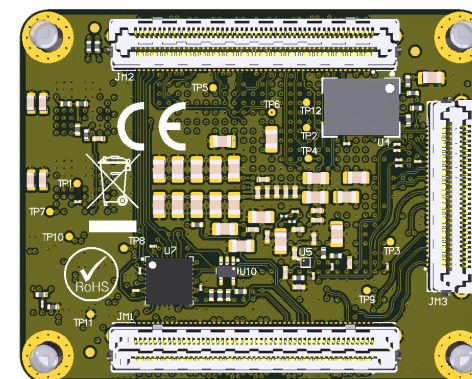
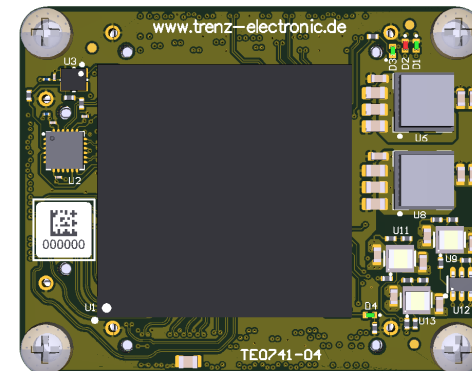
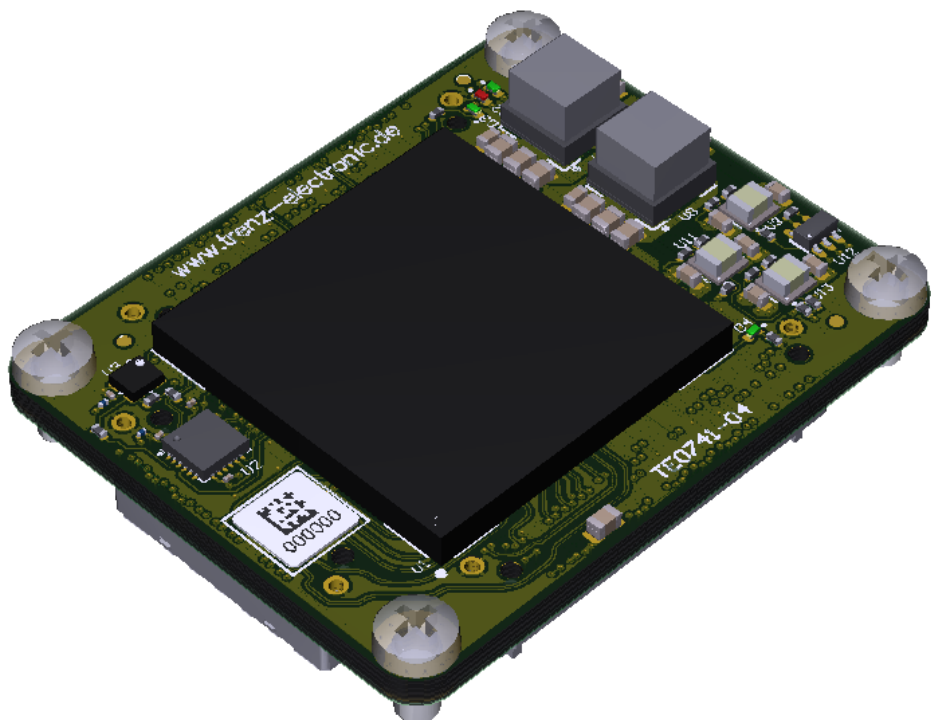




Regarding the usage of our schematics and alike documentation for Trenz module TE0741.

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. TE0741 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!

	Title: TE0741 - Legal Notices Modules		
	A4	Number: TE0741 D2I-1-A	Rev. 05
	Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 1 of 20
	Filename: Legal Notices Modules.SchDoc		

1		2		3		4	
A	REV		Description				A
	-01		Initial revision				
	-02						
B	-03		1) fixed connection DCDC for parallel operations 2) update Razorbeam Connectors, full update lib 3) added serial number (traceability pad) 4) changed ferrite beads L1..L4 size 0402 on BKP0603HS121-T 5) added thermal vias to mounting holes		VT		B
	-04		1) replaced all DCDC (reason: not recommended use Enpirion DCDC) 2) remove Traceability Pad (reason: EOL) 3) added additional resistor for VBAT (reason: possibility using external VBAT from Carrier Board) 4) full upd LIB components 5) optimization PCB routing		VT		
	-05		1) Added PULLUP R34 for net EN1 2) Added PULLUP R43 for net PROG_B 3) Changed component Q1 (TPS27081ADDCR) to U17(MP5077GG-Z) 4) Added external compensation for U14-U15 (2 LTM4638 in parallel mode) 5)Added diode between nets INIT and PROG_B 6) Removed power supervisor TPS3805H33DCKR. Added power sense monitor U11 STM6710LWB6F 7) Updated Overview 8) Updated Power diagram 9) Some nets from banks 32, 33, 34 were connected to GND for increasing ESD protection 10) Added PullUp resistor R49 for net CLK_EN on page 18 11) Changed ID nets state on page 9 from '100' (rev4) to '101' (rev5) 12) Added UKCA Logo		MT		
C						C	
D						D	
1		2		3		4	

		Title: TE0741 - Changes List		
		A4	Number: TE0741 D2I-1-A	Rev. 05
		Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 2 of 20
		Filename: Revision_Changes.SchDoc		



