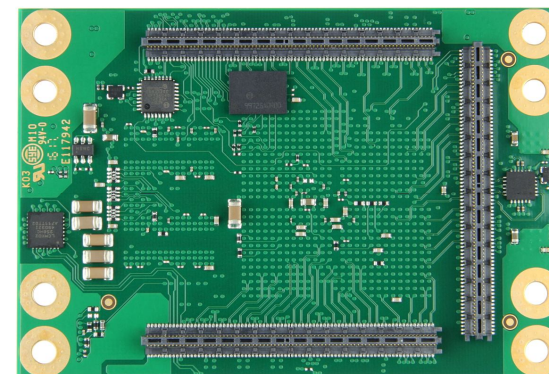
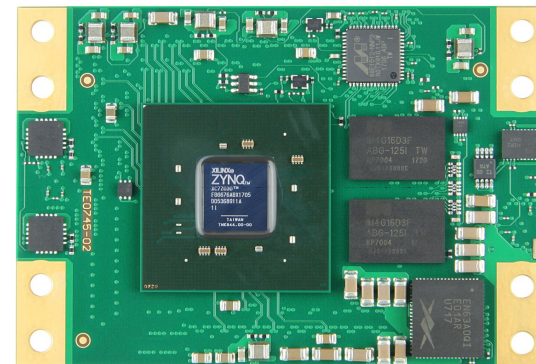
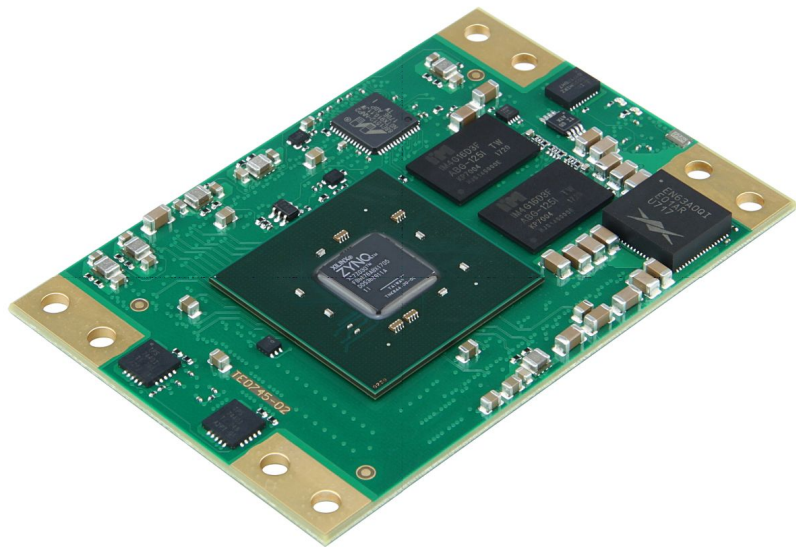




Regarding the usage of our schematics and alike documentation for Trenz module TE0745.
Project is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation,
even if the design is just adapted or modified.
TE0745 is protected under such right and in case of plagiarism we will have to do anything necessary in order to protect our assets.
Schematics and other handouts serve for informational purposes only!

Design drawn by: ED			Title: TE0745 - Legal Notices Modules		
Checked by: MR			A4	Number: TE0745 91C31-A	Rev. 03
Assembly variant: 91C31-A					
Created by: MR			Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 1 of 26
Modified by: MR			Filename: Legal Notices Modules.SchDoc		
Modified at: 2021-02-19					

1

2

3

4

A

B

C

D

REV	Description	
-01	Initial revision	
-02	1. MAC EEPROM Address patch fixed on PCB. 2. Lib components update.	
-03	1. Removed serial number S/N. Connected U2 pin 20 to net "BOOTMODE". 2. Changed DCDC (U4) from EN63A0Q1 to MP8869SGL-Z and adapted corresponding circuit. Added assembly option to connect U4 to I2C bus via R91/R101 (I2C address 0x61). 3. Increase rated voltage for capacitors C108, C142, C147, C148, and C149 from 6.3 V to 25 V. 4. Added diode D3 between signal "RST_IN_N" and "PS_1.8V". 5. Added resistor R106 between CPLD U2 pin 25 and signal "RST_IN_N". 6. Added option for diode D4 population between signal "PROG_B" and "INIT". 7. Changed clock U33 from SiT8008AI-73-XXS-52.000000E to SiT8008BI-73-XXS-52.000000E. 8. Added testpoints TP1...43. 9. Added voltage monitors U20 and U22 with according circuits. 10. Added pull-up resistor R73 for net "PWR_PL_OK". 11. Added resistor R103 to optionally connect U31 PG to signal "PWR_PS_OK" or voltage monitor U20. 12. Changed supply voltage for VCCPLL from PL_1.8V to PS_1.8V. 13. Tied DXP/DXN (U1 pins R14 and R13) directly to GND. 14. Added soft start capacitor options C62 for U8 and C78 for U11. 15. Added decoupling capacitors - C126, C127 for U16, - C129 for U14, - C130 for U19, - C131 for U18, - C144 for U8, - C150 for U11, - C151/C152 for U6, - C153/C154 for U17, - C155/C156 for U32, and - C128 and C157 for U1. 16. Changed voltage rating from 6.3 V to 10 V for 100 uF capacitors. 17. Changed voltage rating from 6.3 V to 16 V for 10 uF capacitors. 18. Changed voltage rating from 6.3 V to 10 V and size from 0402 to 0603 for capacitors C21 and C29. 19. Changed size from 0201 to 0402 for 1 kOhm resistors R104 and R105. 20. Added 100 Ohm termination resistors R109 and R110 for MGT_REF_CLKs. 21. Changed VCCADC_0 supply from VCCIO_0 to PL_1.8V. 22. Added UKCA logo. 23. Changed voltage divider R21 and R22 to set threshold to 0.936 V. 24. Changed DDR clock termination resistor R9 placement position. 25. Changed fiducials to standard fiducial type. 26. Update revision history. 27. Update schematic template. 28. Updated power overview. 29. Removed page "ZYNQ.SchDoc" and added pages Legal Notices, System Overview.	ED

