



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

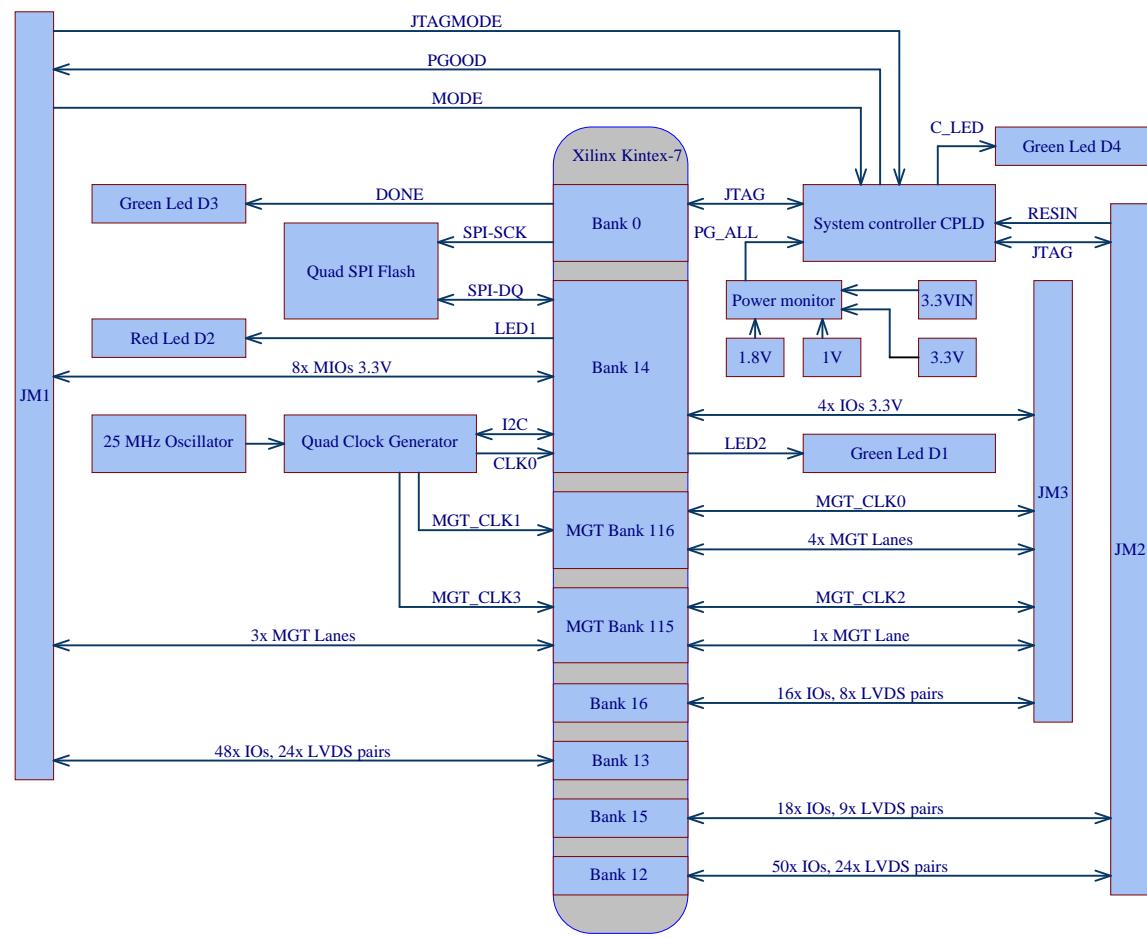
Project is protected under copyright and we strongly and strictly prohibit the reverse engineering or recreation, even if the design is just adapted or modified. TE0741 is protected under such right and in case of plagiarism we will have to do anything necessary in order to protect our assets.

Schematics and other handouts serve for informational purposes only!

| | | | |
|---|---|---|----------------------------|
|  | Title: TE0741 - Legal Notices Modules | | |
| | A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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| | 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-A |
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| Date: 2023-08-02 | | Page 2 of 20 | |
| Filename: Revision_Changes.SchDoc | | | |