Title: TE0741 - Changes List

A4

Number: TE0741
D2I-1-A

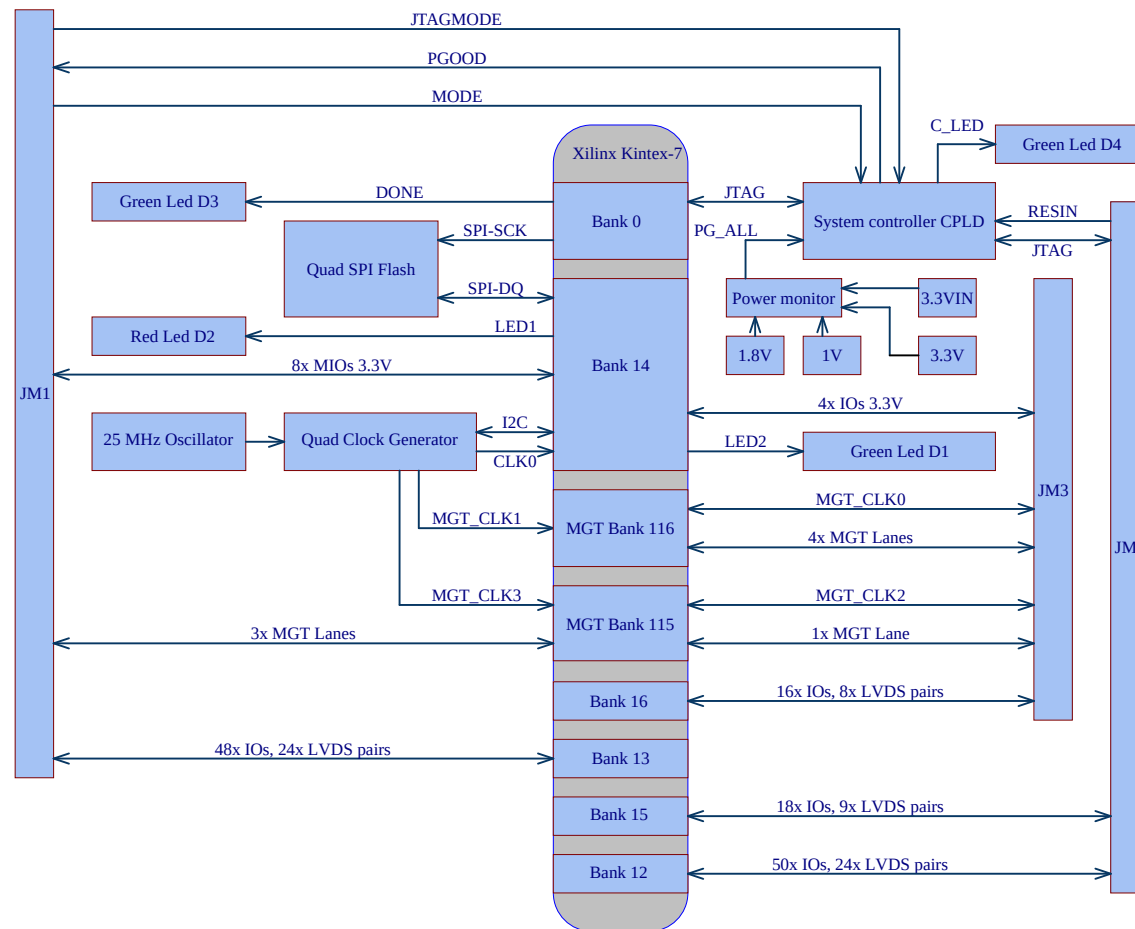
Rev. 05

Date: 2023-08-02

Copyright: Trenz Electronic GmbH

Page 2 of 20

Filename: Revision_Changes.SchDoc

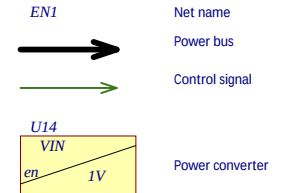
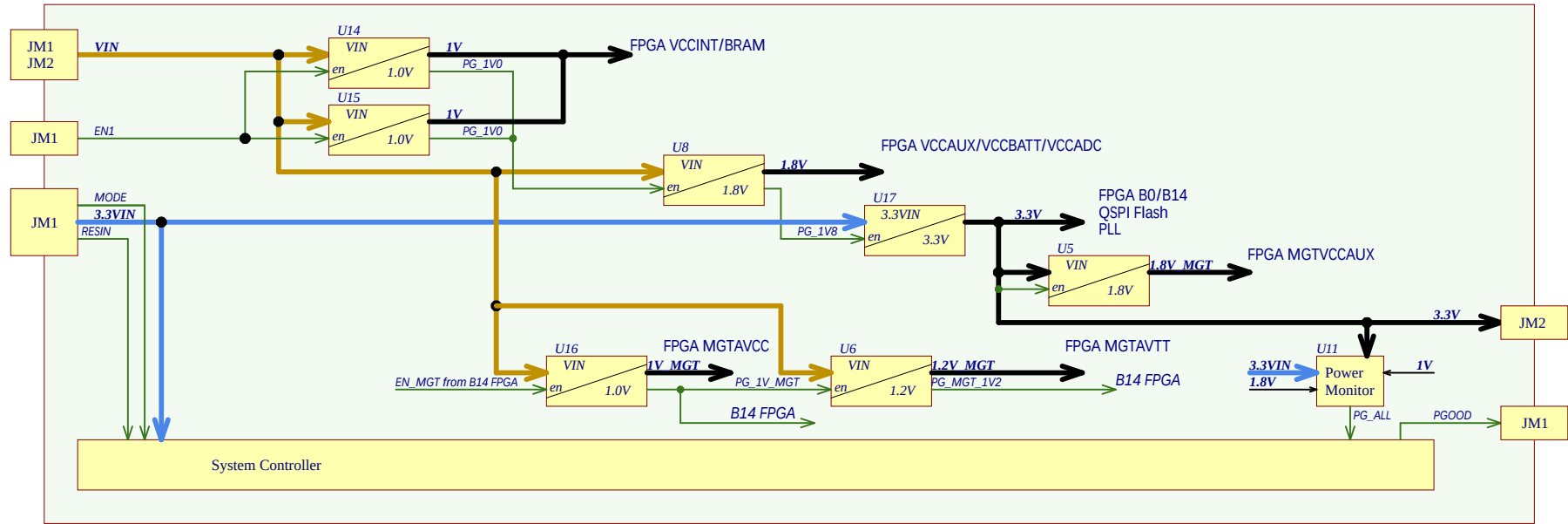


U_Legal Notices Modules	U_B34
U_Revision Changes	U_FPGA_PWR
U_Power_Diagram	U_TE0741
U_B32_B33	U_PWR1



Title: TE0741 - System Overview			
A4	Number: TE0741 D2I-1-A		Rev. 05
Date: 2023-08-02		Copyright: Trenz Electronic GmbH	Page 3 of 20
Filename: Overview.SchDoc			

Power-on sequencing:

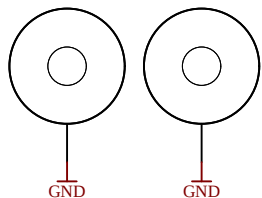


Supported Voltage Ranges:

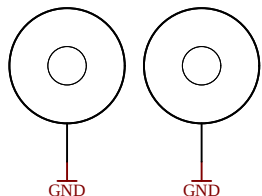
Power Rail	Direction	Range	Tolerance	Description	Note
VIN	IN	3.3 - 5.5V	+/-5%	Micromodule Power	-
3.3VIN	IN	3.3V	+/-5%	Micromodule Power	-
VCCIO12	IN	1.2 - 3.3V	+/-3%	HR IO Bank12	-
VCCIO13	IN	1.2 - 3.3V	+/-3%	HR IO Bank13	-
3.3V	IN	3.3V	+/-3%	HR IO Bank14	-
VCCIO15	IN	1.2 - 3.3V	+/-3%	HR IO Bank15	-
VCCIO16	IN	1.2 - 3.3V	+/-3%	HR IO Bank16	-
VBAT_IN	IN	1.1 - 1.8V	+/-3%	Battery Voltage	-
3.3V	OUT	3.3V	+/-3%	Power for Carrier	-

	Title: TE0741 - Power Diagram	
	A4	Rev. 05
Date: 2023-08-02		Page 4 of 20
Copyright: Trenz Electronic GmbH		Filename: Power_Diagram.SchDoc

Mount.Hole 3.2mm Mount.Hole 3.2mm



Mount.Hole 3.2mm Mount.Hole 3.2mm



UKCA

UKCA Logo on Top Overlay

UKCA-TOPOVERLAY

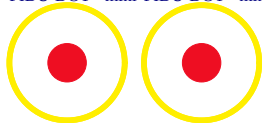
Serial

Serial

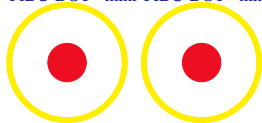
Serialnumber 6,3 x 6.3mm

Special notes:

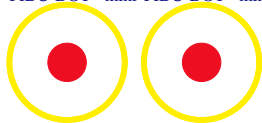
FIDU-DOT - mini FIDU-DOT - mini



FIDU-DOT - mini FIDU-DOT - mini



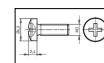
FIDU-DOT - mini FIDU-DOT - mini



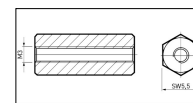
AC coupling on carrier card for nets MGT_CLK0 is REQUIRED!!!!!!

AC coupling on carrier card for nets MGT_CLK2 is REQUIRED!!!!!!

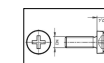
Top of Board



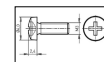
Screw M3x4



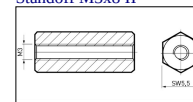
Standoff M3x8 II



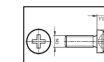
Screw M3x6



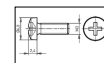
Screw M3x4



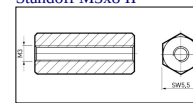
Standoff M3x8 II



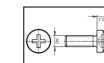
Screw M3x6



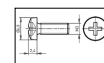
Screw M3x4



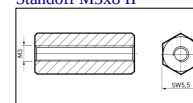
Standoff M3x8 II



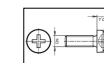
Screw M3x6



Screw M3x4



Standoff M3x8 II



Screw M3x6

Revision PCB Board:

	"0"	"1"	"2"	"3"	"4"	"5"
REV_ID0	0	1	0	1	0	1
REV_ID1	0	0	1	1	0	0
REV_ID2	0	0	0	0	1	1

Search REV_ID pins on page 9

Assembly variant D2I-1-A
Created by VT
Modified by MT
Modified at 2023-04-16



Title:

TE0741

A4

Number: TE0741
D2I-1-A

Rev.