trenz

electronic

Title: TE0745 - Revision Changes

A4

Number: TE0745
91C31-A

Rev. 03

Date: 14.03.2024

Copyright: Trenz Electronic GmbH

Page 2 of 26

Filename: Revision Changes.SchDoc

1

2

3

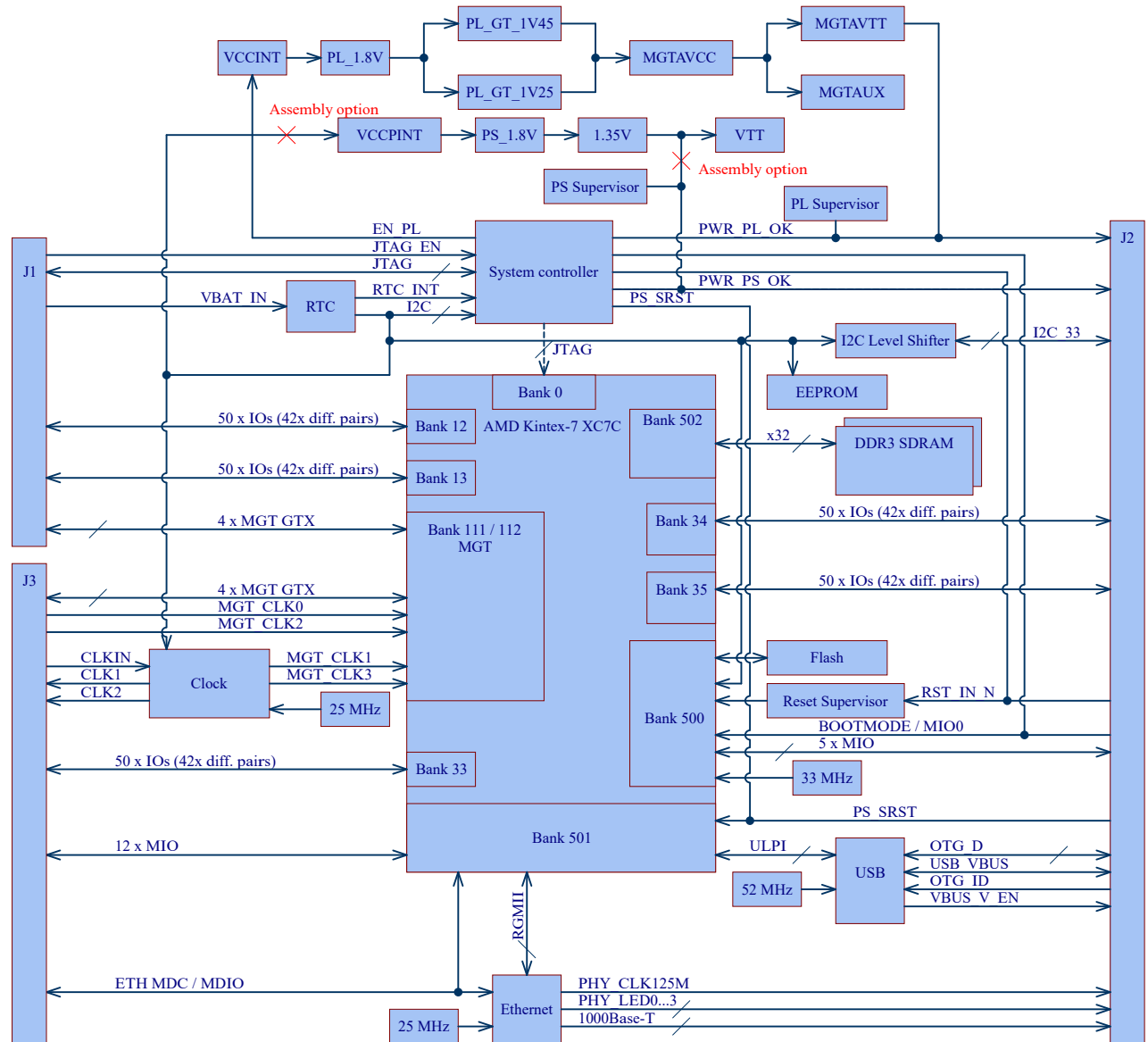
4

I2C Address:

Device	I2C ADDR	Note
SoC U1G	-	I2C Master
CPLD U2	0x30	Firmware dependent
DCDC U4	0x61	Assembly option
PLL U16	0x70	-
RTC U24	0x6F	RTC register
RTC U24	0x57	User SRAM
EEPROM U23	0x53	-

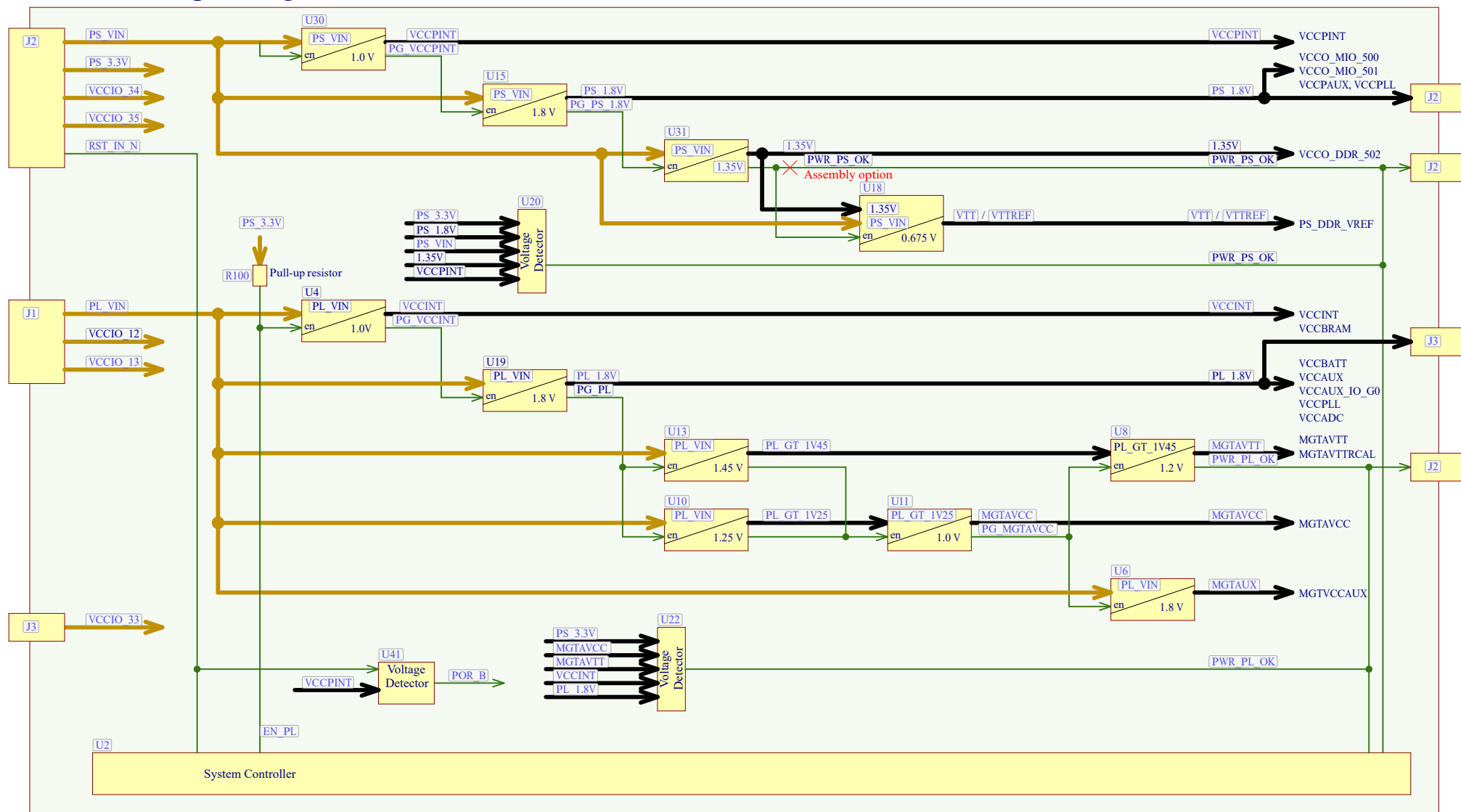
Supported Voltage Ranges:

Power Rail	Direction	Range	Tolerance	Description	Note
PS_3.3V	IN	3.3 V	+/- 5 %	Micromodule Power	-
PS_VIN	IN	3.3 V	+/- 5 %	Micromodule Power	-
PL_VIN	IN	3.2 V - 4.5 V	-	Micromodule Power	within given range
VCCIO_12	IN	1.2 V - 3.3 V	+/- 3 %	HR IO Bank 12	-
VCCIO_13	IN	1.2 V - 3.3 V	+/- 3 %	HR IO Bank 13	-
VCCIO_33	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 33	-
VCCIO_34	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 34	-
VCCIO_35	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 35	-
VBAT_IN	IN	1.8 V - 3.3 V	-	RTC	within given range
PS_1.8V	OUT	1.8 V	+/- 3 %	Power for Carrier	-
PL_1.8V	OUT	1.8 V	+/- 3 %	Power for Carrier	-



Title: TE0745 - System Overview		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 17.06.2025	Copyright: Trenz Electronic GmbH	Page 3 of 26
Filename: Overview.SchDoc		

Power-on sequencing:



Title:	TE0745 - Power overview
--------	-------------------------

A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 4 of 4
Filename: PowerOverview.SchDoc		

Special notes:

UKCA

UKCA Logo on Top Overlay

UKCA-TOPOVERLAY

CE

CE Logo on Top Overlay

CE-TOPOVERLAY

LOGO1

TE Logo PRINT Layer

LOGO PRINT

FIDU-DOT - small FIDU-DOT - small



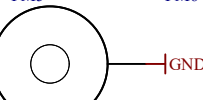
PM1 FIDU-DOT - small PM2 FIDU-DOT - small



PM3 FIDU-DOT - small PM4 FIDU-DOT - small



PM5 PM6

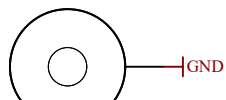
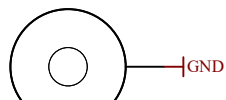
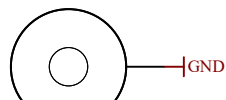
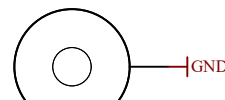


