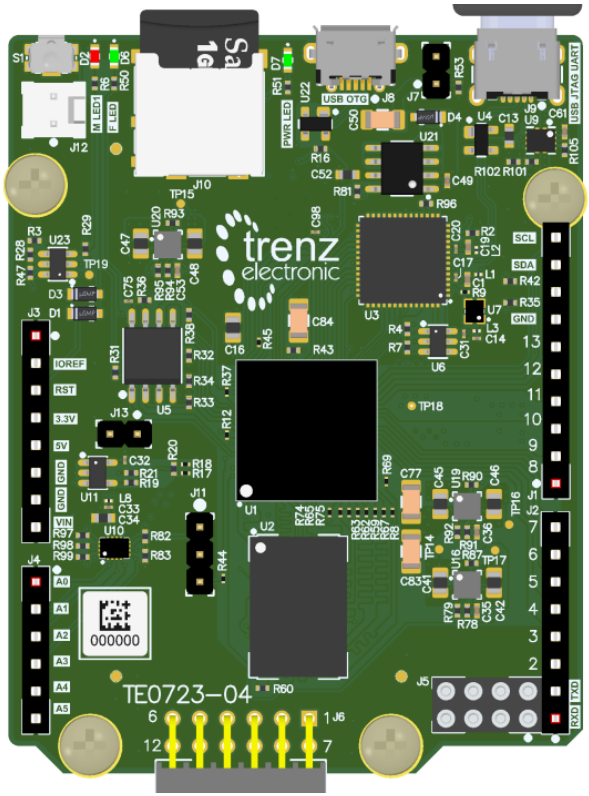
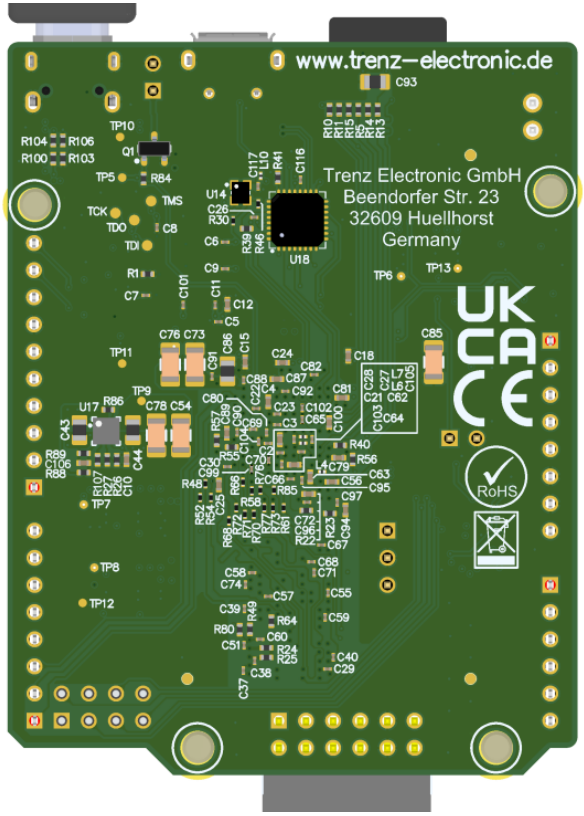




Regarding the usage of our schematics and alike documentation for Trenz module TE0723 .

TE0723 is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation, even if the design is just adapted or modified. TE0723 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	VY/VG
Checked by	VY
Assembly variant	41C68-A
Created by	VY
Modified by	VY
Modified at	2024-10-29

trenz electronic

Title: TE0723 – Legal Notices

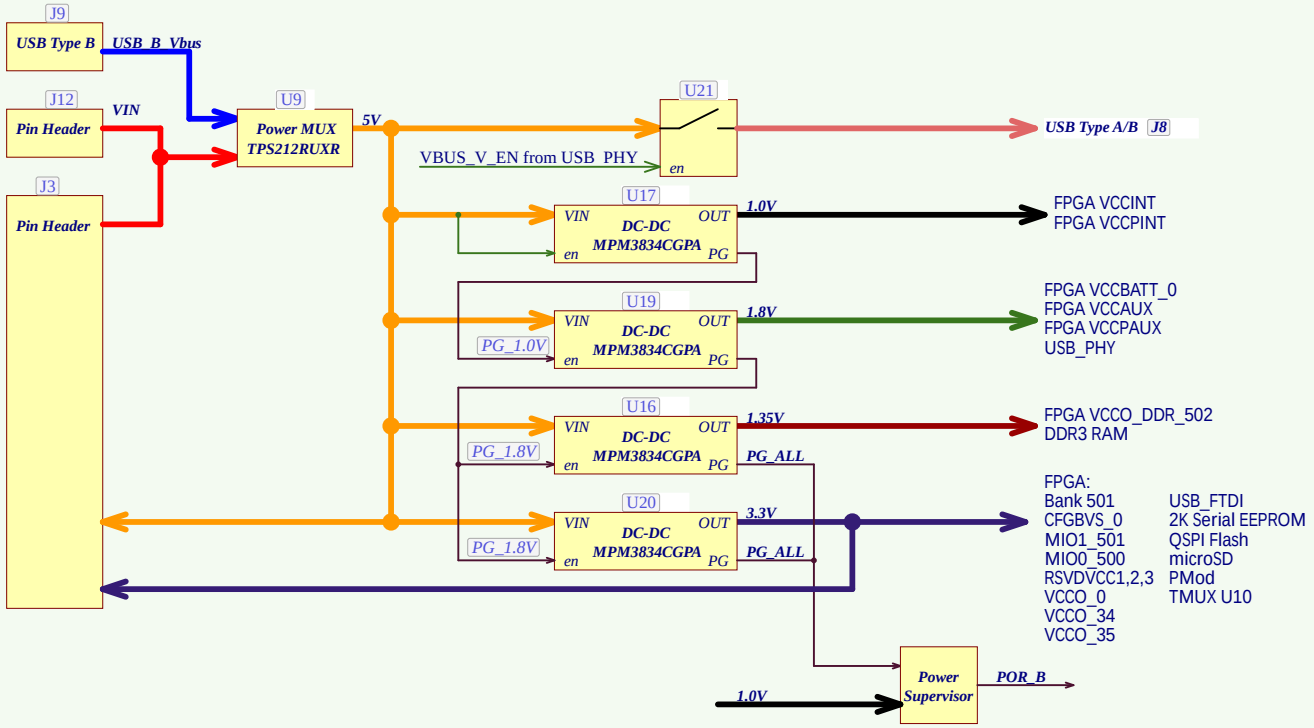
A4	Number: TE0723 41C68-A	Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH	Page 1 of 15
Filename: Legal Notices Modules.SchDoc		

