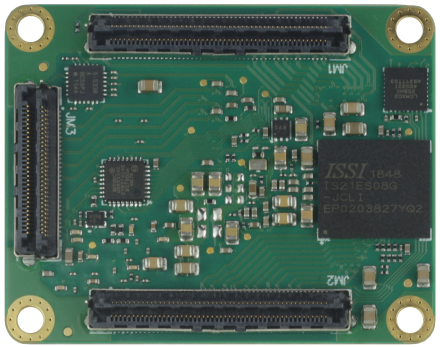

Regarding the usage of our schematics and alike documentation for Trenz module TE0823.

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. TE0823 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!

Drawn by	LH
Checked by	ED/MR
Assembly variant	3PIT1QA
Created by	LH
Modified by	LH
Modified at	2025-12-15

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Title: TE0823 - Legal notices

A4	Number: TE0823 3PIT1QA	Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 1 of 25
Filename: Legal Notices Modules.SchDoc		

REV	Description	
-01	Initial revision	-
-01a	1. R38 value was changed to 20K (was: 40K2) to set VCU 0.9V	VY
-01b	1. added block diagram 2. added page "Legal notices" 3. R51 value was changed to 10K (was: 20K) to set PS_VCU 0.85V	VY
-02	1. Replaced EOL buck converter EN6363QI (U5) with MPM3860. 2. Renamed net PS_LP0V85 to PS_LPVCC and net PS_FP0V85 to PS_FPVCC. 3. Added BD39040MUF-C (U4) as an additional power supervisor. 4. Added signal PG_ALL to CPLD. 5. Replaced EOL LPDDR4 RAM IS43LQ32256A-062BLI (U2A) with IS43LQ32K01S2A-046BLI. 6. Replaced TPS27081ADDCR (Q1) with MP5077GG-Z (U16). 7. Replaced EOL SiT8008AI-73-XXS-52.000000E (U14) with SiT8008BI-73-XXS-52.000000E. 8. All LVDS and MGT tracks extended by 1 mm due to PCB changes. 9.Added C144 and C145 and optional 100 ohm termination resistor R106 to CLK0 for AC coupling. 10. Net PG_FPD renamed to PG_ALL. 11. Added MOSFET T2A to ensure correct power good sequence.	LH

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Title: TE0823 - Revision changes		
A4	Number: TE0823 3PIT1QA	Rev. 02
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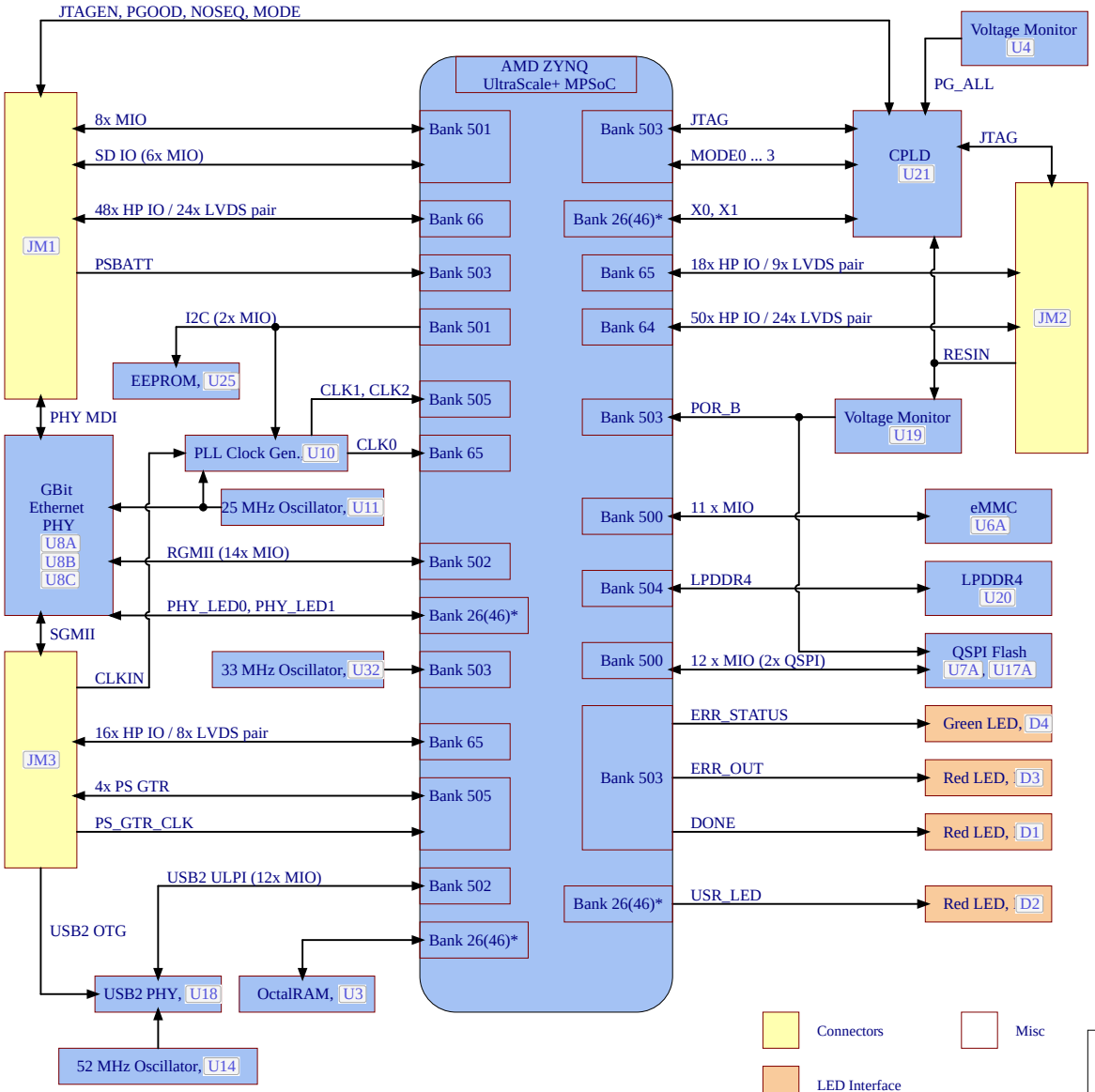
Filename: Revision Changes.SchDoc		



* Bank name in XCZU2/3 or XCZU4/5

I2C-Adress	Component	BUS
0x50	24AA025E48T-I/OT U25	I2C0
0x70	SI5338A-B-GMR U10	I2C0

ZU_Power

ZU_PS_Power

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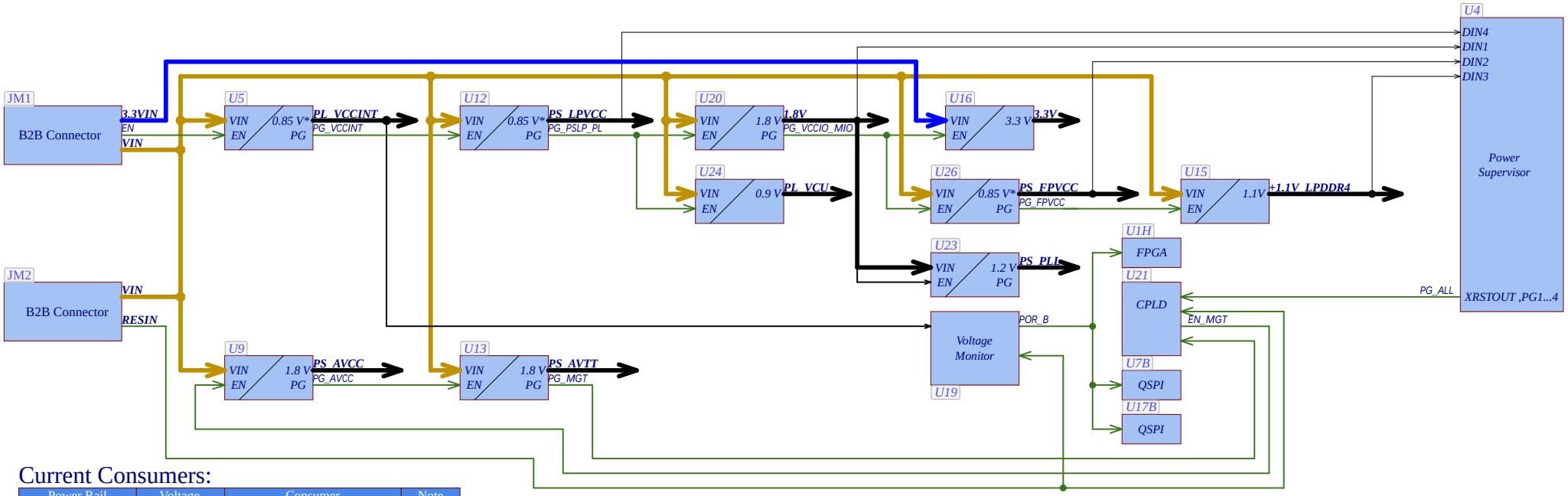
Title: TE0823 - Overview		
A4	Number: TE0823 3PIT1QA	Rev. 02
Date: 22.04.2026	Copyright: Trenz Electronic GmbH	Page 3 of 25
Filename: TE0823-Overview.SchDoc		



Current Consumers:

Power Rail	Voltage	Consumer	Note
PL_VCCINT	0.72/0.85/0.9 V	SoC VCCINT	-
PS_LPVCC	0.85 V / 0.9 V	SoC VCCINT_IO SoC VCCBRAM SoC VCC_PSINTLP	-
1.8V	1.8 V	CPLD VCCIO1/2 B2B JM1/JM2 SoC VCCO_66/65/64 QSPI FLASH QUAD CLK VDDO eMMC VCCQ ETH PHY VDDO SoC VCCPSDDR_PLL USB PHY VDD18 SoC VCC_AUX SoC VCC_AUX_IO SoC VCC_PS_AUX SoC VCCO_PSIO0/2_500/2 DDR VDD1	-
PL_VCU	0.9 V	SoC VCCINT_VCU	-
PS_AVCC	0.85 V	SoC PS_MGTRAVCC	-
PS_FPVCC	0.85 V / 0.9 V	SoC VCC_PS_INTFP_DDR SoC VCC_PS_INTFP	-
PS_PLL	1.2 V	SoC VCC_PSPLL	-
3.3V	3.3 V	SoC VCCO_PSIO1_501 QUAD CLK VDD eMMC VCC EEPROM VCC CLK GEN 25M VDD USB PHY VDD33/VBAT CLK GEN 52M VDD	-
PS_AVTT	1.8 V	SoC PS_MGTRAVTT	-
LPDDR_+1.1V	1.1 V	DDR VDD2/VDDQ SoC VCCO_PSDDR_504	-

* Voltage depends on assembly variant.

