



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

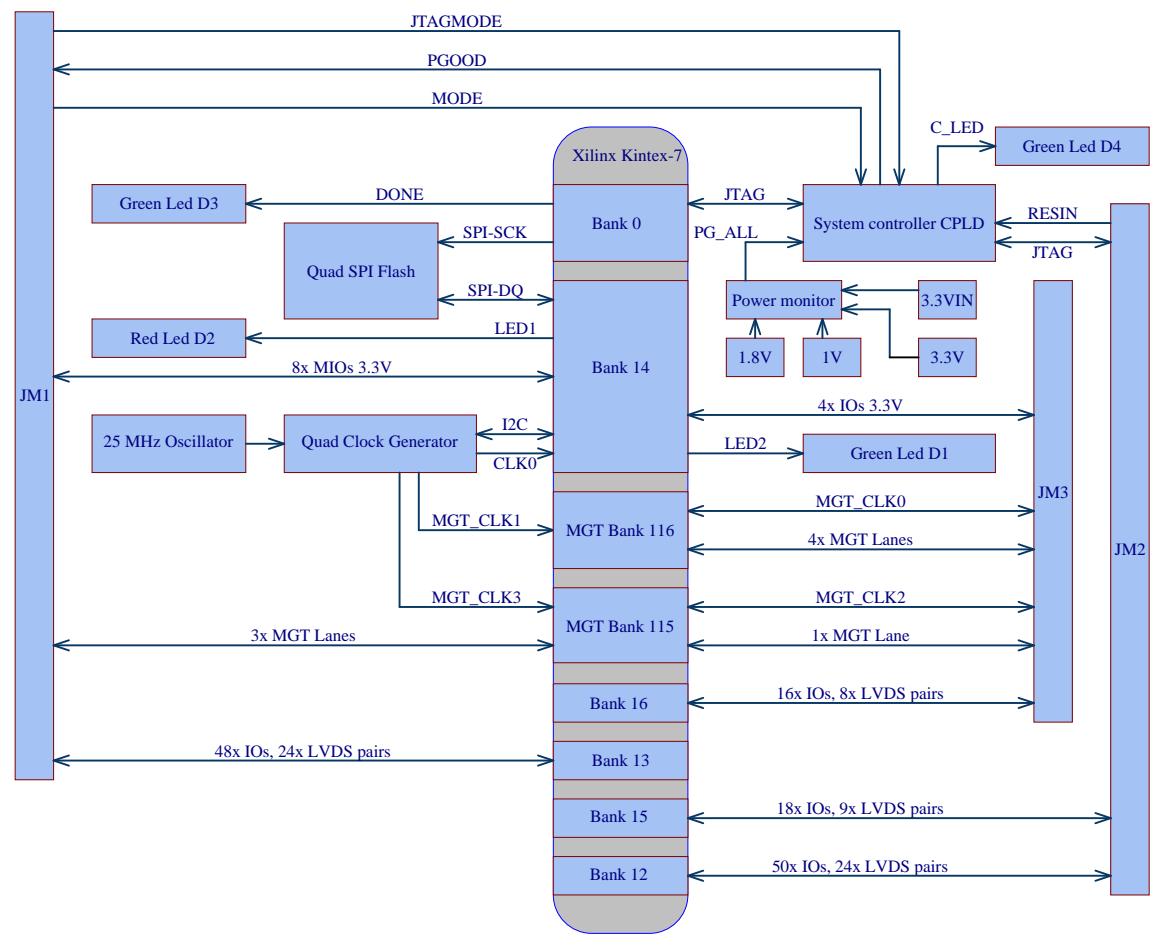
Project is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation, even if the design is just adapted or modified. TE0741 is protected under such right and in case of plagiarism we will have to do anything necessary in order to protect our assets.

Schematics and other handouts serve for informational purposes only!

	Title: TE0741 - Legal Notices Modules		
	A4	Number: TE0741 B2C-1-AF	Rev. 05
	Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 1 of 20
	Filename: Legal Notices Modules.SchDoc		

REV	Description	
-01	Initial revision	
-02		
-03	<ul style="list-style-type: none"> 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
-04	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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

		Title: TE0741 - Changes List		
		A4	Number: TE0741 B2C-1-AF	Rev. 05
		Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 2 of 20
		Filename: Revision_Changes.SchDoc		

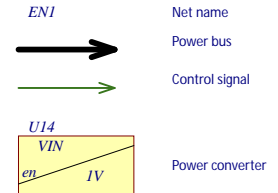
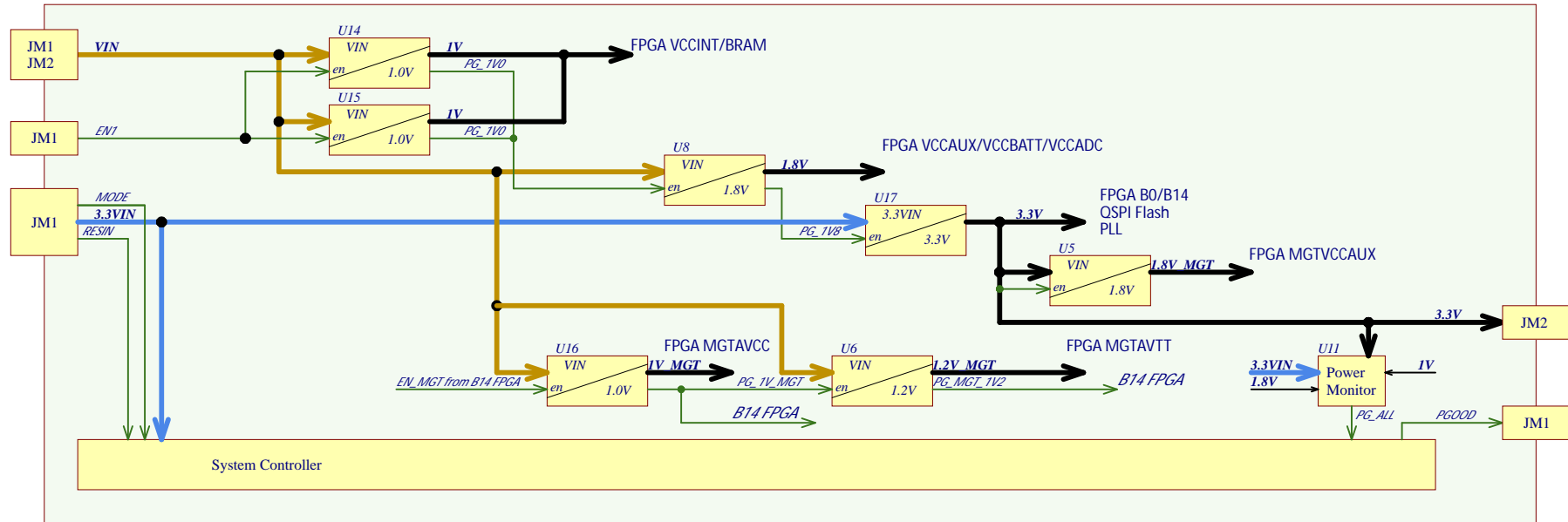


U_Legal Notices Modules	U_B34
U_Revision Changes	U_FPGA_PWR
U_Power_Diagram	U_TE0741
U_B32_B33	U_PWR1



Title: TE0741 - System Overview		
A4	Number: TE0741 B2C-1-AF	Rev. 05
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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	Number: TE0741 B2C-1-AF	Rev. 05
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Filename: Power_Diagram.SchDoc		

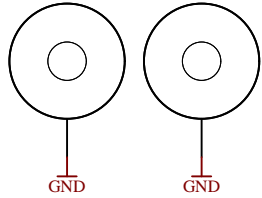
1

2

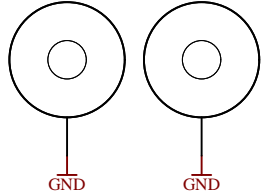
3

4

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

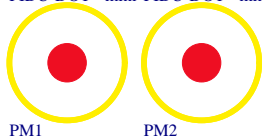
Serial

Serialnumber 6,3 x 6.3mm

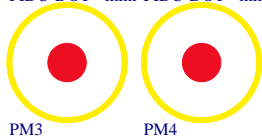
Special notes:

XC7K160T-2FFG676C instead of XC7K160T-2FBG676C

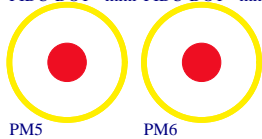
FIDU-DOT - mini FIDU-DOT - mini



FIDU-DOT - mini FIDU-DOT - mini



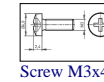
FIDU-DOT - mini FIDU-DOT - mini



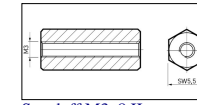
AC coupling on carrier card for nets MGT_CLK0 is REQUIRED!!!!!!