05

Date: 2023-08-02

Copyright: Trenz Electronic GmbH

Page 5 of 20

Filename: TE0741.SchDoc

1

2

3

4

A

A

B

B

C

C

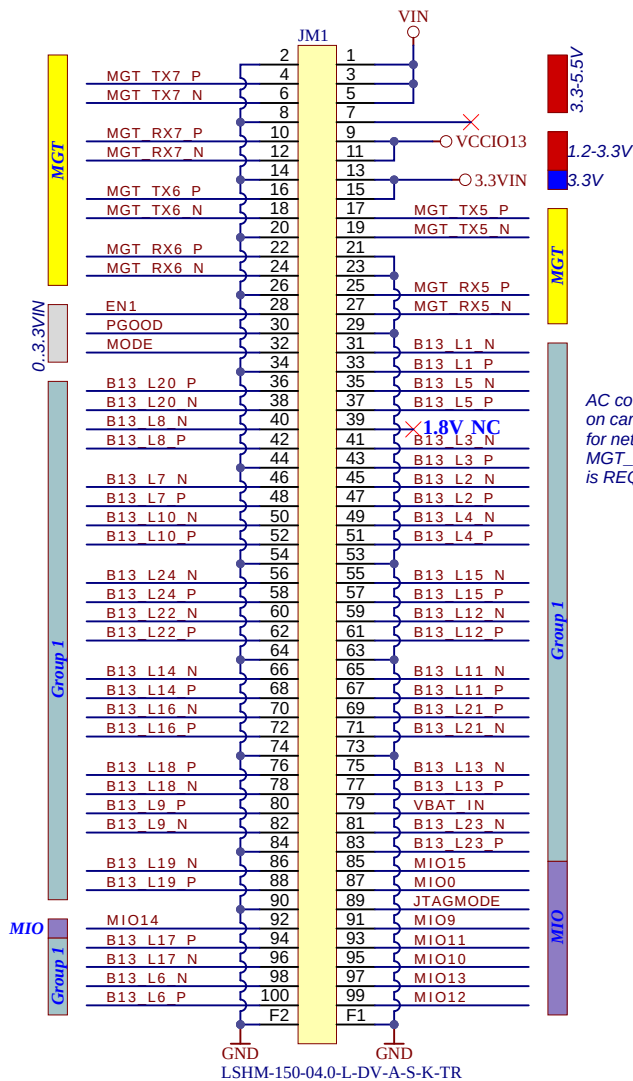
D

D

B13 48 IO, 24 LVDS Pairs
B14 8 IO, 3.3V
MGT 3 Lanes

B16 16 IO, 8 LVDS Pairs
MGT 4 + 1 Lanes
B14 4 IO, 3.3V

B15 18 IO, 9 LVDS Pairs
B12 48 IO, 24 LVDS Pairs
B12 2 IO



AC coupling
on carrier card
for nets
MGT_CLK0
is REQUIRED

Group 5

MGT

Group 3

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

Group 5

LSHM-130-04.0-L-DV-A-S-K-TR

VCCIO12	1.2..3.3V
VCCIO13	1.2..3.3V
VCCIO14	3.3V
VCCIO15	1.2..3.3V
VCCIO16	1.2..3.3V
MIO	0..3.3VIN
Group 1	0..VCCIO13
Group 2	0..VCCIO12
Group 3	0..VCCIO14
Group 4	0..VCCIO15
Group 5	0..VCCIO16
MGT	

Group 4

0..3.3VIN

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

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Group 4

Group 4

Group 4

Group 4

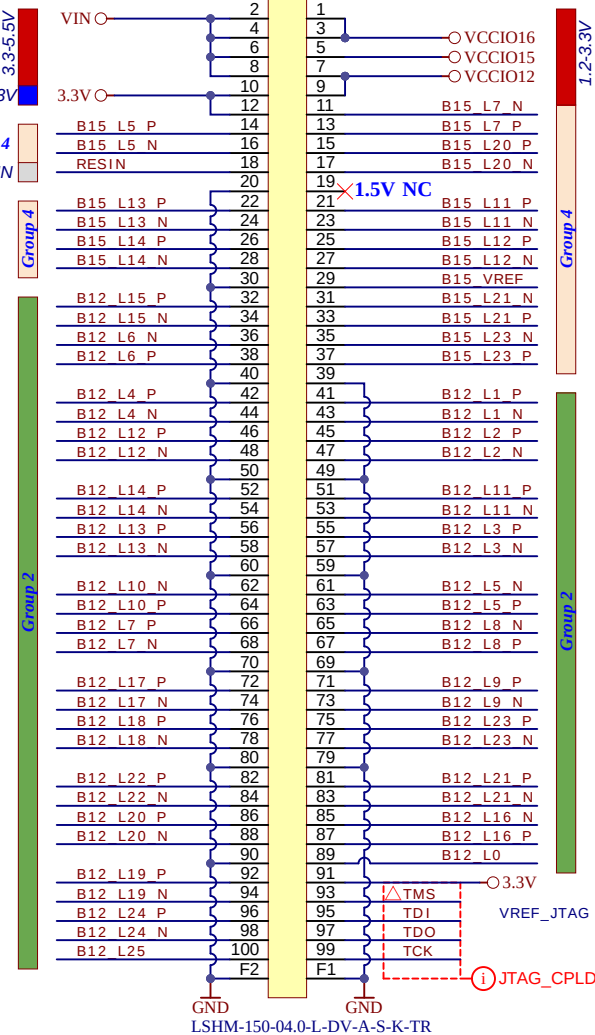
Group 4

Group 4

Group 4

Group 4

AC coupling
on carrier card
for nets
MGT_CLK2
is REQUIRED



Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

Group 4

LSHM-150-04.0-L-DV-A-S-K-TR

Some information about Trenz modules compatibility and differences [here](#)

Clock Capable I/O
All pins named
Bxx_11_X
Bxx_12_X
Bxx_13_X
Bxx_14_X
Are Clock Capable I/O's



Title: TE0741 - B2B Connectors		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 6 of 20
Filename: B2B-Connectors.SchDoc		