Supported Voltage Ranges:

Power Rail	Direction	Range	Tolerance	Description	Note
3.3VIN	IN	3.3 V	+/- 5 %	Carrier Power	Main Power
VIN	IN	3.3 V - 5 V	+/- 5 %	Carrier Power	Main Power
PSBATT	IN	1.2 V - 1.5 V	-	RTC Power	
VCCO_64	IN	1 V - 1.8 V	+/- 3 %	Bank Power	HP IO Bank 64
VCCO_65	IN	1 V - 1.8 V	+/- 3 %	Bank Power	HP IO Bank 65
VCCO_66	IN	1 V - 1.8 V	+/- 3 %	Bank Power	HP IO Bank 66
3.3V	OUT	3.3 V	-	Carrier Power	
1.8V	OUT	+1.8 V	-	Carrier Power	

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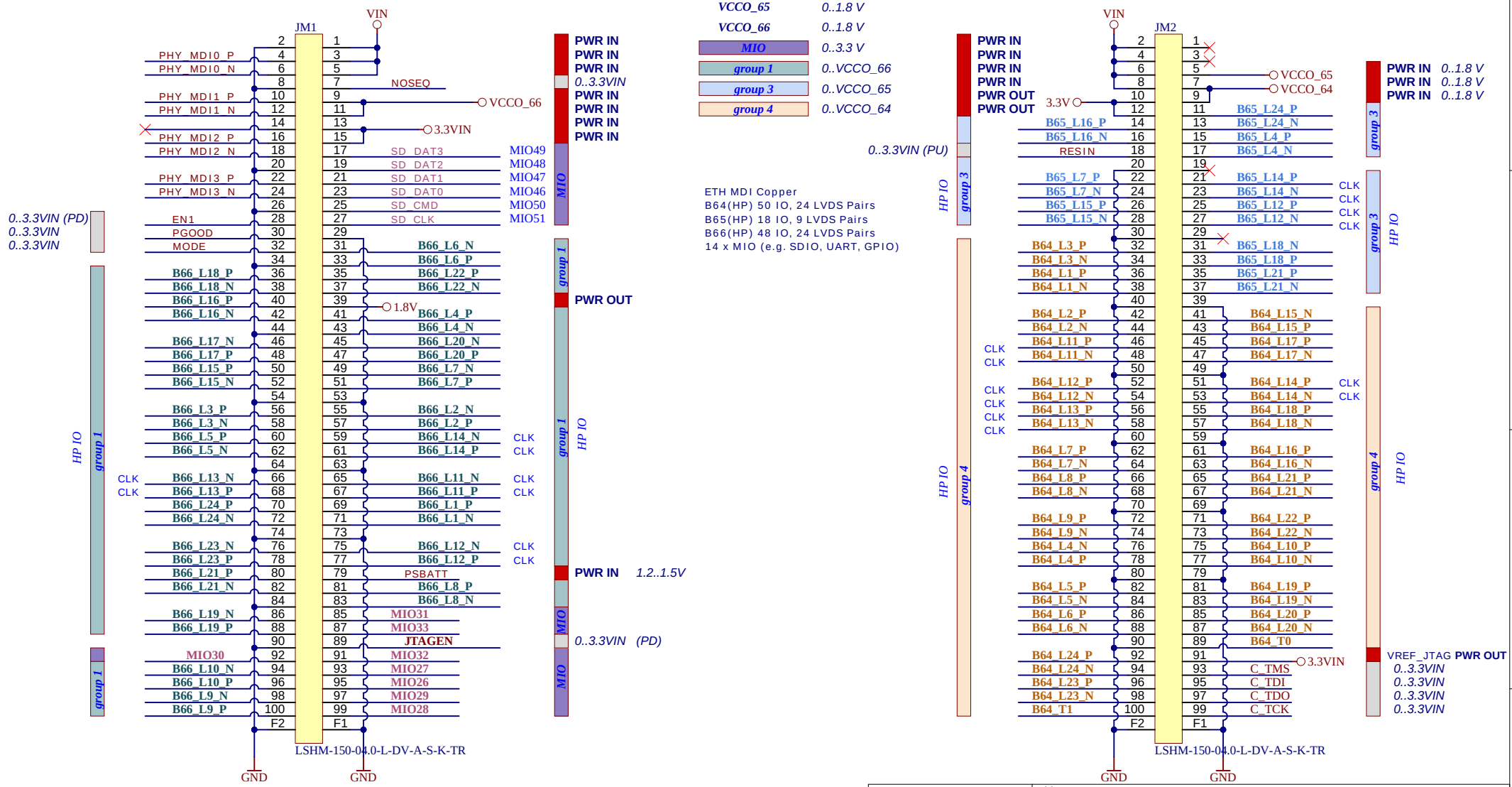
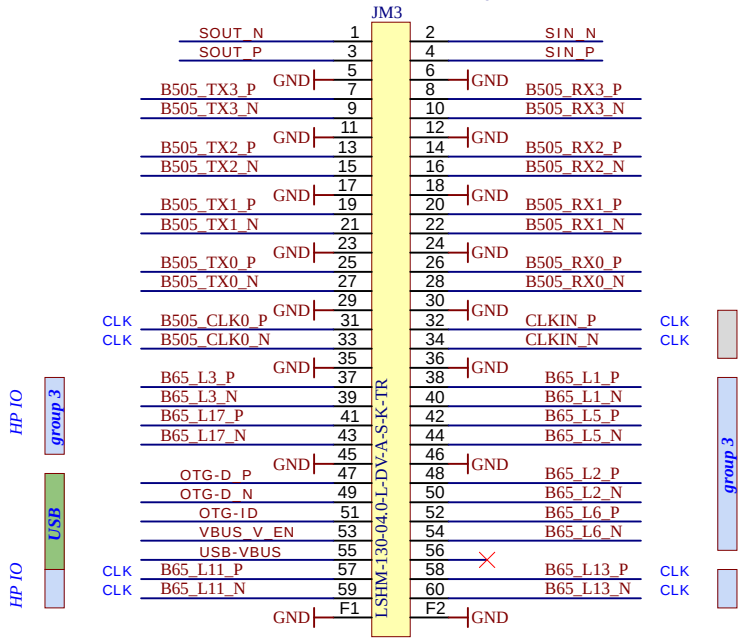
Title: TE0823 - Power overview		
A4	Number: TE0823 3PIT1QA	Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 4 of 25
Filename: Power-Overview.SchDoc		



Title: TE0823 - B2B-Connectors		
A4	Number: TE0823 3PIT1QA	Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 5 of 25
Filename: B2B-Connectors.SchDoc		

B65(HP) 16 IO, 8 LVDS Pairs
USB OTG
ETH SGMII
PS_GTR 4 Lanes
PS_GTR CLK IN
PLL CLK IN

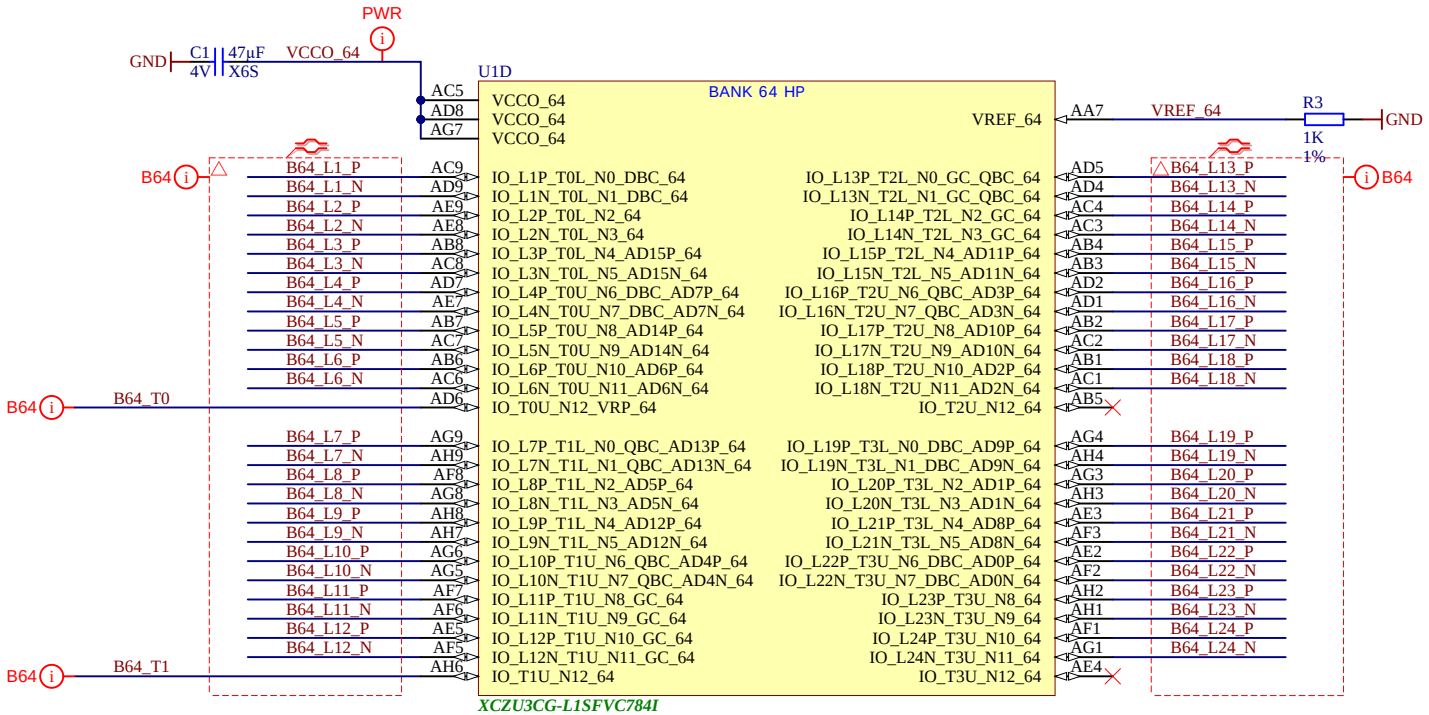
group 3 0..VCCO_65



AC coupling and 100 Ω termination on carrier board mandatory!

VCCO64, VCCO65, VCCO66 ->>> max. 1.8V (HP bank's)

trenz electronic	Title: TE0823 - B2B-Connectors_2	
A4	Number: TE0823 3PIT1QA	Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 6 of 25
Filename: B2B-Connectors_2.SchDoc		



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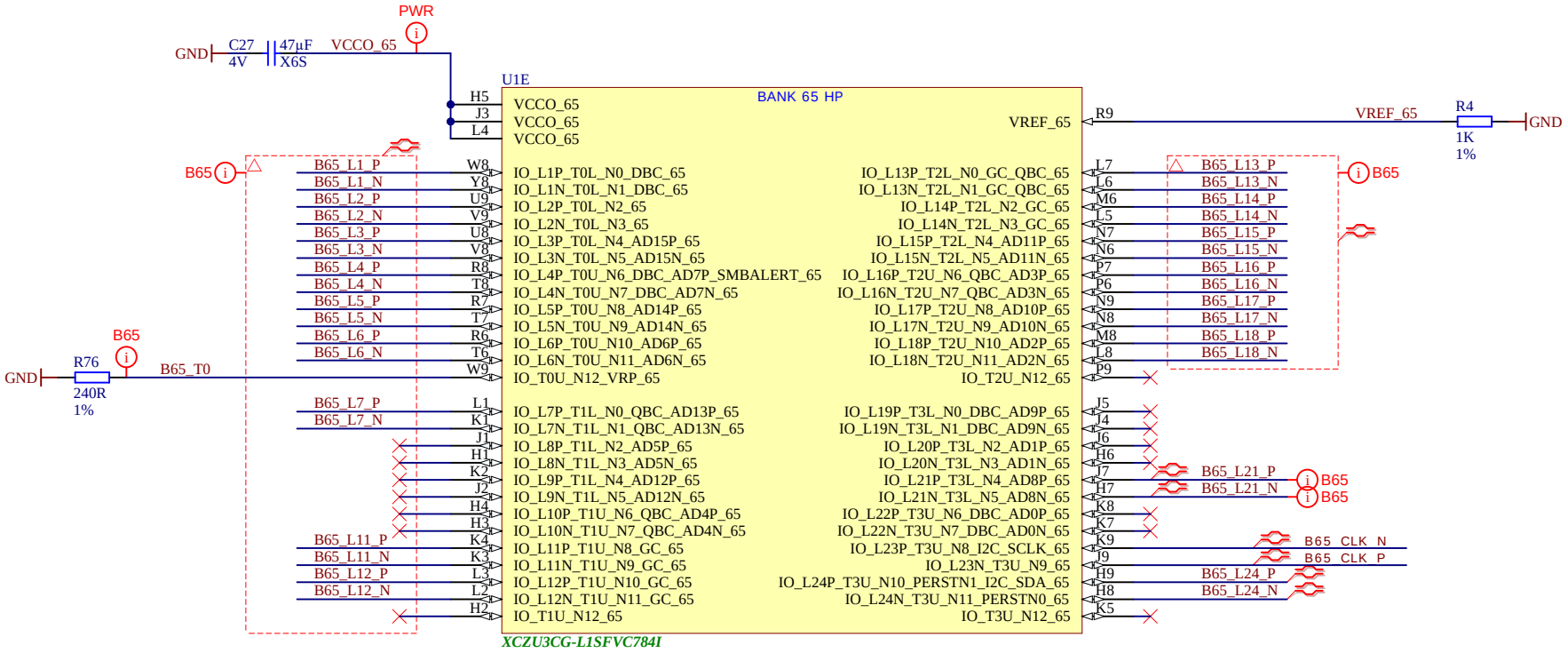
A4	Number: TE0823 3PIT1QA		Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH		Page 7 of 25
Filename: B64.SchDoc			