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

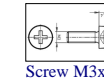
Top of Board



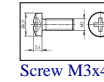
Screw M3x4



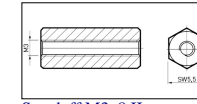
Standoff M3x8 II



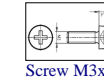
Screw M3x6



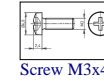
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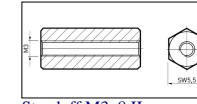
Standoff M3x8 II



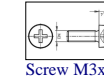
Screw M3x6



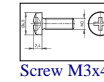
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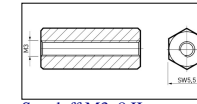
Standoff M3x8 II



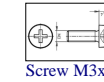
Screw M3x6



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	B2C-1-AF
Created by	OT
Modified by	MT
Modified at	2023-04-16



Title: TE0741		
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Filename: TE0741.SchDoc		

1

2

3

4

A

A

B

B

C

C

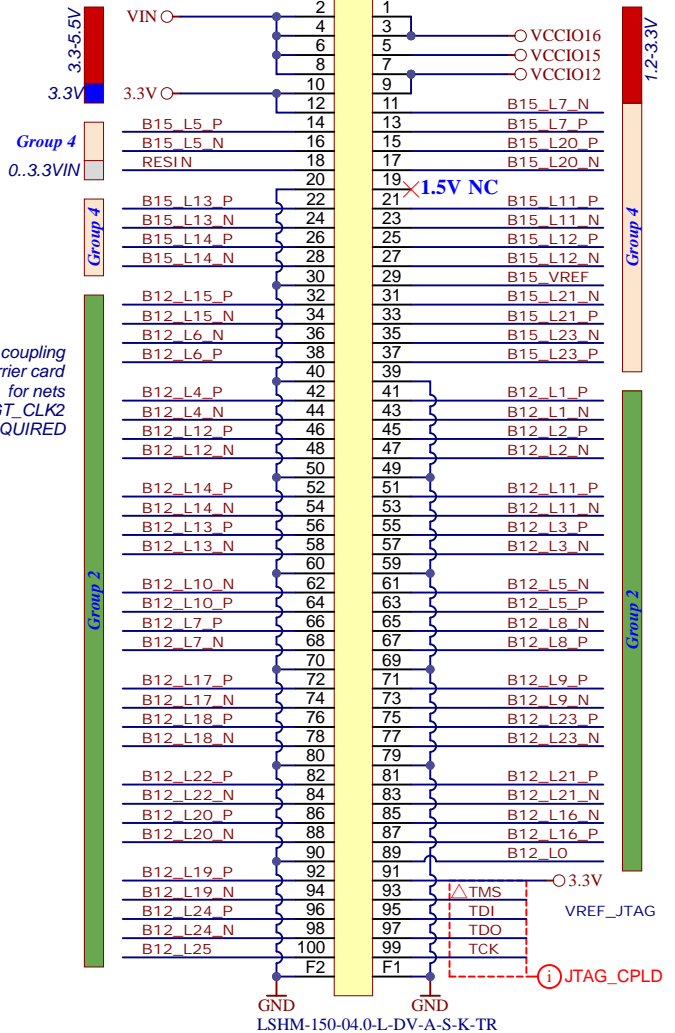
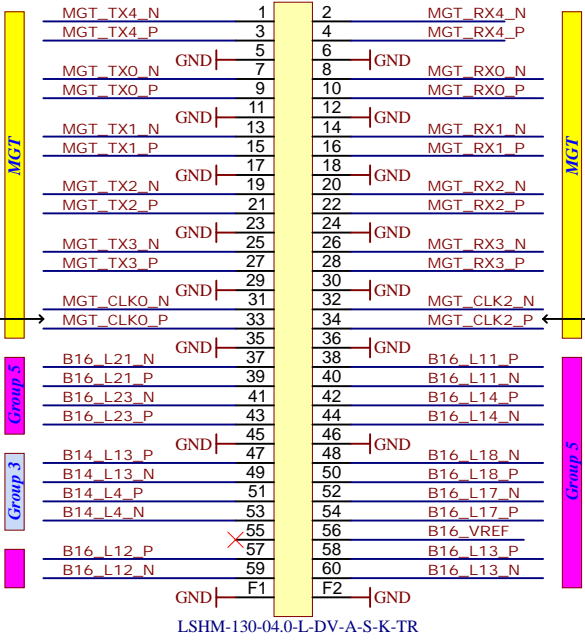
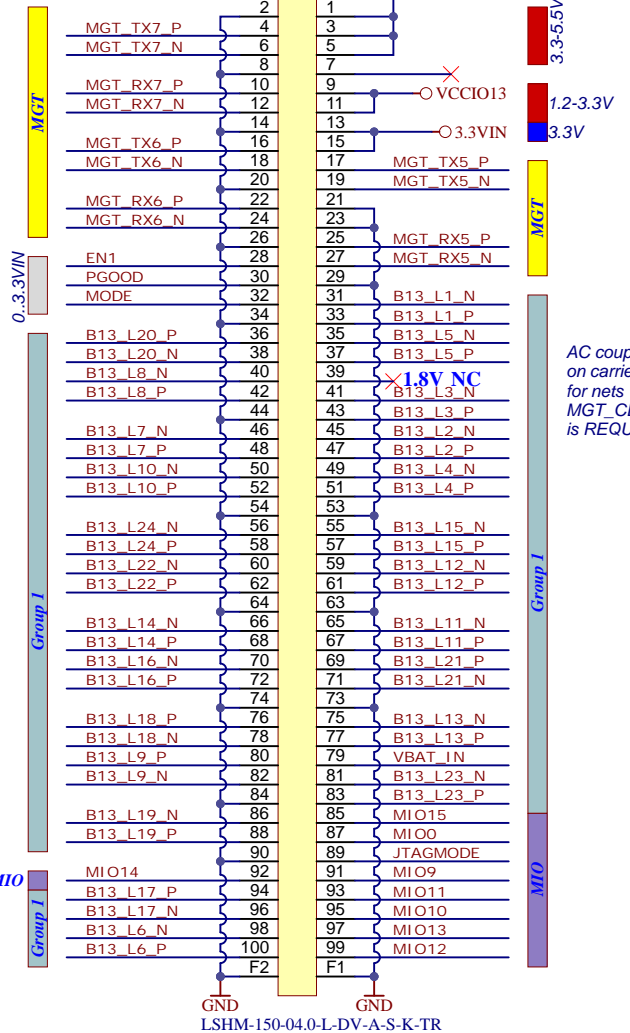
D