1

2

3

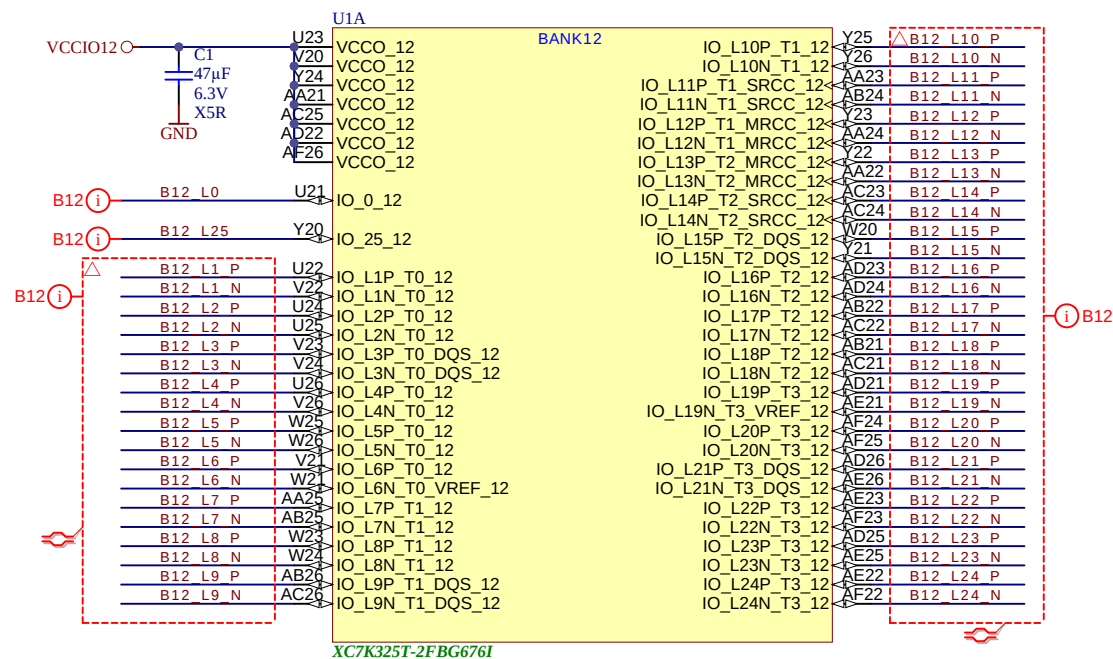
4

B12_FIXED (i) △

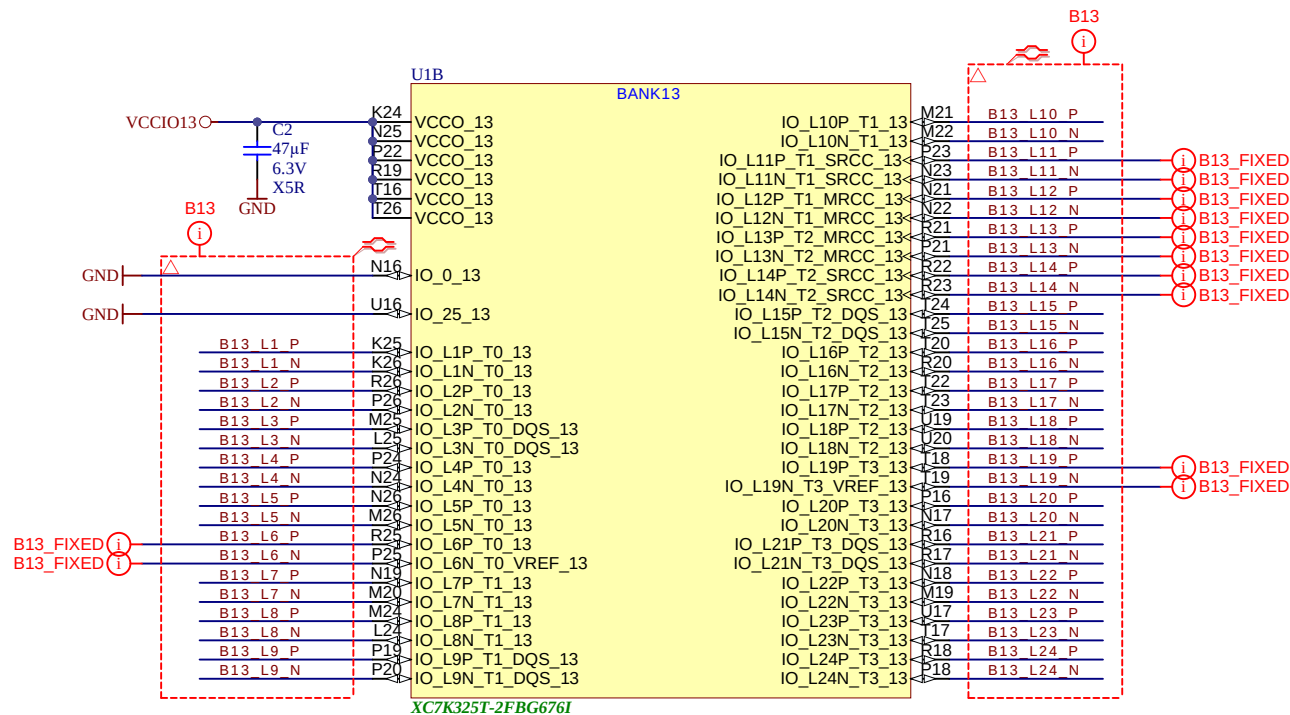
B12 L11 P
B12 L11 N
B12 L12 P
B12 L12 N
B12 L13 P
B12 L13 N
B12 L14 P
B12 L14 N

B12 L19 P
B12 L19 N
B12 L6 P
B12 L6 N

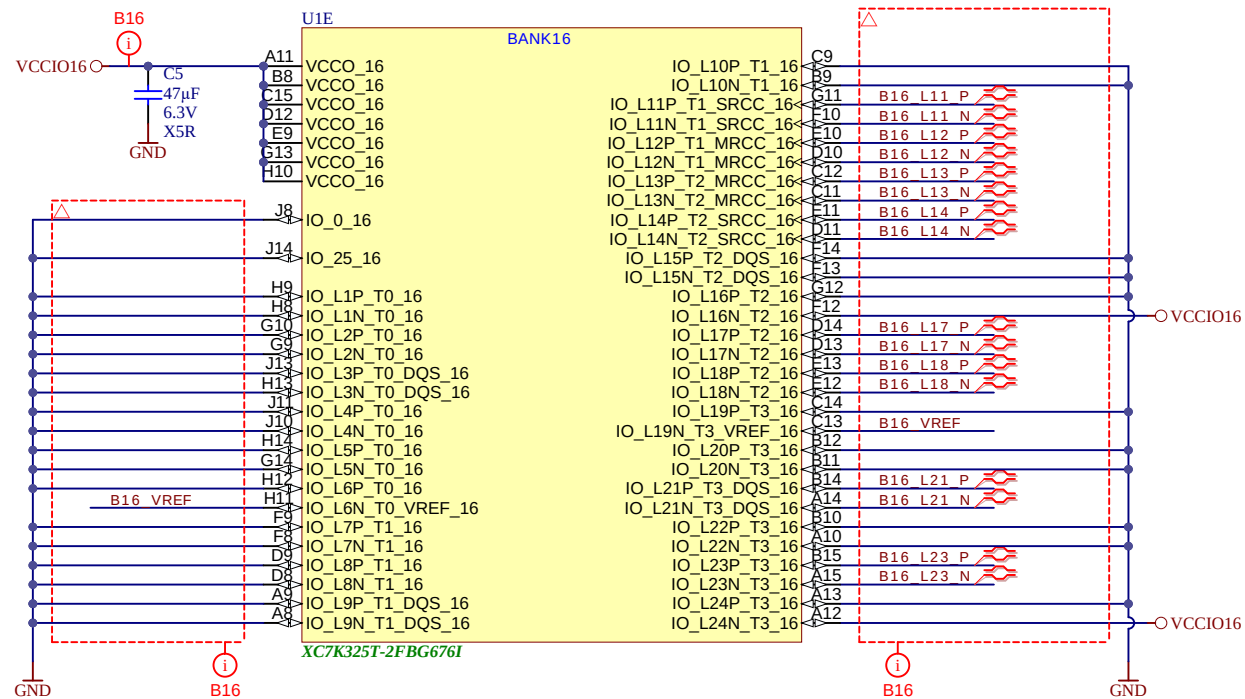
K70T version does not have this bank!



		Title: TE0741 - FPGA Bank 12	
		A4	Number: TE0741 D2I-1-A
Date: 2023-08-02		Copyright: Trenz Electronic GmbH	
Filename: B12.SchDoc		Page 7 of 20	
		Rev. 05	



Title: TE0741 - FPGA Bank 13		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 8 of 20
Filename: B13.SchDoc		



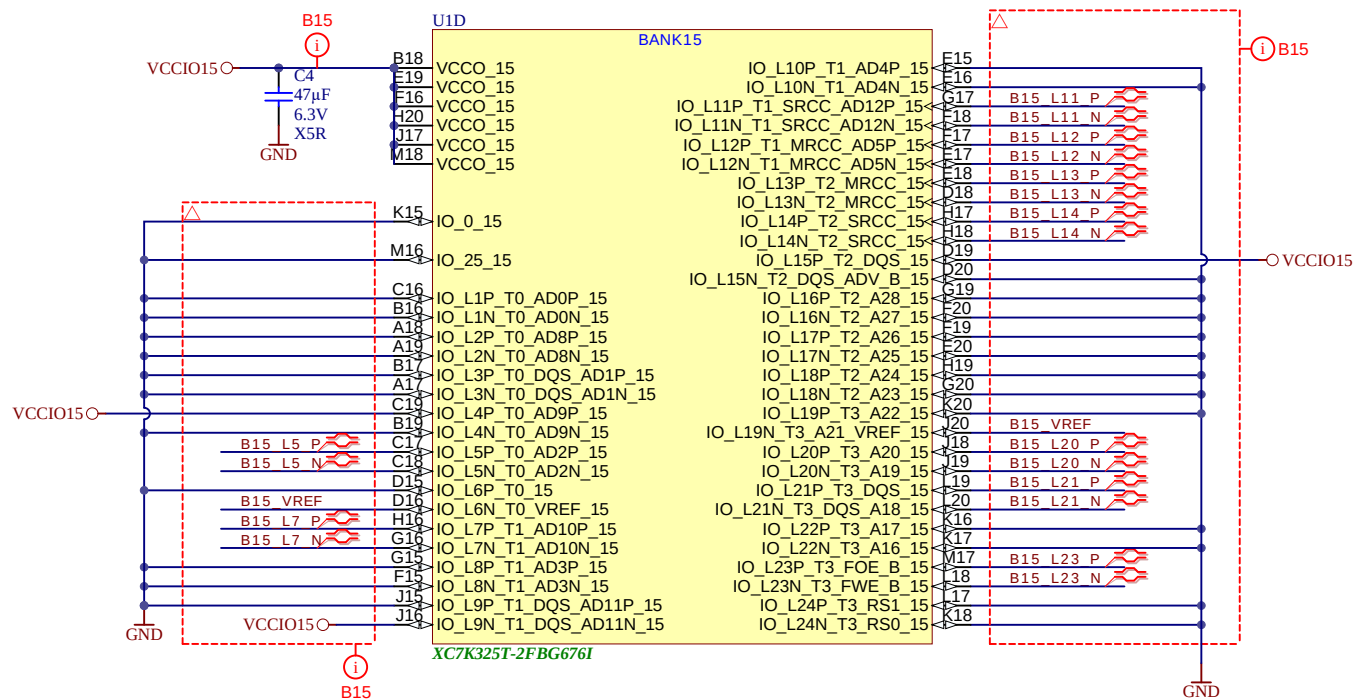
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		A4 Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02		Copyright: Trenz Electronic GmbH	
Filename: B16.SchDoc		Page 10 of 20	