REV	Description	
-01	Initial revision	
-02		
-03	1) changed FTDI-chip on 56pins package 2) changed micro-USB connectors 3) optimized BOM 4) update footprints, full update lib 5) added serial number (tracebility pad)	
-04	1. The power supply circuit has been revised. DCDC U16, U17, U19, U20 EN5311QI regulators have been replaced by MPM3834C. 2. The input power circuit has been revised. - Added additional power input J3, pin 8, net VIN. - J12 is connected to VIN. - Diode D5 removed and replaced by power multiplexer U9 which switches the power supply source between connector J3 and J12 (primary) and the USB connector J9 (secondary). 3. DCDC U16 , U20 PG outputs connected to power supervisor U23 input #MR through diode D3 to maintain the reset state until the power-up is complete. 4. Resistor R16 value changed from 1K13 to 1K (Net USB VBUS). 5. U3 FT2232 ADBUS4 is pulled up (added R96). 6. U10 analog multiplexer is changed from CD74HC4051D to TMUX1208QRSVRQ1. 7. AMUX_Sx signals pulled low to prevent floating state (added R97, R98, R99). 8. Green LEDs D6 and D7 changed from 150060VS75000 to 19-213/G6C-BM1N2/DT. Red LED D2 changed from 150060RS75000 to 19-213/R6C-AL1M2VY/3T. 9. Diode D1 changed from BAR43 to MSS2P3-M3/89A. 10. C52 changed from 4.7uF 6.3V to 10uF 16V. 11. Clock generator U14 SiT8008AI-73-XXS-52.000000E changed to SiT8008BI-73-XXS-52.000000E. 12. Clock generator U7 SiT8008AI-73-XXS-12.000000E changed to SiT8008BI-73-XXS-12.000000E. 13. EOL component U5 changed from S25FL127SABMFV10 to S25FL128LAGMFI013. 14. Micro USB J8 changed from 629105150521 (Type B) to 629105150921 (Type A/B). 15. Ferrite beads L1 - L4, L6 - L8, L10 BKP0603HS121-T replaced by MPZ0603S121HT000. 16. Added J13 for JTAG boot mode. 17. Added additional decoupling capacitors C64, C65, C70, C73, C76, C94 - C97, C99, C100, C102 - C105 according to AMD specification (UG 933); 18. Added additional Test points TP14 - TP19 to the top side. 19. Changed fiducials to standard style. 20. Track-it™ Traceability Pad is removed (EOL). 21. Added legal notices, power overview and system overview. 22. Updated company address on PCB. 23. Added UKCA logo. 24. Digilent licensies MISC1, MISC2 are removed.	VY/VG

trenz electronic

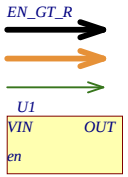
Title: TE0723 - Changes list		
A4	Number: TE0723 41C68-A	Rev. 04
Date: 02.06.2025	Copyright: Trenz Electronic GmbH	Page 2 of 15
Filename: Revision_Changes.SchDoc		

Power-on sequencing:



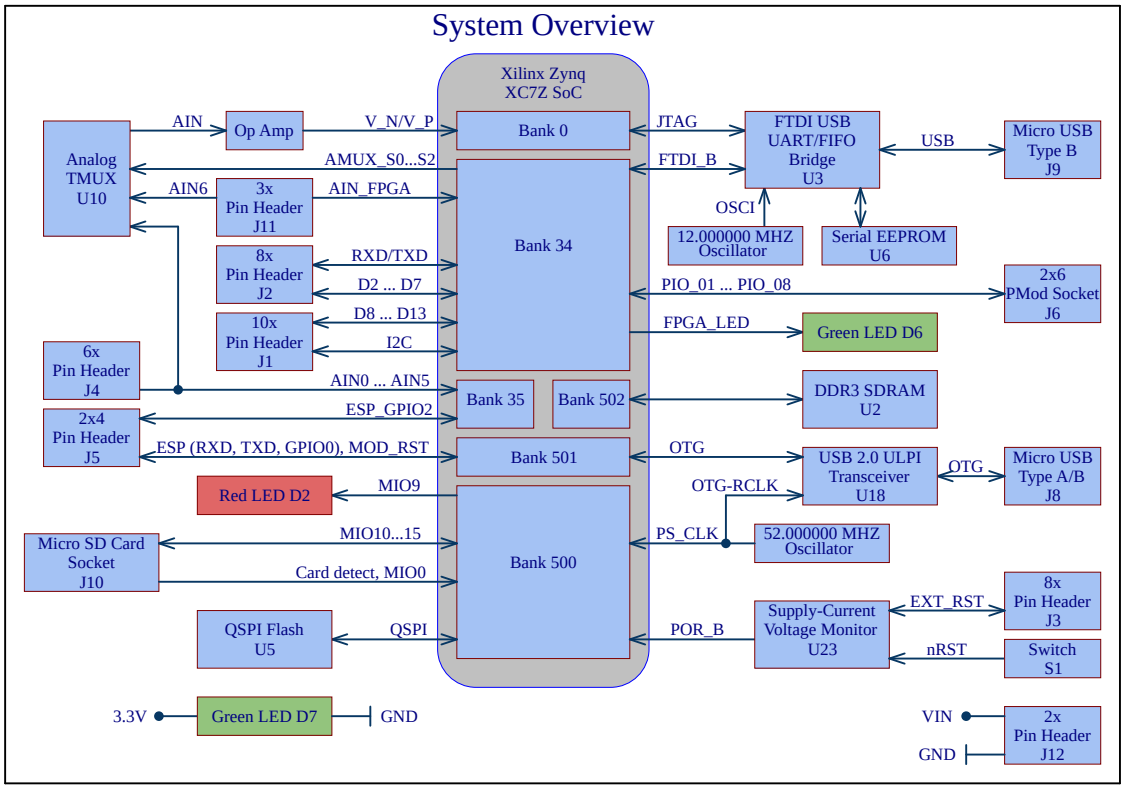
Supported Voltage Ranges:

Power Rail	Direction	Range	Tolerance	Description	Note
VIN	IN	5V	+/-5%	Micromodule Power	J12
USB_B_Vbus	IN	5V	+/-5%	Micromodule Power	J9
3.3V	OUT	3.3V	+/-3%	Power supply for external use	J3
5V	OUT	5V	+/-5%	Power supply for external use	J3



trenz electronic

Title: TE0723 - Power_Diagram			
A4	Number: TE0723 41C68-A		Rev. 04
Date: 2024-11-05	Copyright: Trenz Electronic GmbH		Page3 of 15
Filename: Power_Diagram.SchDoc			



U_FPGA_PWR
FPGA_PWR.SchDoc

U_PowerSupply
PowerSupply.SchDoc

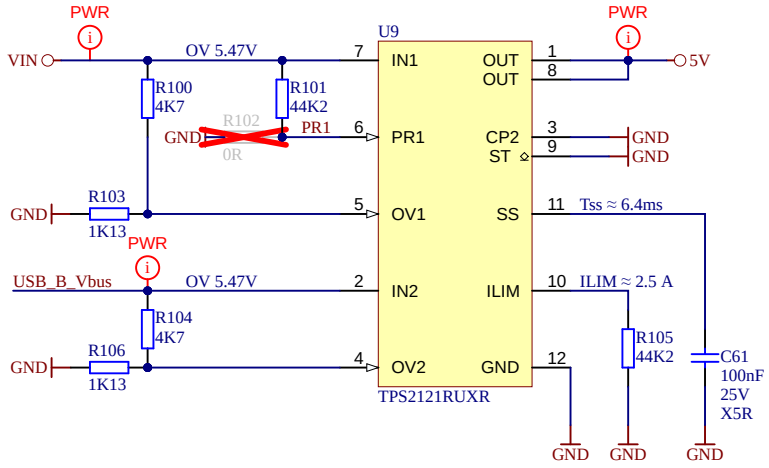
Mount.Hole 3.2mm (unplated)

Mount.Hole 3.2mm (unplated)

Mount.Hole 3.2mm (unplated)

Mount.Hole 3.2mm (unplated)