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



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	

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

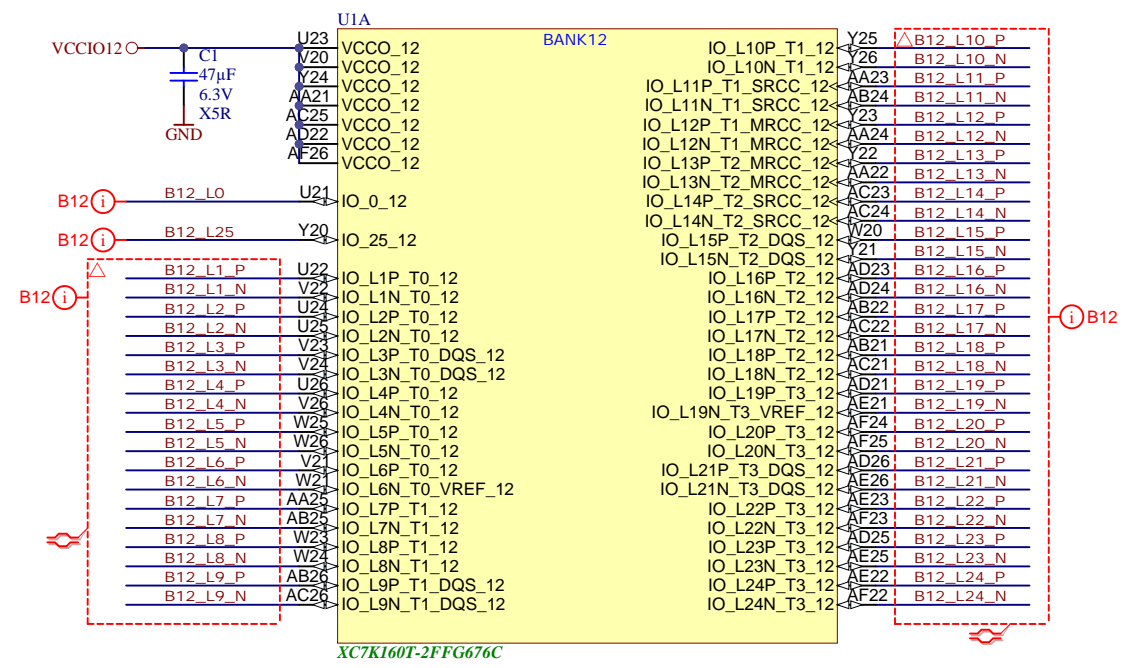


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Filename: B2B-Connectors.SchDoc		

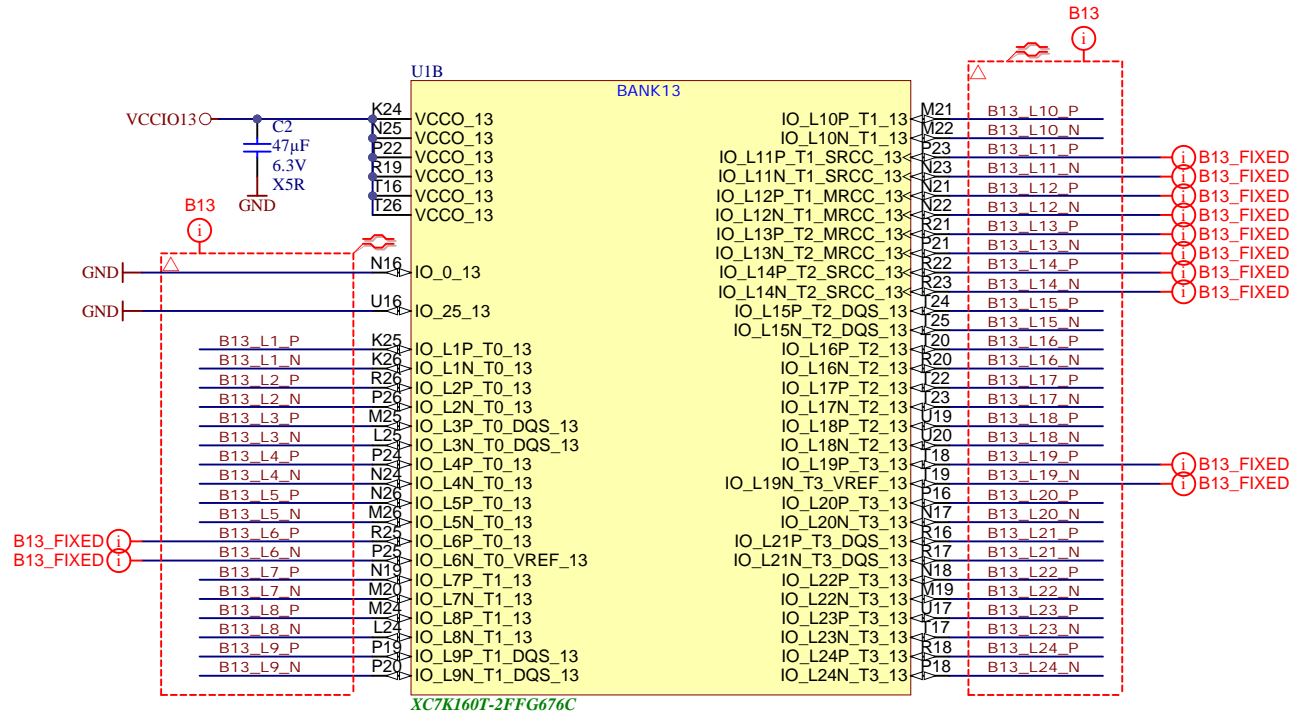
B12_FIXED ⓘ ▲

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!



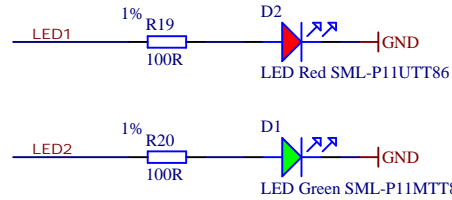
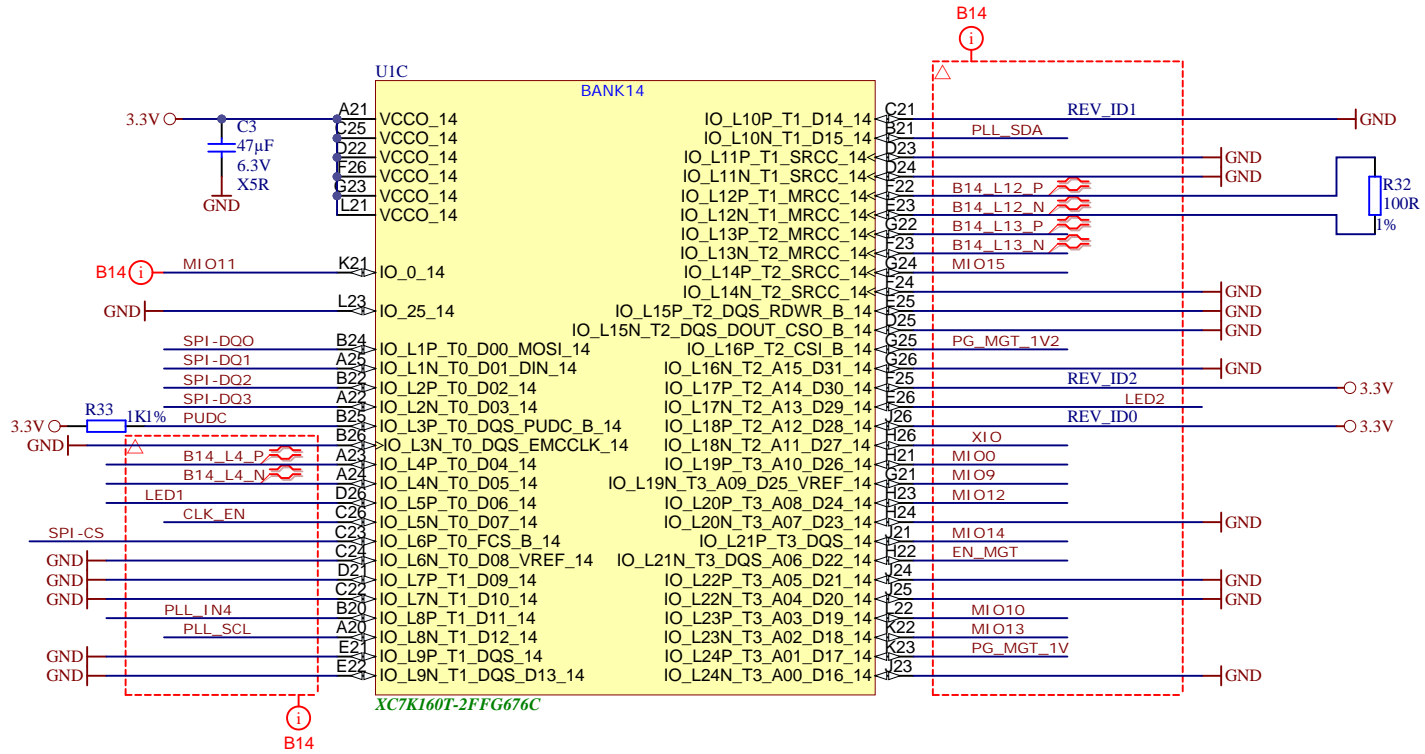
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	Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 7 of 20
	Filename: B12.SchDoc		