Mount.Hole 3.2mm für Unterlegscheibe

Mount.Hole 3.2mm für Unterlegscheibe

Mount.Hole 3.2mm für Unterlegscheibe

Mount.Hole 3.2mm für Unterlegscheibe

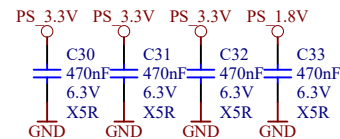


Mount.Hole 3.2mm für Unterlegscheibe

Mount.Hole 3.2mm für Unterlegscheibe

Mount.Hole 3.2mm für Unterlegscheibe

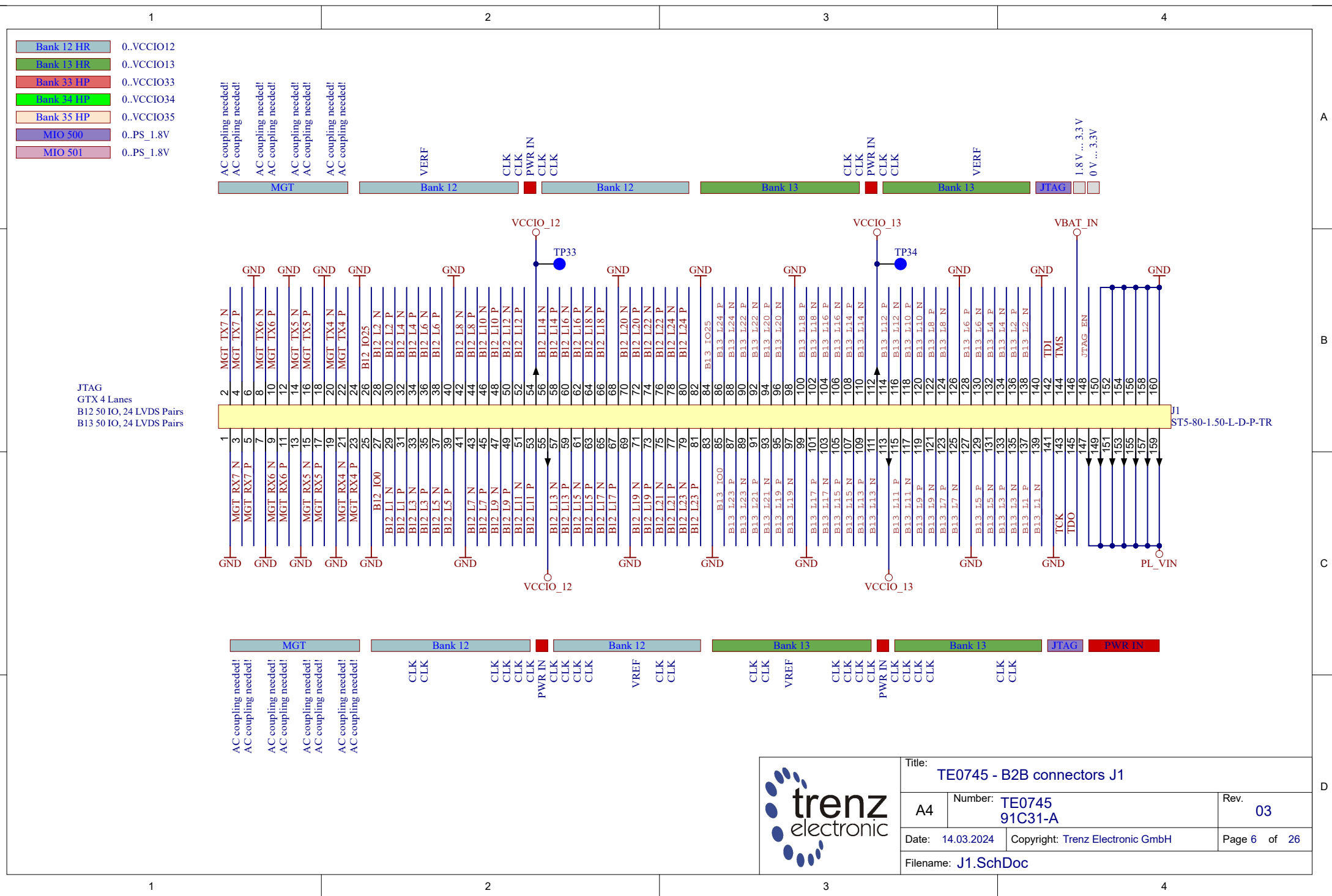
Mount.Hole 3.2mm für Unterlegscheibe

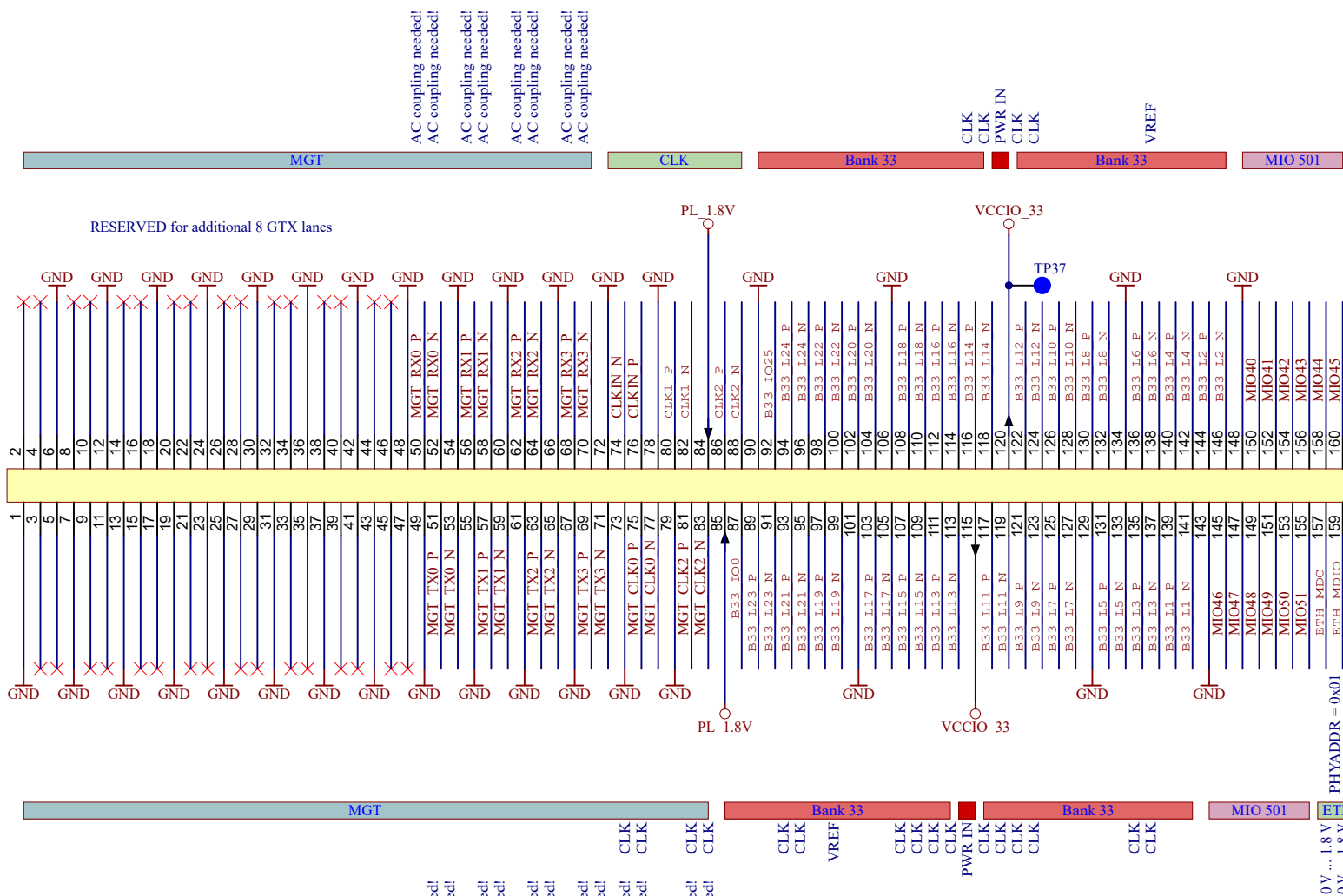


Serial
Serial
Serialnumber 6,3 x 6.3mm



Title: TE0745 - System Controller		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 5 of 26
Filename: TE0745.SchDoc		

