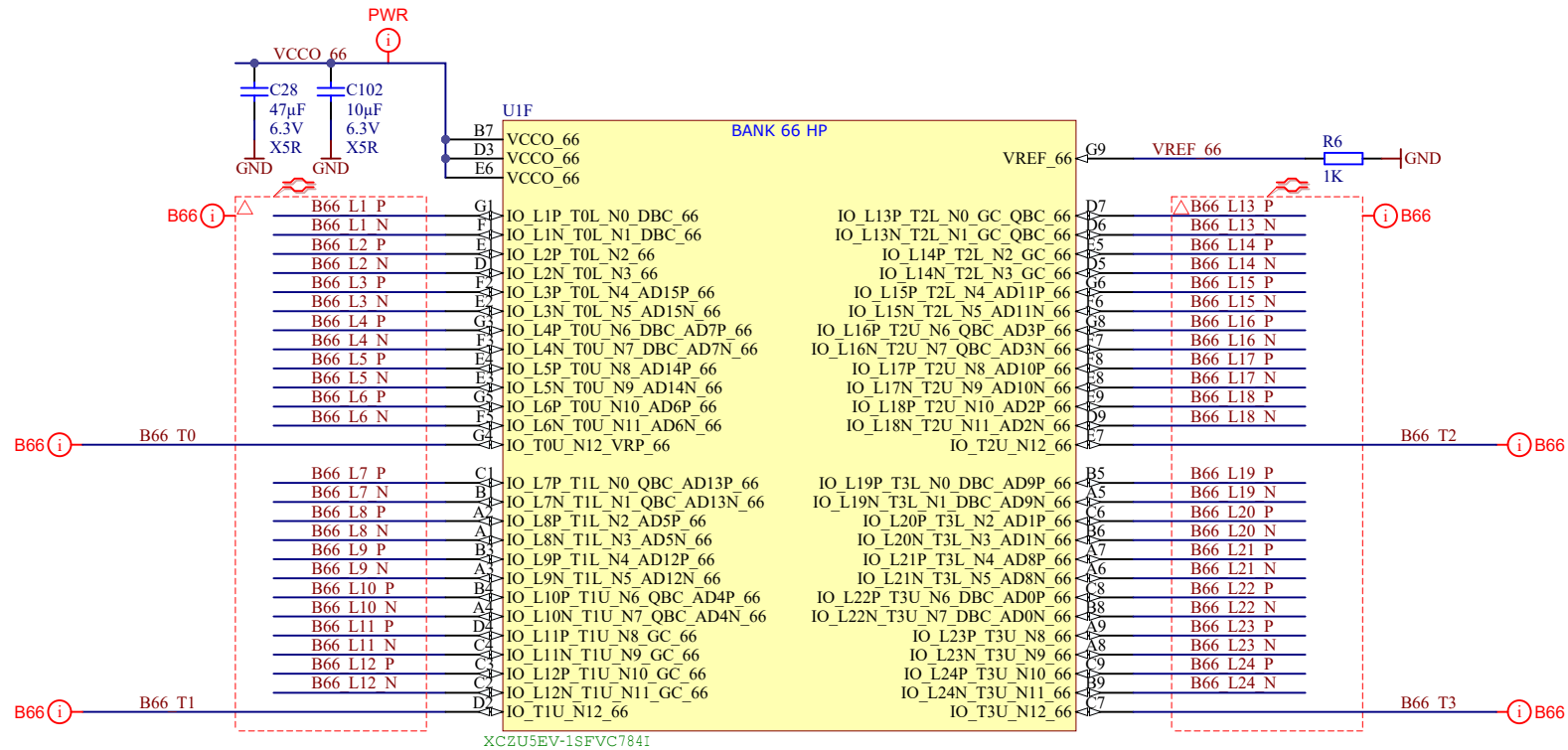

Title: TE0813 - Config		
A4	Number: TE0813 5DI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 10 of 30
Filename: CONFIG.SchDoc		



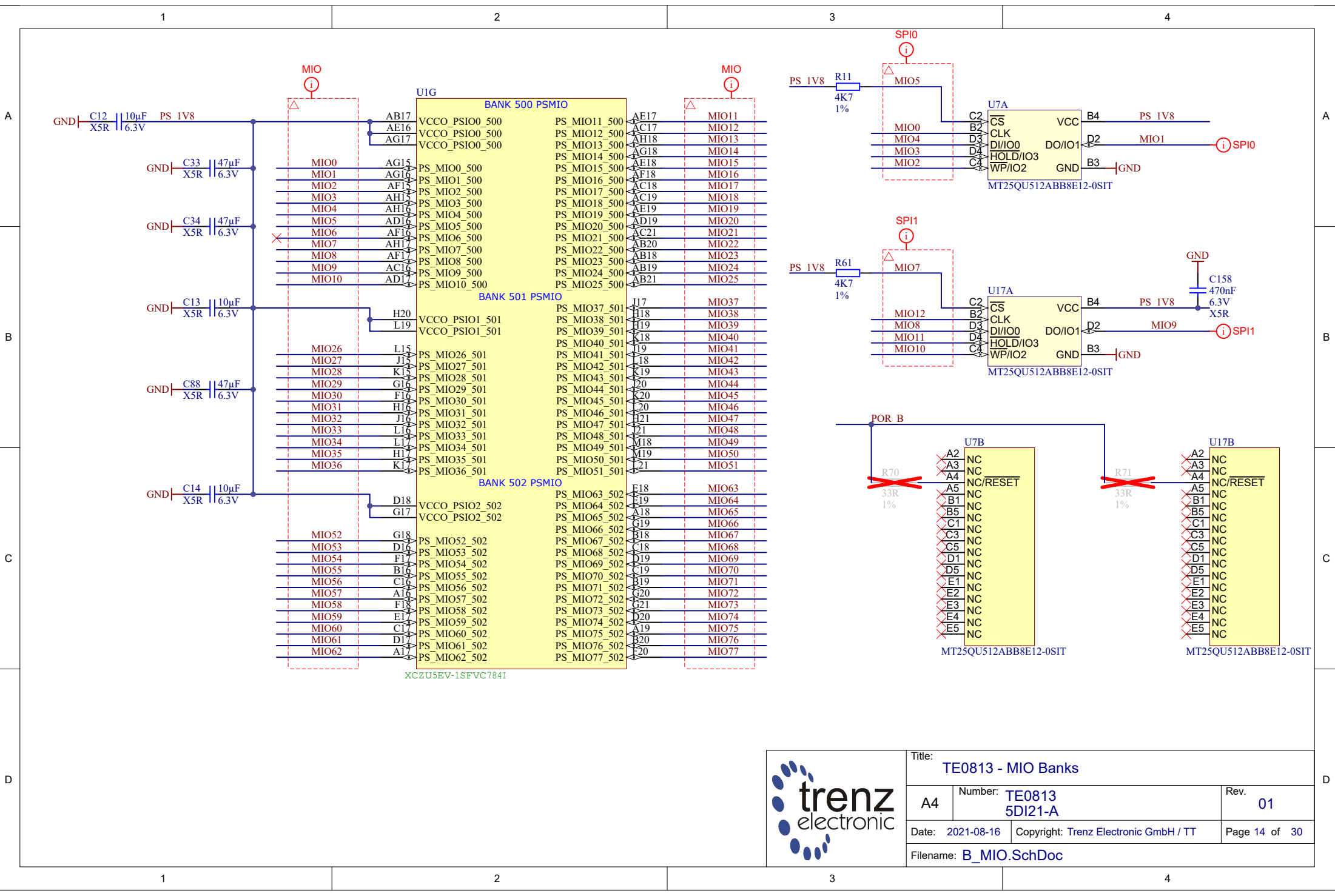
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 11 of 30
Filename: B64.SchDoc		




Title: TE0813 - B65		
A4	Number: TE0813 5DI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 12 of 30
Filename: B65.SchDoc		