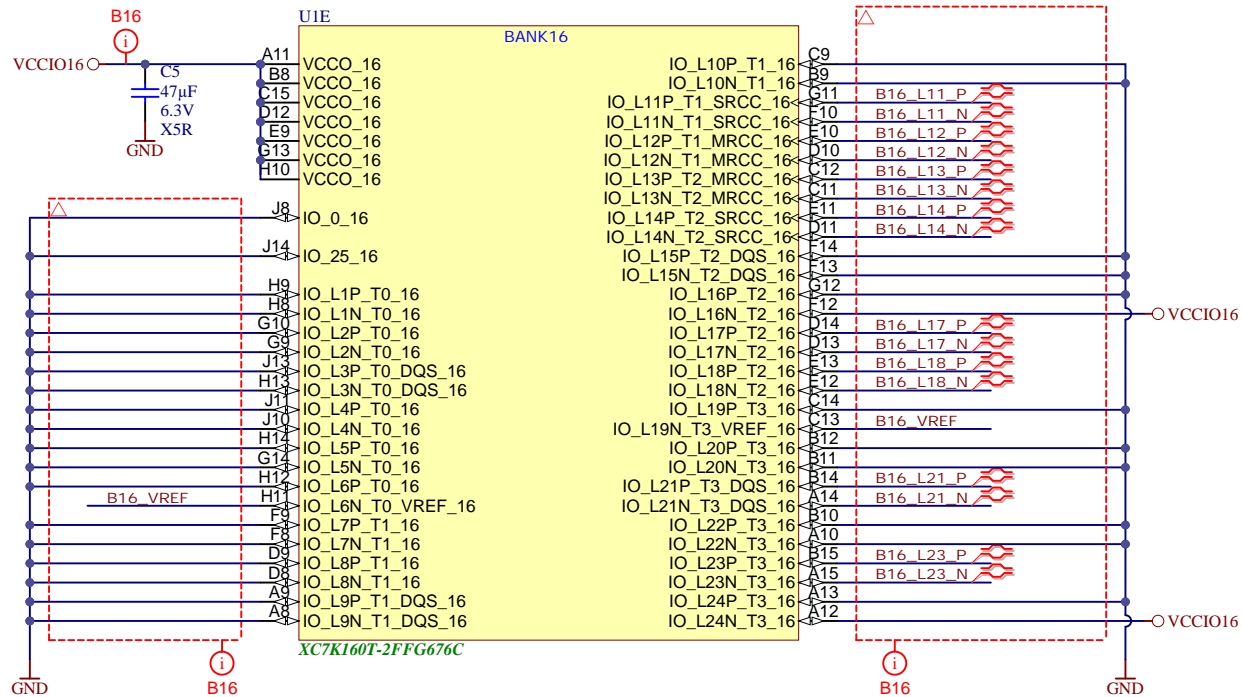
XC7K160T-2FFG676C




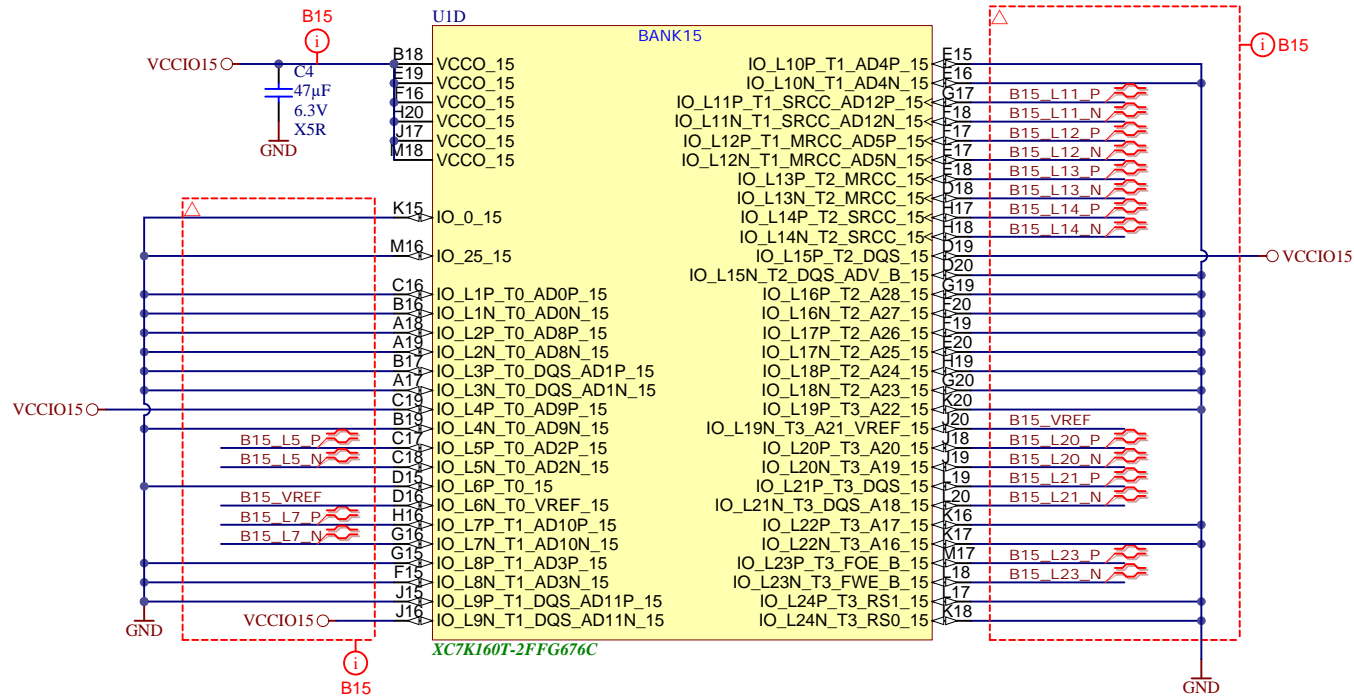
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Filename: B13.SchDoc		



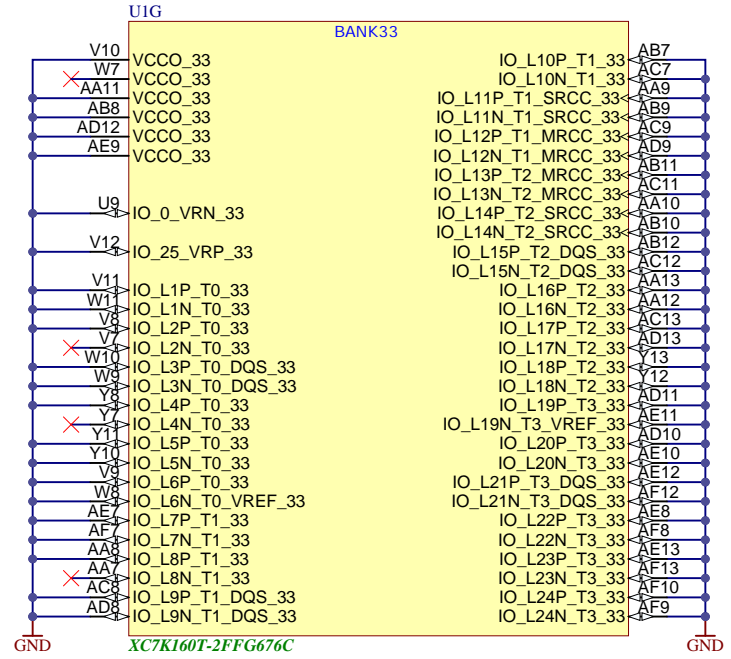
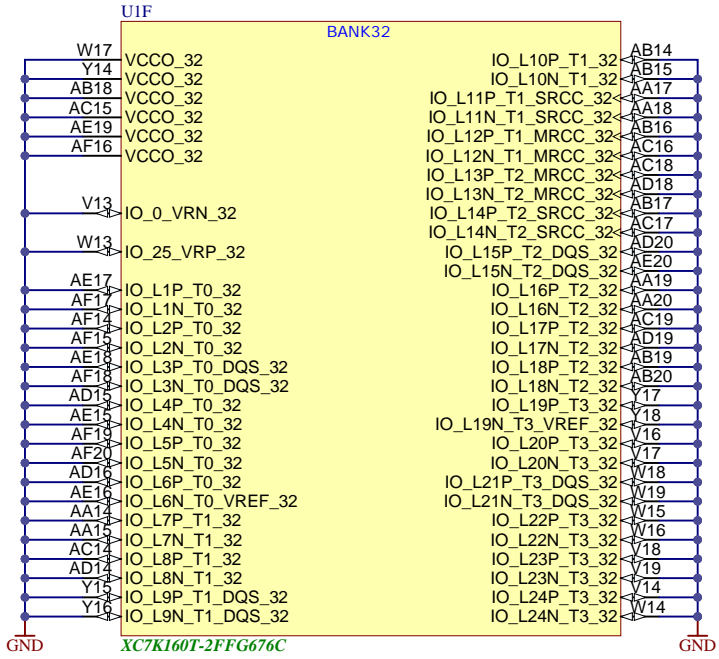