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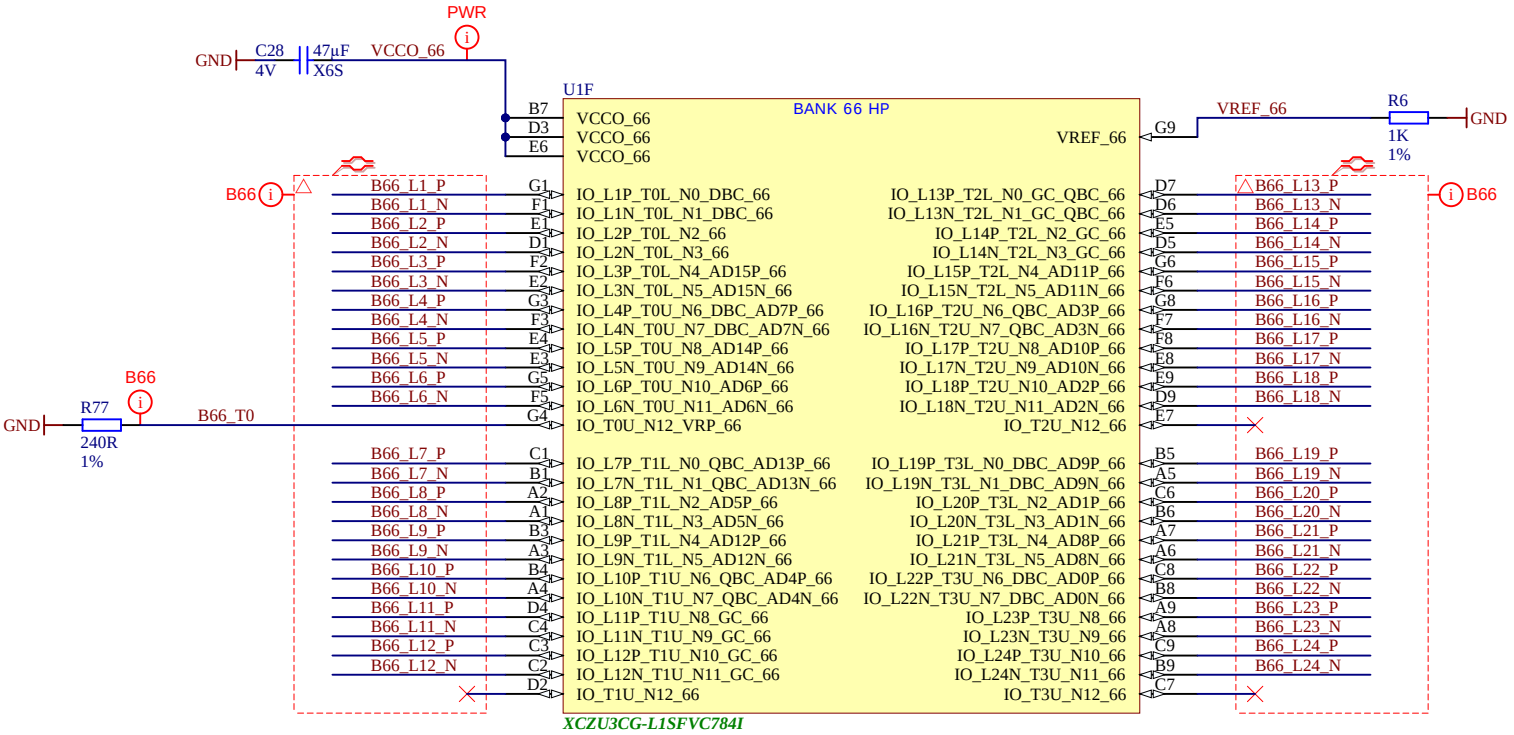
	Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 8 of 25
	Filename: B65.SchDoc		



trenz electronic	Title: TE0823 - B66		
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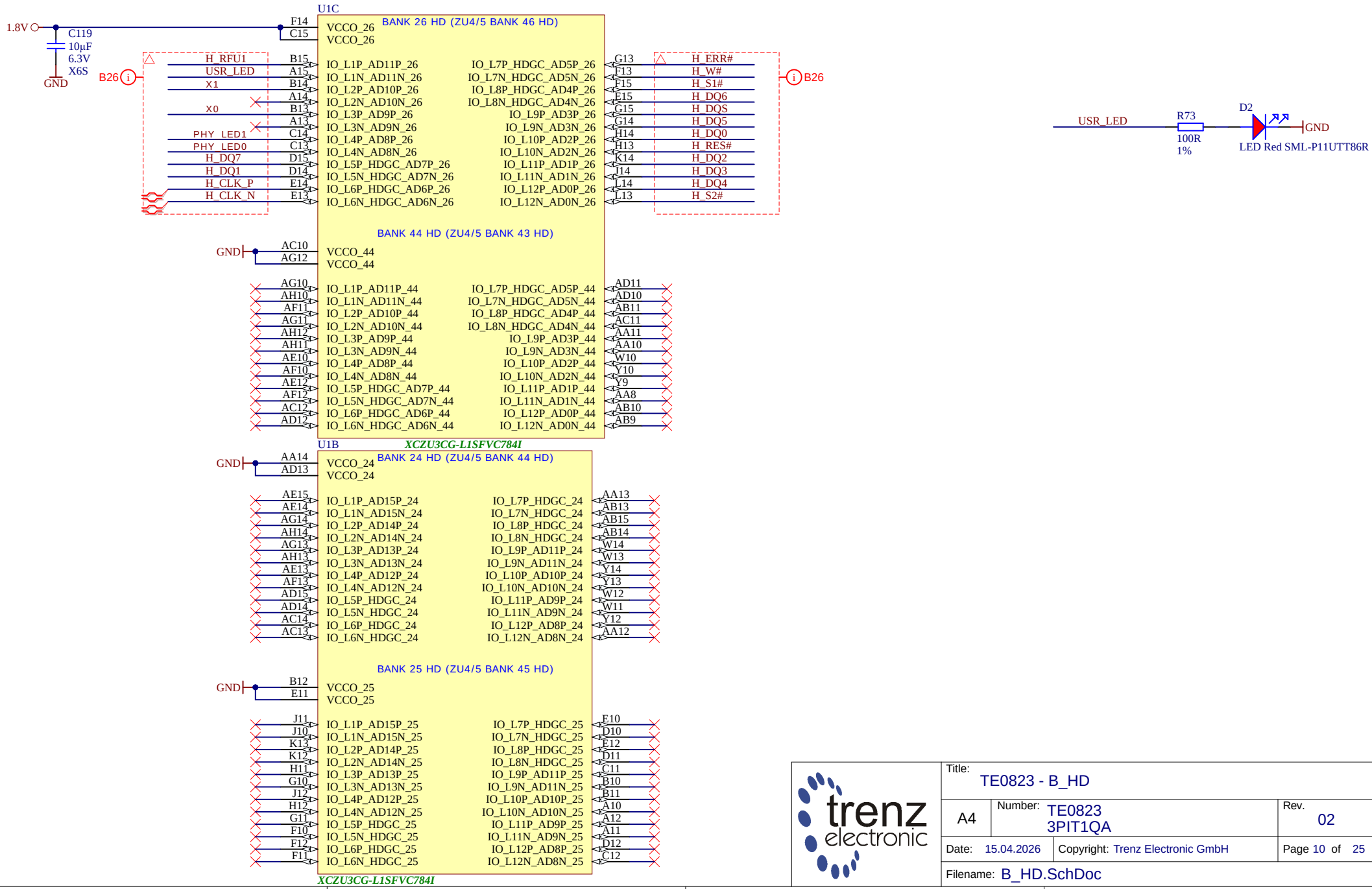
	Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 9 of 25
	Filename: B66.SchDoc		


U1C
BANK 26 HD (ZU4/5 BANK 46 HD)
VCCO_26
VCCO_26
IO_L1P_AD11P_26
IO_L1N_AD11N_26
IO_L2P_AD10P_26
IO_L2N_AD10N_26
IO_L3P_AD9P_26
IO_L3N_AD9N_26
IO_L4P_AD8P_26
IO_L4N_AD8N_26
IO_L5P_HDGC_AD7P_26
IO_L5N_HDGC_AD7N_26
IO_L6P_HDGC_AD6P_26
IO_L6N_HDGC_AD6N_26
IO_L7P_HDGC_AD5P_26
IO_L7N_HDGC_AD5N_26
IO_L8P_HDGC_AD4P_26
IO_L8N_HDGC_AD4N_26
IO_L9P_AD3P_26
IO_L9N_AD3N_26
IO_L10P_AD2P_26
IO_L10N_AD2N_26
IO_L11P_AD1P_26
IO_L11N_AD1N_26
IO_L12P_AD0P_26
IO_L12N_AD0N_26
BANK 44 HD (ZU4/5 BANK 43 HD)
VCCO_44
VCCO_44
IO_L1P_AD11P_44
IO_L1N_AD11N_44
IO_L2P_AD10P_44
IO_L2N_AD10N_44
IO_L3P_AD9P_44
IO_L3N_AD9N_44
IO_L4P_AD8P_44
IO_L4N_AD8N_44
IO_L5P_HDGC_AD7P_44
IO_L5N_HDGC_AD7N_44
IO_L6P_HDGC_AD6P_44
IO_L6N_HDGC_AD6N_44
IO_L7P_HDGC_AD5P_44
IO_L7N_HDGC_AD5N_44
IO_L8P_HDGC_AD4P_44
IO_L8N_HDGC_AD4N_44
IO_L9P_AD3P_44
IO_L9N_AD3N_44
IO_L10P_AD2P_44
IO_L10N_AD2N_44
IO_L11P_AD1P_44
IO_L11N_AD1N_44
IO_L12P_AD0P_44
IO_L12N_AD0N_44
U1B
XCZU3CG-L1SFVC784I
BANK 24 HD (ZU4/5 BANK 44 HD)
VCCO_24
VCCO_24
IO_L1P_AD15P_24
IO_L1N_AD15N_24
IO_L2P_AD14P_24
IO_L2N_AD14N_24
IO_L3P_AD13P_24
IO_L3N_AD13N_24
IO_L4P_AD12P_24
IO_L4N_AD12N_24
IO_L5P_HDGC_24
IO_L5N_HDGC_24
IO_L6P_HDGC_24
IO_L6N_HDGC_24
IO_L7P_HDGC_24
IO_L7N_HDGC_24
IO_L8P_HDGC_24
IO_L8N_HDGC_24
IO_L9P_AD11P_24
IO_L9N_AD11N_24
IO_L10P_AD10P_24
IO_L10N_AD10N_24
IO_L11P_AD9P_24
IO_L11N_AD9N_24
IO_L12P_AD8P_24
IO_L12N_AD8N_24
BANK 25 HD (ZU4/5 BANK 45 HD)
VCCO_25
VCCO_25
IO_L1P_AD15P_25
IO_L1N_AD15N_25
IO_L2P_AD14P_25
IO_L2N_AD14N_25
IO_L3P_AD13P_25
IO_L3N_AD13N_25
IO_L4P_AD12P_25
IO_L4N_AD12N_25
IO_L5P_HDGC_25
IO_L5N_HDGC_25
IO_L6P_HDGC_25
IO_L6N_HDGC_25
IO_L7P_HDGC_25
IO_L7N_HDGC_25
IO_L8P_HDGC_25
IO_L8N_HDGC_25
IO_L9P_AD11P_25
IO_L9N_AD11N_25
IO_L10P_AD10P_25
IO_L10N_AD10N_25
IO_L11P_AD9P_25
IO_L11N_AD9N_25
IO_L12P_AD8P_25
IO_L12N_AD8N_25
XCZU3CG-L1SFVC784I
1.8V
C119
10µF
6.3V
X6S
GND
B26
H_RFU1
USR_LED
X1
X0
PHY_LED1
PHY_LED0
H_DQ7
H_DQ1
H_CLK_P
H_CLK_N
H_ERR#
H_W#
H_S1#
H_DQ6
H_DQS
H_DQ5
H_DQ0
H_RES#
H_DQ2
H_DQ3
H_DQ4
H_S2#
USR_LED
R73
100R
1%
D2
LED Red SML-P11UTT86R
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Title: TE0823 - B_HD
A4
Number: TE0823 3PIT1QA
Rev. 02
Date: 15.04.2026
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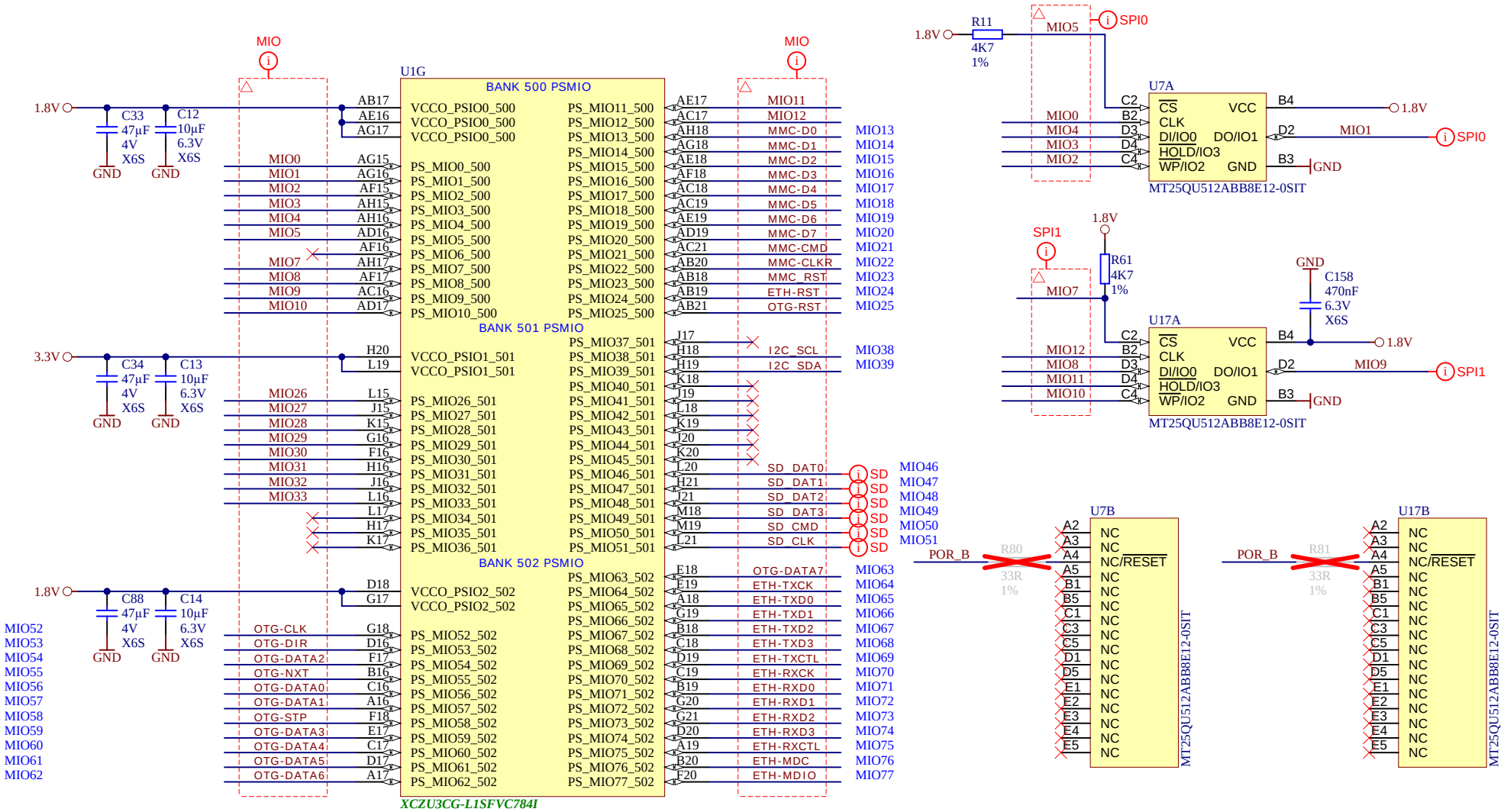
Filename: B_HD.SchDoc