If only one input voltage is valid (above UV and below OV) then that input will power the output.
If both inputs VIN and USB_B_Vbus are valid, then VIN is used



RoHS
RoHS Logo on Top Overlay
RoHS-TOPOVERLAY

CE
CE Logo on Top Overlay
CE-TOPOVERLAY

UKCA
UKCA Logo on Top Overlay
UKCA-TOPOVERLAY

LOGO1
TE Logo PRINT Layer
LOGO PRINT

MECH1
TE Address Overlay
LOGO ADDRESS

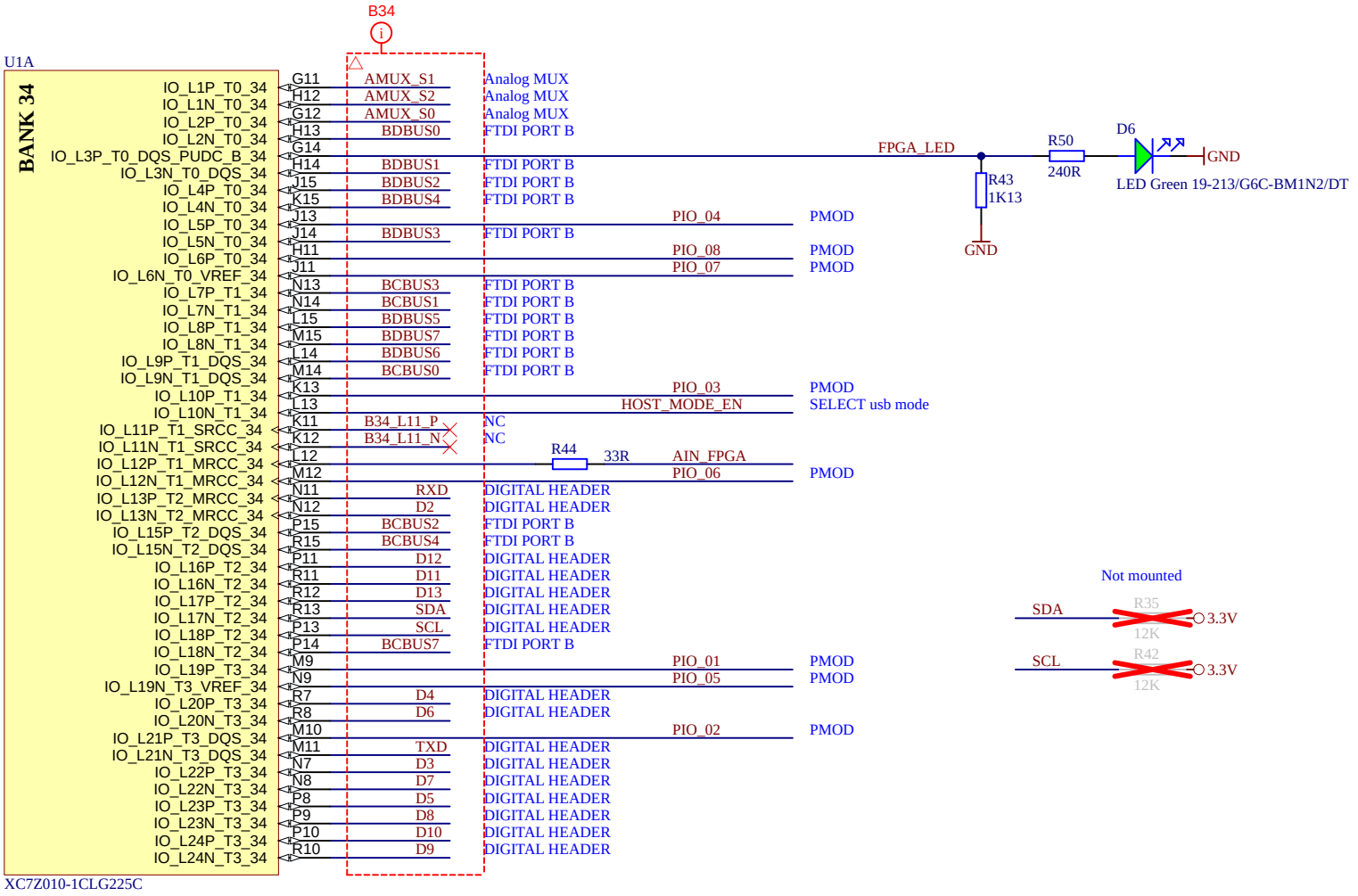
WEEE
WEEE Logo on Top Overlay
WEEE-TOPOVERLAY

Serial
Serial
Serialnumber 6,3 x 6.3mm

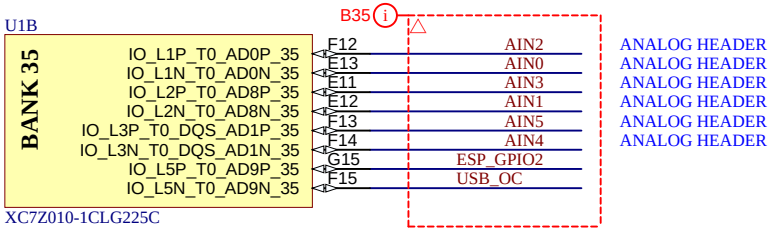
PM1 FIDU-DOT - small
PM2 FIDU-DOT - small
PM3 FIDU-DOT - small
PM4 FIDU-DOT - small
PM5 FIDU-DOT - small
PM6 FIDU-DOT - small

trenz electronic

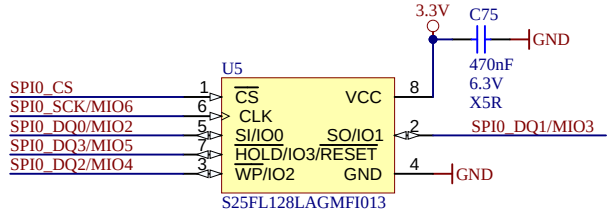
Title: TE0723 - Overview		
A4	Number: TE0723 41C68-A	Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH	Page 4 of 15
Filename: TE0723.SchDoc		

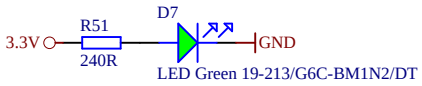


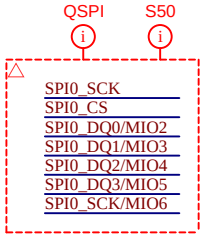
trenz electronic	Title: TE0723 - FPGA B34		
A4	Number: TE0723 41C68-A		Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH		Page 5 of 15
Filename: FPGA_B34.SchDoc			



trenz electronic	Title: TE0723 - FPGA B35	
A4	Number: TE0723 41C68-A	Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH	Page 6 of 15
Filename: FPGA_B35.SchDoc		