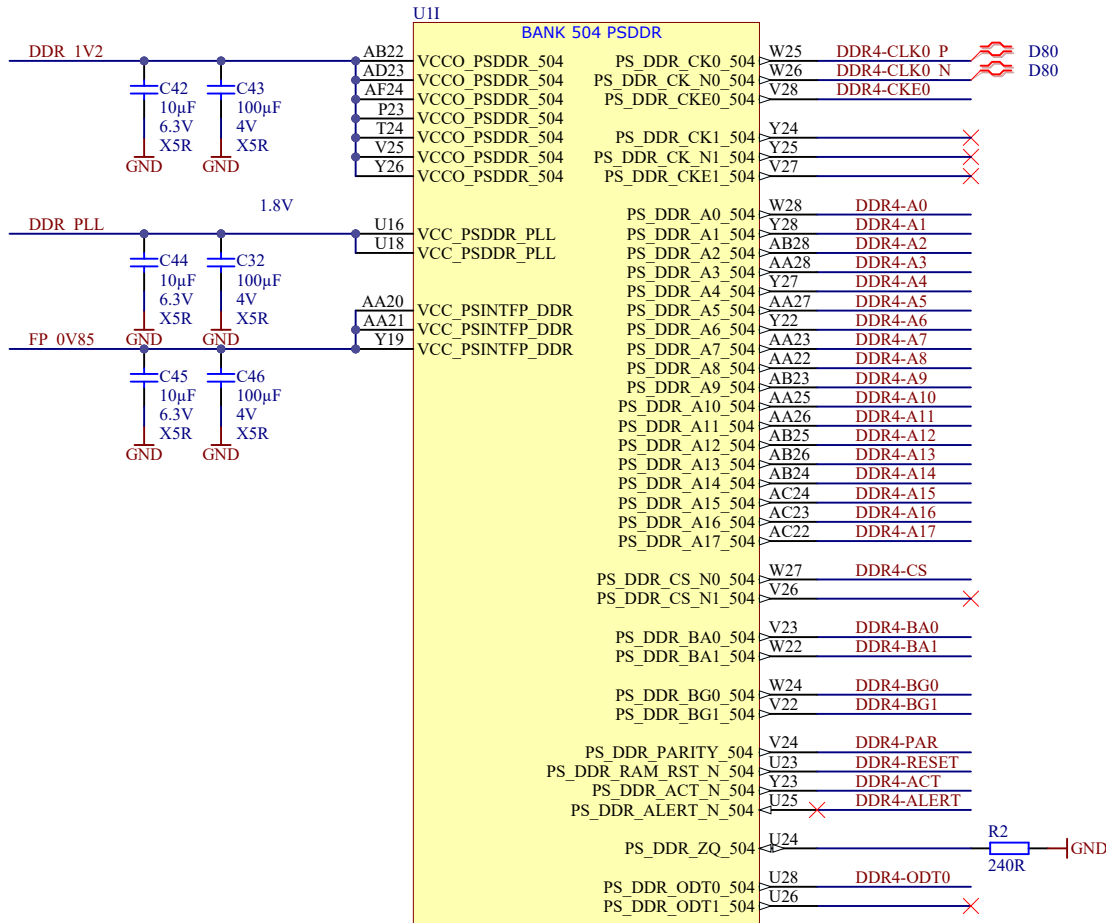



Title: TE0813 - B66		
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 13 of 30
Filename: B66.SchDoc		

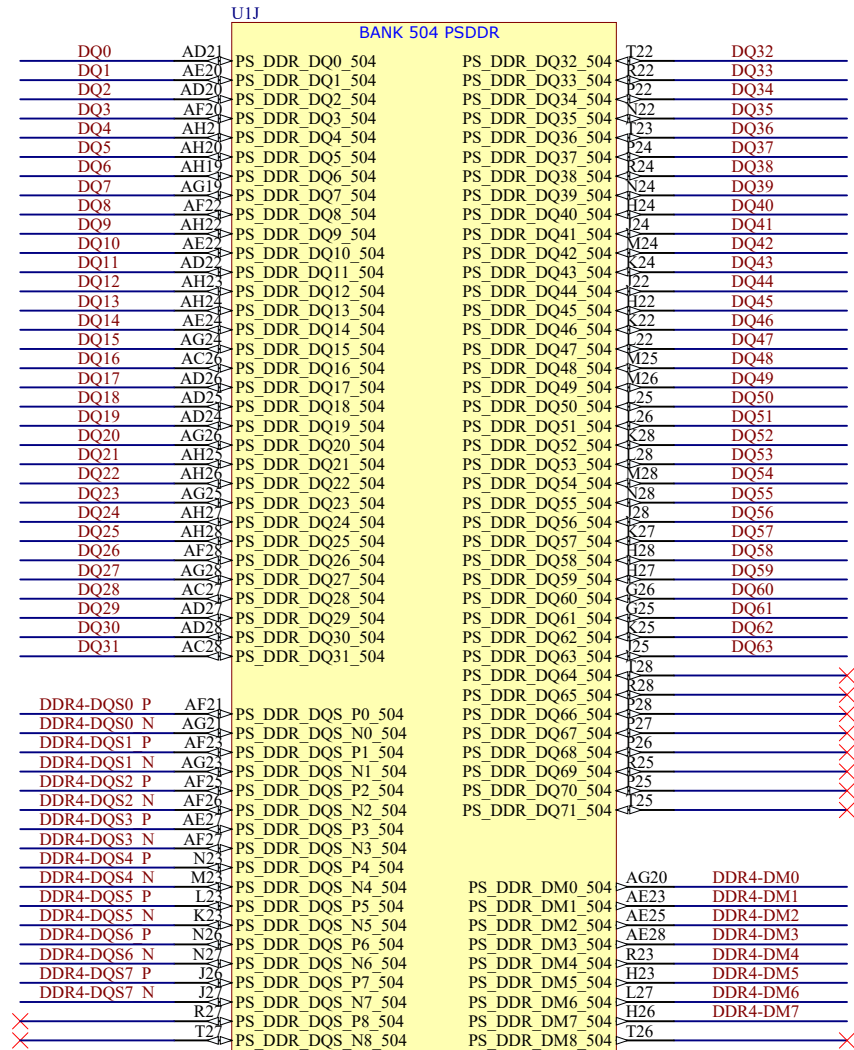


		Title: TE0813 - MIO Banks	
		A4	Number: TE0813 5DI21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Filename: B_MIO.SchDoc		Page 14 of 30	





XCZU5EV-1SFVC784I



XCZU5EV-1SFVC784I



Title: <b>TE0813 - PS_DDR</b>		
A4	Number: <b>TE0813 5DI21-A</b>	Rev. <b>01</b>
Date: <b>2021-08-16</b>	Copyright: <b>Trenz Electronic GmbH / TT</b>	Page <b>15</b> of <b>30</b>
Filename: <b>PS_DDR.SchDoc</b>		