trenz electronic	Title: TE0823 - B_MIO		
A4	Number: TE0823 3PIT1QA		Rev. 02
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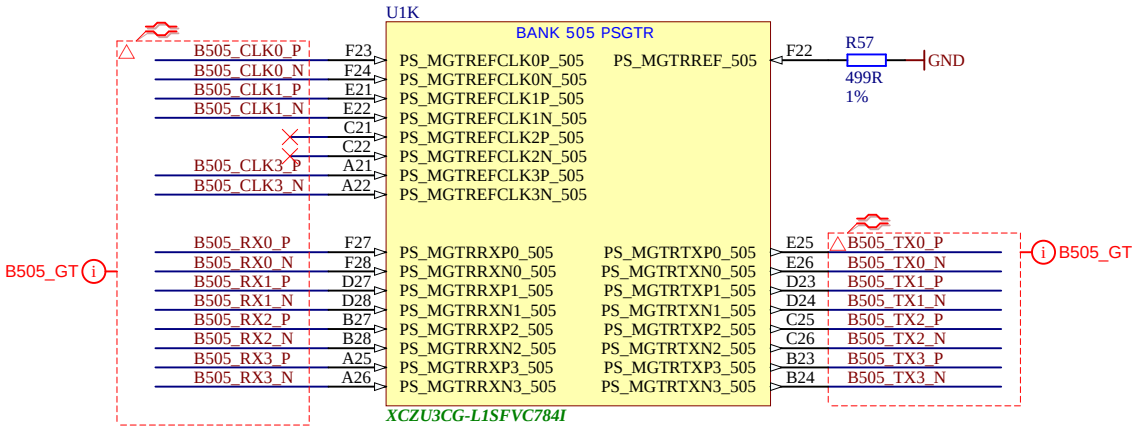
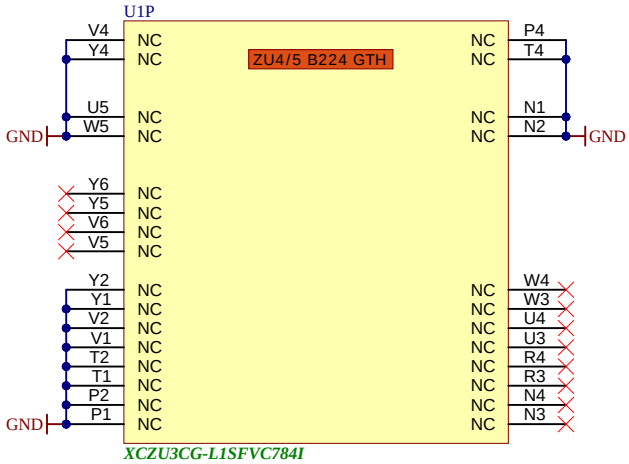
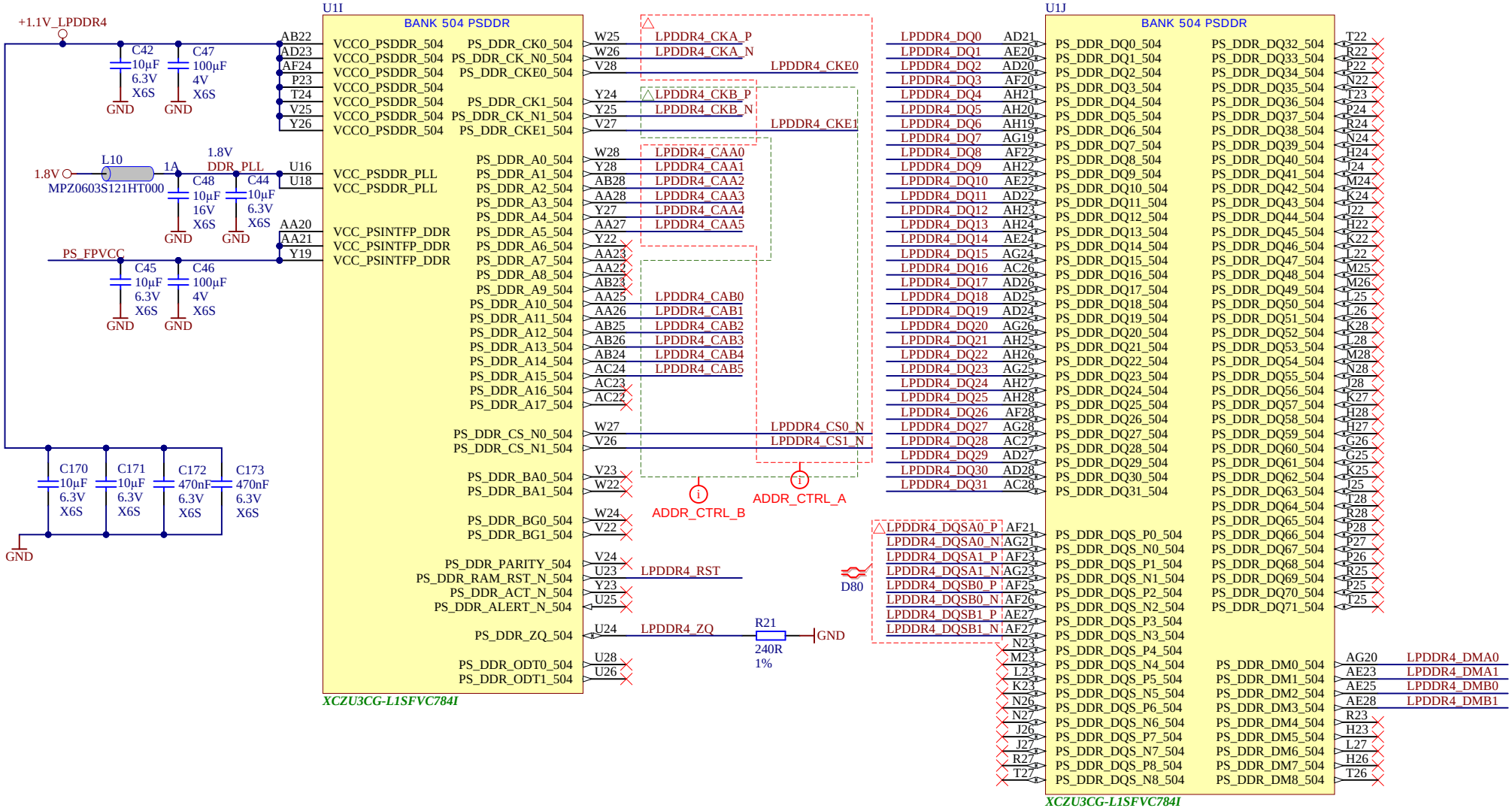
Filename: B_MIO.SchDoc			



100 nF external coupling capacitors recommended for transceiver pins.
10 nF external coupling capacitors recommended for clock pins.



trenz electronic	Title: TE0823 - B_PS_GT		
	A4	Number: TE0823 3PIT1QA	Rev. 02
	Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 12 of 25
	Filename: B_PS_GT.SchDoc		