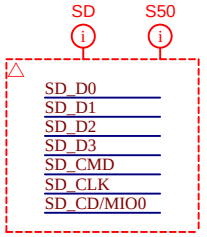
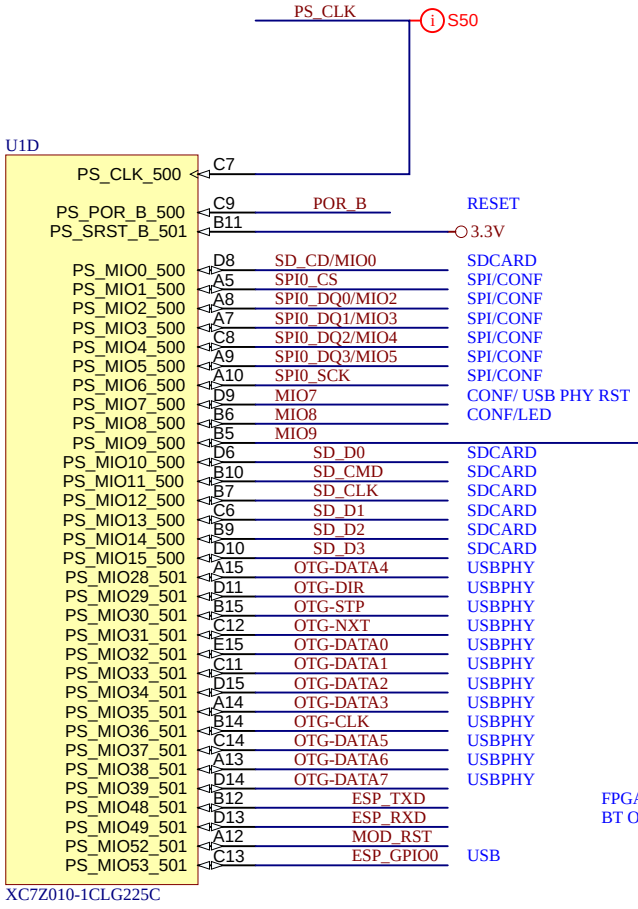
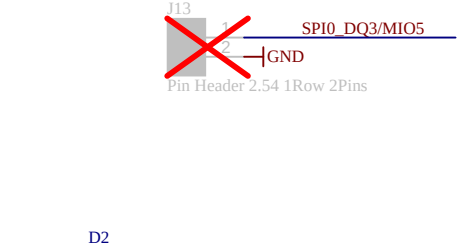


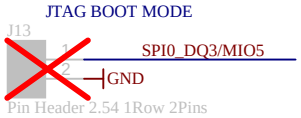
Table 6-4: **Boot Mode MIO Strapping Pins**

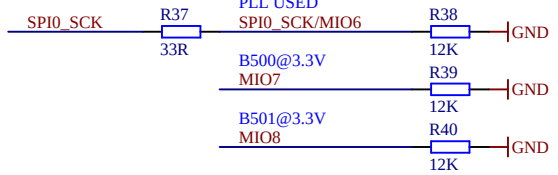
Pin-signal / Mode	MIO[8] VMODE[1]	MIO[7] VMODE[0]	MIO[6] BOOT_MODE[4]	MIO[5] BOOT_MODE[0]	MIO[4] BOOT_MODE[2]	MIO[3] BOOT_MODE[1]	MIO[2] BOOT_MODE[3]
Boot Devices							
JTAG Boot Mode; cascaded is most common[1]				0	0	0	JTAG Chain Routing[2] 0: Cascade mode 1: Independent mode
NOR Boot[3]				0	0	1	
NAND				0	1	0	
Quad-SPI[3]				1	0	0	
SD Card				1	1	0	