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B

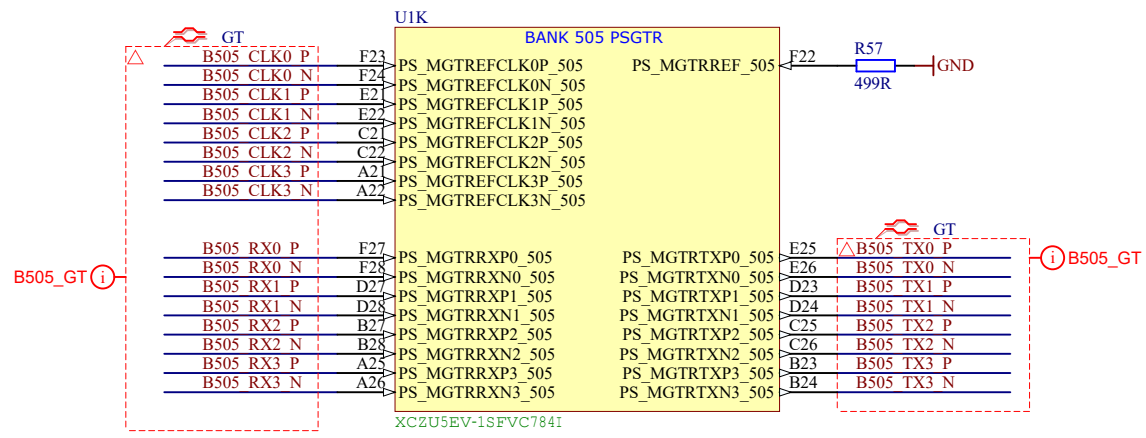
B


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D



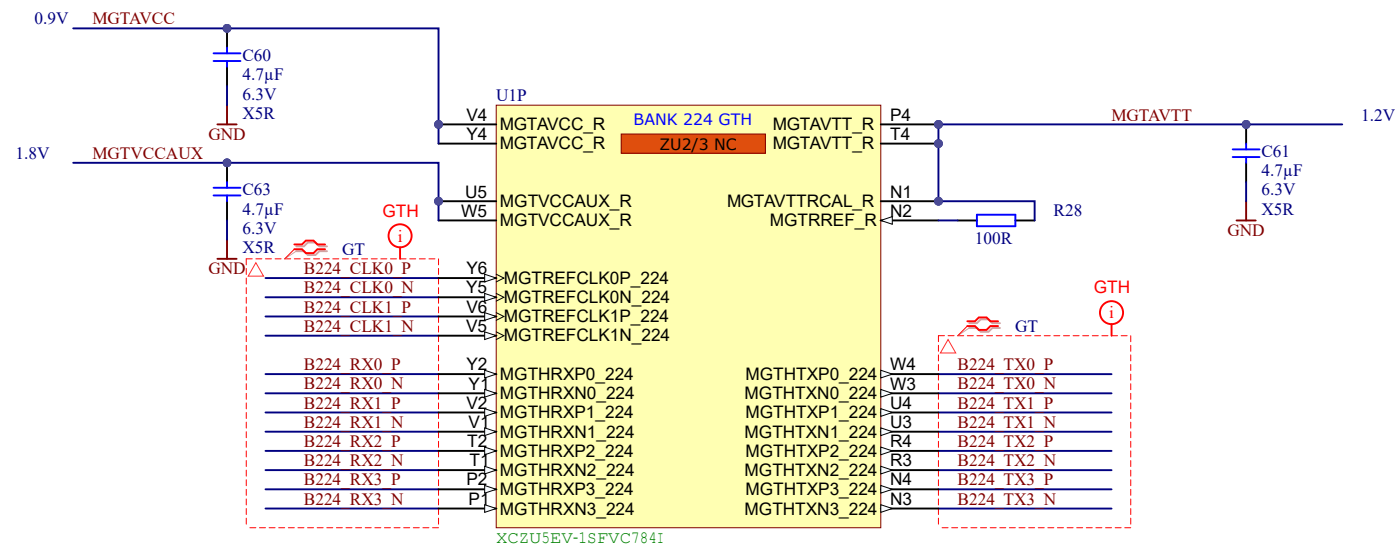
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		A4	Number: TE0813 5DI21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Date: 2021-08-16		Page 16 of 30	
Filename: B_PS_GT.SchDoc			


1

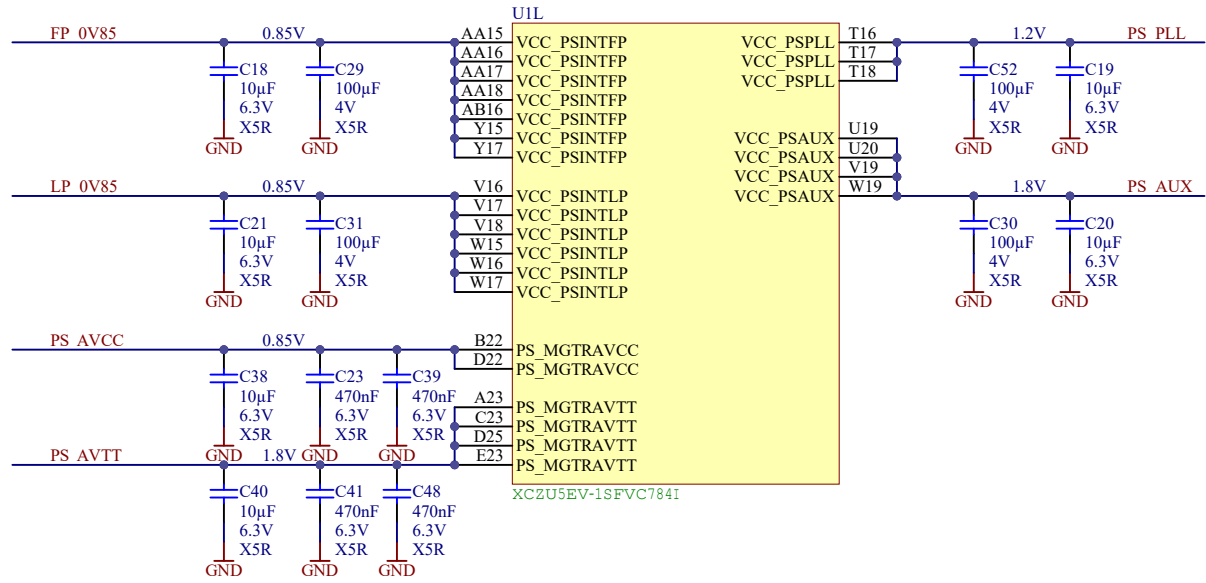
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		Title: TE0813 - B224GTH	
		A4	Number: TE0813 5DI21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Date: 2021-08-16		Page 17 of 30	
Filename: B_GT.SchDoc			



		Title: TE0813 - ZU_PS_POWER	
		A4	Number: TE0813 5DI21-A
Date: 2021-08-16		Copyright: Trenz Electronic GmbH / TT	
Date: 2021-08-16		Page 18 of 30	
Filename: ZU_PS_POWER.SchDoc			

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A

B

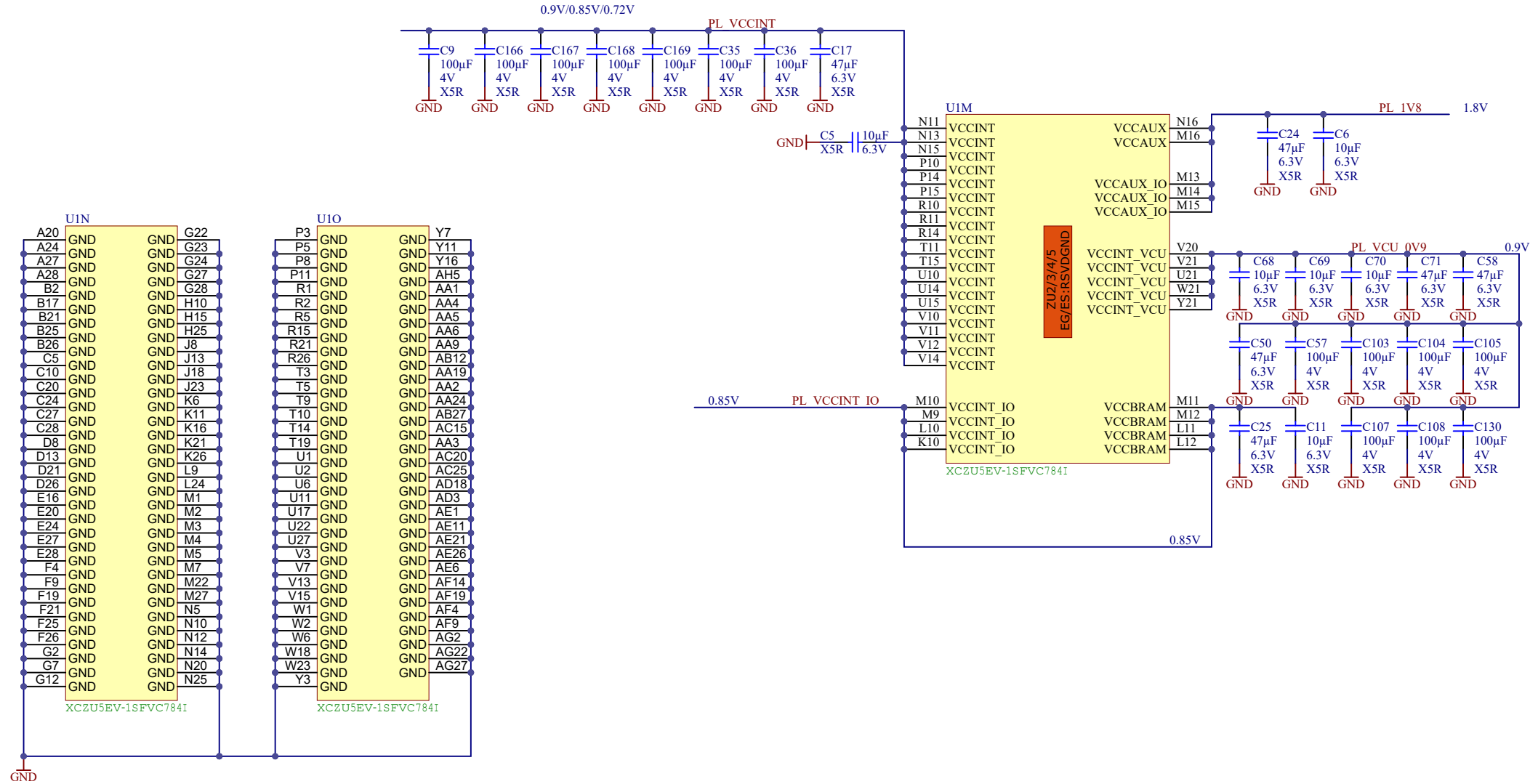
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C