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Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 9 of 20
Filename: B14.SchDoc		



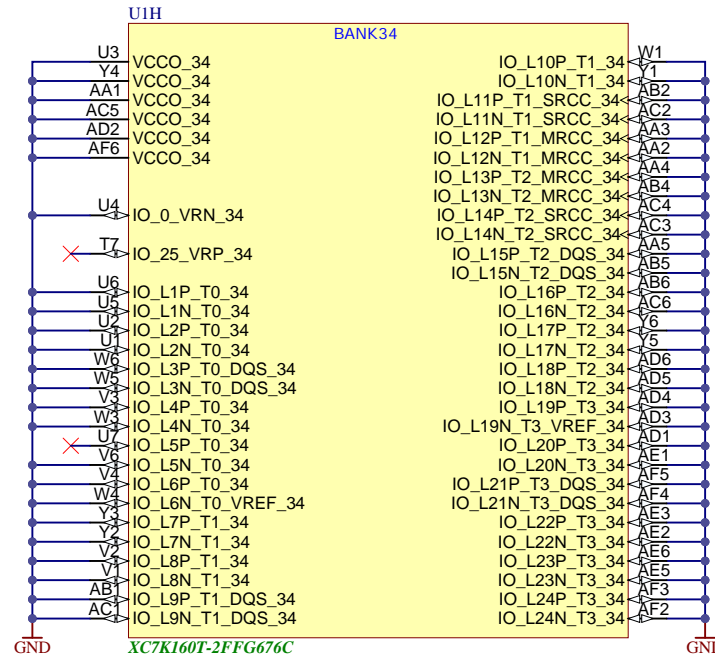
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	Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 10 of 20
	Filename: B16.SchDoc		




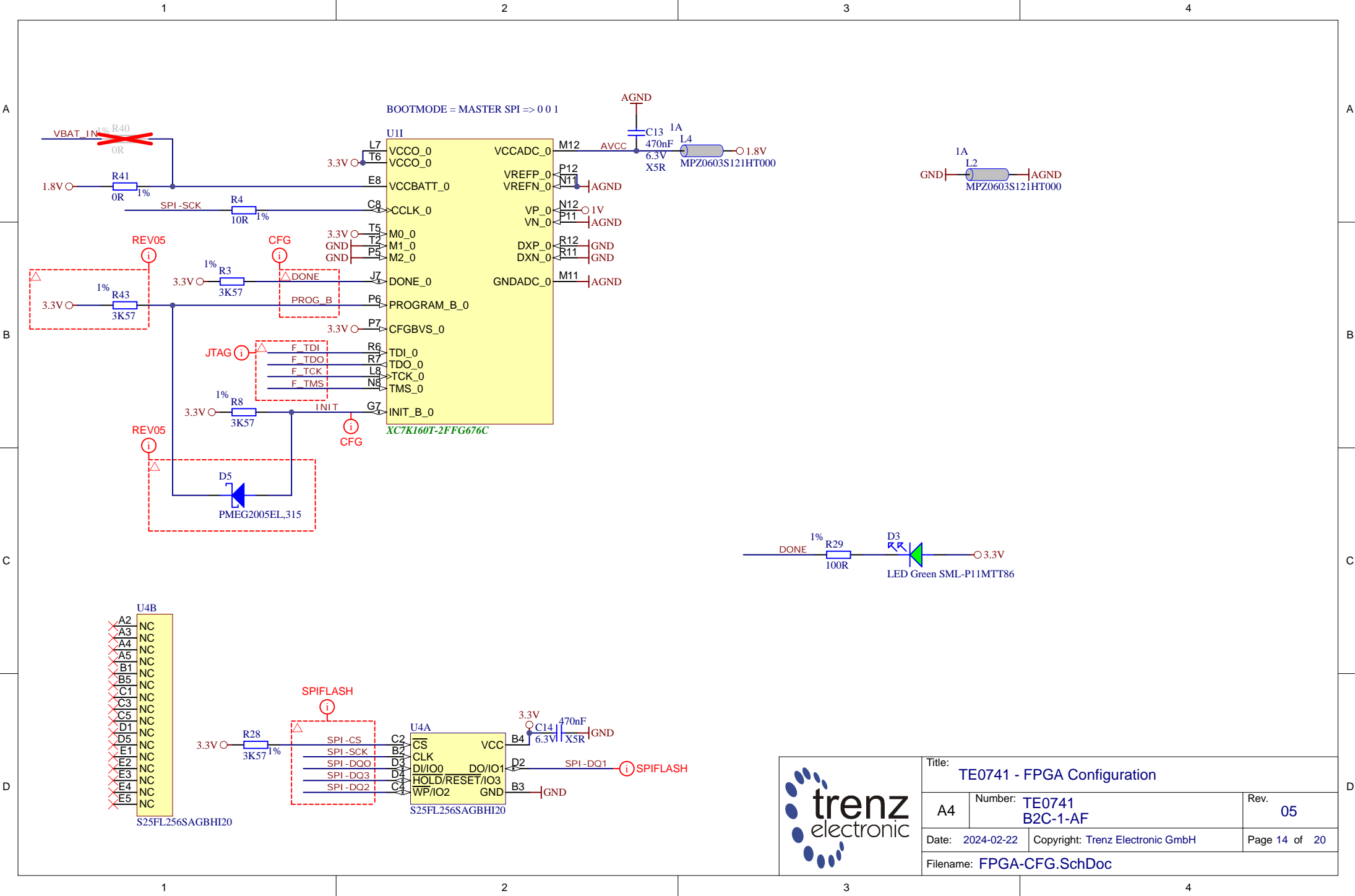
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Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 11 of 20
Filename: B15.SchDoc		