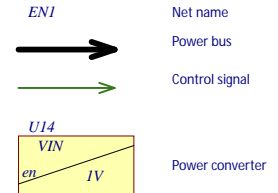
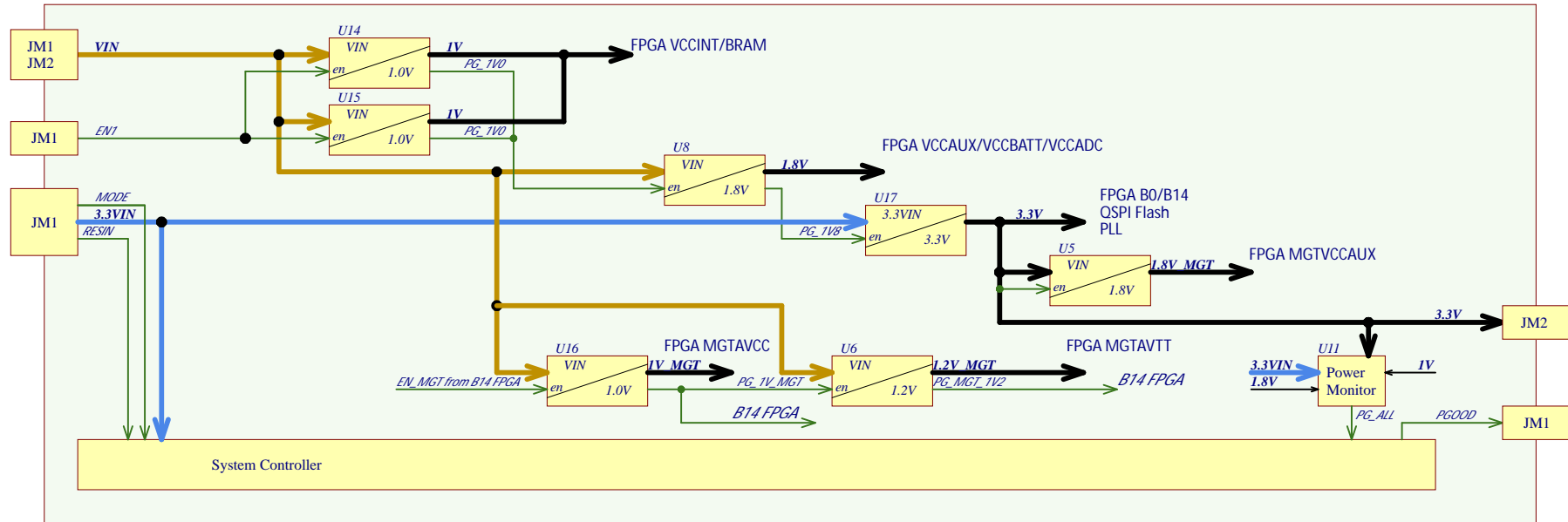


| | |
|-------------------------|------------|
| U_Legal Notices Modules | U_B34 |
| U_Revision Changes | U_FPGA_PWR |
| U_Power_Diagram | U_TE0741 |
| U_B32_B33 | U_PWR1 |



| | | |
|---------------------------------|----------------------------------|--------------|
| Title: TE0741 - System Overview | | |
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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 | | |
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| Filename: Power_Diagram.SchDoc | | |

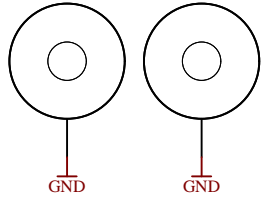
1

2

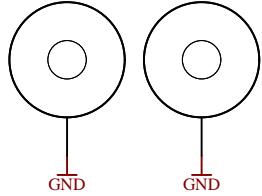
3

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

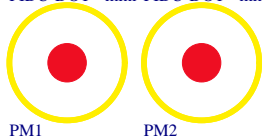
Serial

Serial

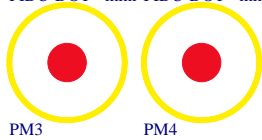
Serialnumber 6,3 x 6.3mm

Special notes:

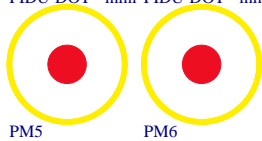
FIDU-DOT - mini FIDU-DOT - mini



FIDU-DOT - mini FIDU-DOT - mini



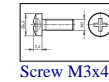
FIDU-DOT - mini FIDU-DOT - mini



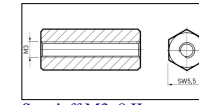
AC coupling on carrier card for nets MGT_CLK0 is REQUIRED!!!!!!