C

D

D



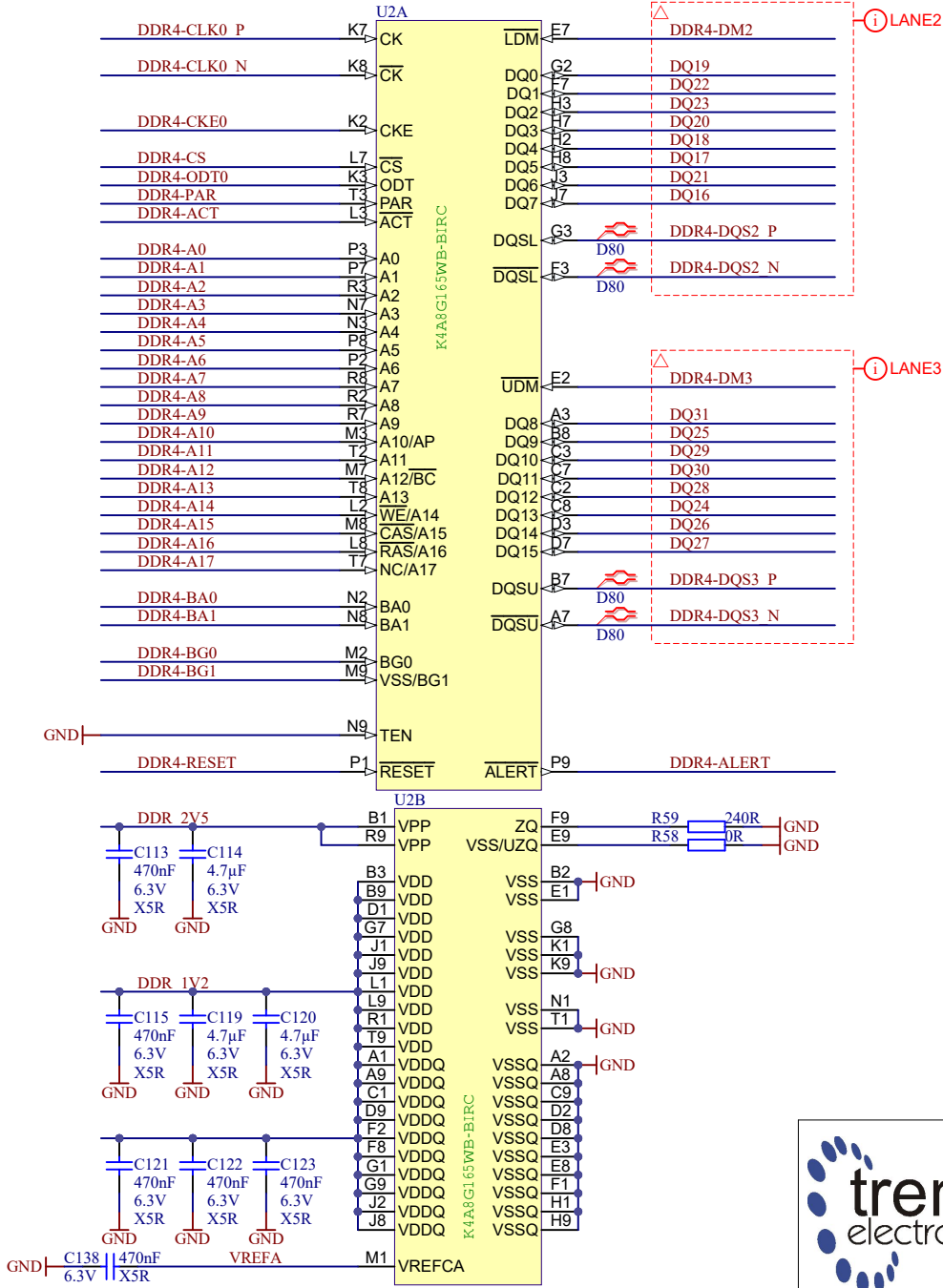
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	A4	Number: <b>TE0813 5DI21-A</b>	Rev. <b>01</b>
	Date: <b>2021-08-16</b>	Copyright: Trenz Electronic GmbH / TT	
	Page 19 of 30		
Filename: <b>ZU_POWER.SchDoc</b>			

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Title: TE0813 - DDR4_1_RAM		
A4	Number: TE0813 5DI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 20 of 30
Filename: DDR4-RAM.SchDoc		



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A

A

B

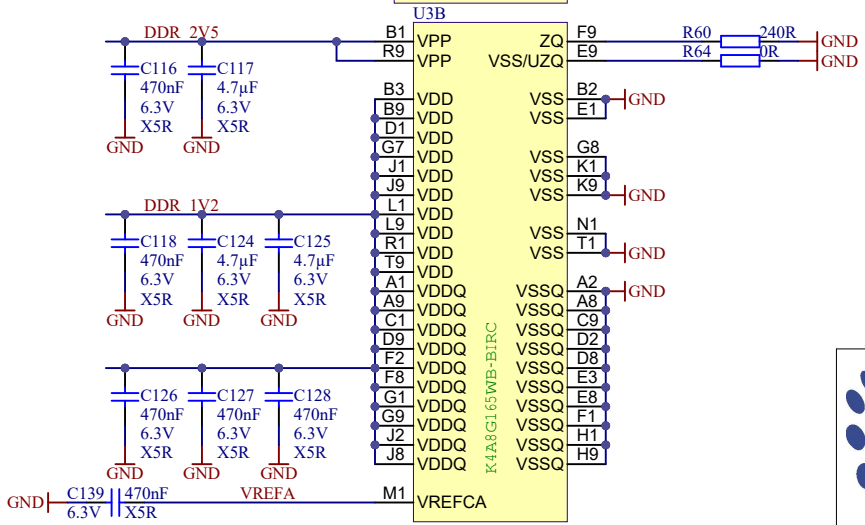
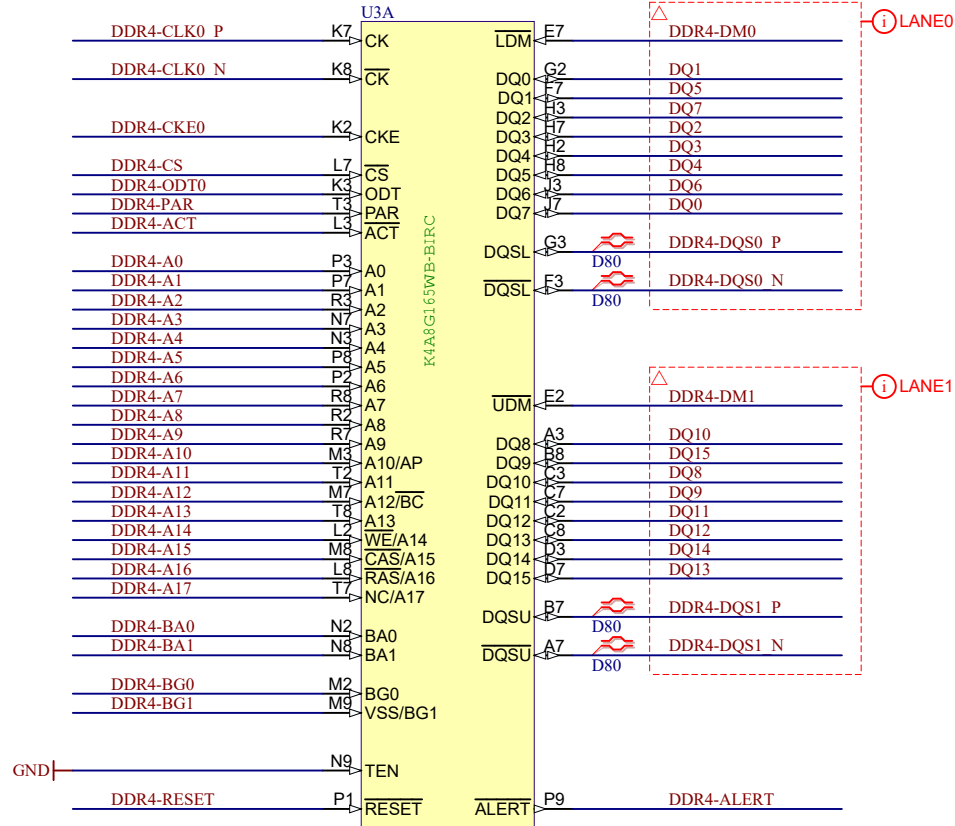
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C