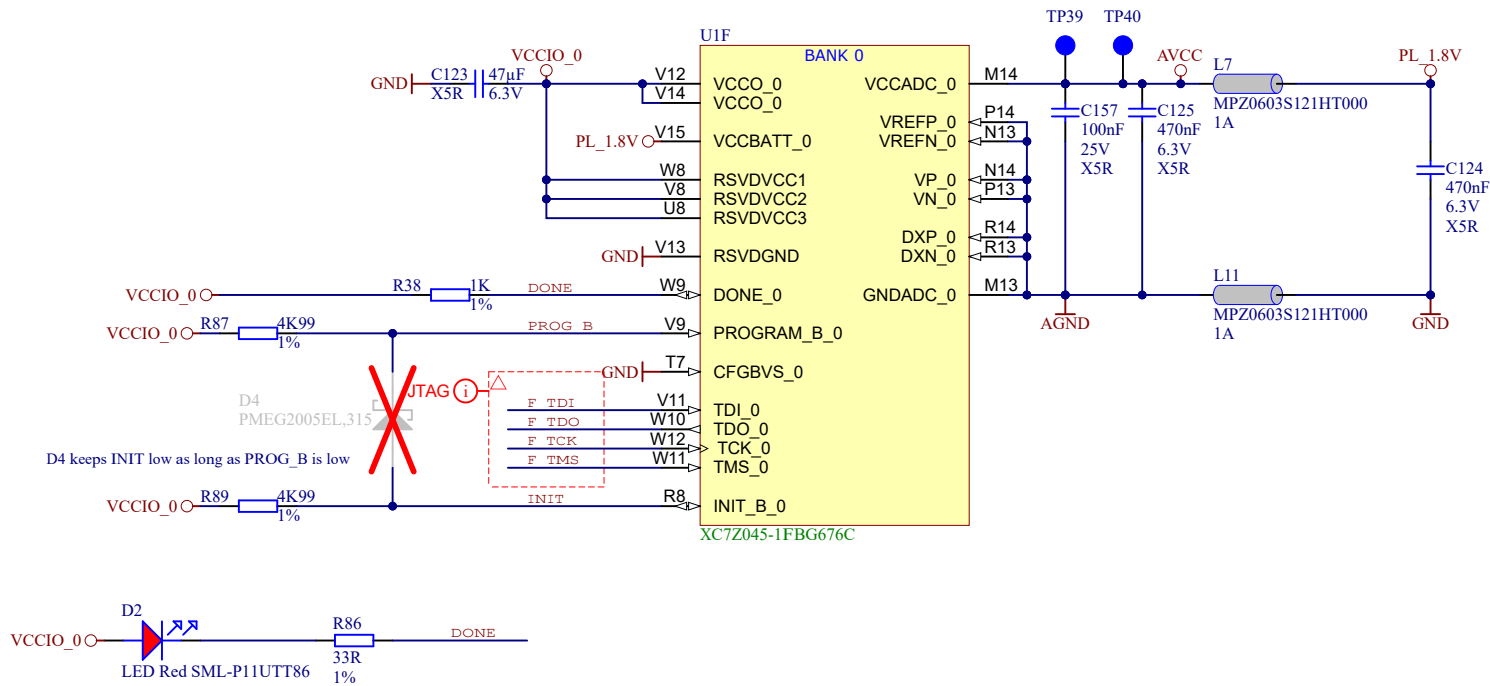
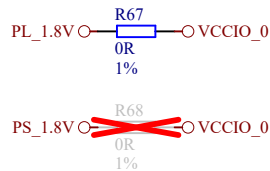




J3
ST5-80-1.50-L-D-P-TR



Title: TE0745 - B2B connectors J3		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 8 of 26
Filename: J3.SchDoc		

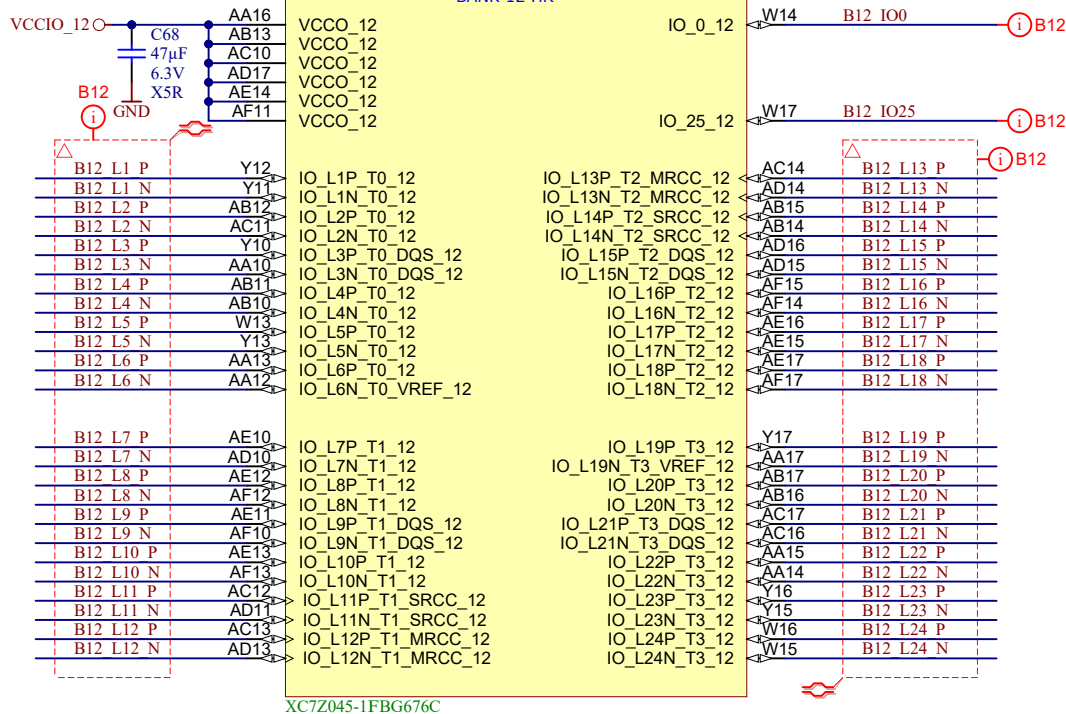


	Title: TE0745 - Zynq_MISC		
	A4	Number: TE0745 91C31-A	Rev. 03
	Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 9 of 26
	Filename: ZYNQ_MISC.SchDoc		

HR
1.2 V/1.35 V/1.5 V/1.8 V/2.5 V/3.3 V

U1A

BANK 12 HR

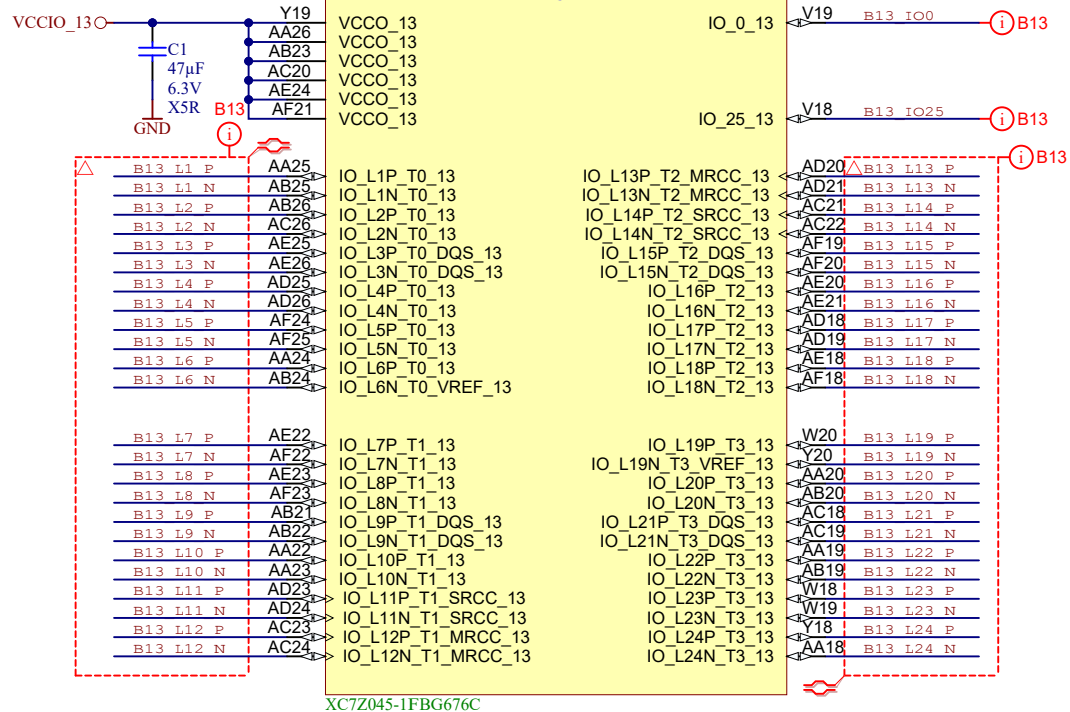


Title: TE0745 - Zynq_B12		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 10 of 26
Filename: B12.SchDoc		