1

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4



Title: TE0741 - FPGA Bank 15		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 11 of 20
Filename: B15.SchDoc		

1

2

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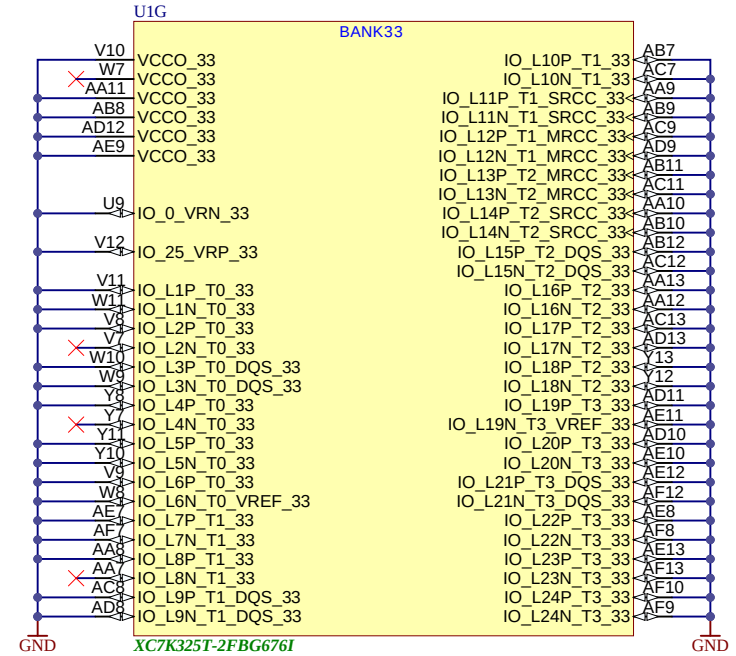
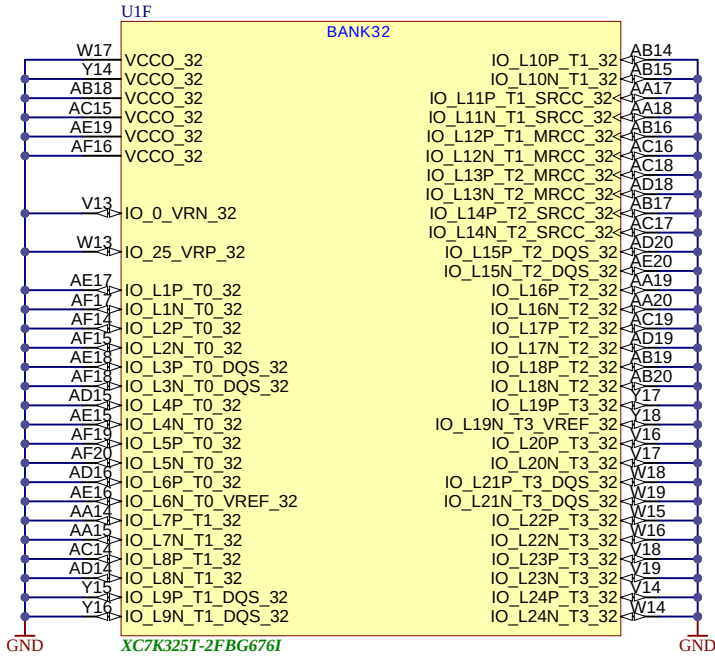
4

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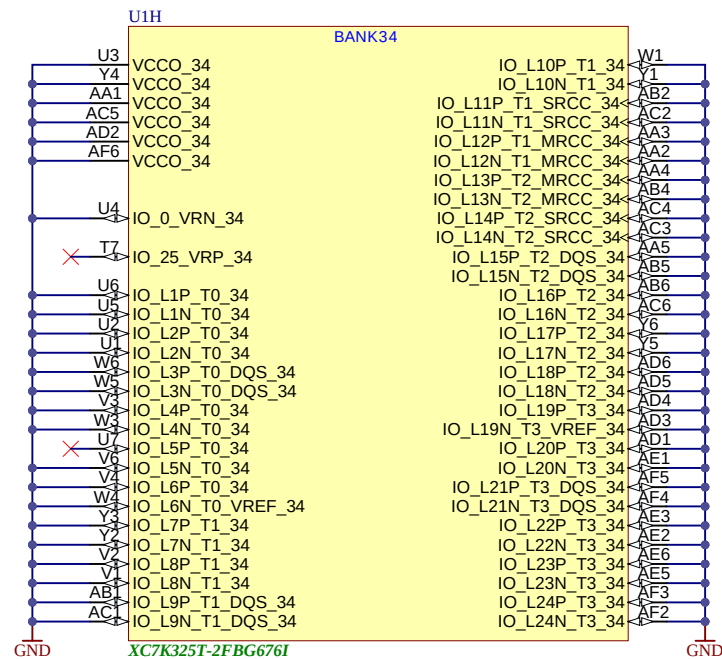
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A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 12 of 20
Filename: B32 B33.SchDoc		