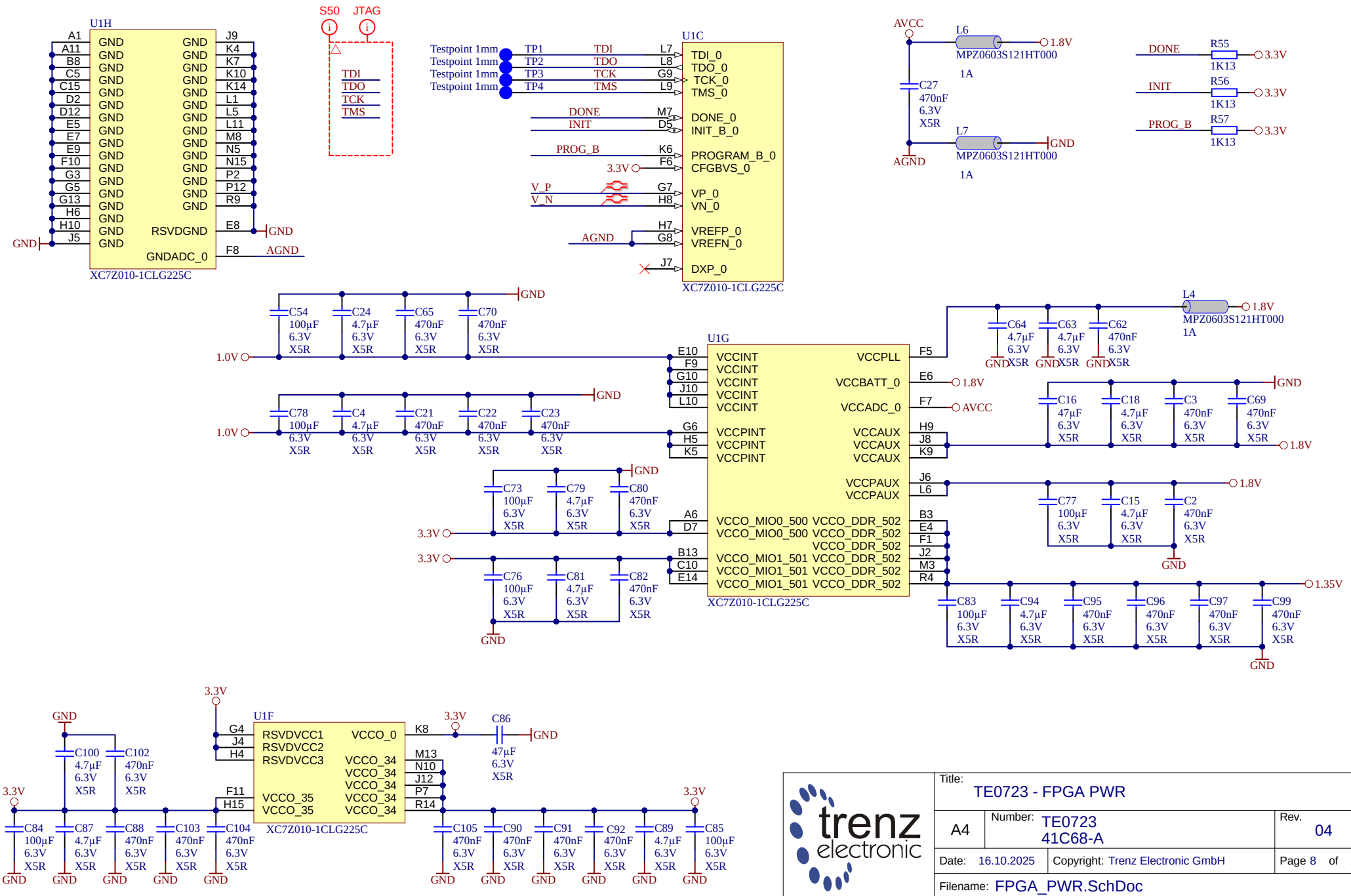
FPGA OUT -> BT IN
BT OUT -> FPGA IN

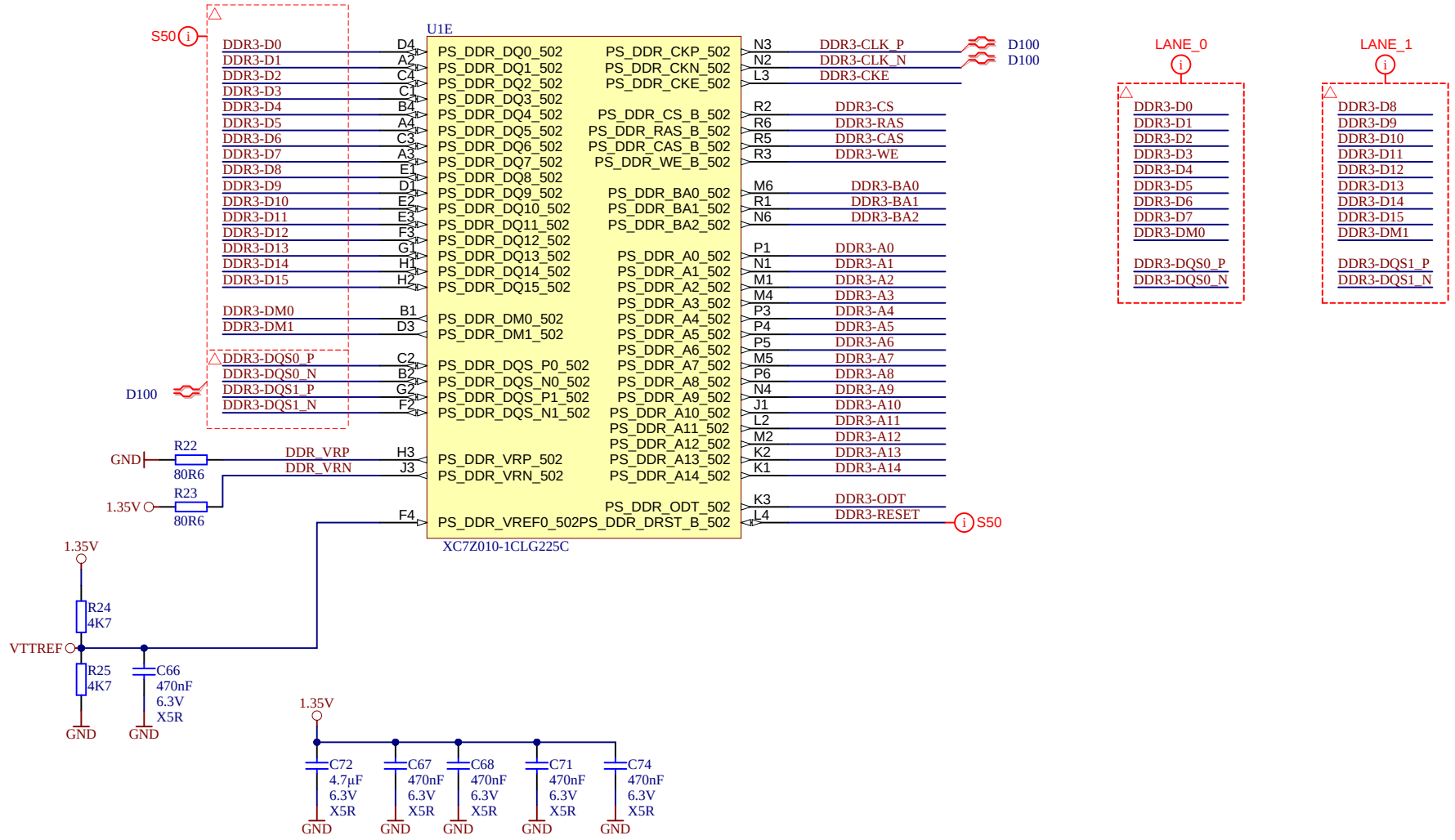




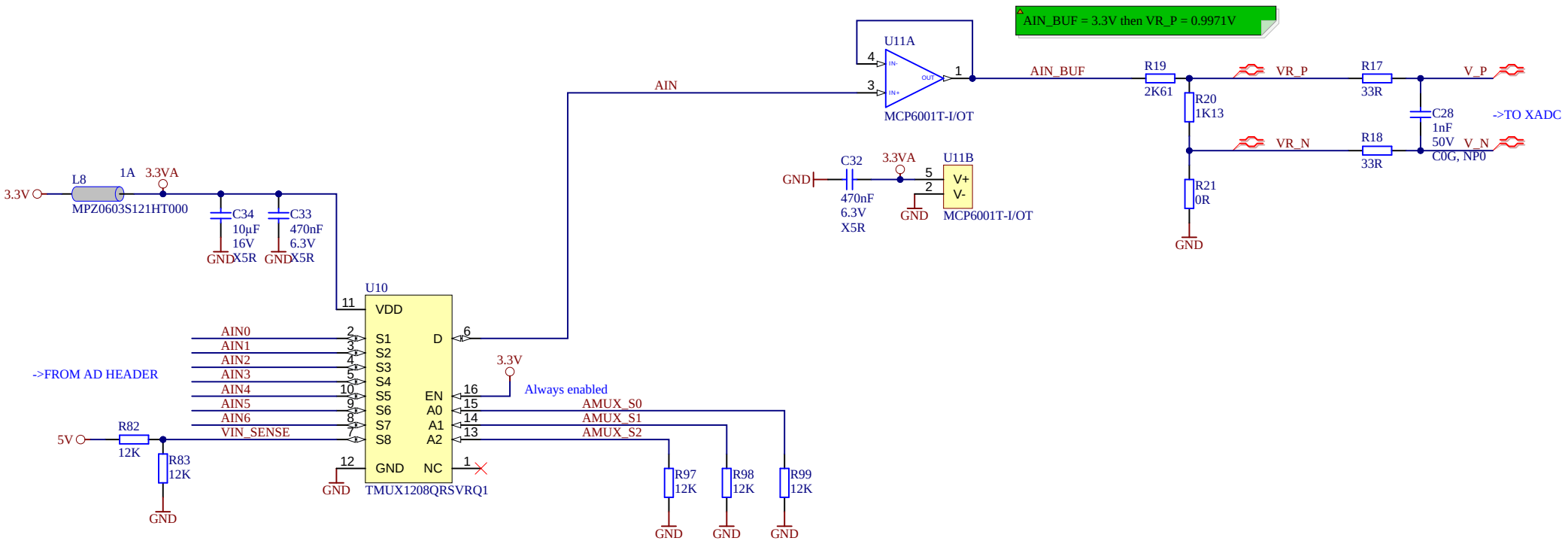
trenz electronic

Title: TE0723 - FPGA MIO			
A4	Number: TE0723 41C68-A		Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH		Page 7 of 15
Filename: FPGA_MIO.SchDoc			