C

D

D



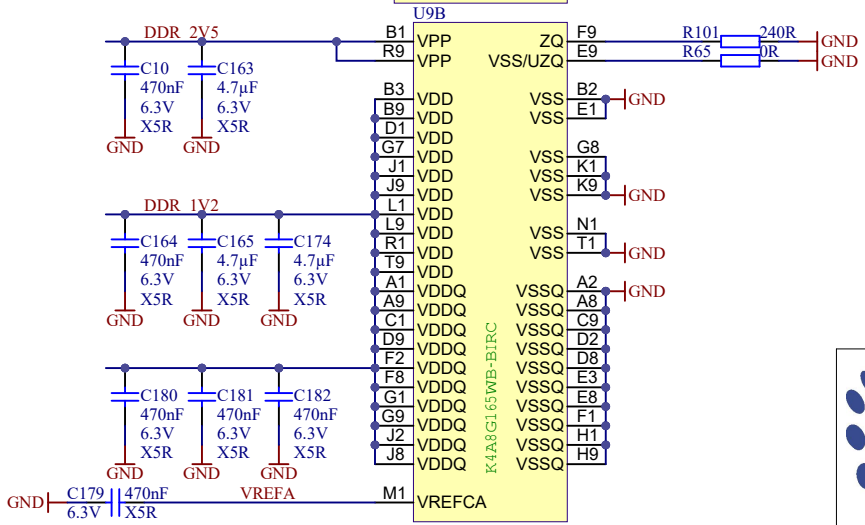
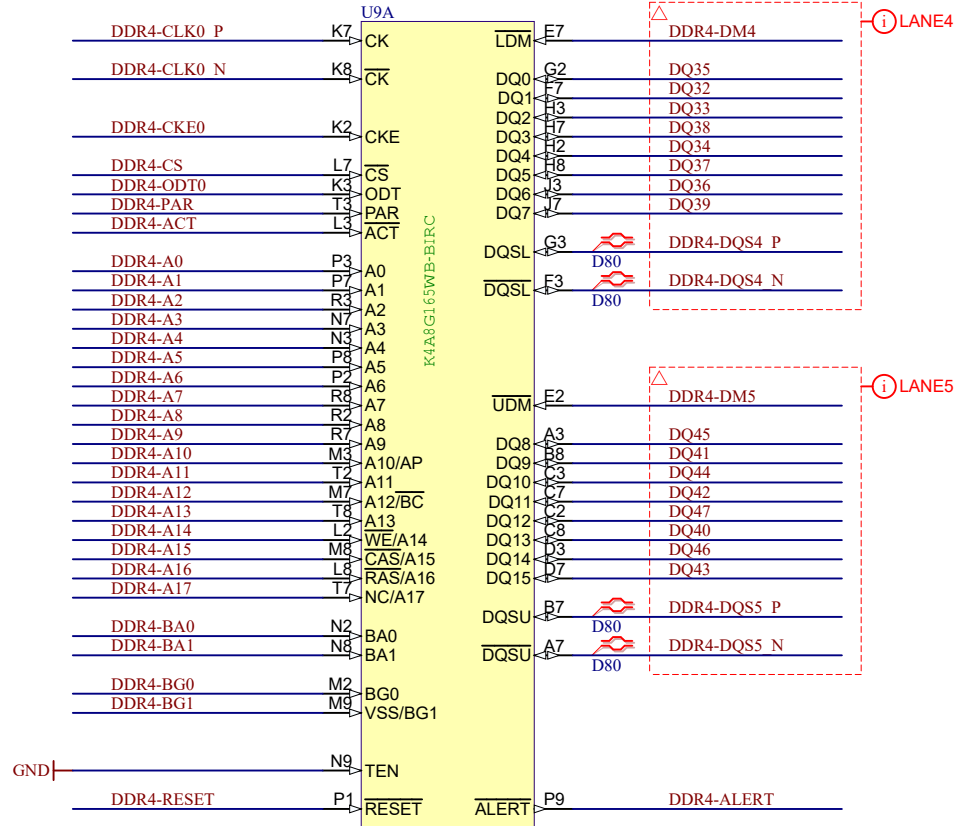
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A4	Number: TE0813 5DI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 21 of 30
Filename: DDR4-RAM_2.SchDoc		