1

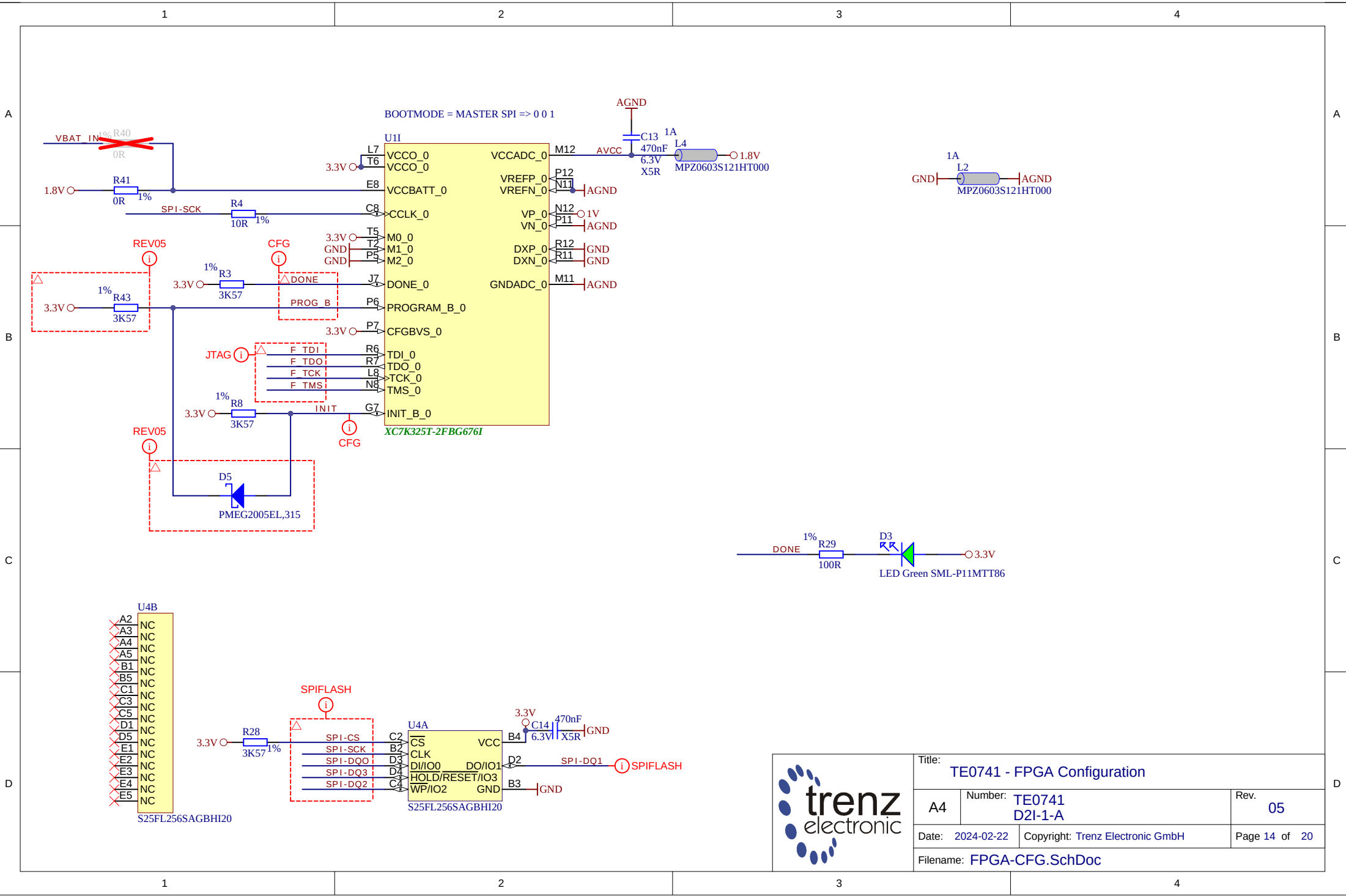
2

3

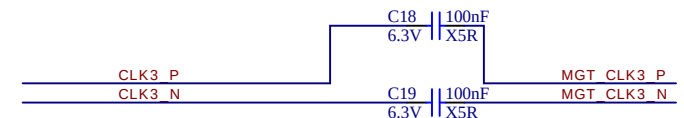
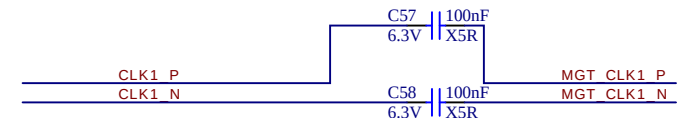
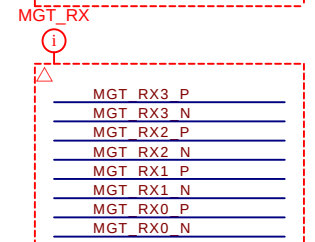
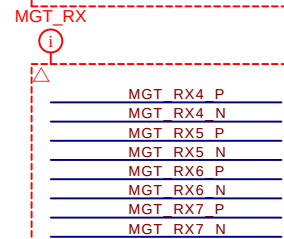
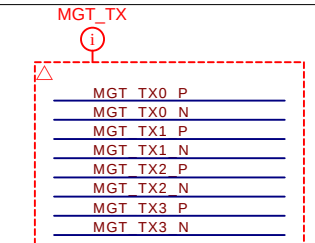
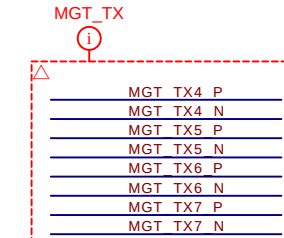
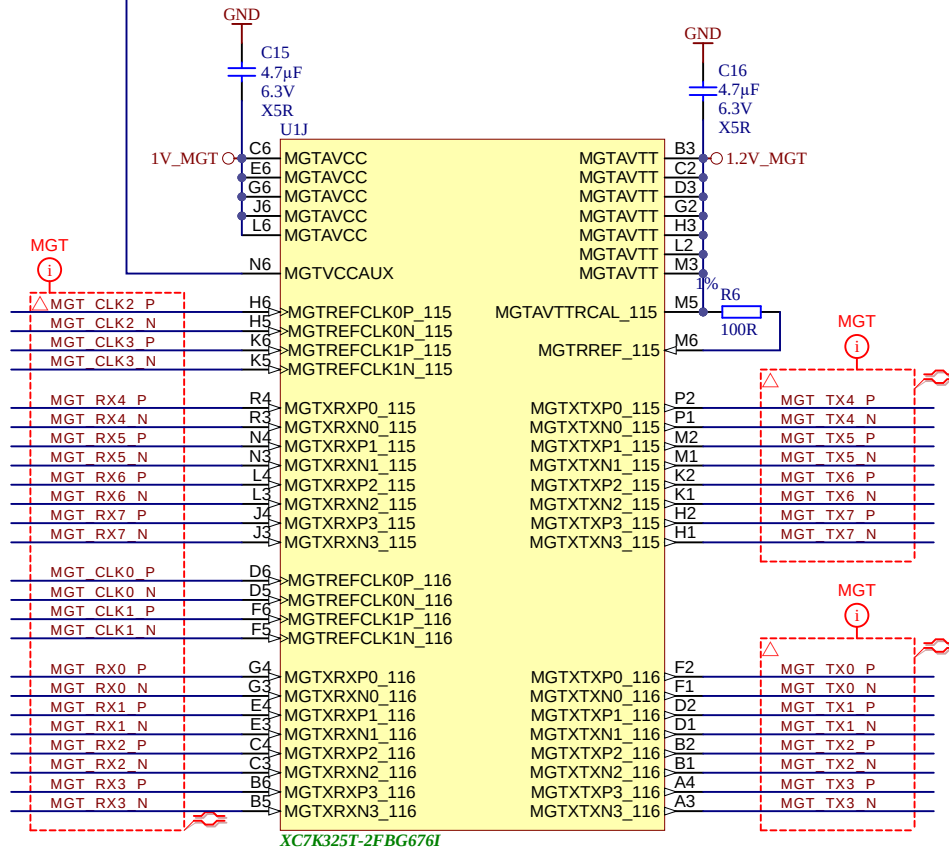
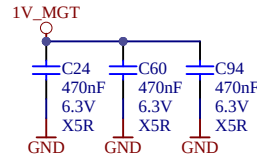
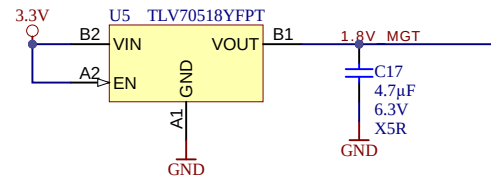
4



Title: TE0741 - FPGA Bank 34		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 13 of 20
Filename: B34.SchDoc		



	Title: TE0741 - FPGA Configuration		
	A4	Number: TE0741 D2I-1-A	Rev. 05
	Date: 2024-02-22	Copyright: Trenz Electronic GmbH	Page 14 of 20
	Filename: FPGA-CFG.SchDoc		





Title: TE0741 - FPGA MGT Lanes		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 15 of 20
Filename: FPGA-MGT.SchDoc		