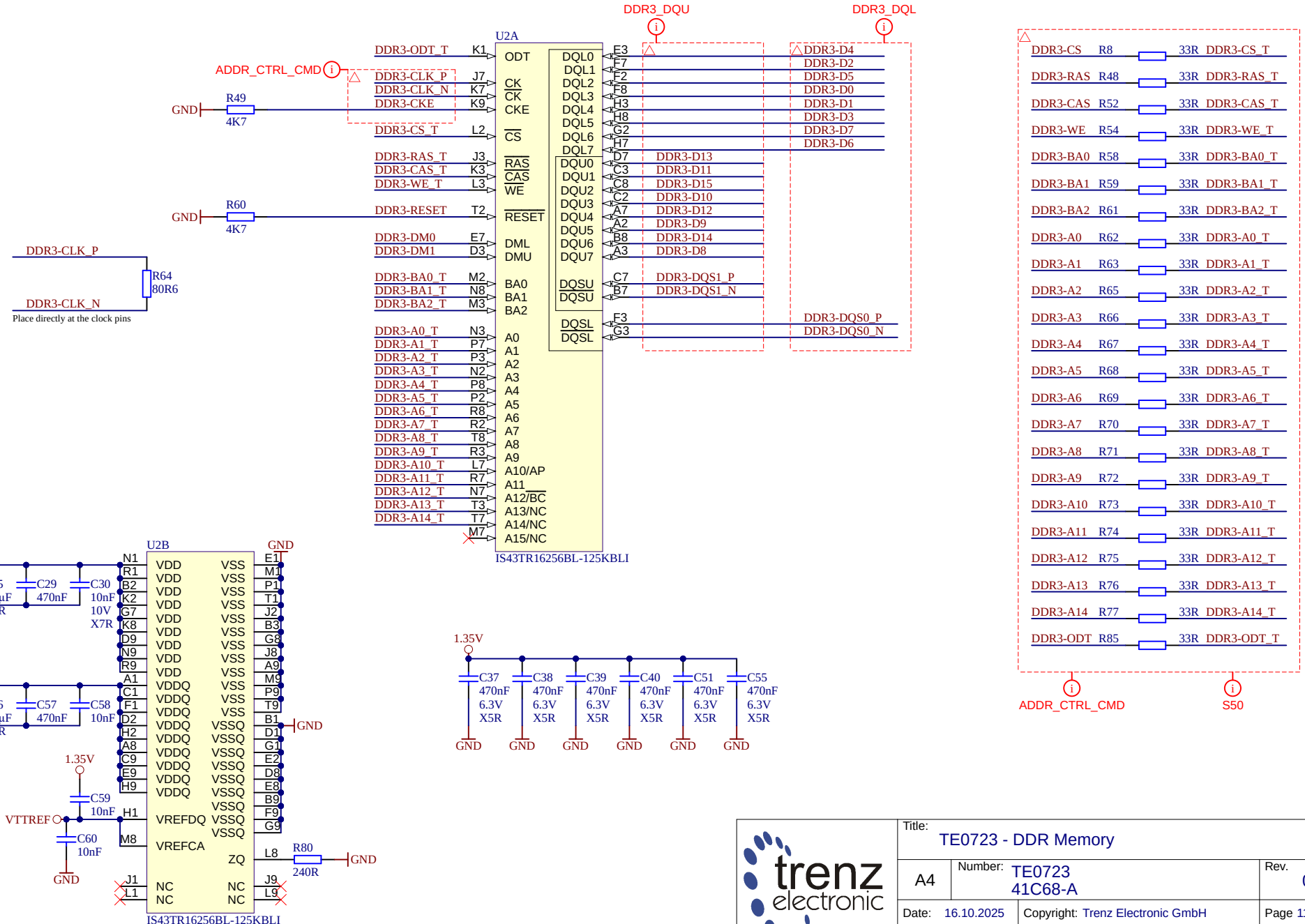

U1H
XC7Z010-1CLG225C
S50
JTAG
TDI
TDO
TCK
TMS
U1C
XC7Z010-1CLG225C
AVCC
L6
MPZ0603S121HT000
1A
C27
470nF
6.3V
X5R
L7
AGND
DONE
INIT
PROG_B
R55
R56
R57
1K13
3.3V
1.8V
GND
U1G
XC7Z010-1CLG225C
L4
C54
C24
C65
C70
C78
C4
C21
C22
C23
C73
C79
C80
C76
C81
C82
C64
C63
C62
C16
C18
C3
C69
C77
C15
C2
C83
C94
C95
C96
C97
C99
1.0V
U1F
XC7Z010-1CLG225C
C86
47µF
C100
C102
C84
C87
C88
C103
C104
C105
C90
C91
C92
C89
C85
trenz electronic
Title: TE0723 - FPGA PWR
A4
Number: TE0723 41C68-A
Rev. 04
Date: 16.10.2025
Copyright: Trenz Electronic GmbH
Page 8 of 15
Filename: FPGA_PWR.SchDoc



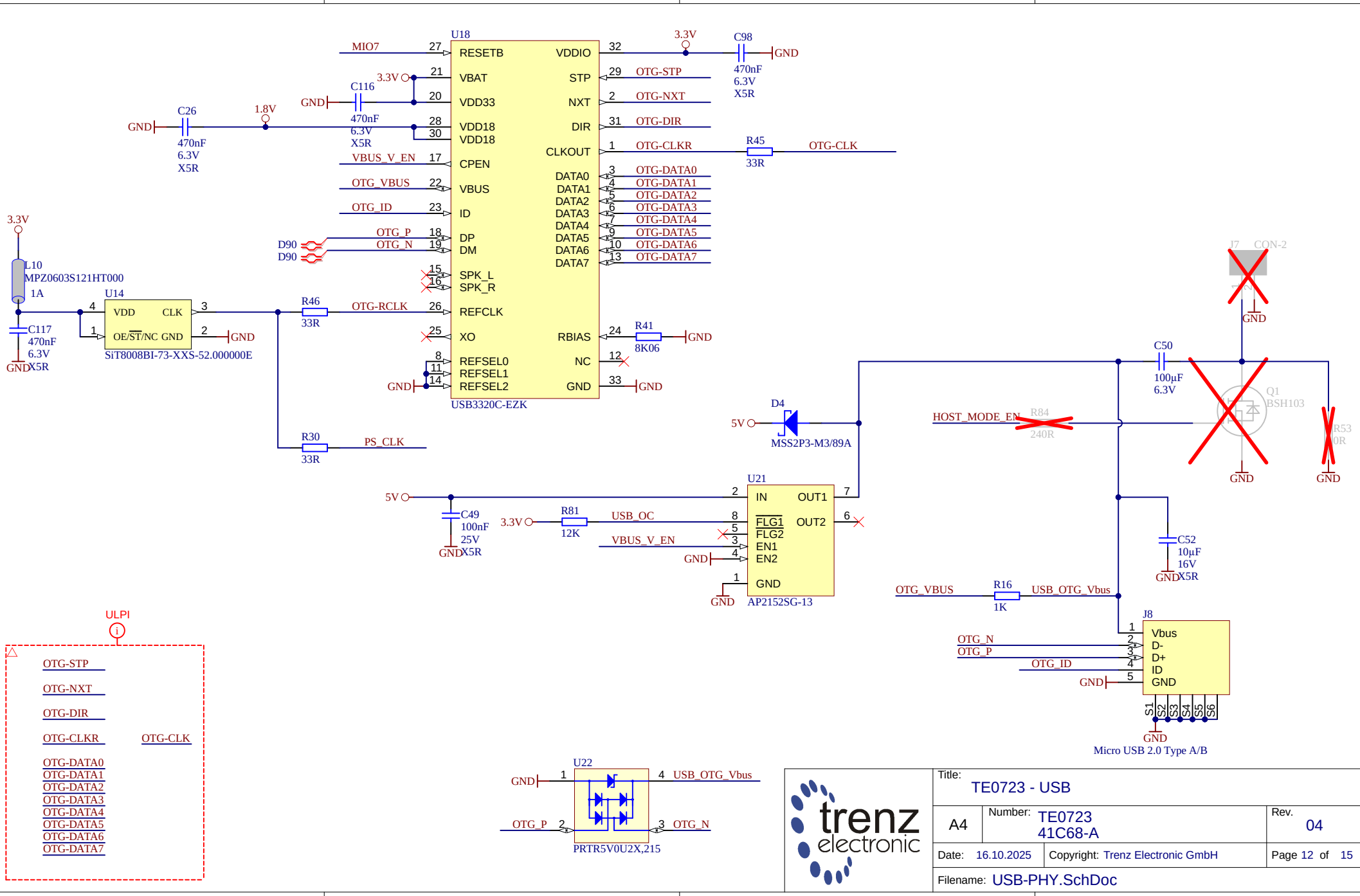
trenz electronic	Title: TE0723 - FPGA RAM		
A4	Number: TE0723 41C68-A		Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH		Page 9 of 15
Filename: FPGA_RAM.SchDoc			