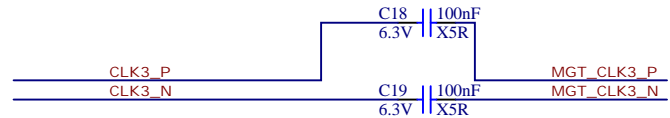
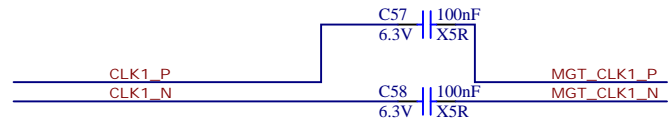
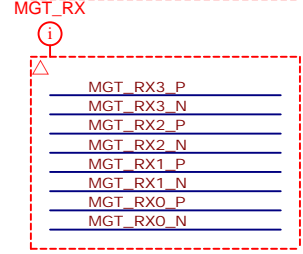
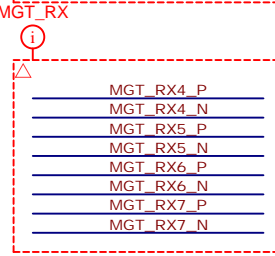
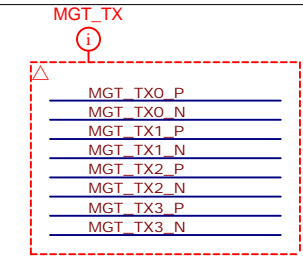
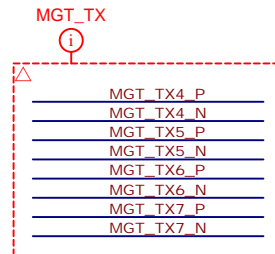
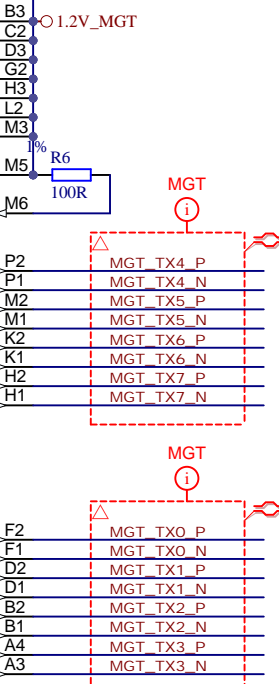
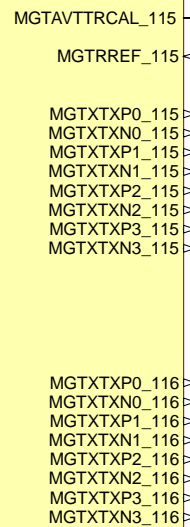
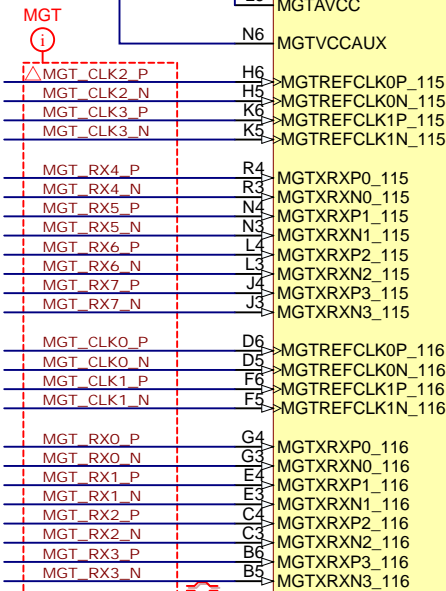
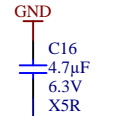
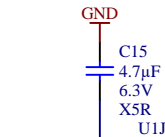
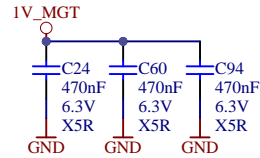
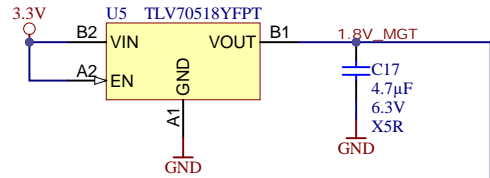
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A4	Number: TE0741 B2C-1-AF	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 12 of 20
Filename: B32_B33.SchDoc		



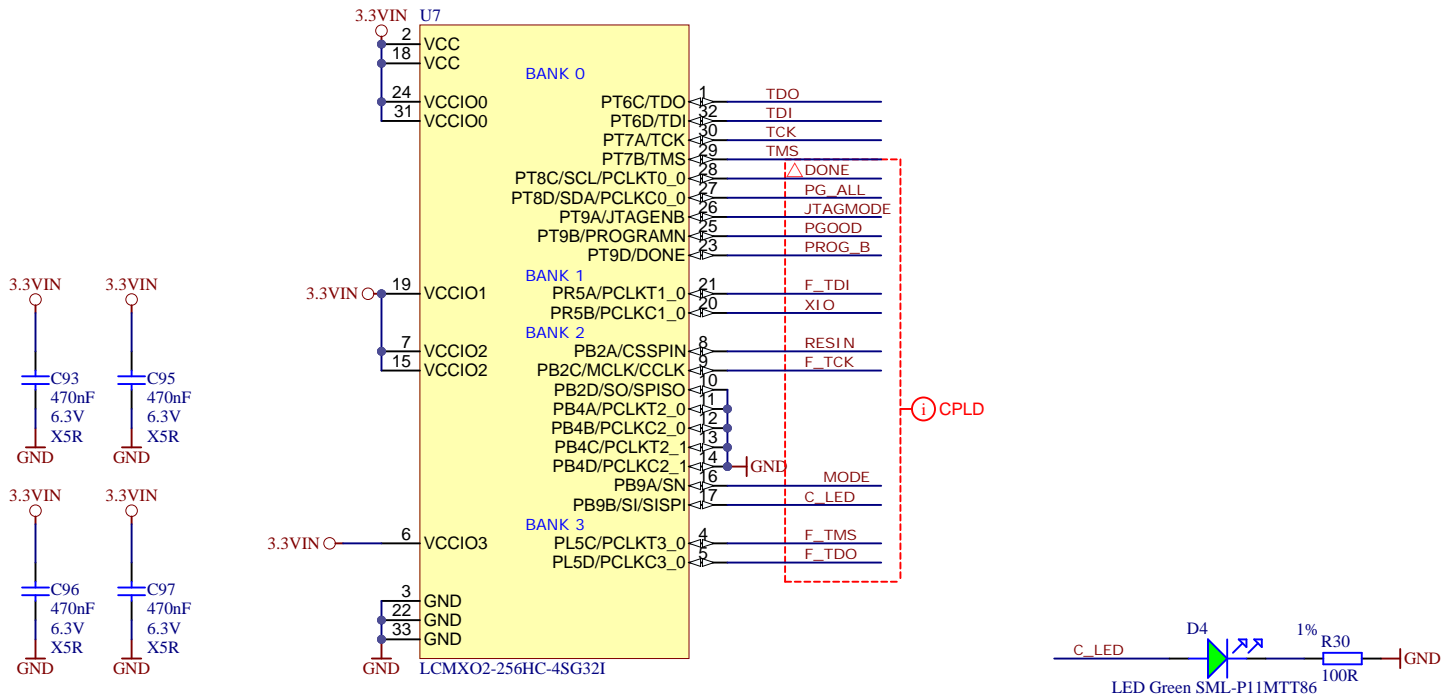
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	Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 13 of 20
	Filename: B34.SchDoc		



Title: TE0741 - FPGA Configuration		
A4	Number: TE0741 B2C-1-AF	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 B2C-1-AF	Rev. 05
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Filename: FPGA-MGT.SchDoc		



Title: TE0741 - System Controller		
A4	Number: TE0741 B2C-1-AF	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 16 of 20
Filename: FPGA-MISC.SchDoc		

1

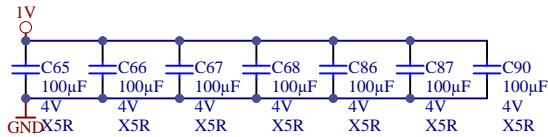
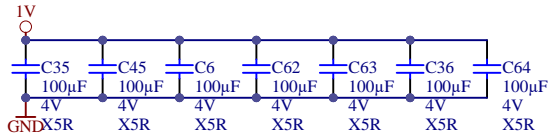
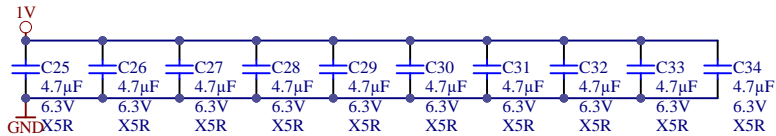
2