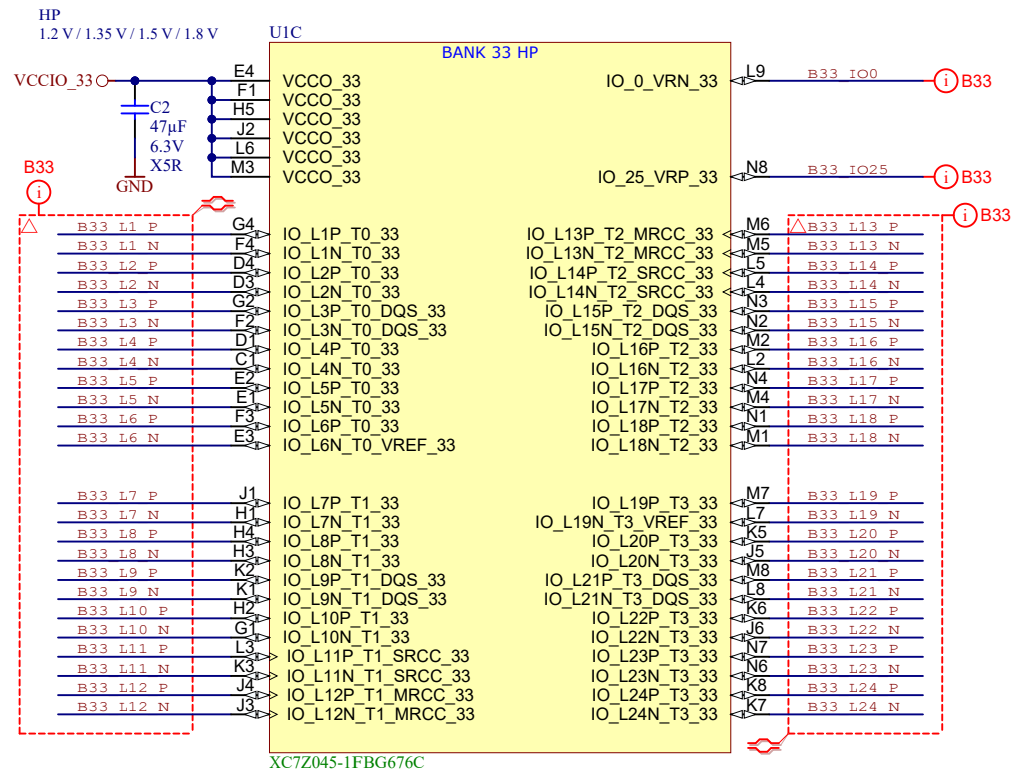
HR
1.2V/1.35V/1.5V/1.8V/2.5V/3.3V

U1B

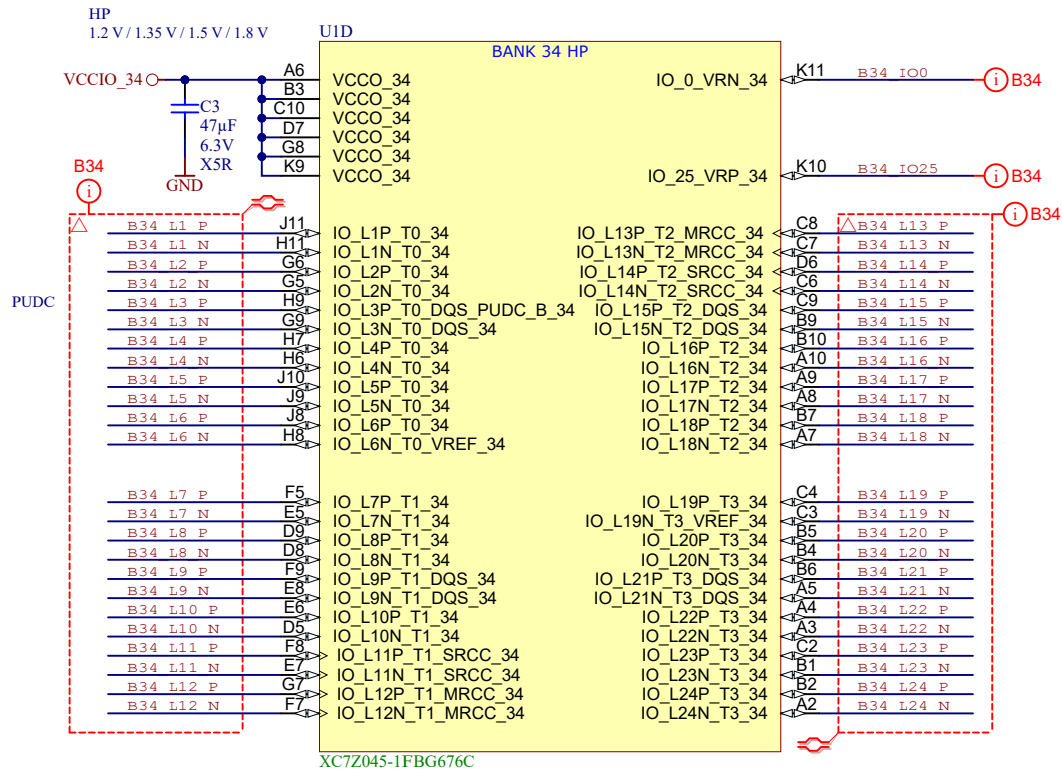
BANK 13 HR



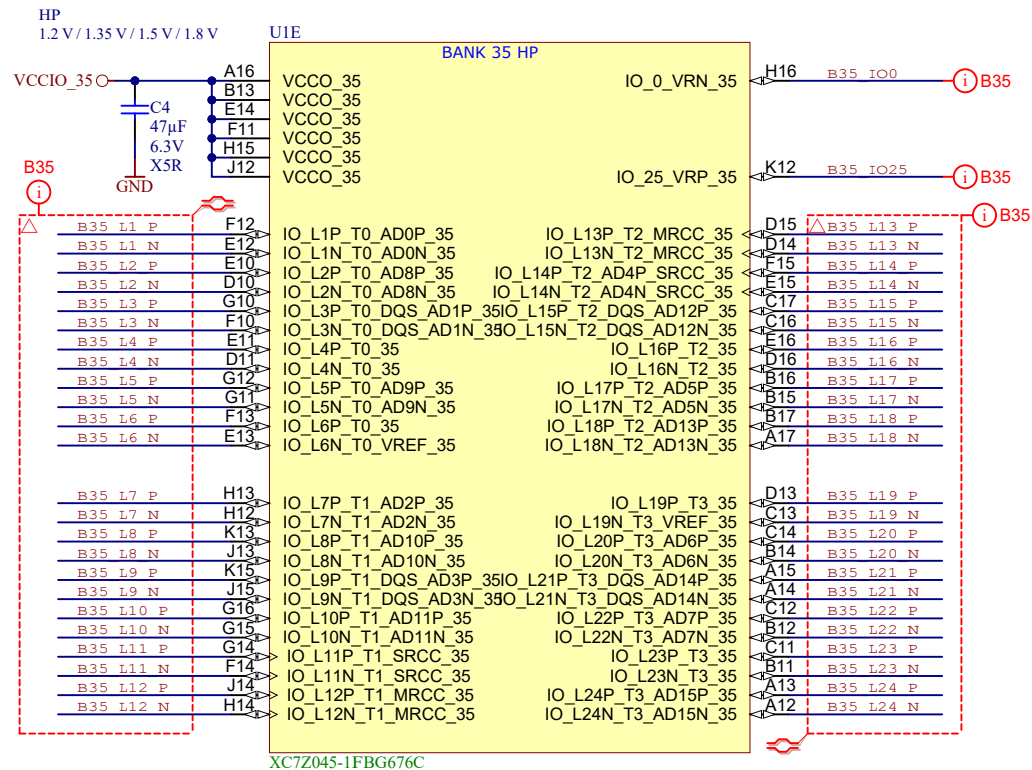
Title: TE0745 - Zynq_B13		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 11 of 26
Filename: B13.SchDoc		



Title: TE0745 - Zynq_B33		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 12 of 26
Filename: B33.SchDoc		



Title: TE0745 - Zynq_B34		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 13 of 26
Filename: B34.SchDoc		



Title: TE0745 - Zynq_B35			
A4	Number: TE0745 91C31-A		Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH		Page 14 of 26
Filename: B35.SchDoc			