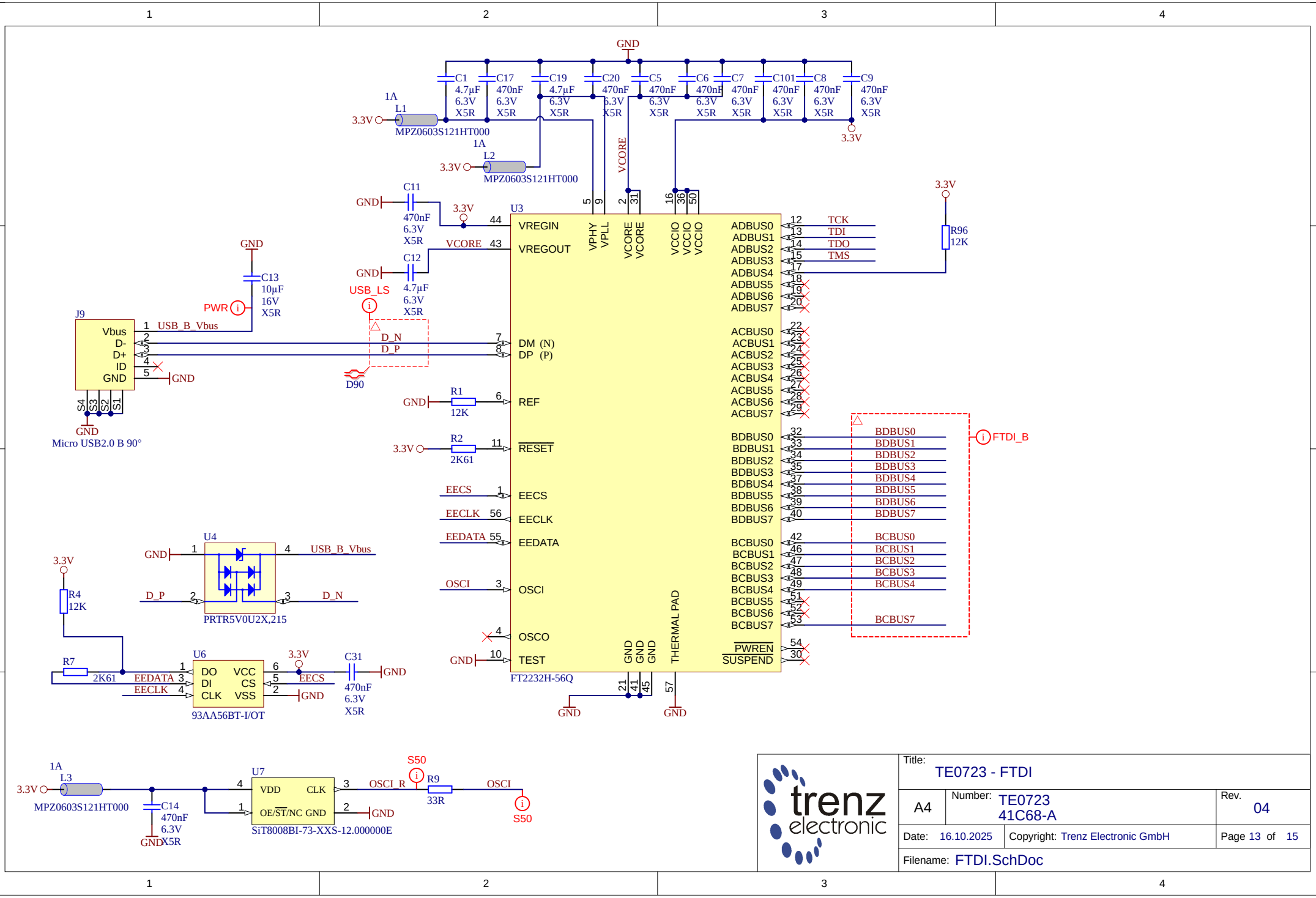


trenz electronic	Title: TE0723 - Analog Input		
A4	Number: TE0723 41C68-A		Rev. 04
Date: 02.06.2025	Copyright: Trenz Electronic GmbH		Page 10 of 15
Filename: Analog.SchDoc			