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

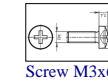
Top of Board



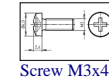
Screw M3x4



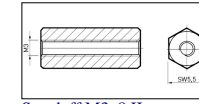
Standoff M3x8 II



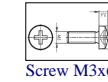
Screw M3x6



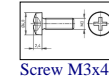
Screw M3x4



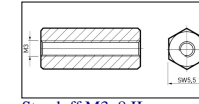
Standoff M3x8 II



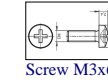
Screw M3x6



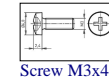
Screw M3x4



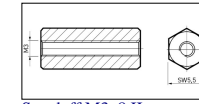
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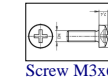
Screw M3x6



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-A |
| Created by | VT |
| Modified by | MT |
| Modified at | 2023-04-16 |



| | | |
|-------------------------|----------------------------------|--------------|
| Title: TE0741 | | |
| A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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1

2

3

4

A

A

B

B

C

C

D

D

1

2

3

4

A

A

B

B

C

C

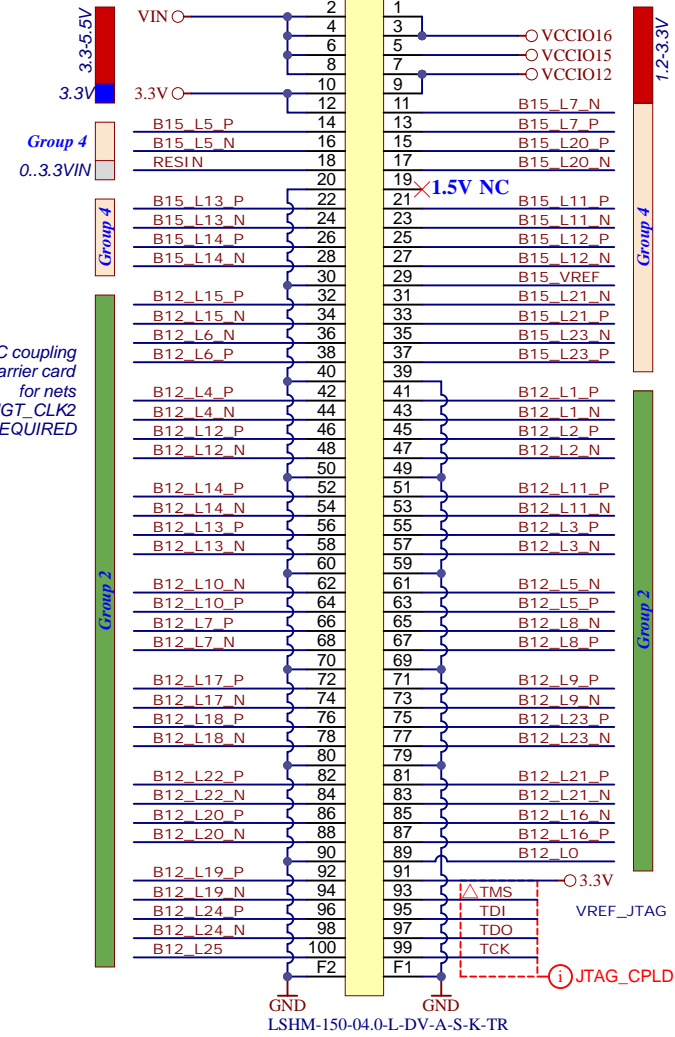
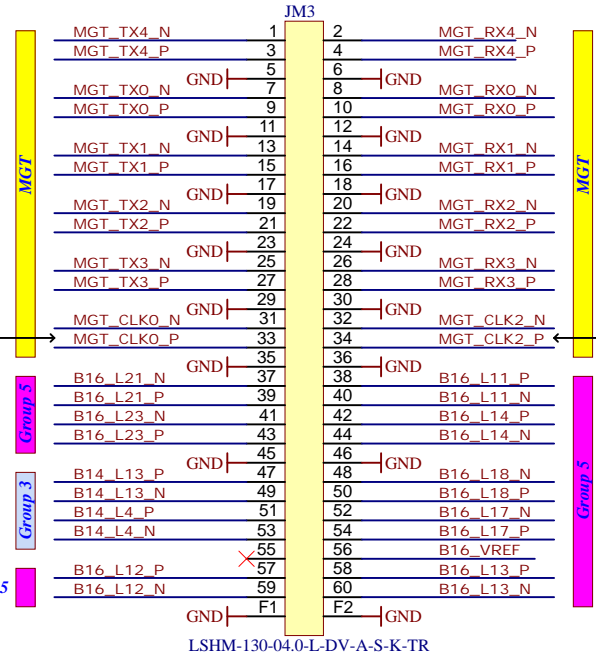
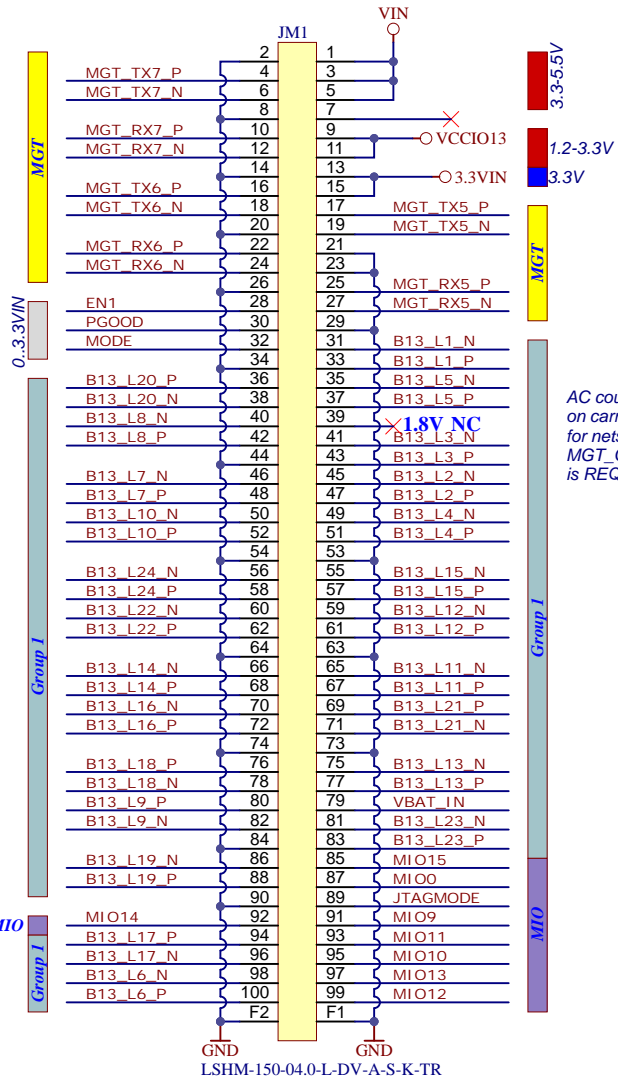
D