1

2

3

4

A

A

B

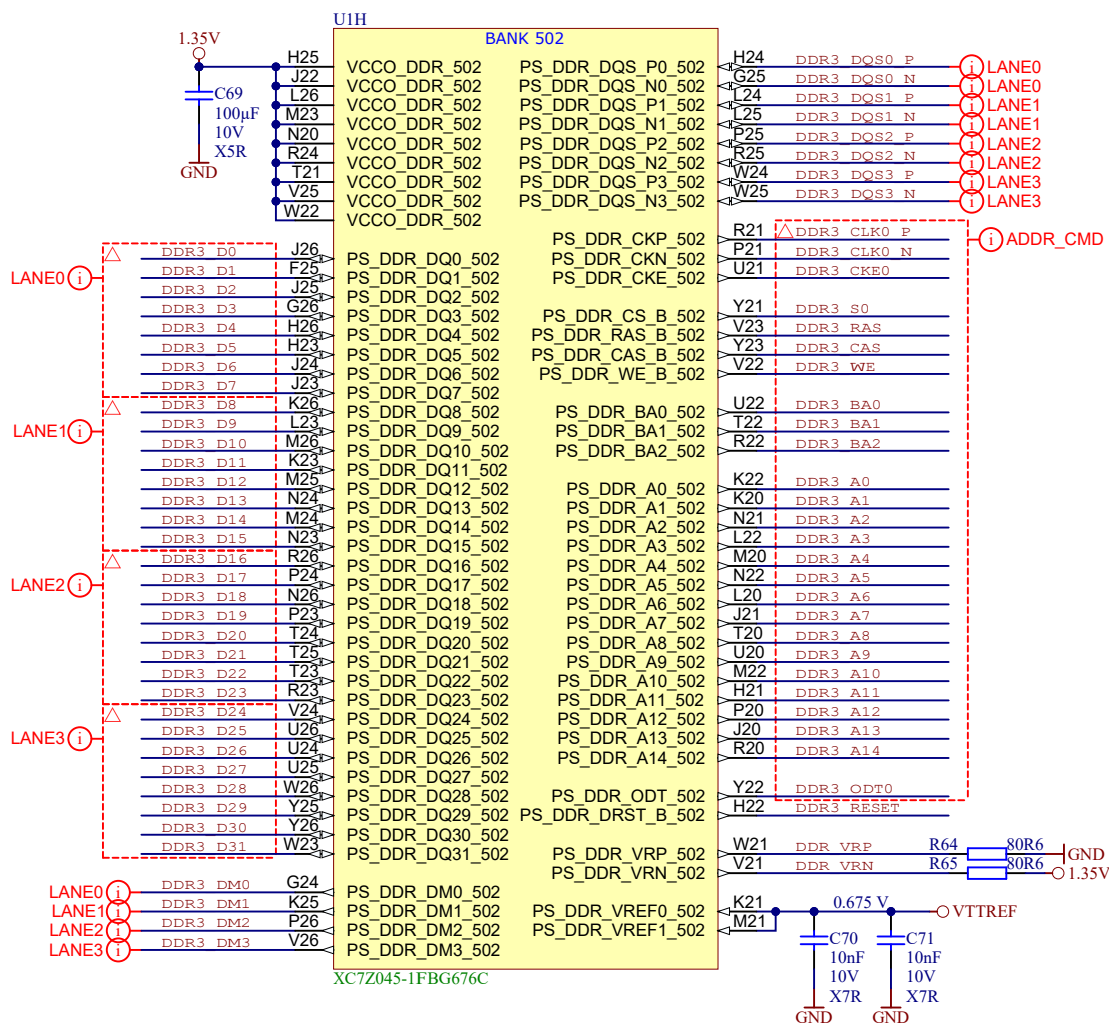
B

C

C

D

D



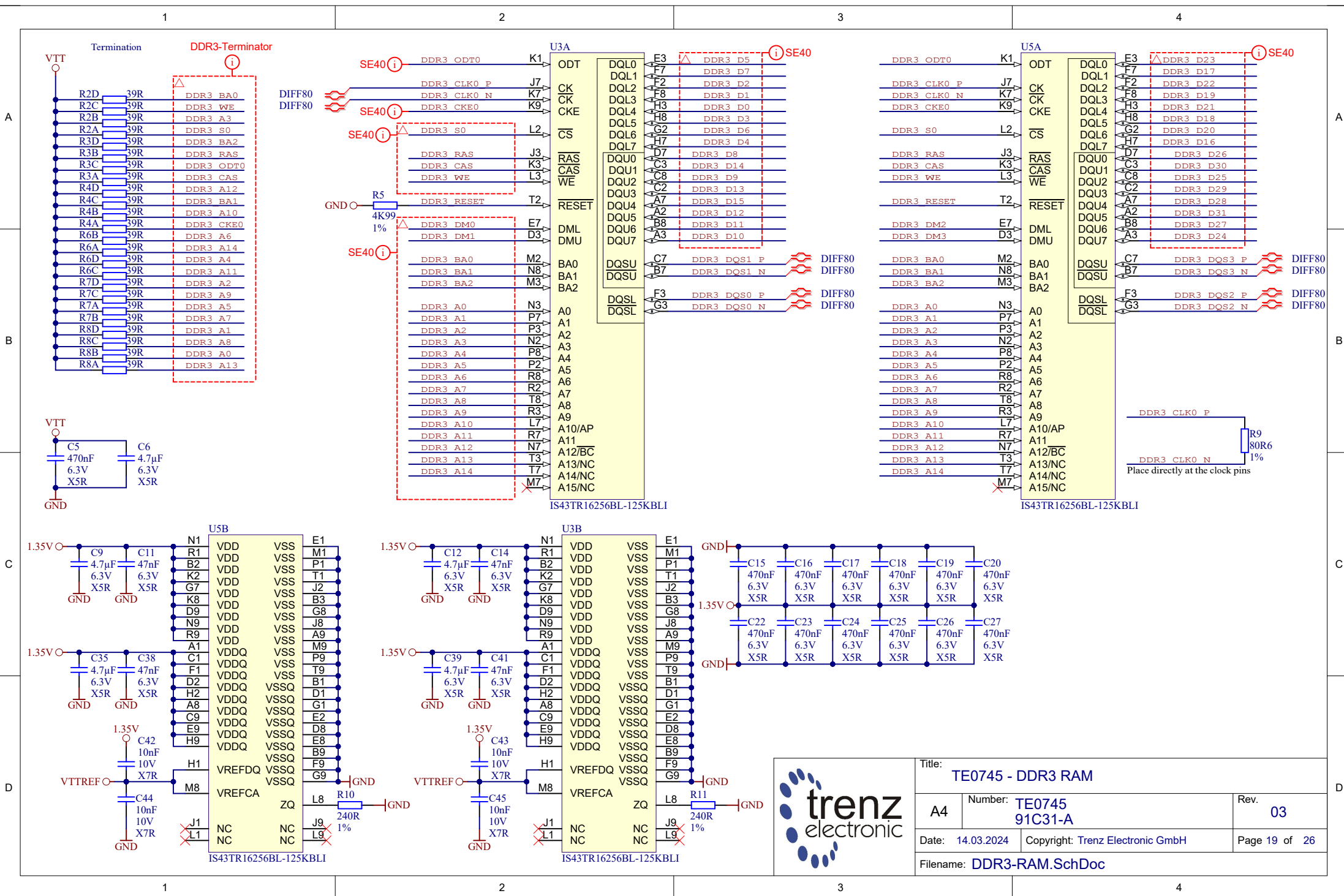
Title: TE0745 - Zynq_PS_DDR		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 17 of 26
Filename: PS-DDR.SchDoc		