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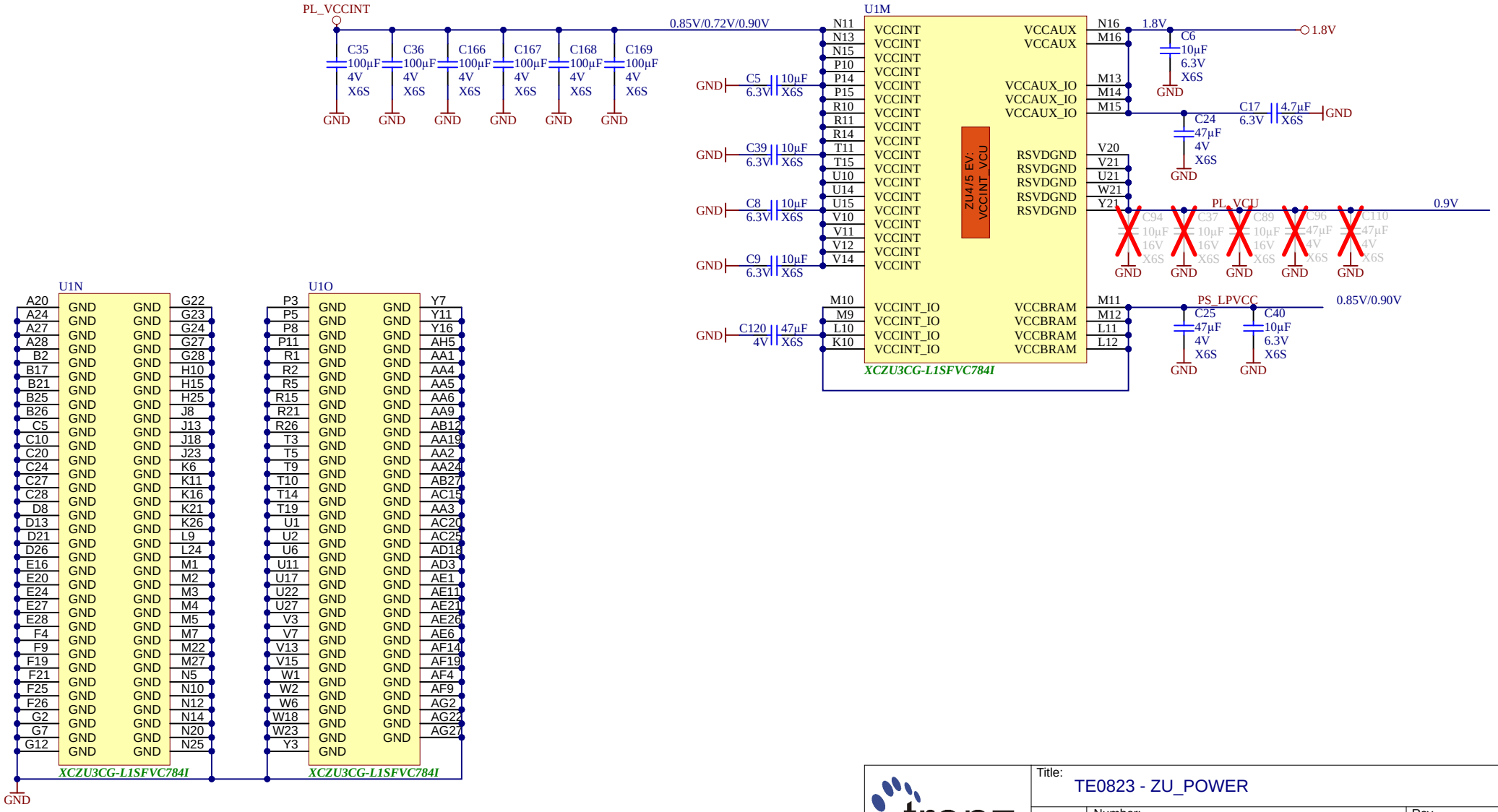
Date: 17.04.2026	Copyright: Trenz Electronic GmbH		Page 13 of 25
Filename: PS_DDR.SchDoc			



Title: TE0823 - ZU_POWER		
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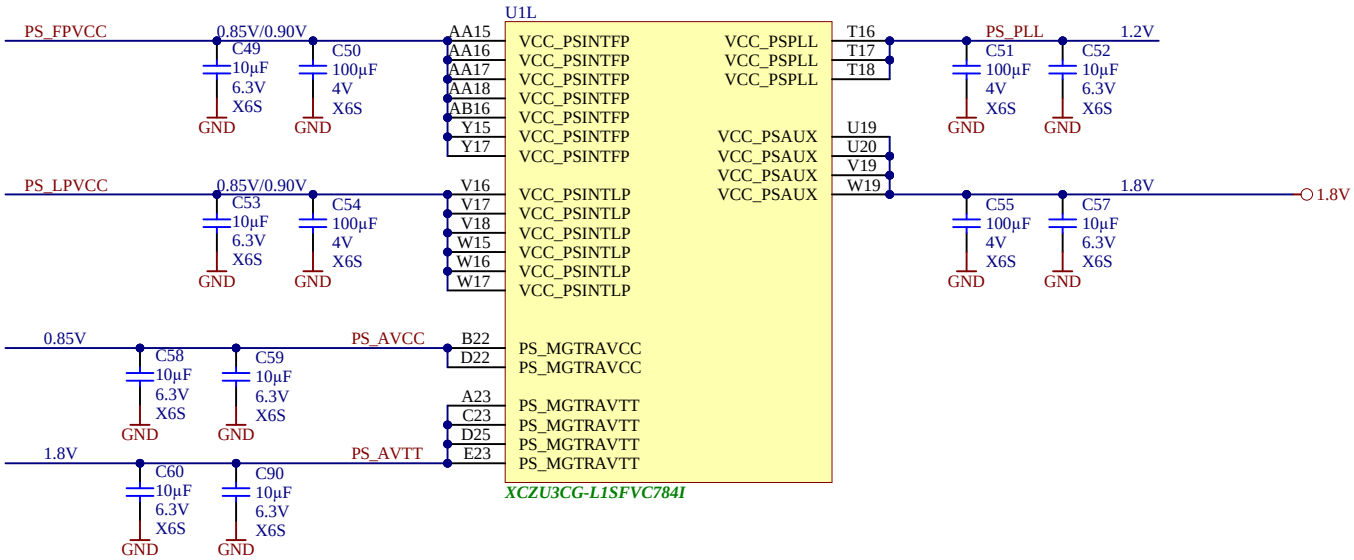
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 14 of 25
Filename: ZU_POWER.SchDoc		



trenz electronic	Title: TE0823 - ZU_PS_POWER		
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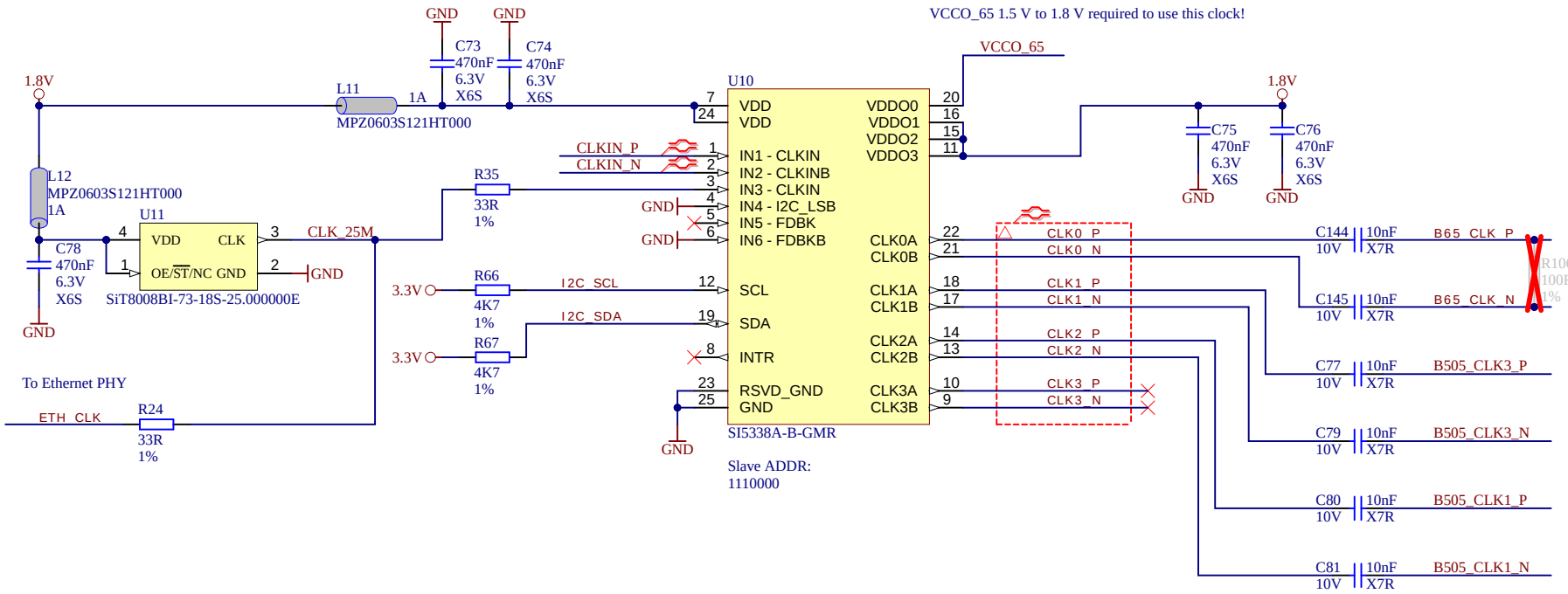
	Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 15 of 25
	Filename: ZU_PS_POWER.SchDoc		



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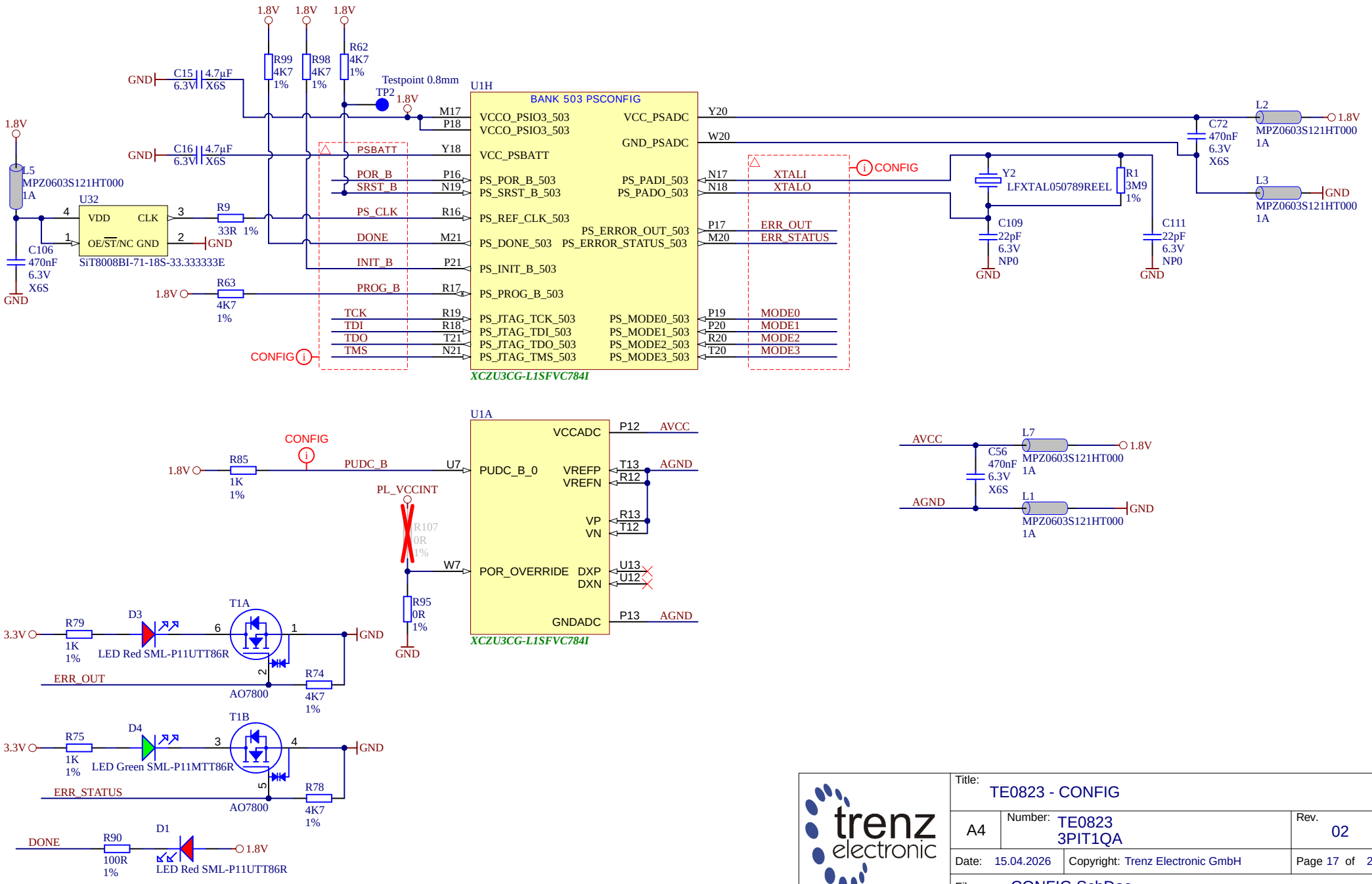
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 16 of 25
Filename: CLK.SchDoc		