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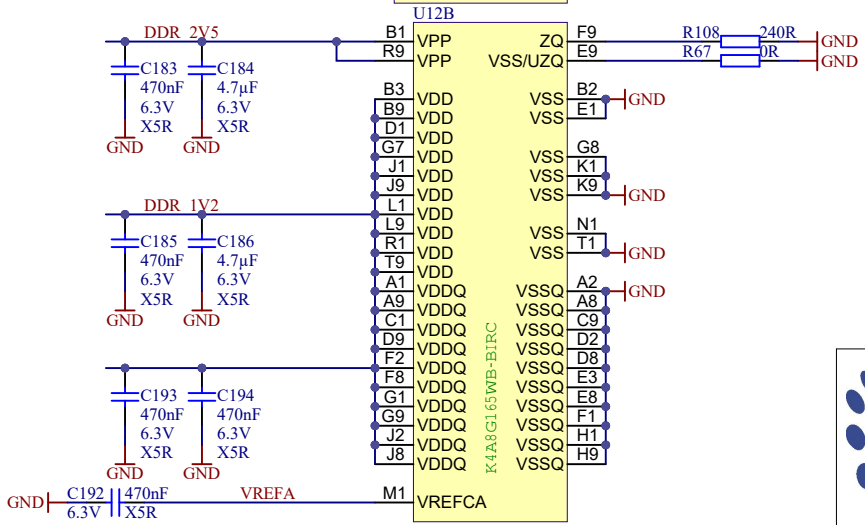
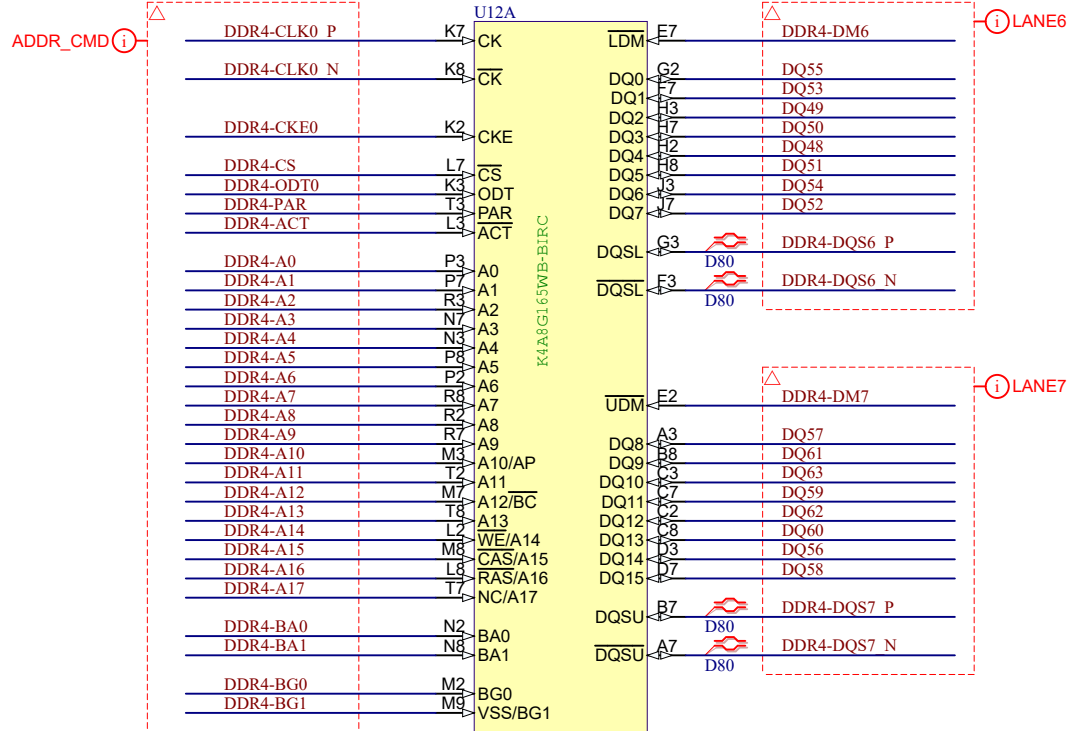
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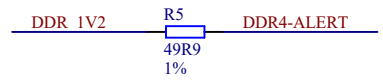
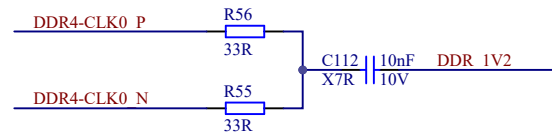
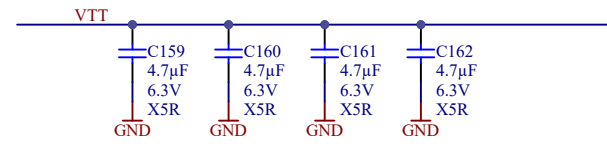
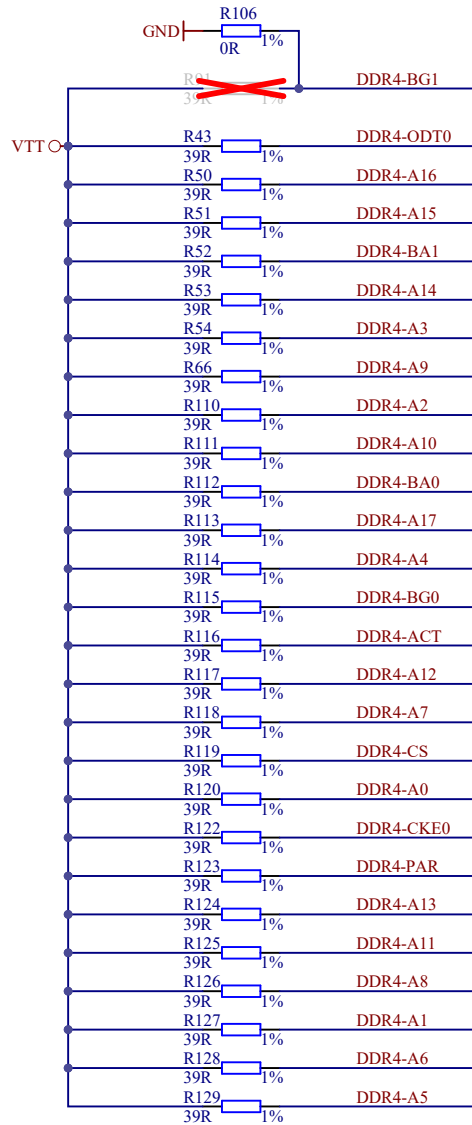
trenz electronic

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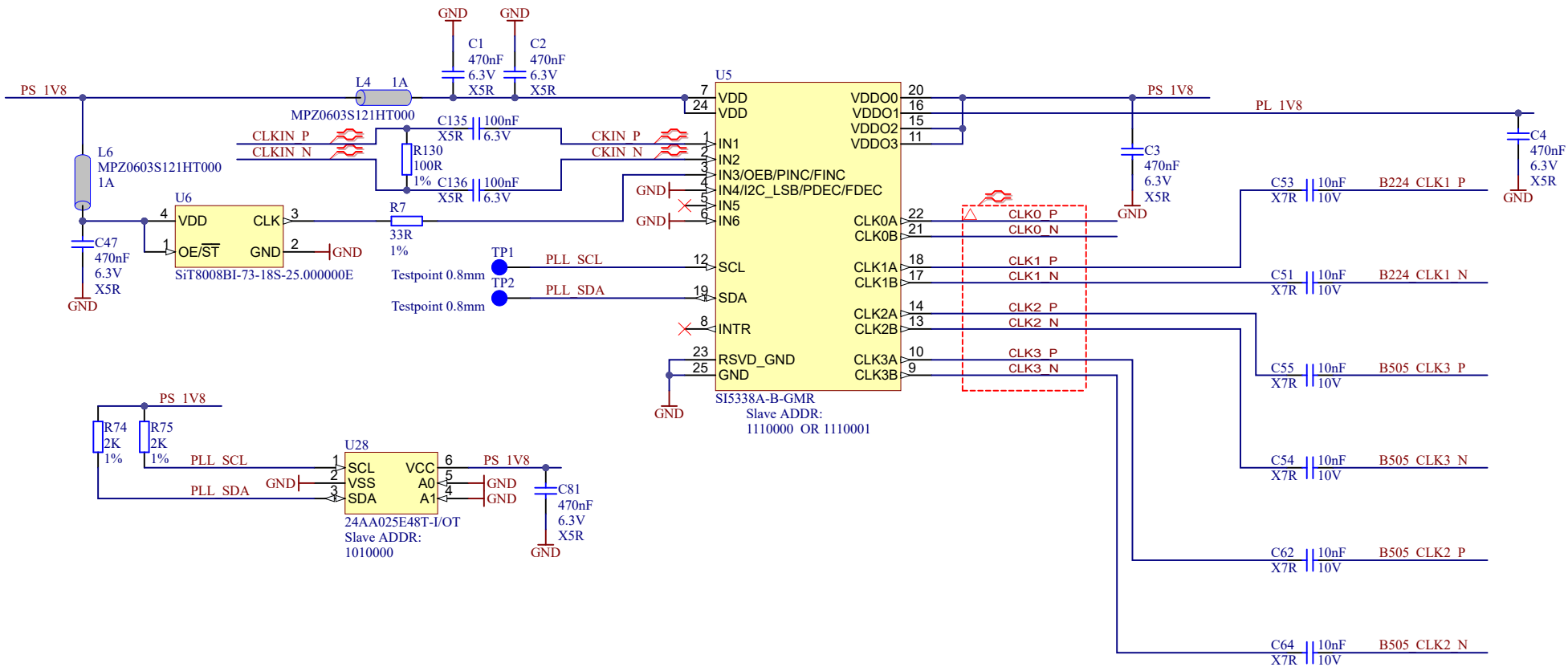
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Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 22 of 30
Filename: DDR4-RAM_3.SchDoc		