1

2

3

4

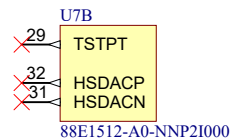
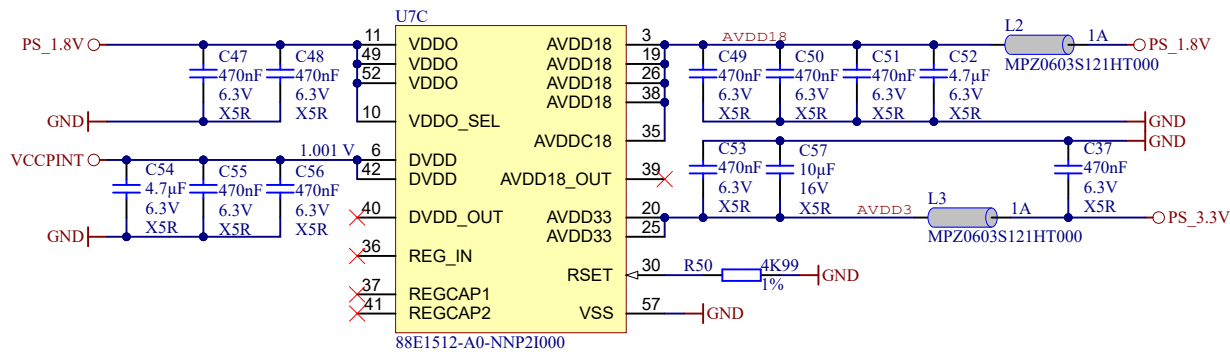
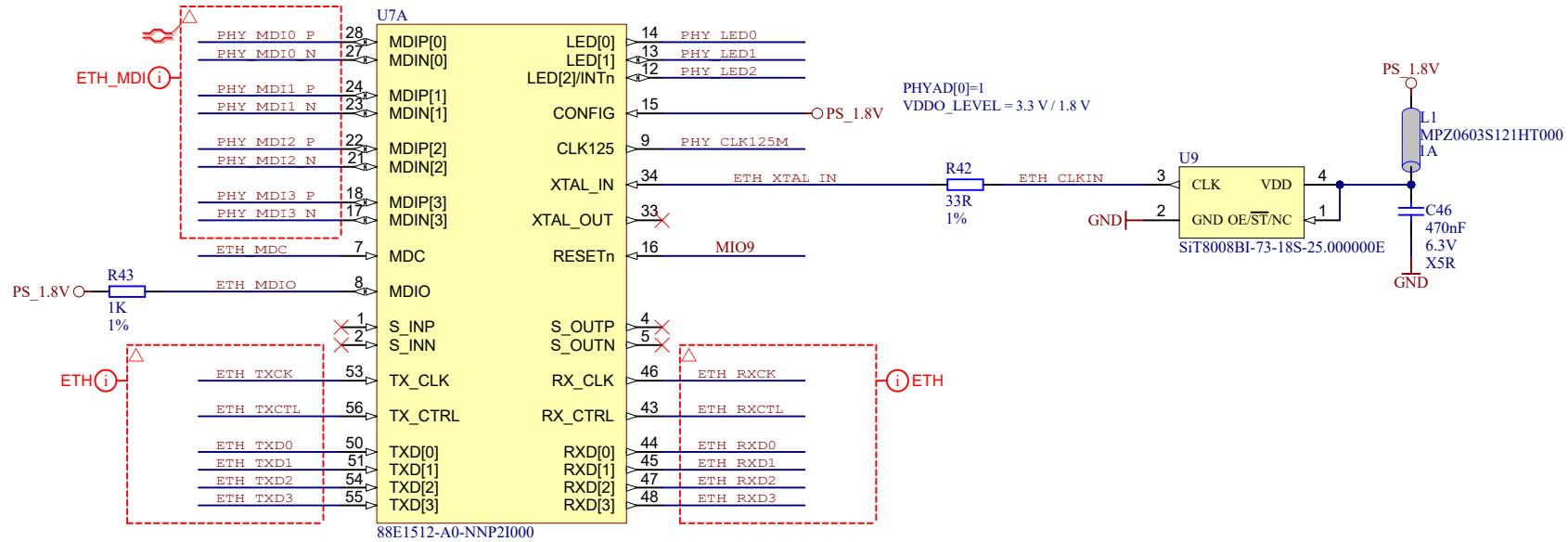


1

2

3

4



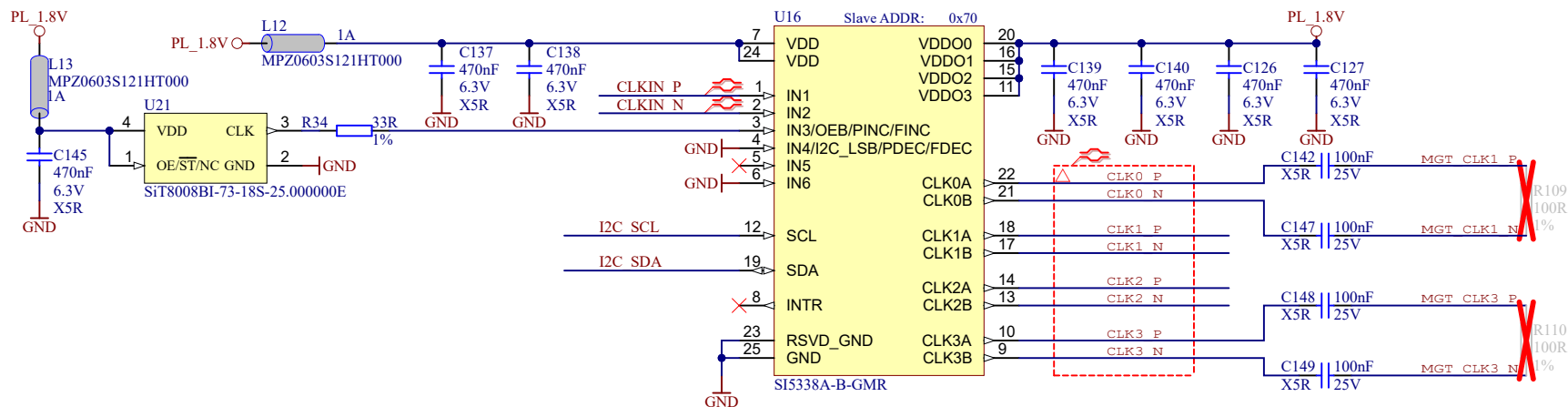
Title: TE0745 - ETH_PHY		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 21 of 26
Filename: ETH-PHY.SchDoc		

1

2

3

4



Datasheet Si5338:

IN1/IN2

These pins are used as the main differential clock input or as the XTAL input. See "3.2. Input Stage" on page 19, Figure 3 and Figure 4, for connection details. Clock inputs to these pins must be ac-coupled. Keep the traces from pins 1,2 to the crystal as short as possible and keep other signals and radiating sources away from the crystal.
When not in use, leave IN1 unconnected and IN2 connected to GND.



Title: TE0745 - CLK		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 22 of 26
Filename: CLK.SchDoc		

1

2

3

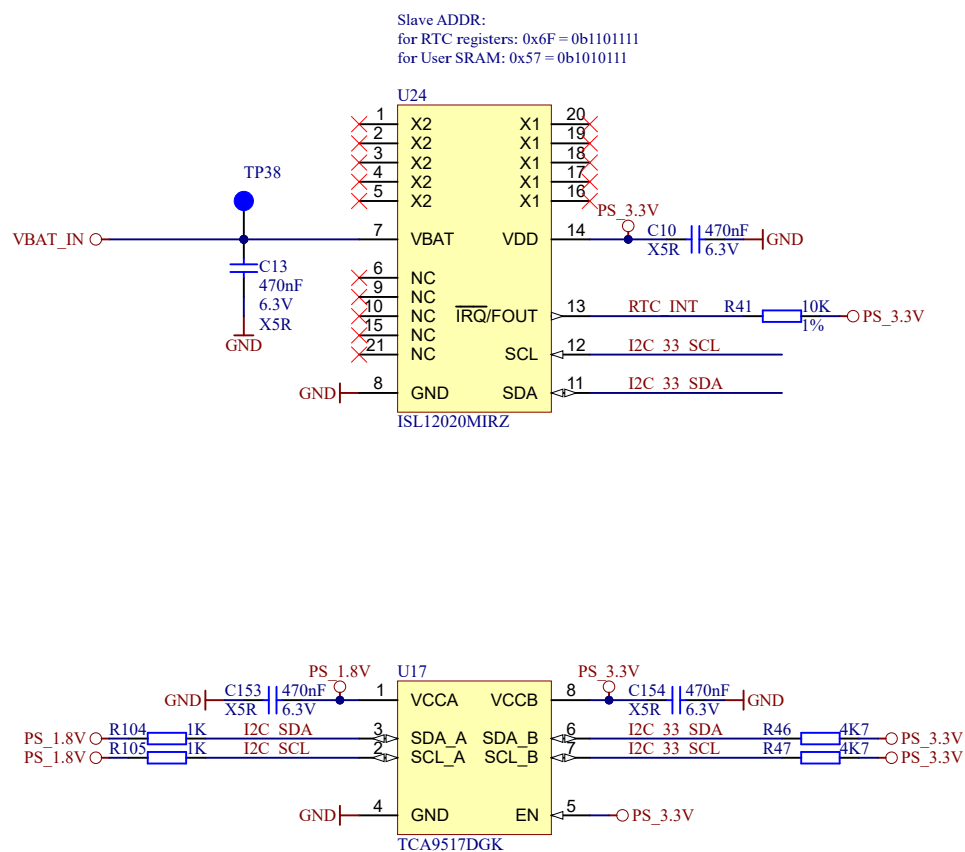
4

A

B

C

D



Title: TE0745 - RTC		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 17.06.2025	Copyright: Trenz Electronic GmbH	Page 23 of 26
Filename: SENSOR-RTC.SchDoc		