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



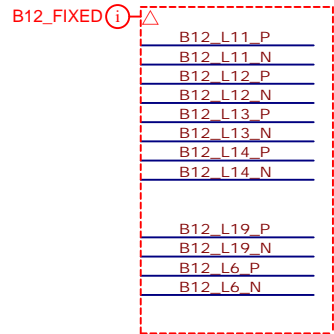
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| Filename: B2B-Connectors.SchDoc | | |

1

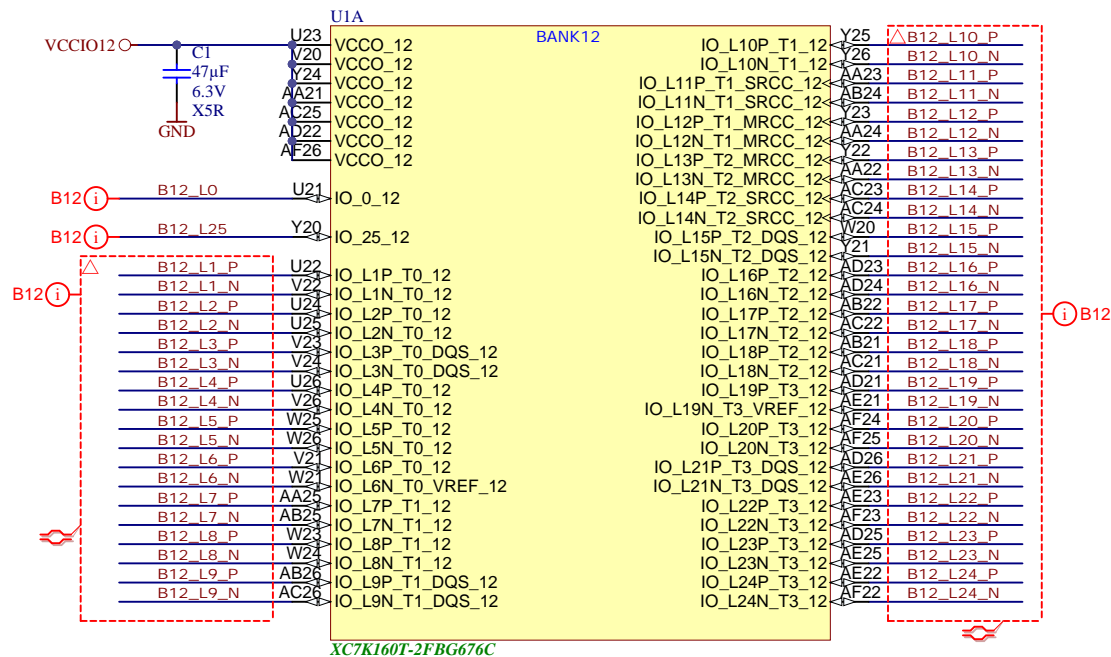
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3