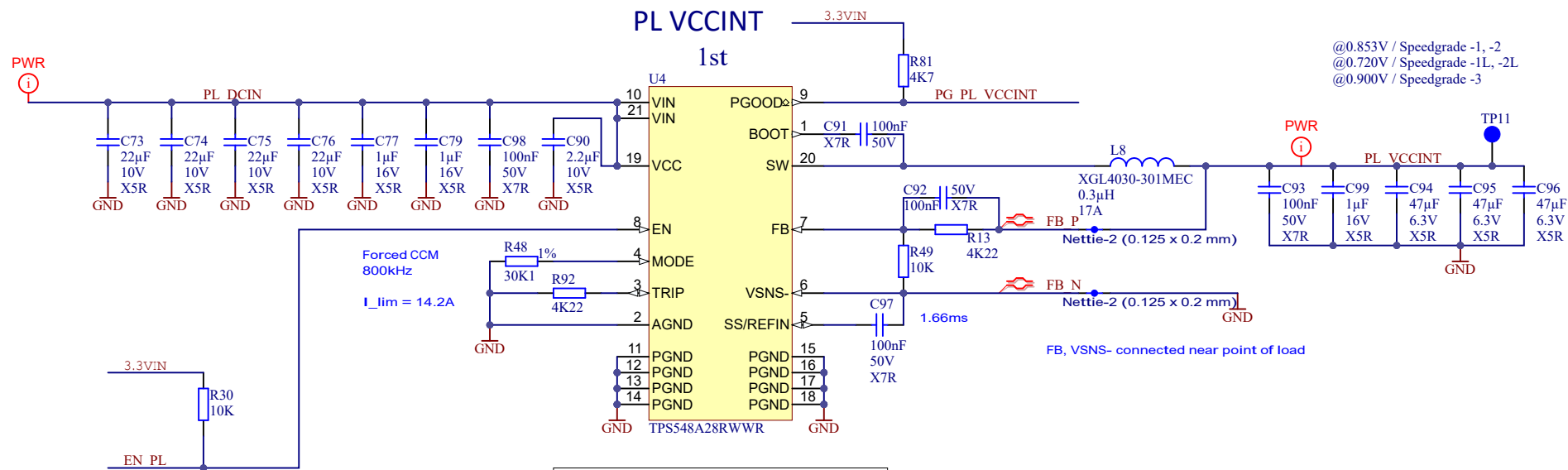
Title: TE0813 - DDR4_4_RAM		
A4	Number: TE0813 5DI21-A	Rev. 01
Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT	Page 23 of 30
Filename: DDR4-RAM_4.SchDoc		



Title: TE0813 - DDR4_TERM		
A4	Number: TE0813 5DI21-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 5DI21-A
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	Page 25 of 30	
Copyright: Trenz Electronic GmbH / TT		Filename: Clock.SchDoc



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

Forced CCM  
 800kHz  
 I\_lim = 14.2A

FB, VSNS- connected near point of load

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

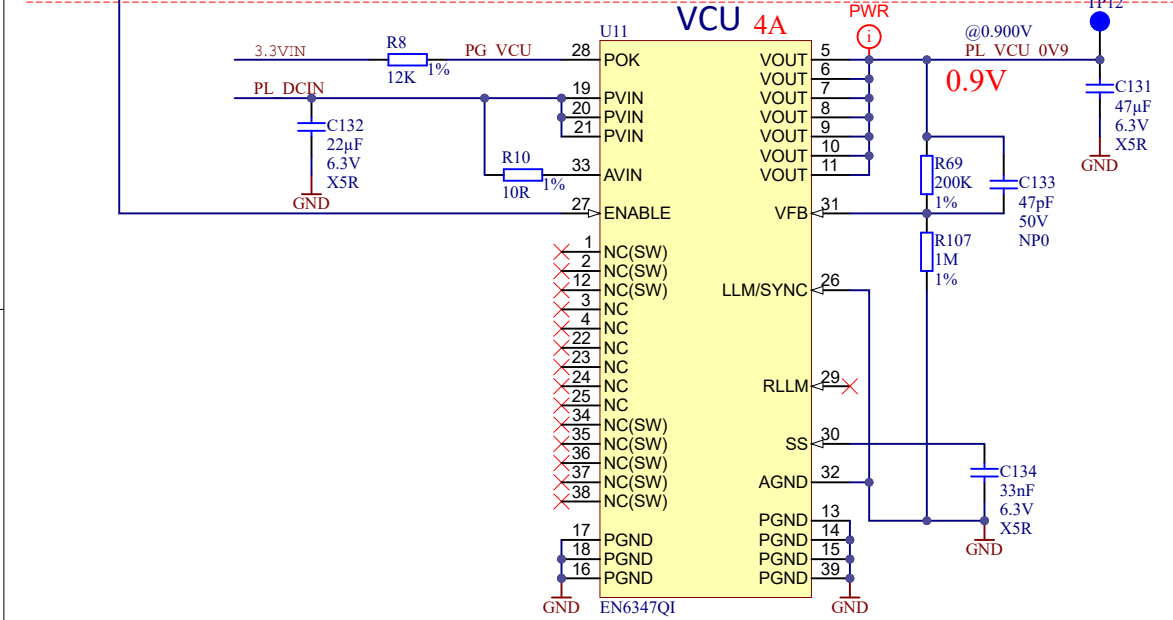
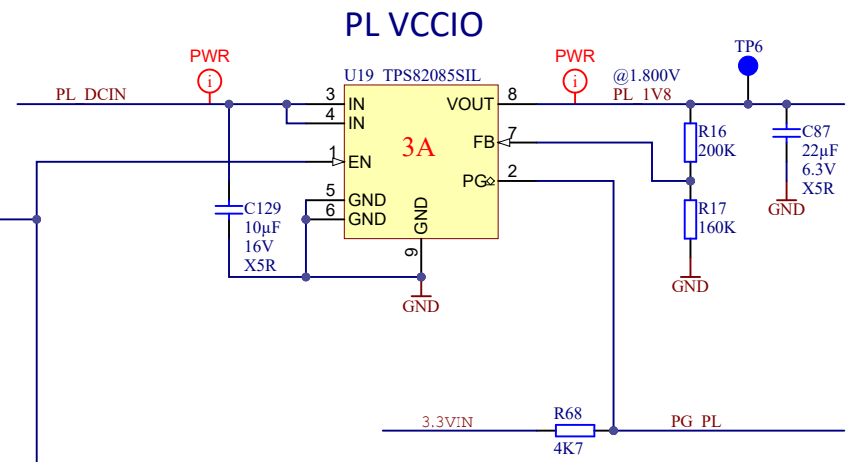
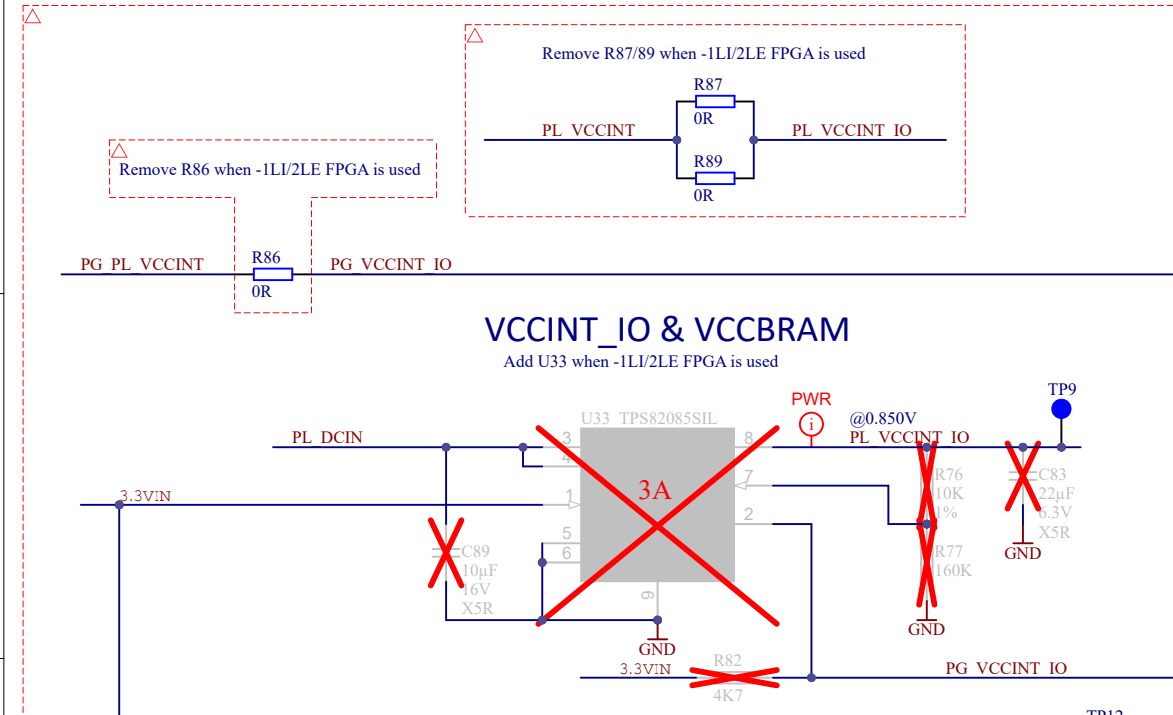
U4 pin compatible with  
 -- TPS548B28 (20A)  
 -- TPS54JA20 (12A)