3

4

A

A



B

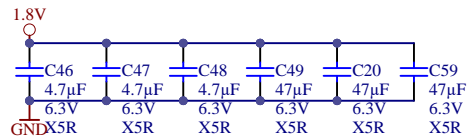
B

C

C

D

D

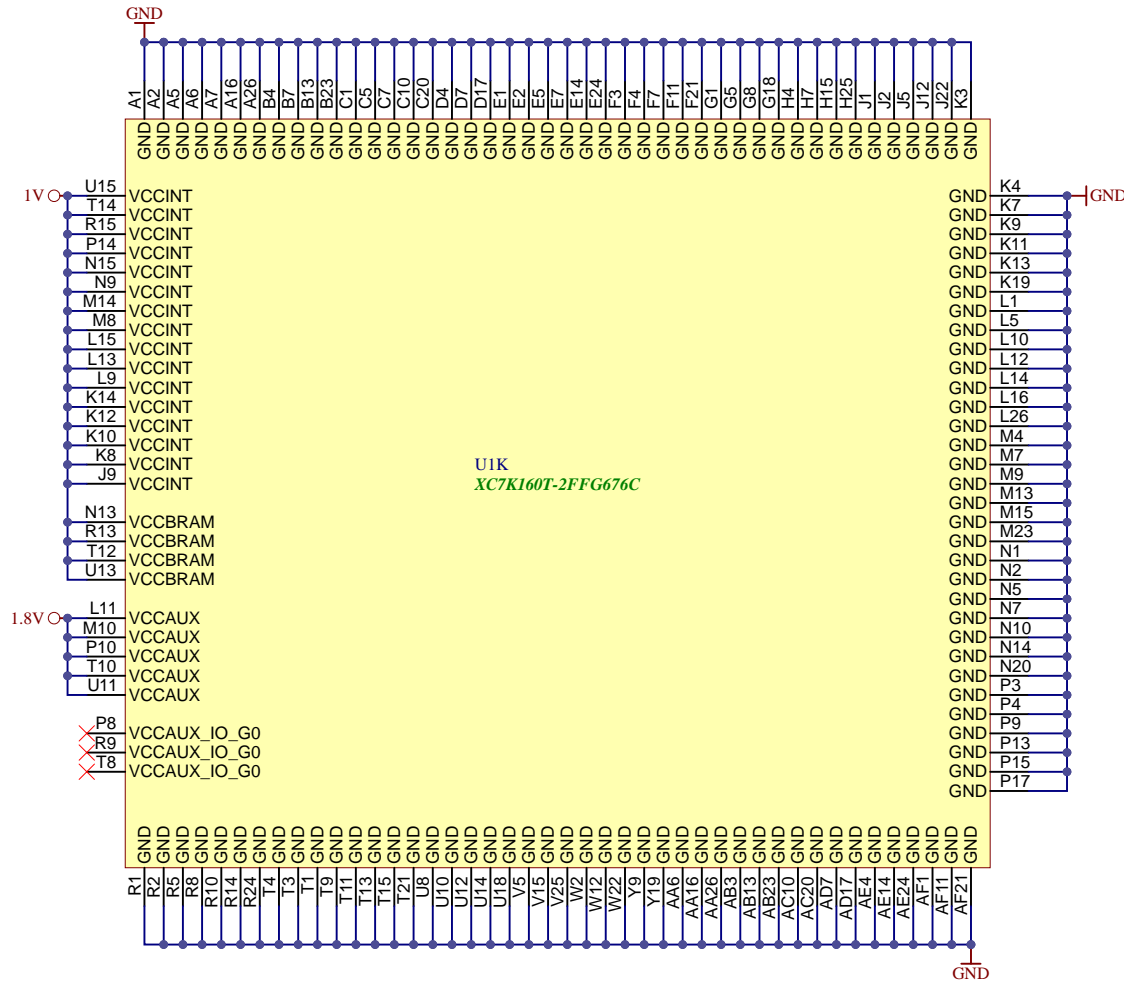


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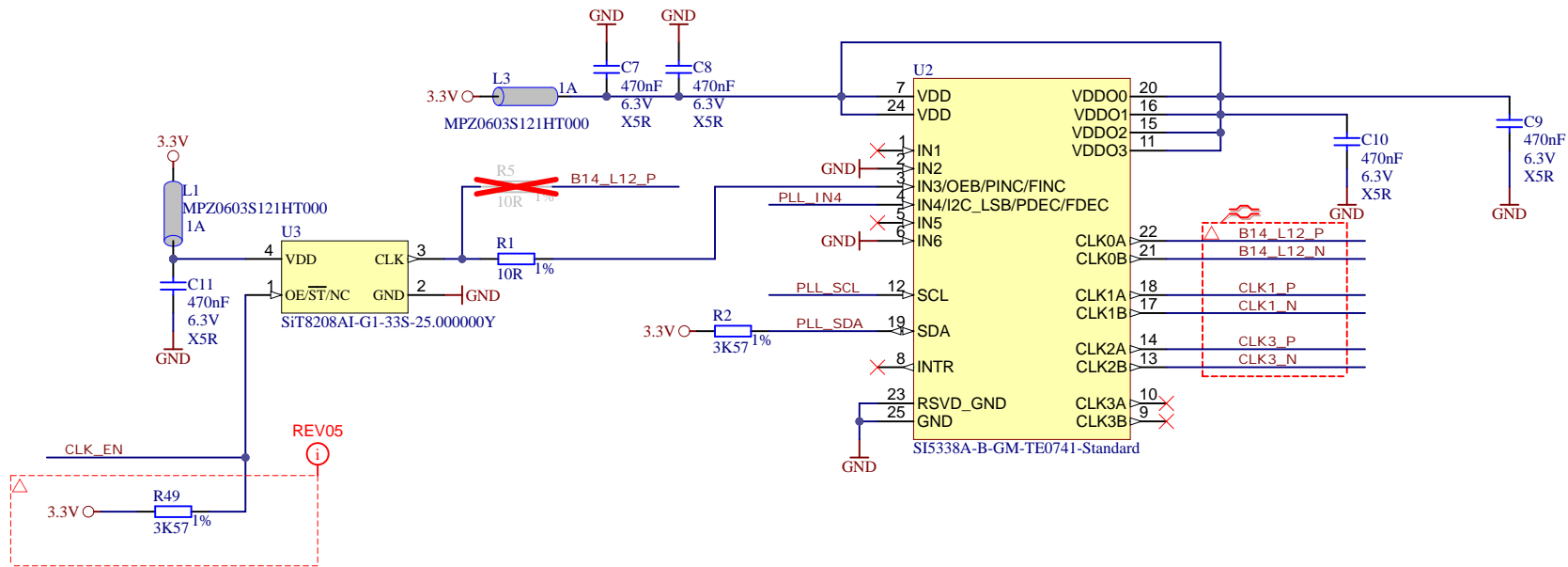
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3

4



Title: TE0741 - FPGA Power Pinout		
A4	Number: TE0741 B2C-1-AF	Rev. 05
Date: 2023-08-02	Copyright: Trenz Electronic GmbH	Page 17 of 20
Filename: FPGA-PWR.SchDoc		



			Title: TE0741 - Clock	
			A4	Number: TE0741 B2C-1-AF
Date: 2023-08-02		Copyright: Trenz Electronic GmbH		Page 18 of 20
Filename: Clock.SchDoc				