1

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4

A

A

B

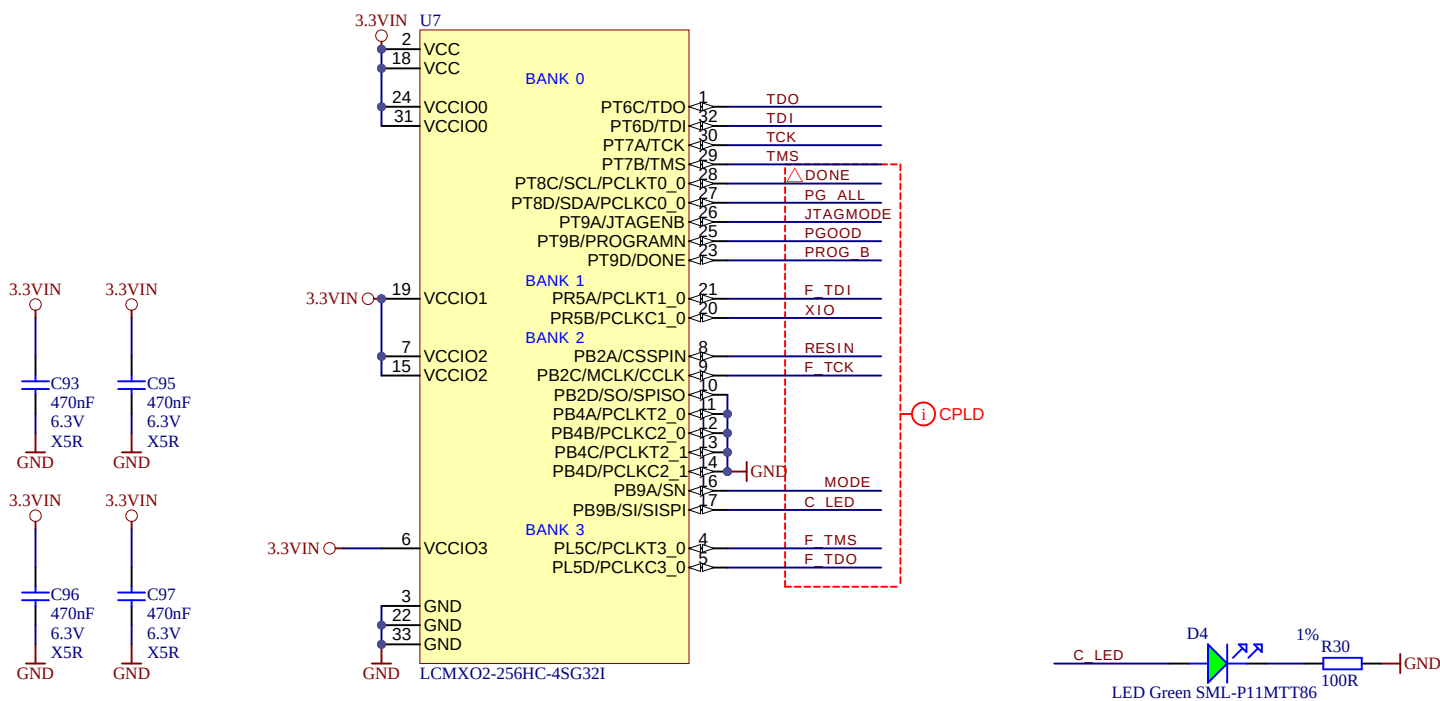
B

C

C

D

D



Title: TE0741 - System Controller		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 16 of 20
Filename: FPGA-MISC.SchDoc		

1

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1

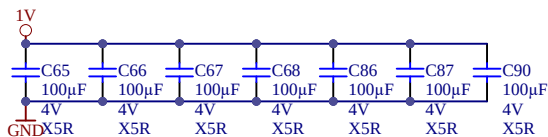
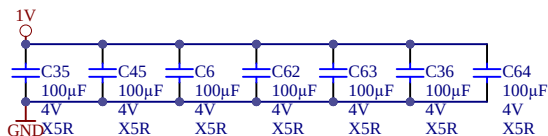
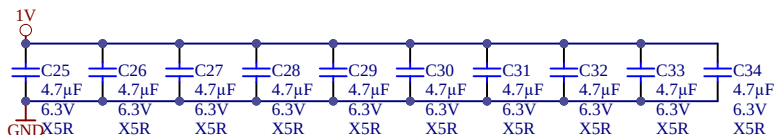
2

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4

A

A



B

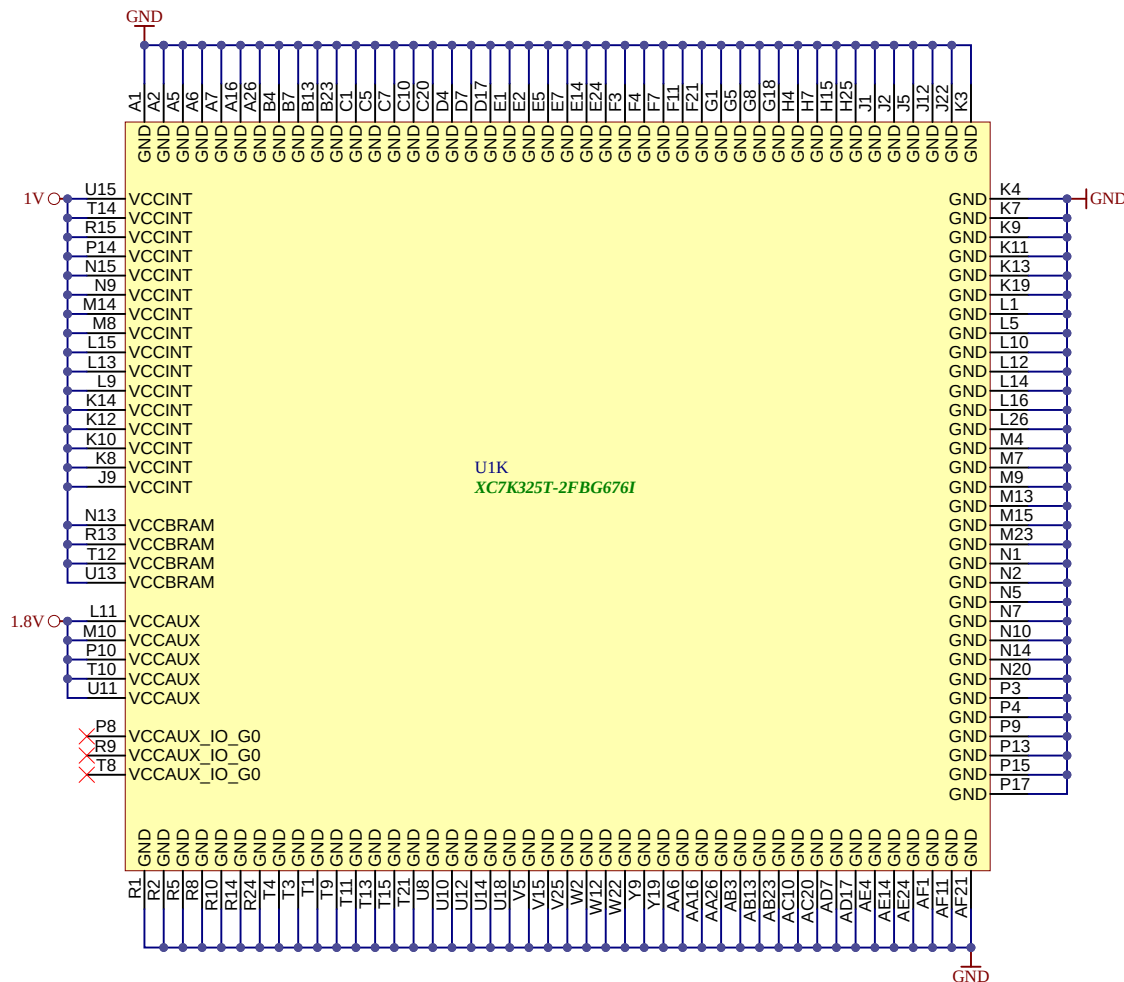
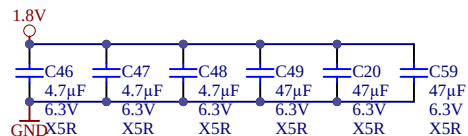
B

C

C

D

D



Title: TE0741 - FPGA Power Pinout		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 17 of 20
Filename: FPGA-PWR.SchDoc		