	Title: TE0813 - POWER	
	A4	Number: TE0813 5DI21-A
	Date: 2021-08-16	Copyright: Trenz Electronic GmbH / TT
	Filename: POWER.SchDoc	

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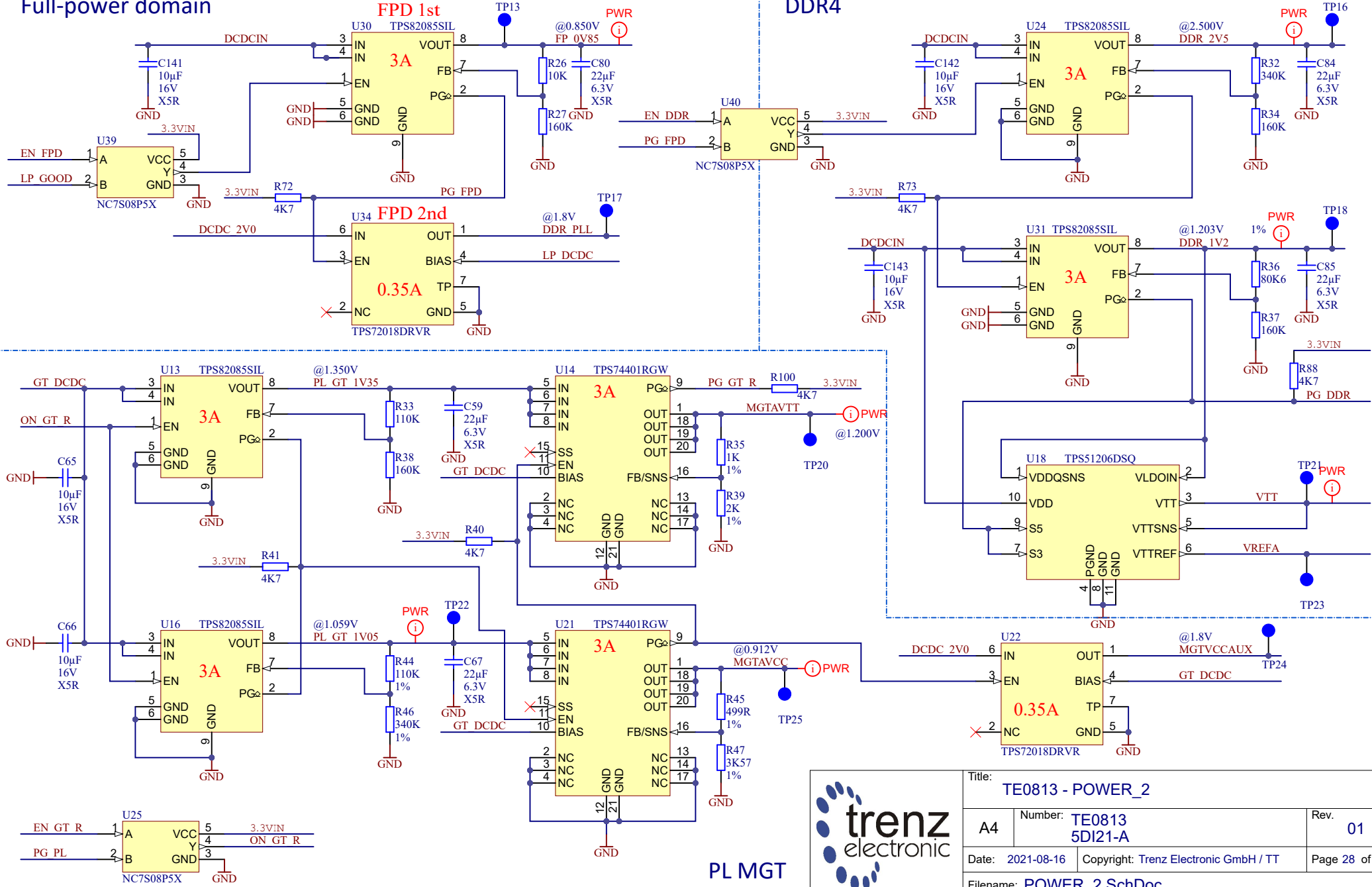




		Title: TE0813 - POWER	
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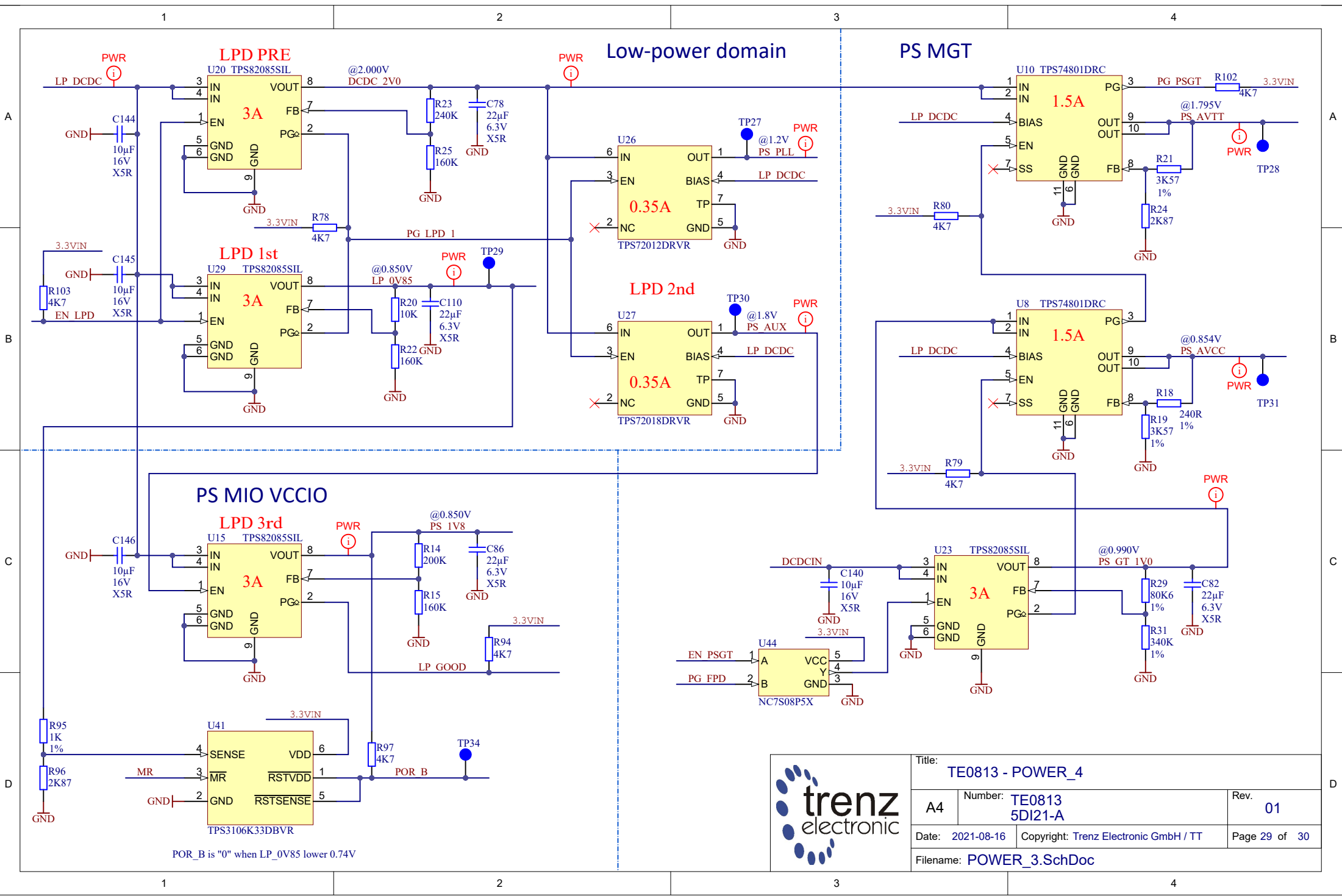
# Full-power domain

# DDR4



Title: <b>TE0813 - POWER_2</b>		
A4	Number: <b>TE0813 5DI21-A</b>	Rev. <b>01</b>
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PL MGT



Low-power domain

PS MGT

PS MIO VCCIO



Title: TE0813 - POWER_4		
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POR\_B is "0" when LP\_0V85 lower 0.74V

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 5DI21-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