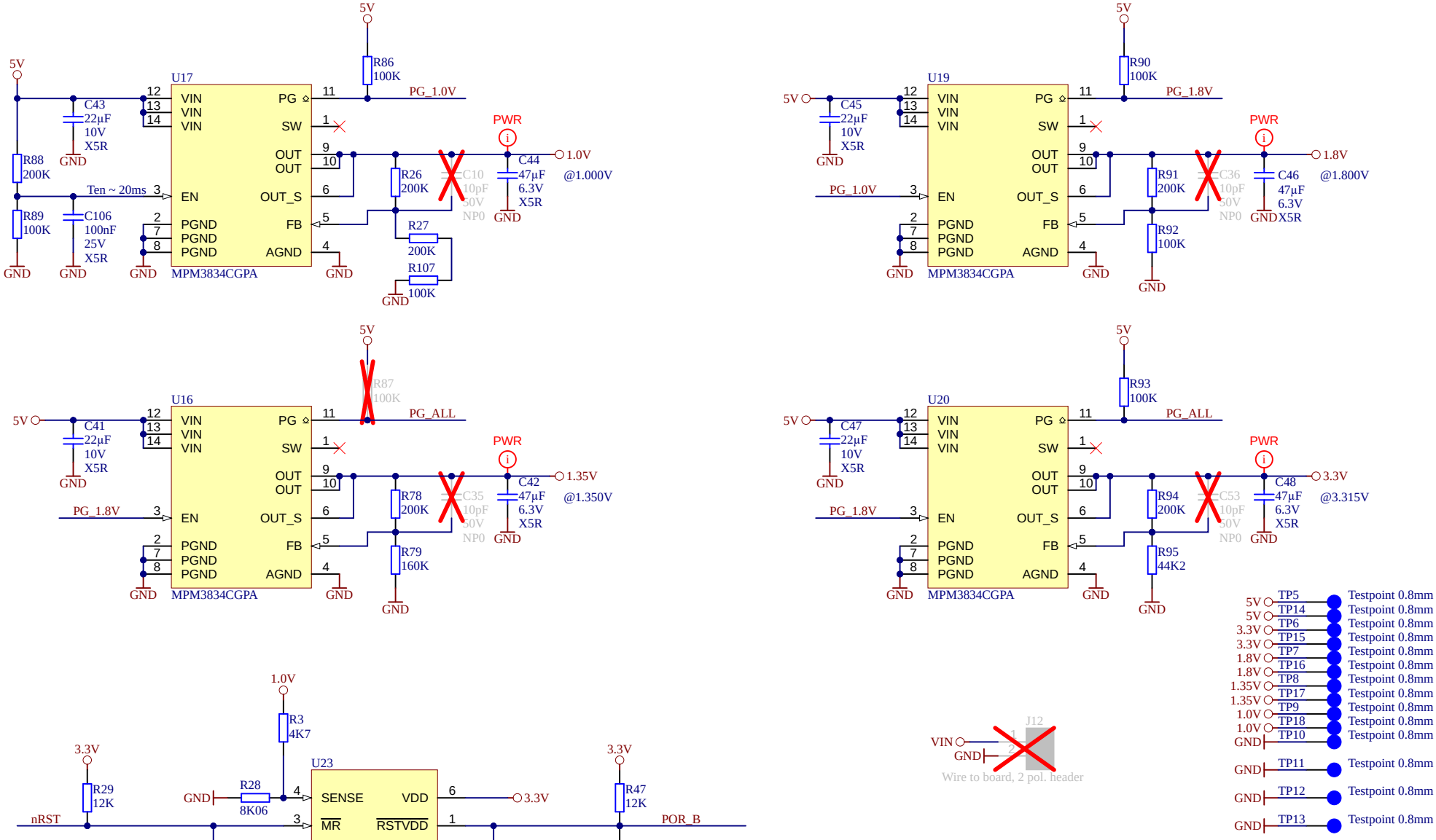


Title: TE0723 - DDR Memory			
A4	Number: TE0723 41C68-A		Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH		Page 11 of 15
Filename: DDR3-RAM.SchDoc			


U18
RESETB
VBAT
VDD33
VDD18
VDD18
CPEN
VBUS
ID
DP
DM
SPK_L
SPK_R
REFCLK
XO
REFSEL0
REFSEL1
REFSEL2
VDDIO
STP
NXT
DIR
CLKOUT
DATA0
DATA1
DATA2
DATA3
DATA4
DATA5
DATA6
DATA7
RBIAS
NC
GND
USB3320C-EZK
MIO7
3.3V
GND
1.8V
C26
470nF
6.3V
X5R
C116
470nF
6.3V
X5R
C98
470nF
6.3V
X5R
VBUS_V_EN
OTG_VBUS
OTG_ID
OTG_P
OTG_N
D90
D90
OTG-STP
OTG-NXT
OTG-DIR
OTG-CLKR
R45
33R
OTG-CLK
OTG-DATA0
OTG-DATA1
OTG-DATA2
OTG-DATA3
OTG-DATA4
OTG-DATA5
OTG-DATA6
OTG-DATA7
R41
8K06
L10
MPZ0603S121HT000
1A
U14
VDD
CLK
OE/ST/NC
GND
SiT8008BI-73-XXS-52.000000E
C117
470nF
6.3V
X5R
R46
33R
OTG-RCLK
R30
33R
PS_CLK
D4
5V
MSS2P3-M3/89A
U21
IN
OUT1
FLG1
FLG2
EN1
EN2
GND
OUT2
AP2152SG-13
C49
100nF
25V
X5R
R81
12K
USB_OC
VBUS_V_EN
C50
100µF
6.3V
HOST_MODE_EN
R84
240R
Q1
BSH103
R53
0R
J7
CON-2
C52
10µF
16V
X5R
R16
1K
USB_OTG_Vbus
J8
Vbus
D-
D+
ID
GND
S1
S2
S3
S4
S5
S6
Micro USB 2.0 Type A/B
ULPI
OTG-STP
OTG-NXT
OTG-DIR
OTG-CLKR
OTG-CLK
OTG-DATA0
OTG-DATA1
OTG-DATA2
OTG-DATA3
OTG-DATA4
OTG-DATA5
OTG-DATA6
OTG-DATA7
U22
PRTR5V0U2X,215
trenz electronic
Title: TE0723 - USB
A4
Number: TE0723 41C68-A
Rev. 04
Date: 16.10.2025
Copyright: Trenz Electronic GmbH
Page 12 of 15
Filename: USB-PHY.SchDoc

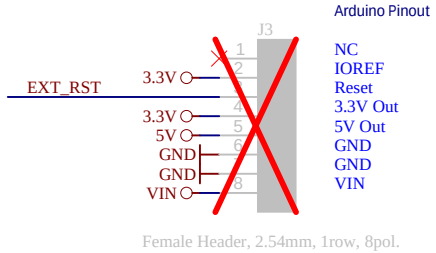


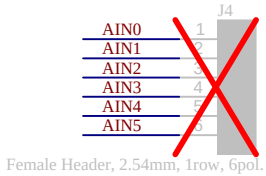
trenz electronic	Title: TE0723 - FTDI		
	A4	Number: TE0723 41C68-A	Rev. 04
	Date: 16.10.2025	Copyright: Trenz Electronic GmbH	Page 13 of 15
	Filename: FTDI.SchDoc		

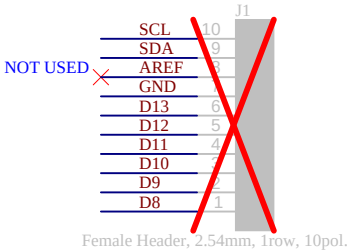


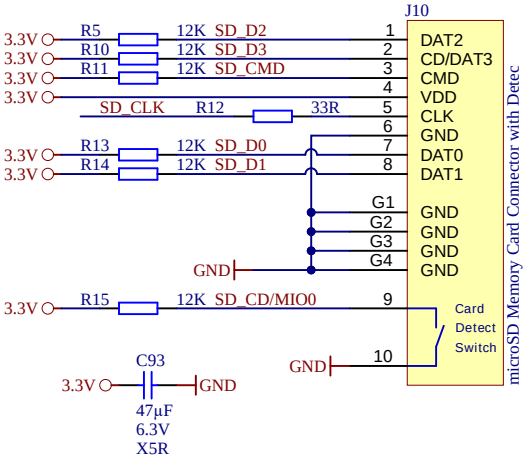
trenz electronic

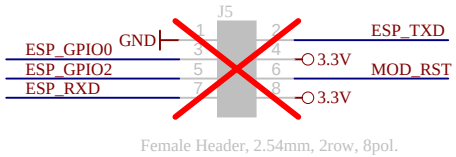
Title: TE0723 - PowerSupply		
A4	Number: TE0723 41C68-A	Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH	Page 14 of 15
Filename: PowerSupply.SchDoc		

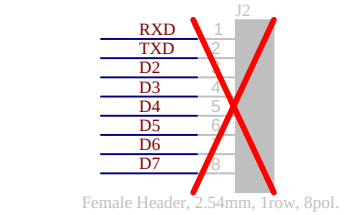


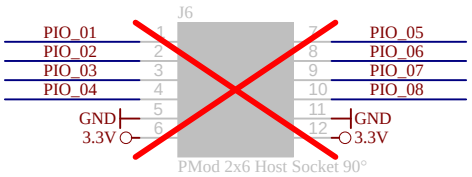


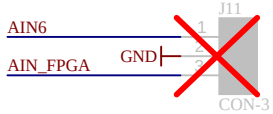


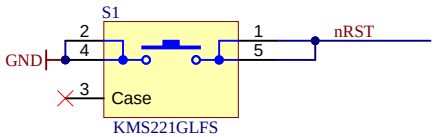












trenz electronic

Title: TE0723 - Connectors			
A4	Number: TE0723 41C68-A		Rev. 04
Date: 16.10.2025	Copyright: Trenz Electronic GmbH		Page 15 of 15
Filename: A-Headers.SchDoc			