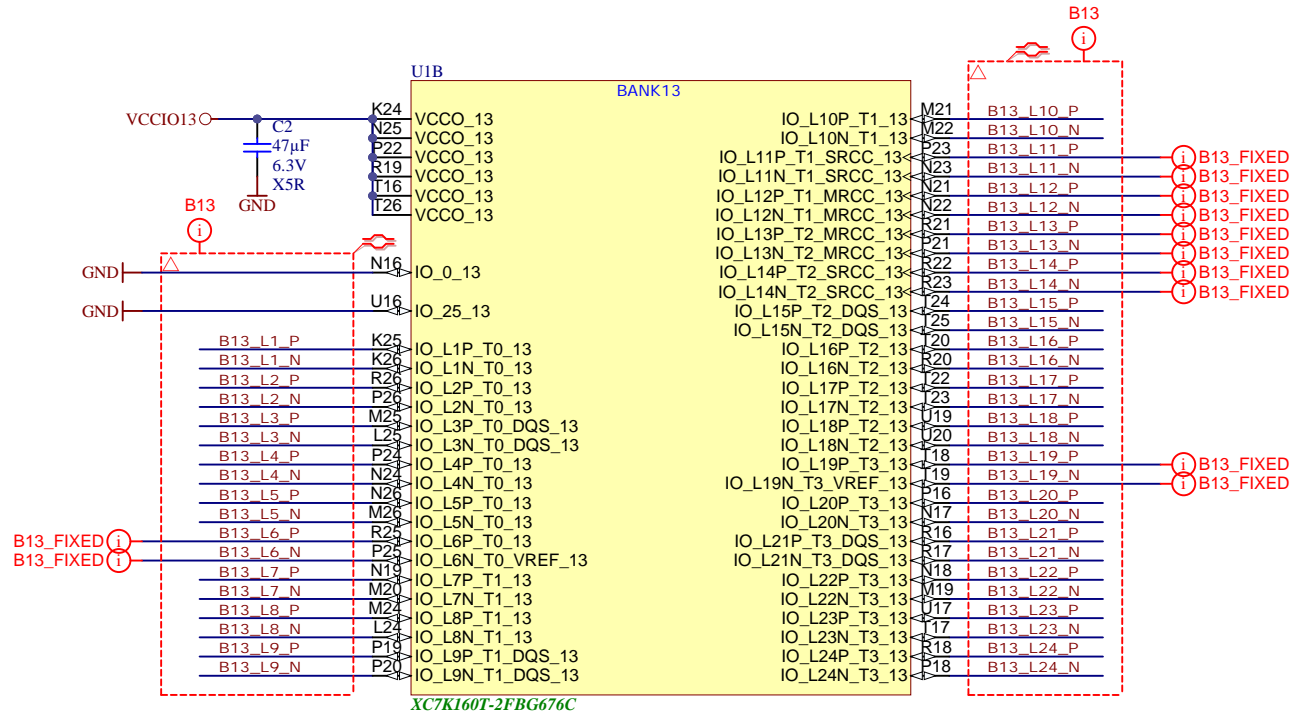
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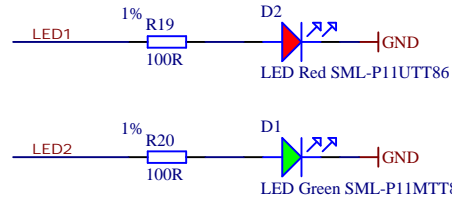
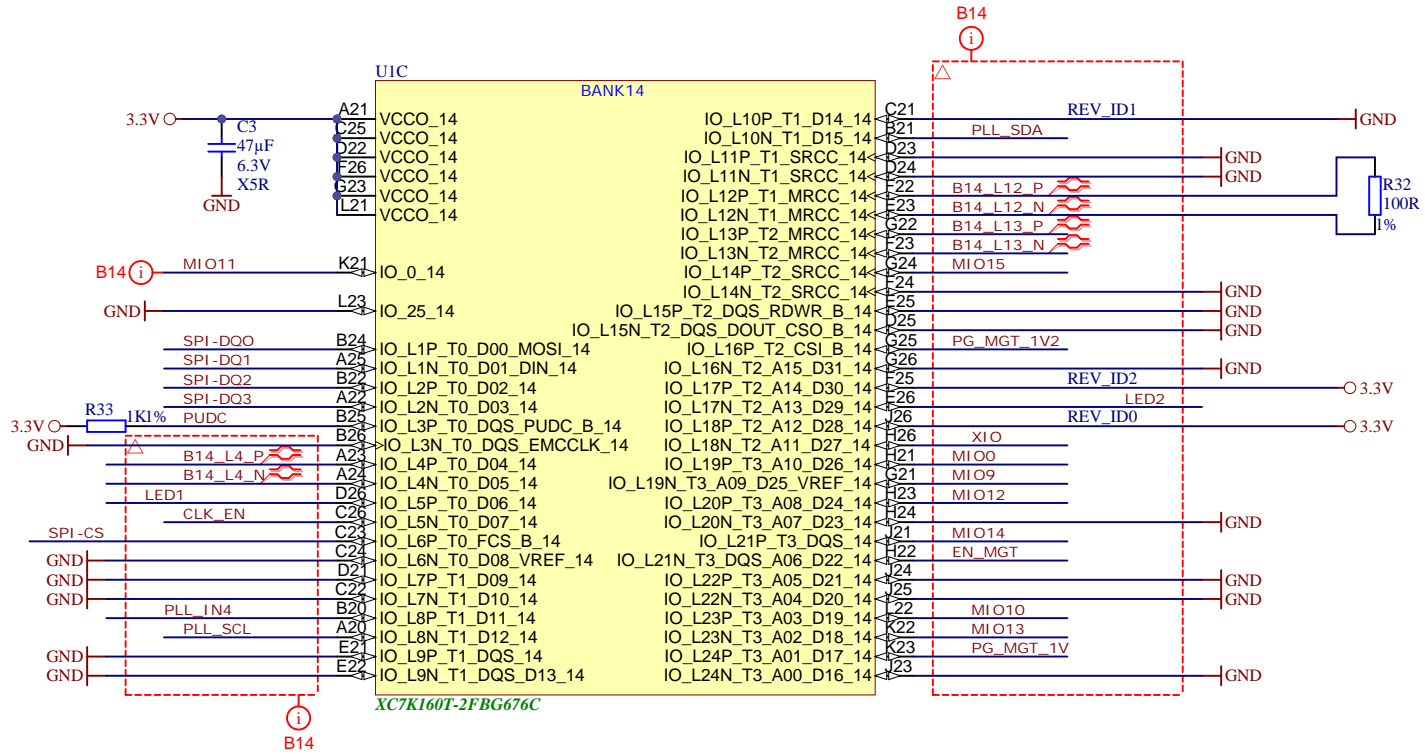
K70T version does not have this bank!