A

A

B

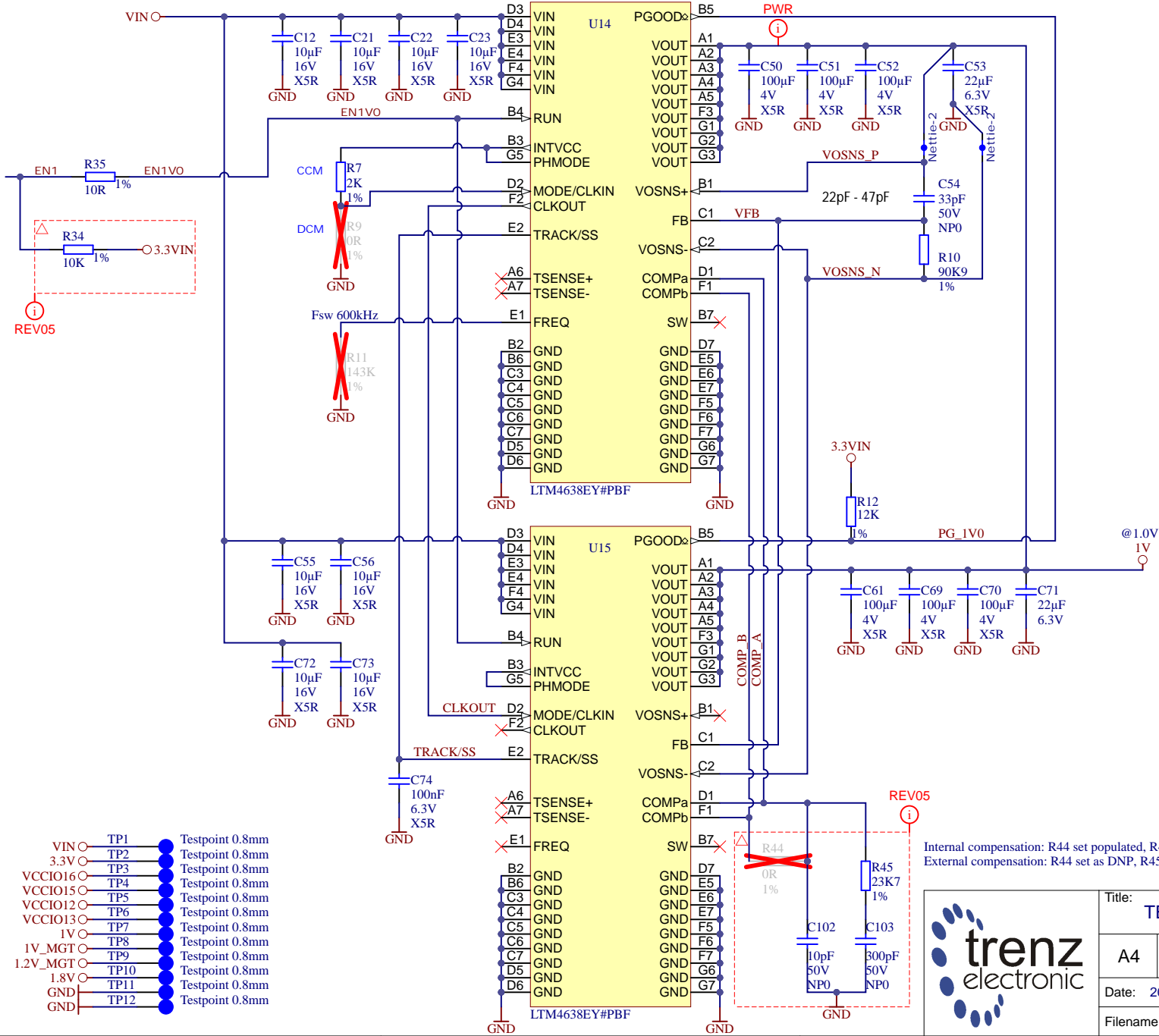
B

C

C

D

D

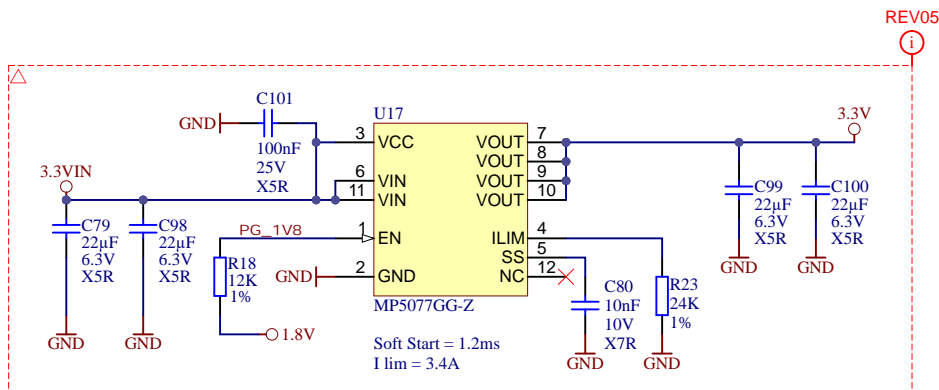
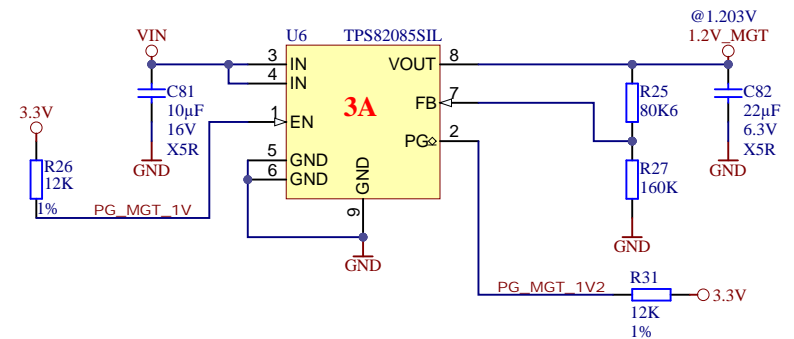
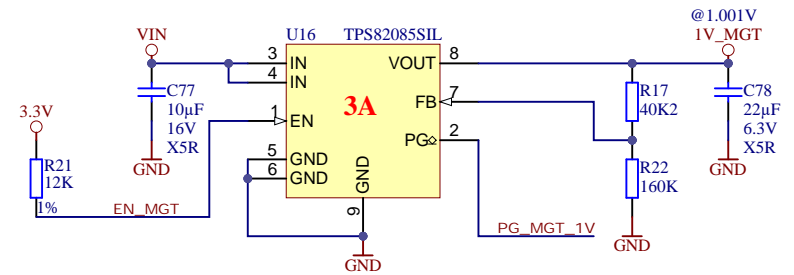
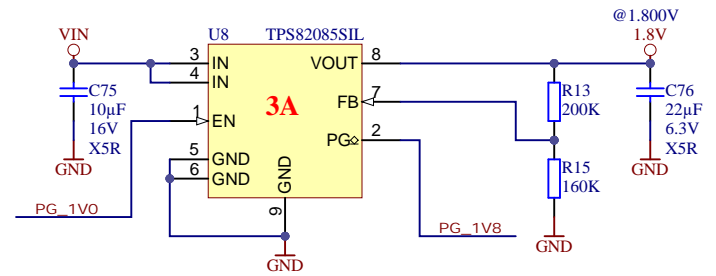
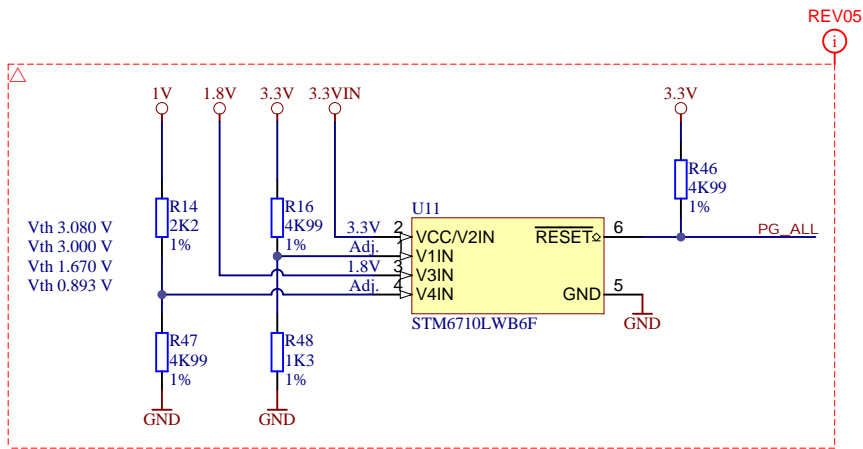



- VIN ○ TP1 ● Testpoint 0.8mm
- 3.3V ○ TP2 ● Testpoint 0.8mm
- VCCIO16 ○ TP3 ● Testpoint 0.8mm
- VCCIO15 ○ TP4 ● Testpoint 0.8mm
- VCCIO12 ○ TP5 ● Testpoint 0.8mm
- VCCIO13 ○ TP6 ● Testpoint 0.8mm
- 1V ○ TP7 ● Testpoint 0.8mm
- 1V_MGT ○ TP8 ● Testpoint 0.8mm
- 1.2V_MGT ○ TP9 ● Testpoint 0.8mm
- 1.8V ○ TP10 ● Testpoint 0.8mm
- GND ○ TP11 ● Testpoint 0.8mm
- GND ○ TP12 ● Testpoint 0.8mm

Internal compensation: R44 set populated, R45, C102,C103 set as DNP
 External compensation: R44 set as DNP, R45, C102,C103 set populated



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