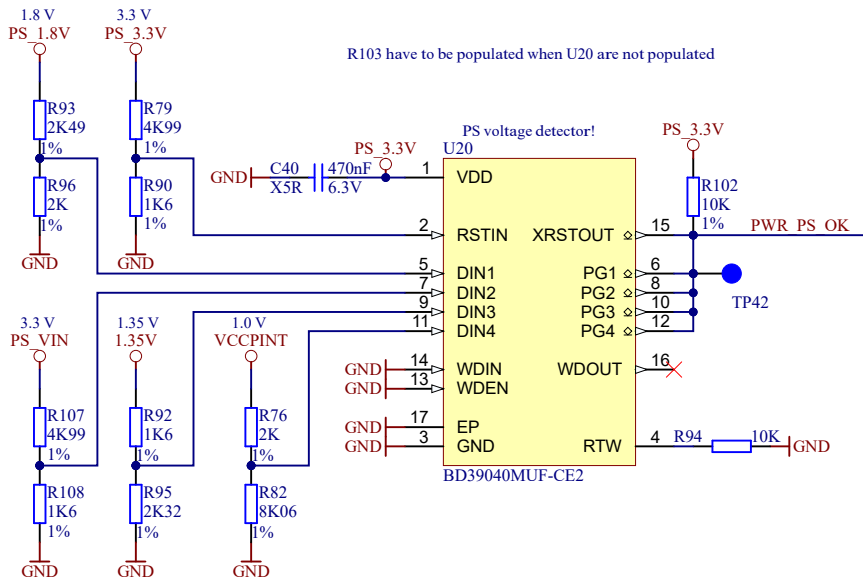
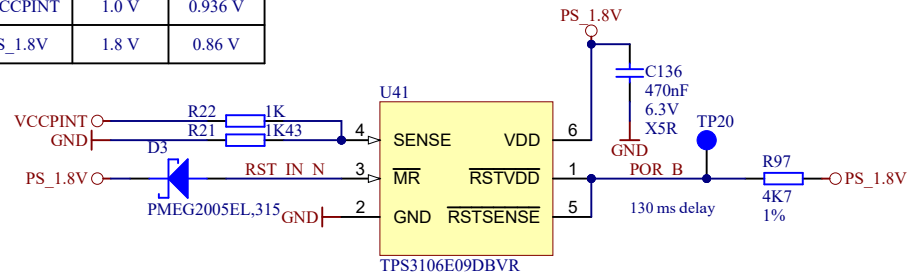
1

2

3

4

Net Name	Voltage Rail	Low Detect
VCCPINT	1.0 V	0.936 V
PS_1.8V	1.8 V	0.86 V

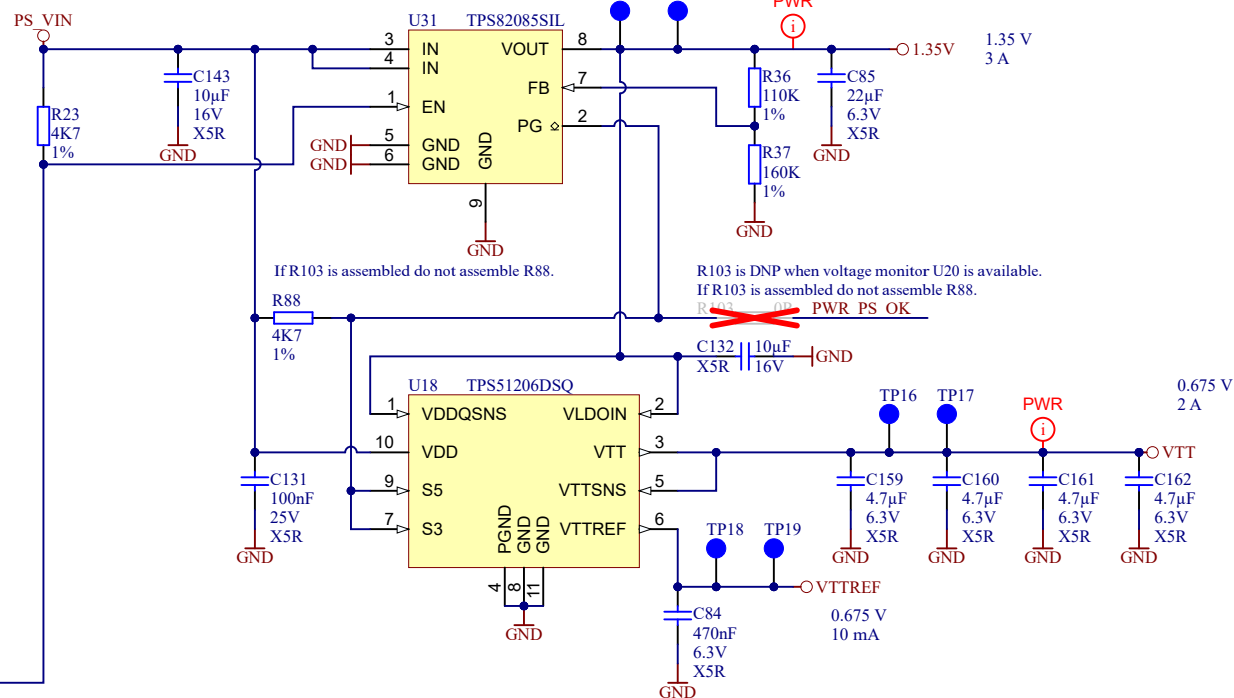
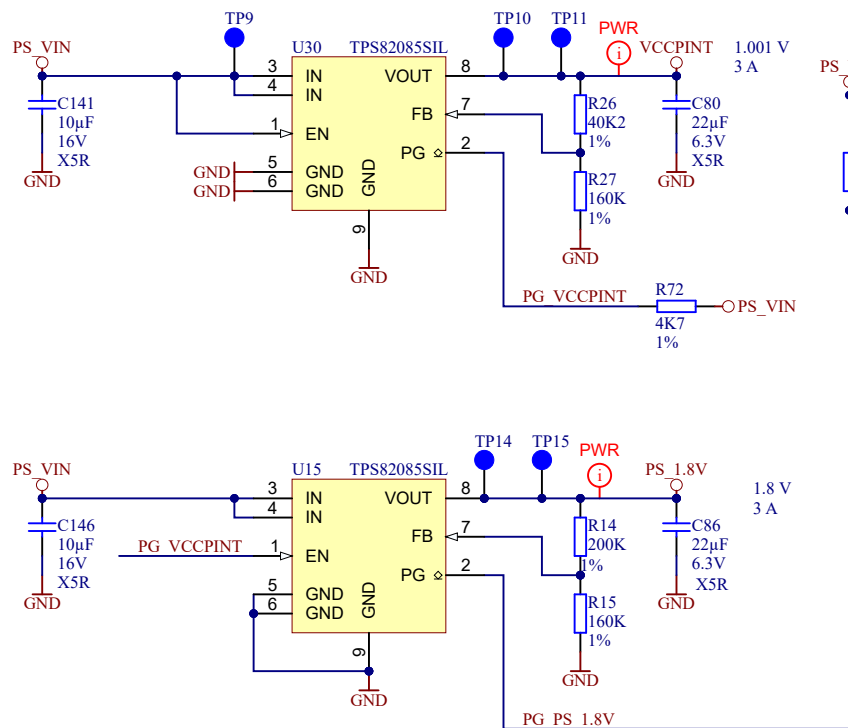


Net Name	Voltage Rail	Low Detect	High Detect
PS_3.3V	3.3 V	2.97 V	3.62 V
PS_1.8V	1.8 V	1.62 V	1.98 V
PS_VIN	3.3 V	2.97 V	3.62 V
1.35V	1.35 V	1.22 V	1.49 V
VCCPINT	1.0 V	0.90 V	1.10 V

Net Name	Voltage Rail	Low Detect	High Detect
PS_3.3V	3.3 V	2.97 V	3.62 V
MGTAVCC	1.0 V	0.90 V	1.10 V
MGTAVTT	1.2 V	1.08 V	1.32 V
VCCINT	1.0 V	0.90 V	1.10 V
PL_1.8V	1.8 V	1.62 V	1.98 V



Title: TE0745 - Power		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 17.06.2025	Copyright: Trenz Electronic GmbH	Page 24 of 26
Filename: POWER.SchDoc		



Title: TE0745 - Power2		
A4	Number: TE0745 91C31-A	Rev. 03
Date: 14.03.2024	Copyright: Trenz Electronic GmbH	Page 25 of 26
Filename: POWER_2.SchDoc		

1

2

3

4

A

A

B

B

C

C

D

D