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Title: TE0823 - CONFIG			
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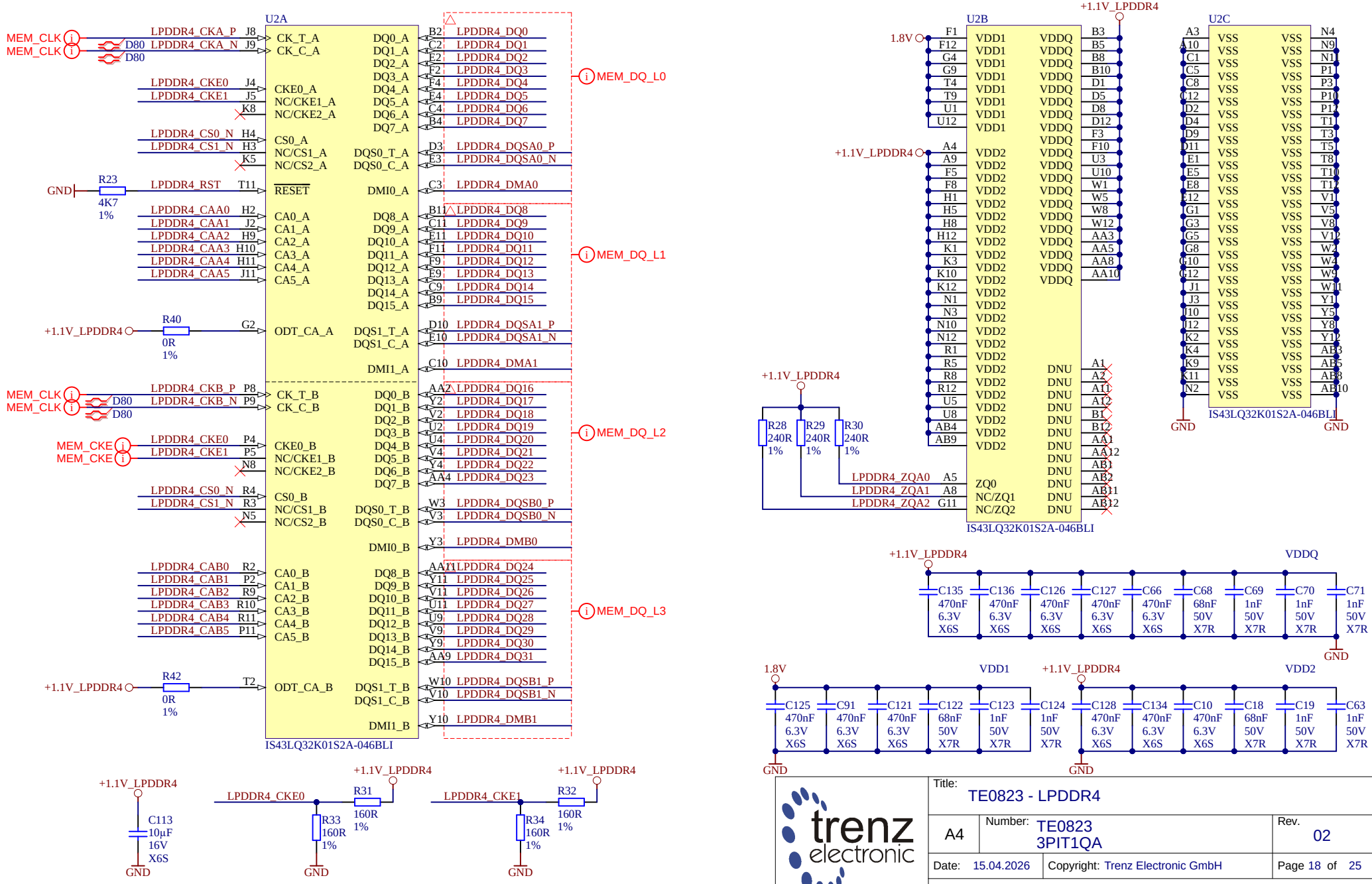
Date: 15.04.2026	Copyright: Trenz Electronic GmbH		Page 17 of 25
Filename: CONFIG.SchDoc			


U2A
IS43LQ32K01S2A-046BLI
U2B
IS43LQ32K01S2A-046BLI
U2C
IS43LQ32K01S2A-046BLI
MEM_DQ_L0
MEM_DQ_L1
MEM_DQ_L2
MEM_DQ_L3
+1.1V_LPDDR4
1.8V
VDDQ
VDD1
VDD2
GND
R23
4K7
1%
R40
0R
1%
R42
0R
1%
R28
240R
1%
R29
240R
1%
R30
240R
1%
C113
10µF
16V
X6S
R31
160R
1%
R33
160R
1%
R32
160R
1%
R34
160R
1%
Title: TE0823 - LPDDR4
A4
Number: TE0823 3PIT1QA
Rev. 02
Date: 15.04.2026
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Filename: LPDDR4.SchDoc
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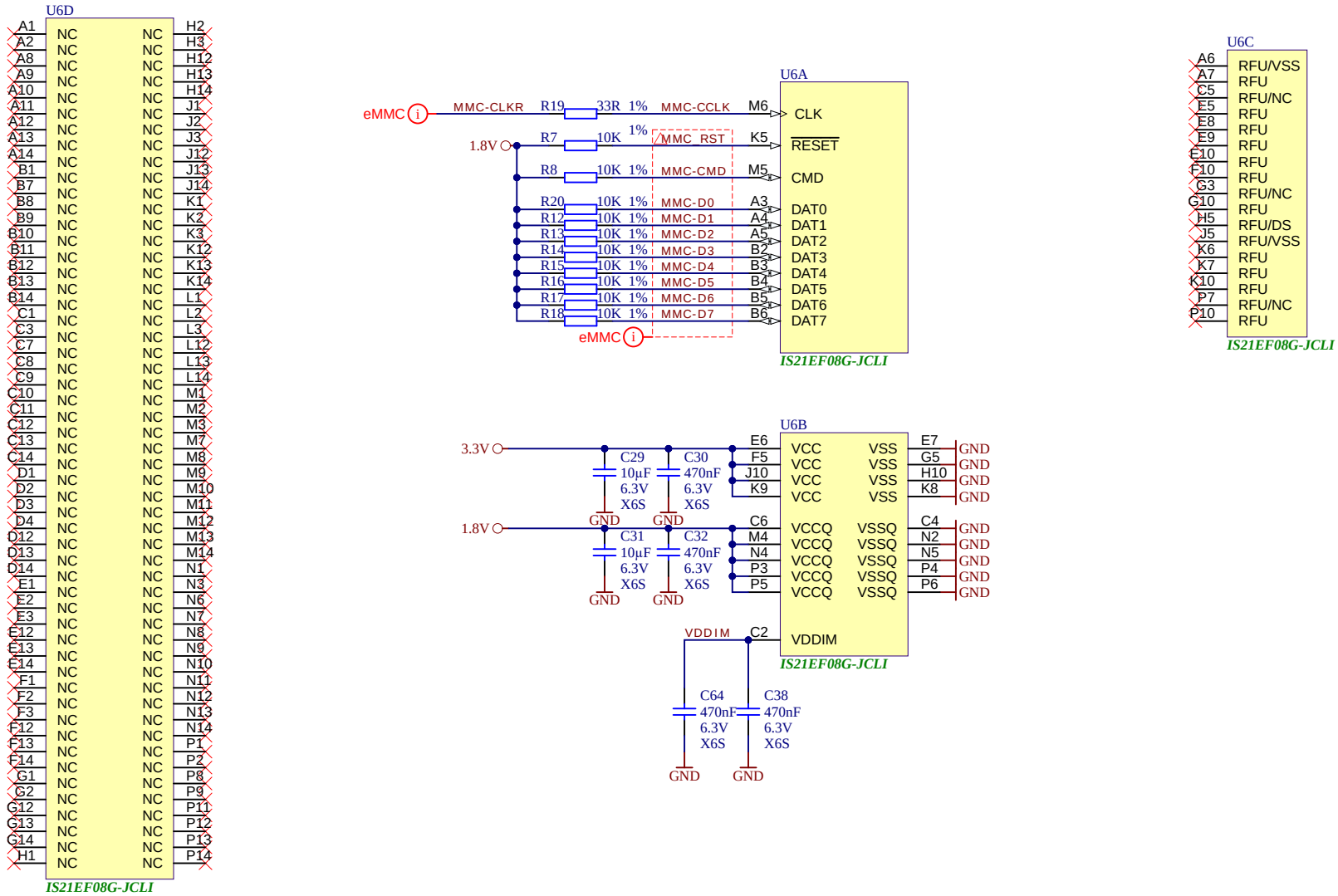

trenz electronic	Title: TE0823 - eMMC		
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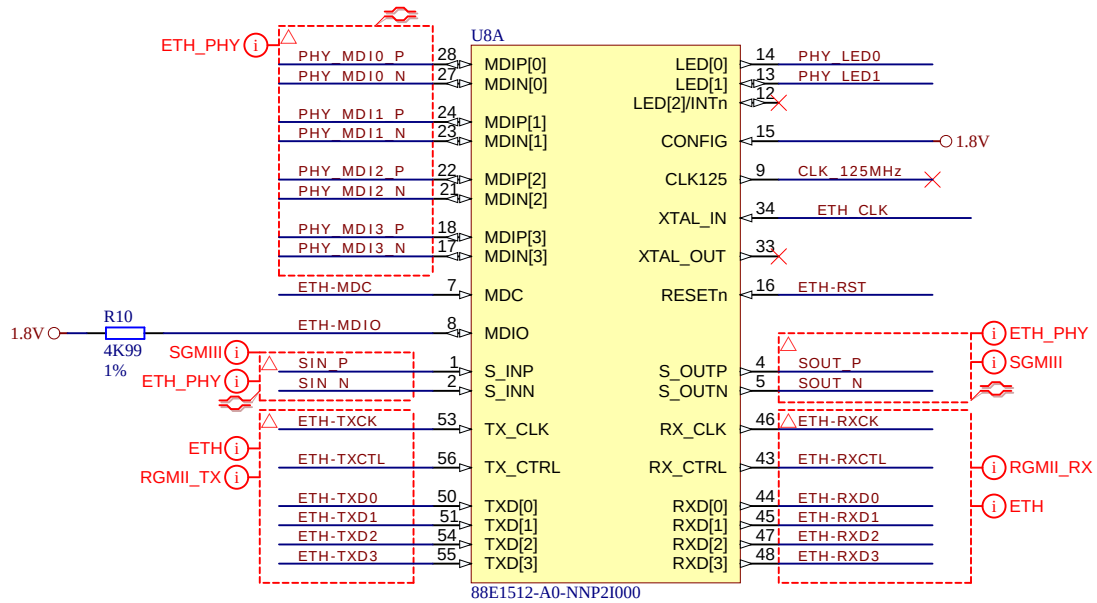
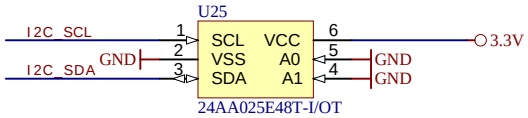
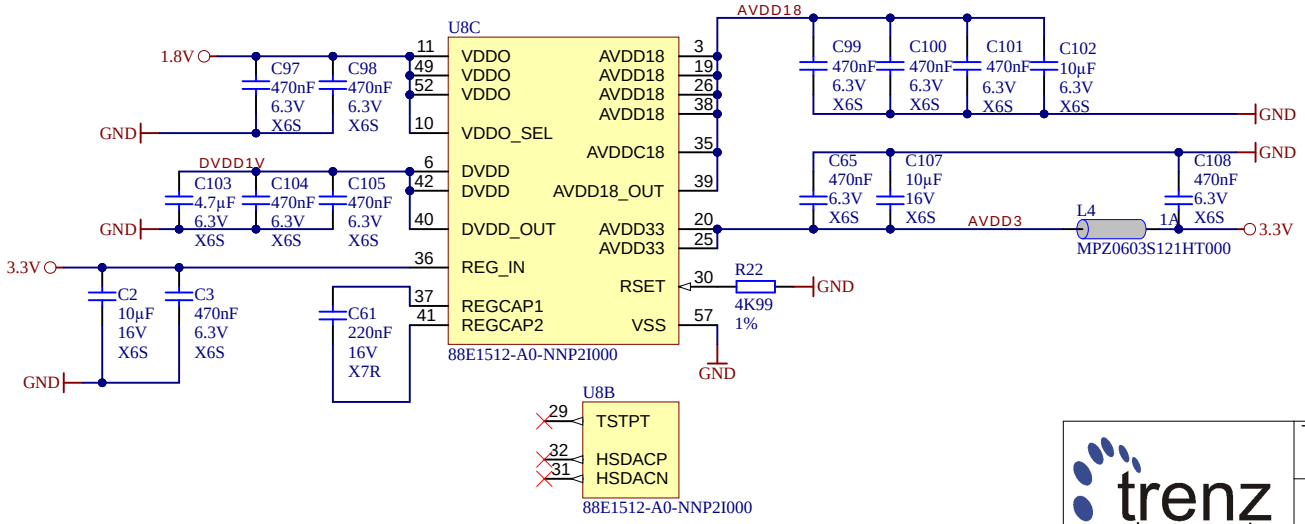
Date: 15.04.2026	Copyright: Trenz Electronic GmbH		Page 19 of 25
Filename: eMMC.SchDoc			