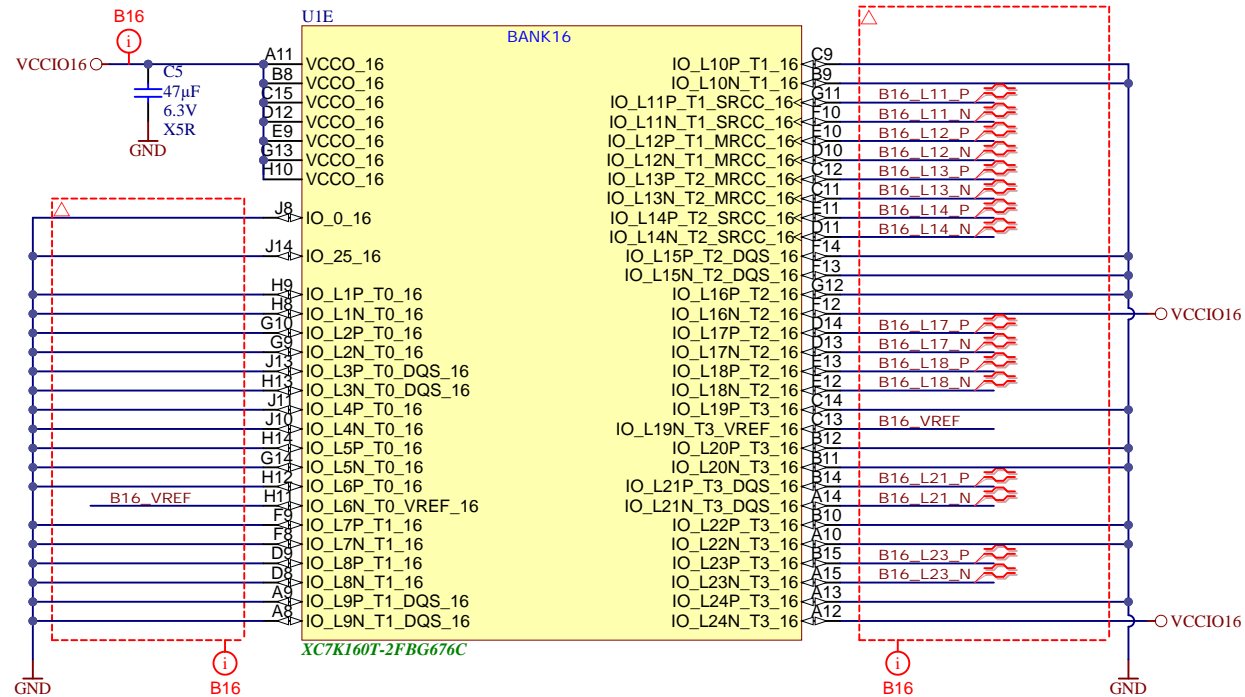
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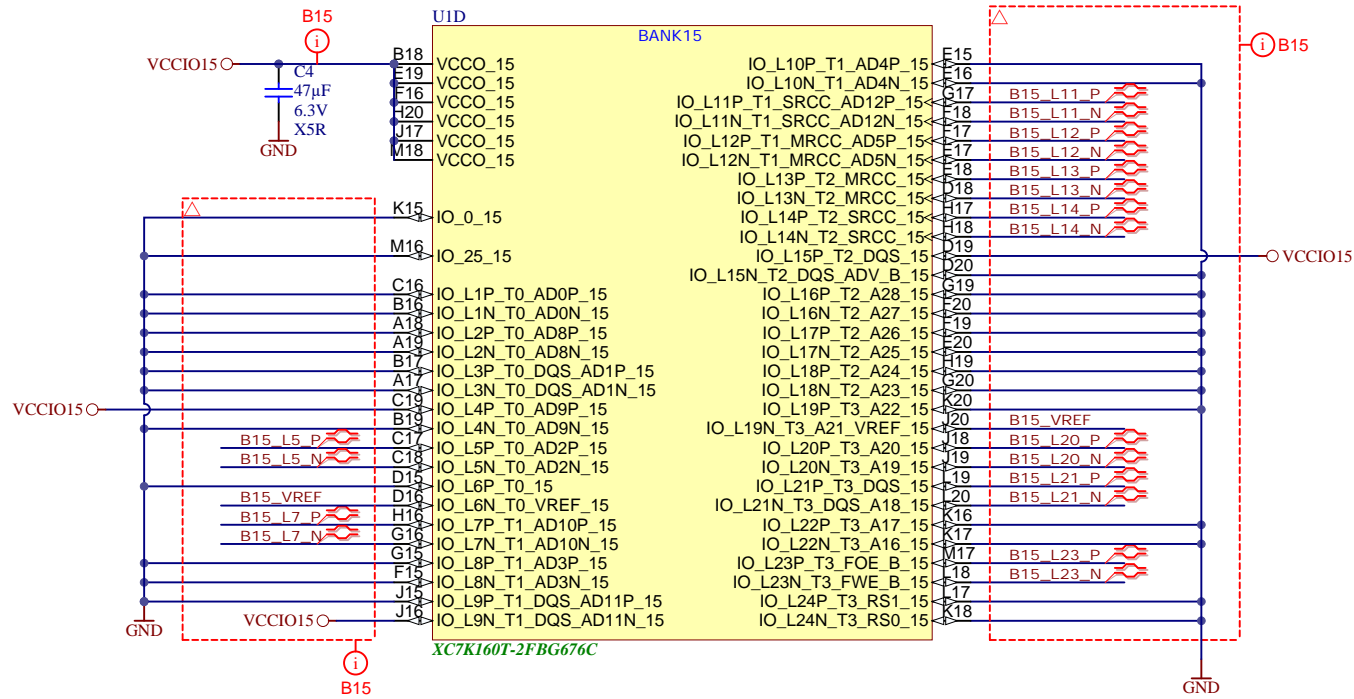
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| | A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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| | Filename: B13.SchDoc | | |