1

2

3

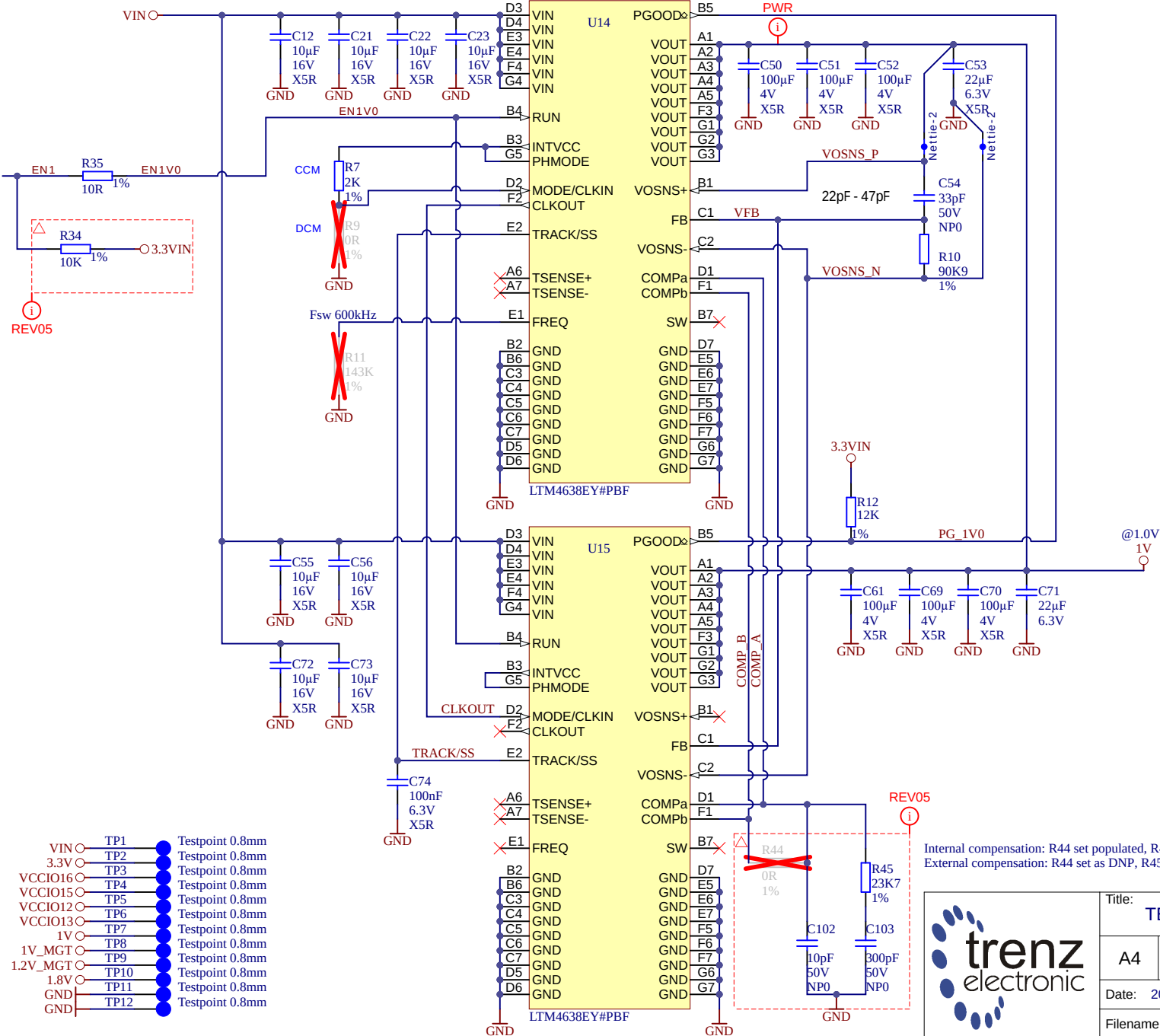
4

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4



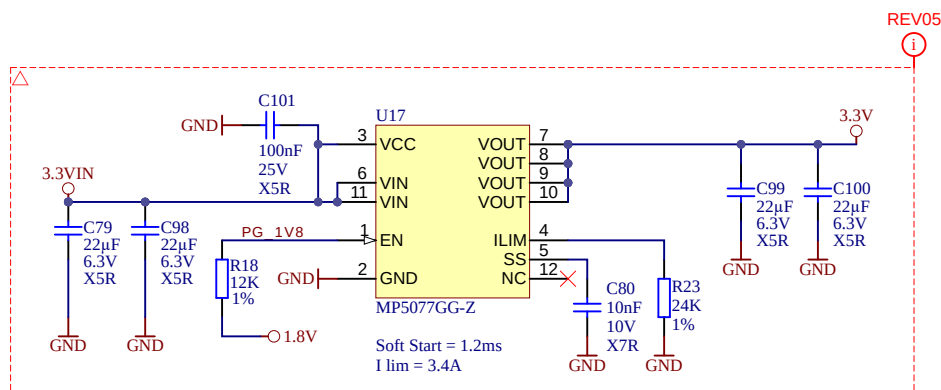
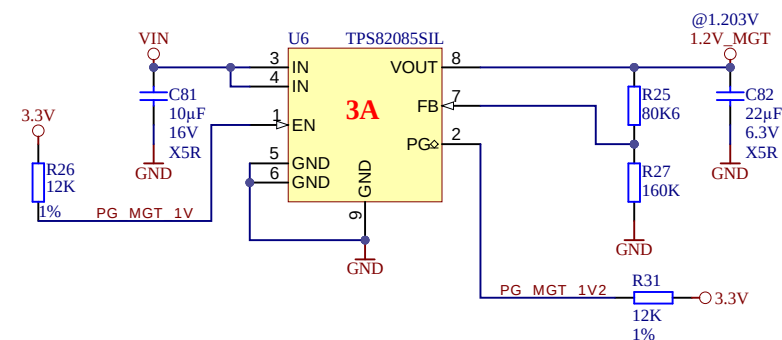
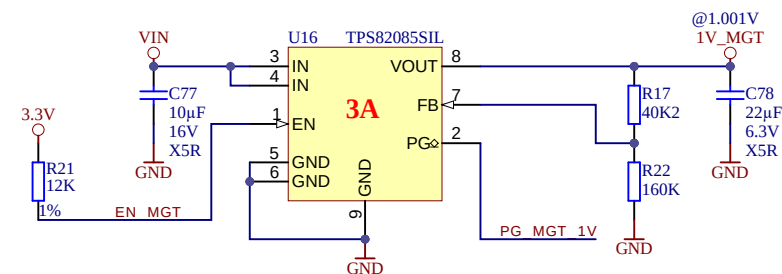
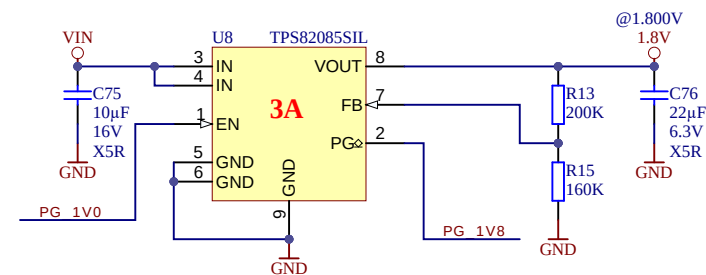
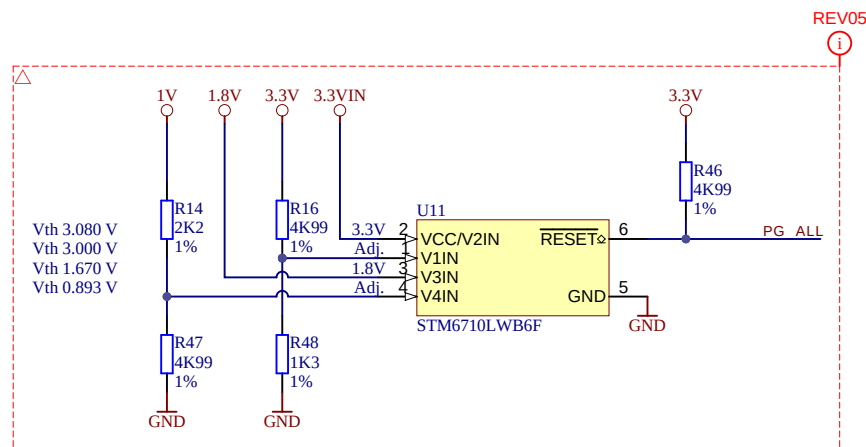
Title: TE0741 - Power Part 1		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 19 of 20
Filename: PWR1.SchDoc		

1

2

3

4



Title: TE0741 - Power Part 2		
A4	Number: TE0741 D2I-1-A	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 20 of 20
Filename: PWR2.SchDoc		