EEPROM for MAC



Slave address: 1010000x



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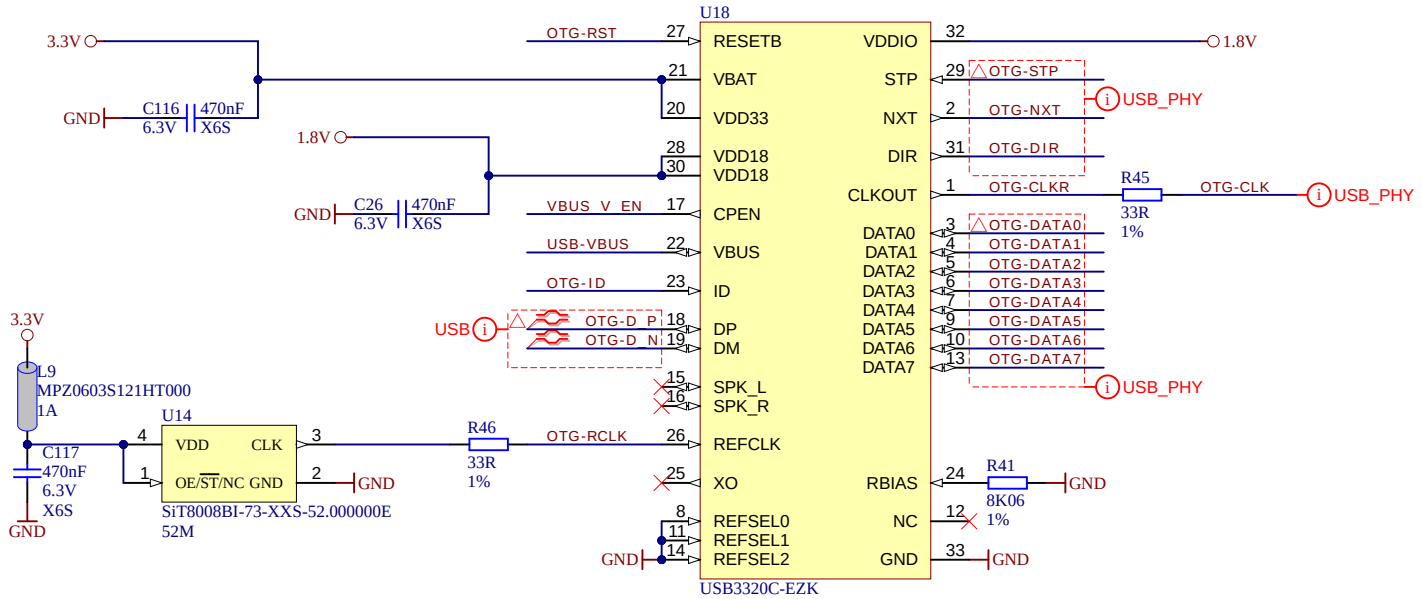
Title: TE0823 - ETH-PHY			
A4	Number: TE0823 3PIT1QA		Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH		Page 20 of 25
Filename: ETH-PHY.SchDoc			

	USB3320	USB3340
R110	0R	DNP
R112	0R	DNP
C129	4.7 µF	1 µF
C233	0.1 µF	1 µF



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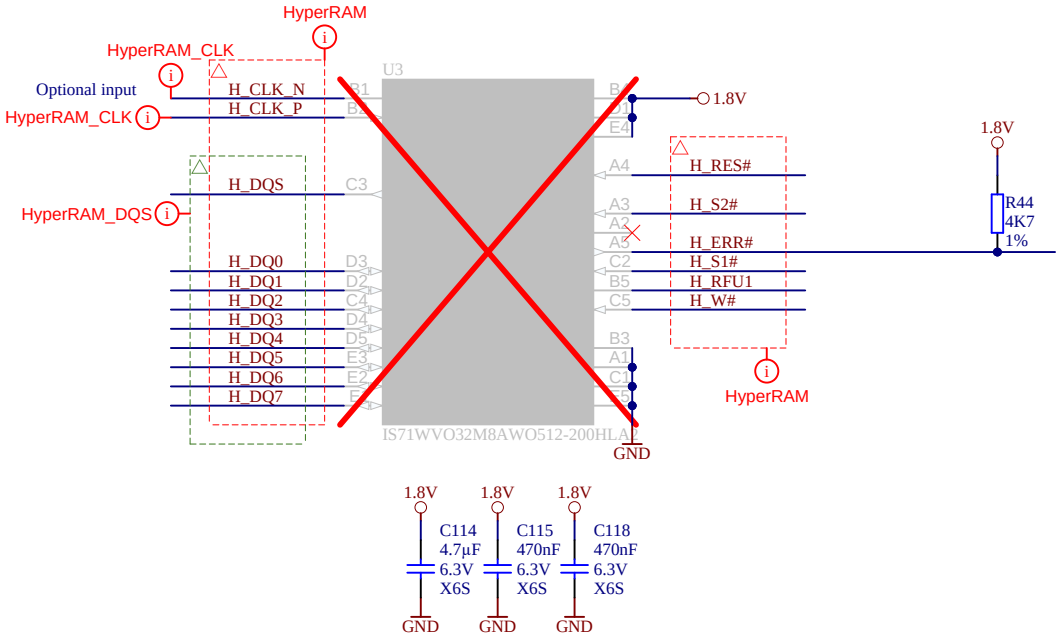
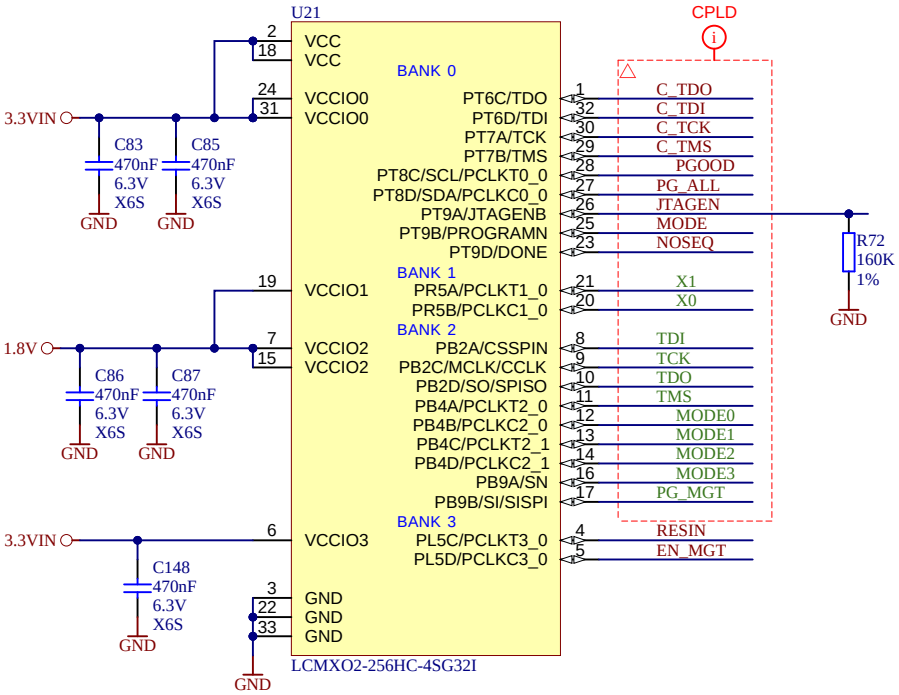
Title: TE0823 - USB-PHY		
A4	Number: TE0823 3PIT1QA	Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH	Page 21 of 25
Filename: USB-PHY.SchDoc		



Title: TE0823 - HyperRAM			
A4	Number: TE0823 3PIT1QA		Rev. 02
Date: 15.04.2026	Copyright: Trenz Electronic GmbH		Page 22 of 25
Filename: HyperRAM.SchDoc			

Special notes:

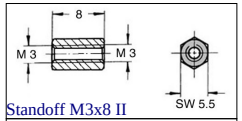


Serial
Serial
Serialnumber 6,3 x 6.3mm

PM1 FIDU-DOT - mini
PM2 FIDU-DOT - mini
PM3 FIDU-DOT - mini
PM4 FIDU-DOT - mini
PM5 FIDU-DOT - mini
PM6 FIDU-DOT - mini

Mount.Hole 3.2mm GND
Mount.Hole 3.2mm GND
Mount.Hole 3.2mm GND
Mount.Hole 3.2mm GND

Screw M3x4
Screw M3x4
Screw M3x4
Screw M3x4



Standoff M3x8 II
Standoff M3x8 II
Standoff M3x8 II
Standoff M3x8 II

Screw M3x6
Screw M3x6
Screw M3x6
Screw M3x6

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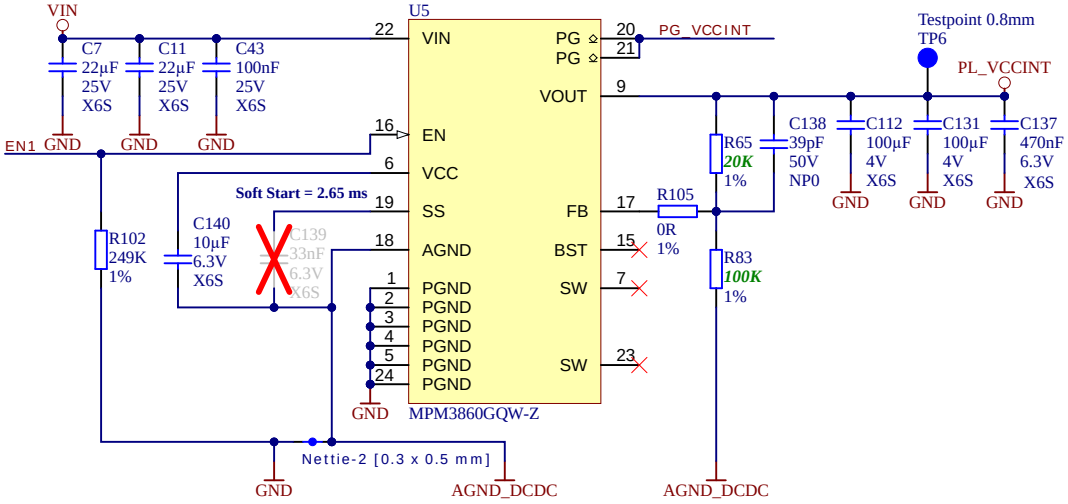
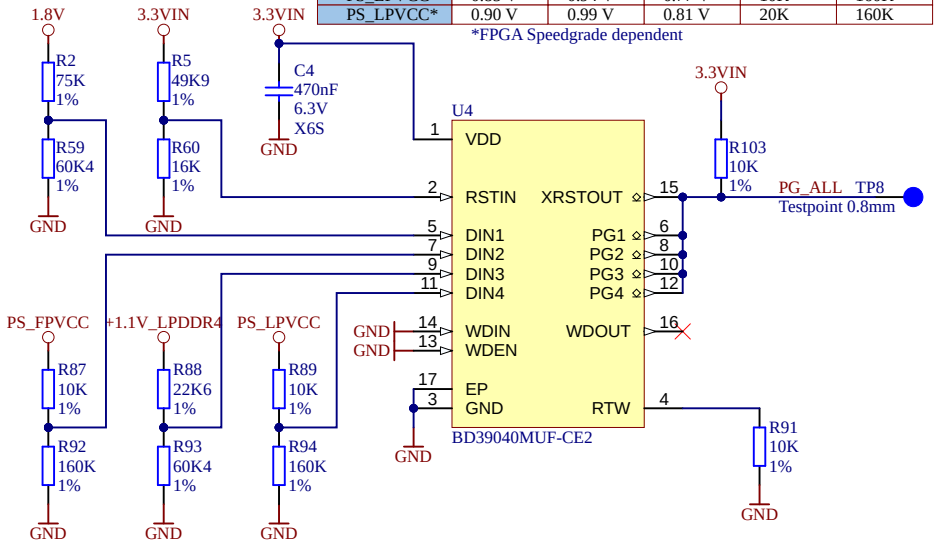
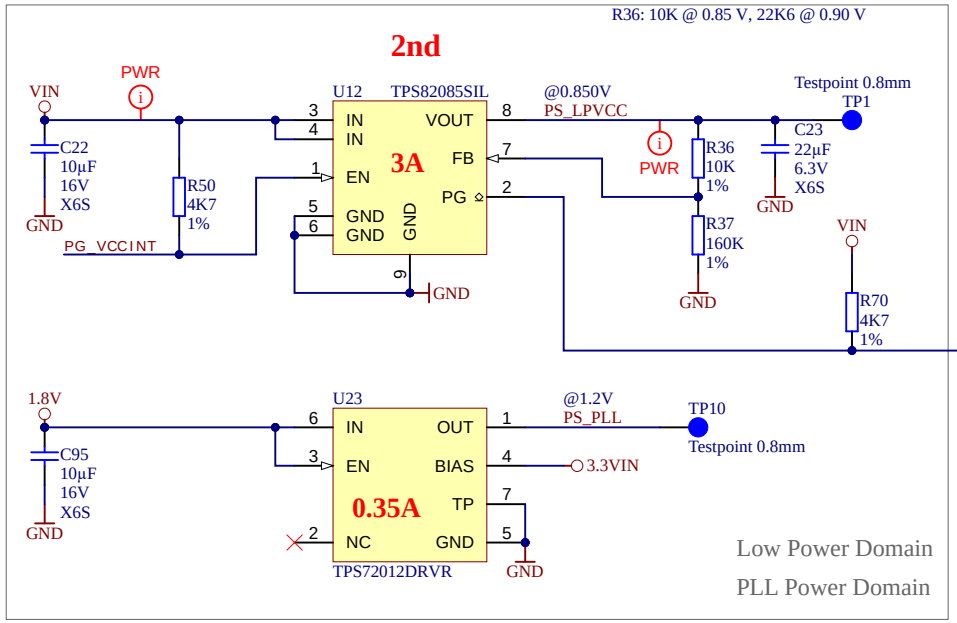
FPGA Speedgrade	Resistor values	Voltage
-1 / -2	R65 - 24K9, R83 - 60K4	PL_VCCINT = 0.847 V
-2E	R65 - 24K9, R83 - 49K9	PL_VCCINT = 0.899 V
-1LI / 2LE	R65 - 20K, R83 - 100K	PL_VCCINT = 0.720 V

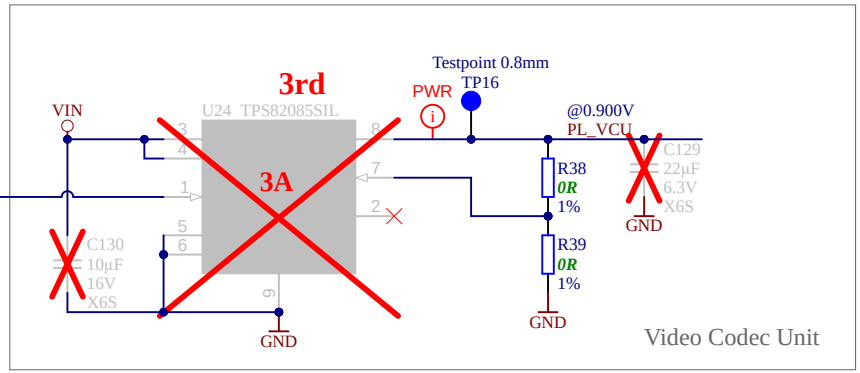
Net	Nominal	OV	UV	R_U	R_L
3.3VIN	3.3 V	3.63 V	2.97 V	49K9	16K
1.8V	1.8 V	1.98 V	1.62 V	75K	60K4
PS_FPVCC*	0.85 V	0.94 V	0.77 V	10K	160K
PS_FPVCC*	0.90 V	0.99 V	0.81 V	20K	160K
+1.1V_LPDDR4	1.1 V	1.21 V	0.99 V	22K6	60K4
PS_LPVCC*	0.85 V	0.94 V	0.77 V	10K	160K
PS_LPVCC*	0.90 V	0.99 V	0.81 V	20K	160K

*FPGA Speedgrade dependent









PG_PSLP_PL

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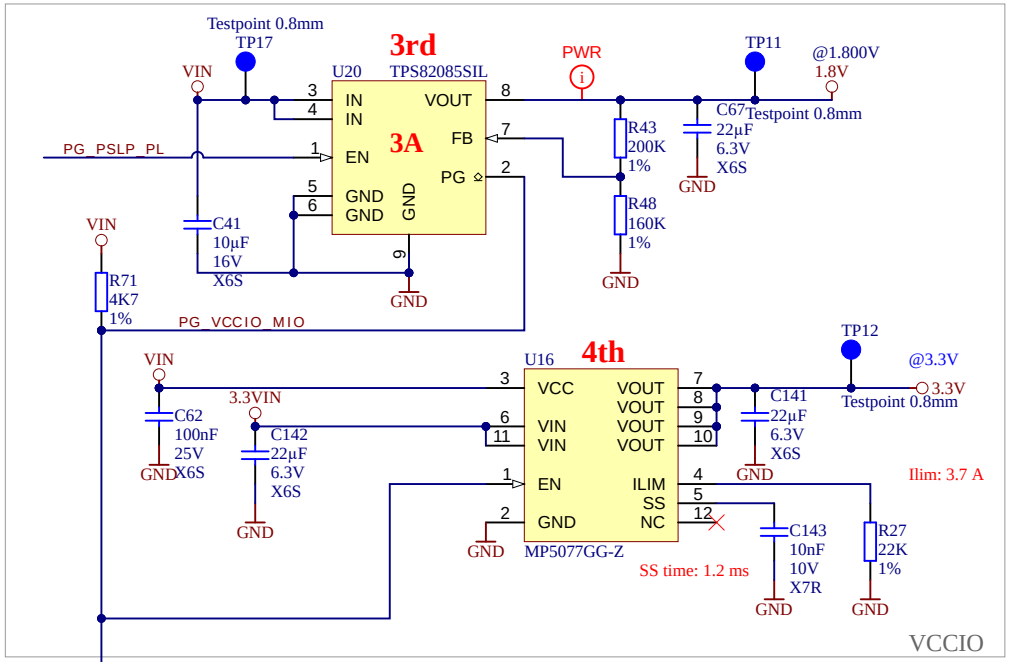
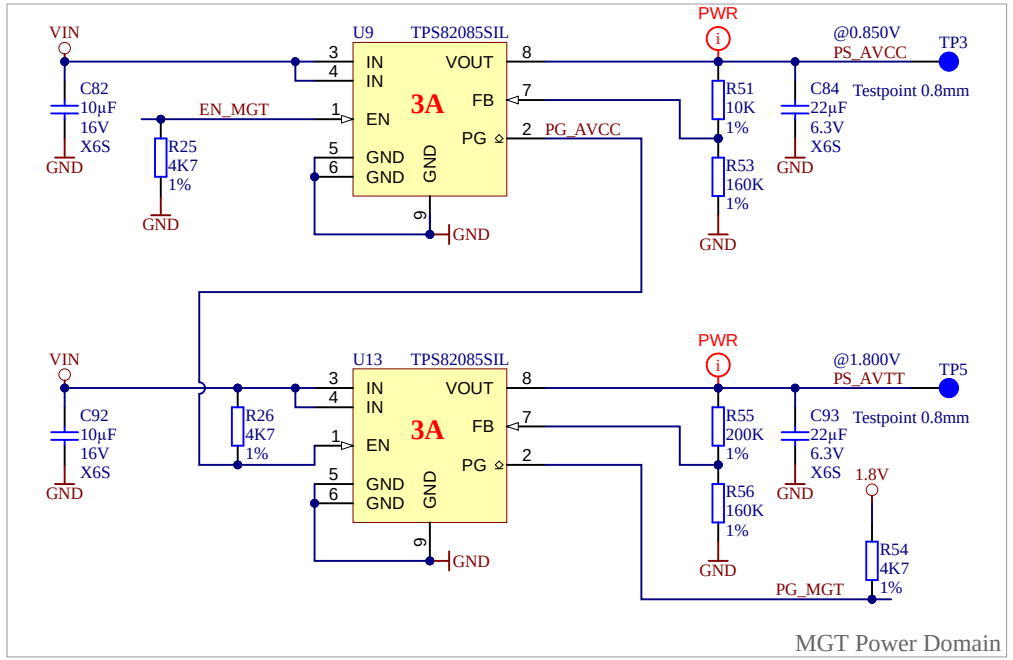
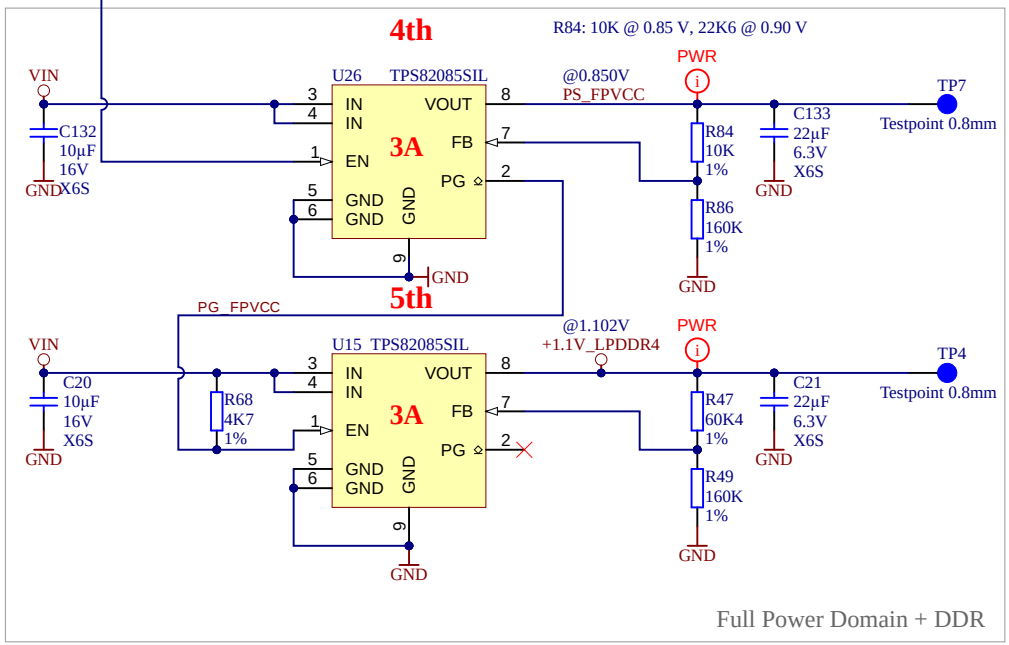
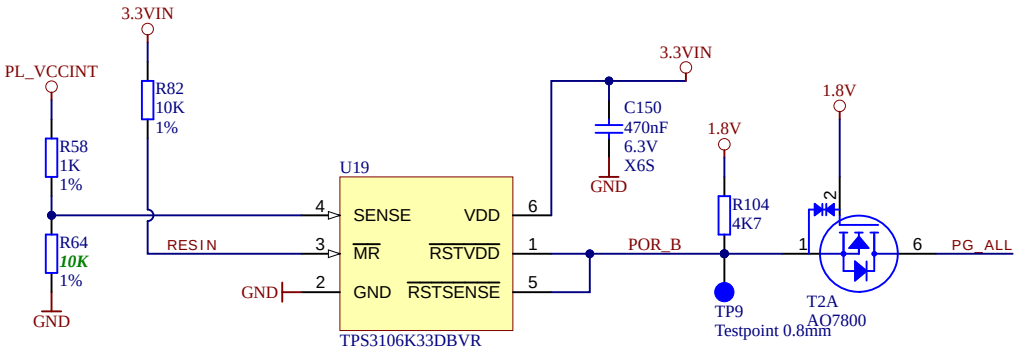






PL_VCCINT	R58	R64
0.9 V	1K	2K32
0.85 V	1K	3K3
0.72 V	1K	10K



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