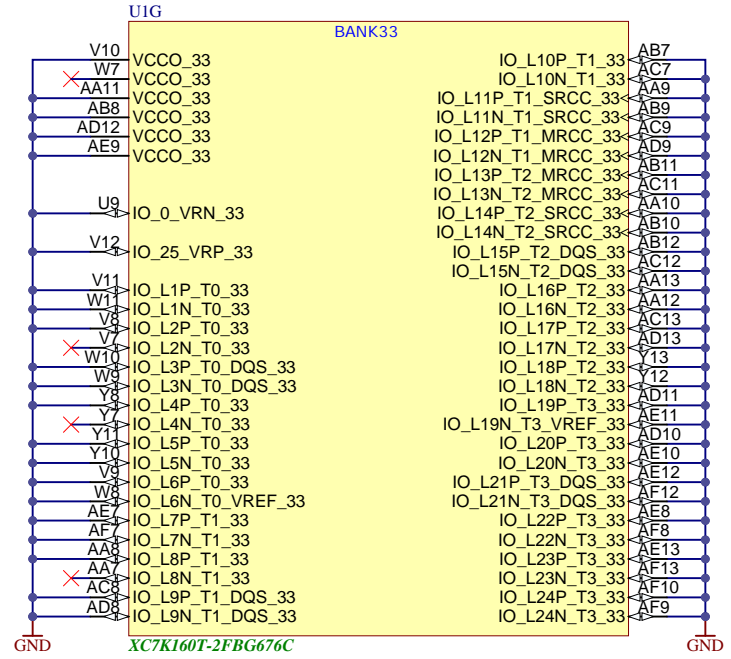
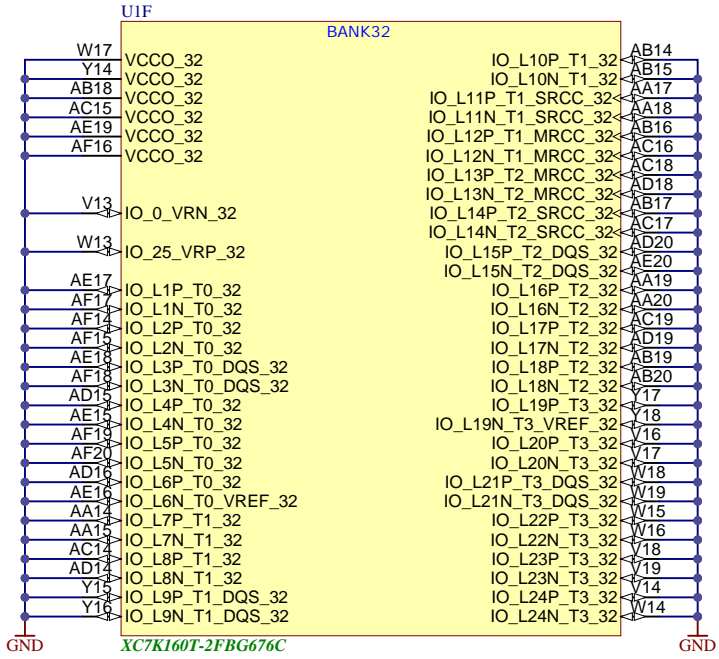
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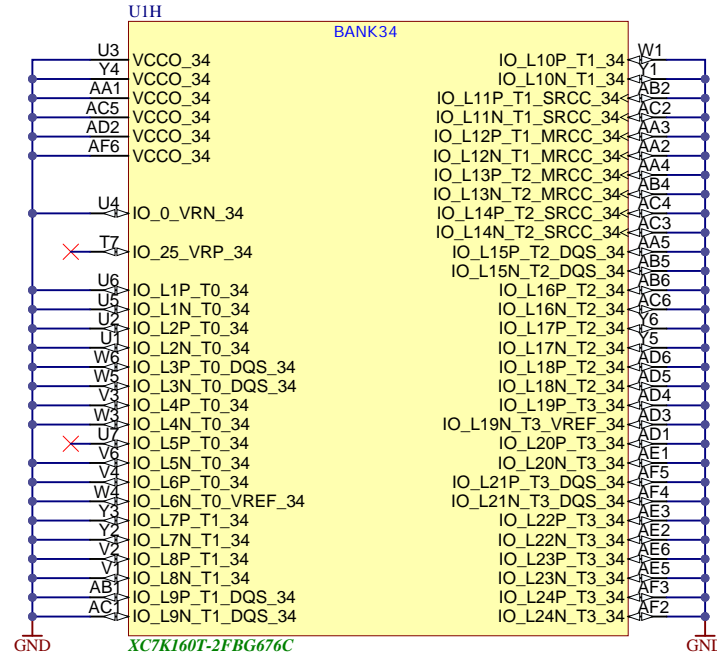
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| Filename: B16.SchDoc | | |




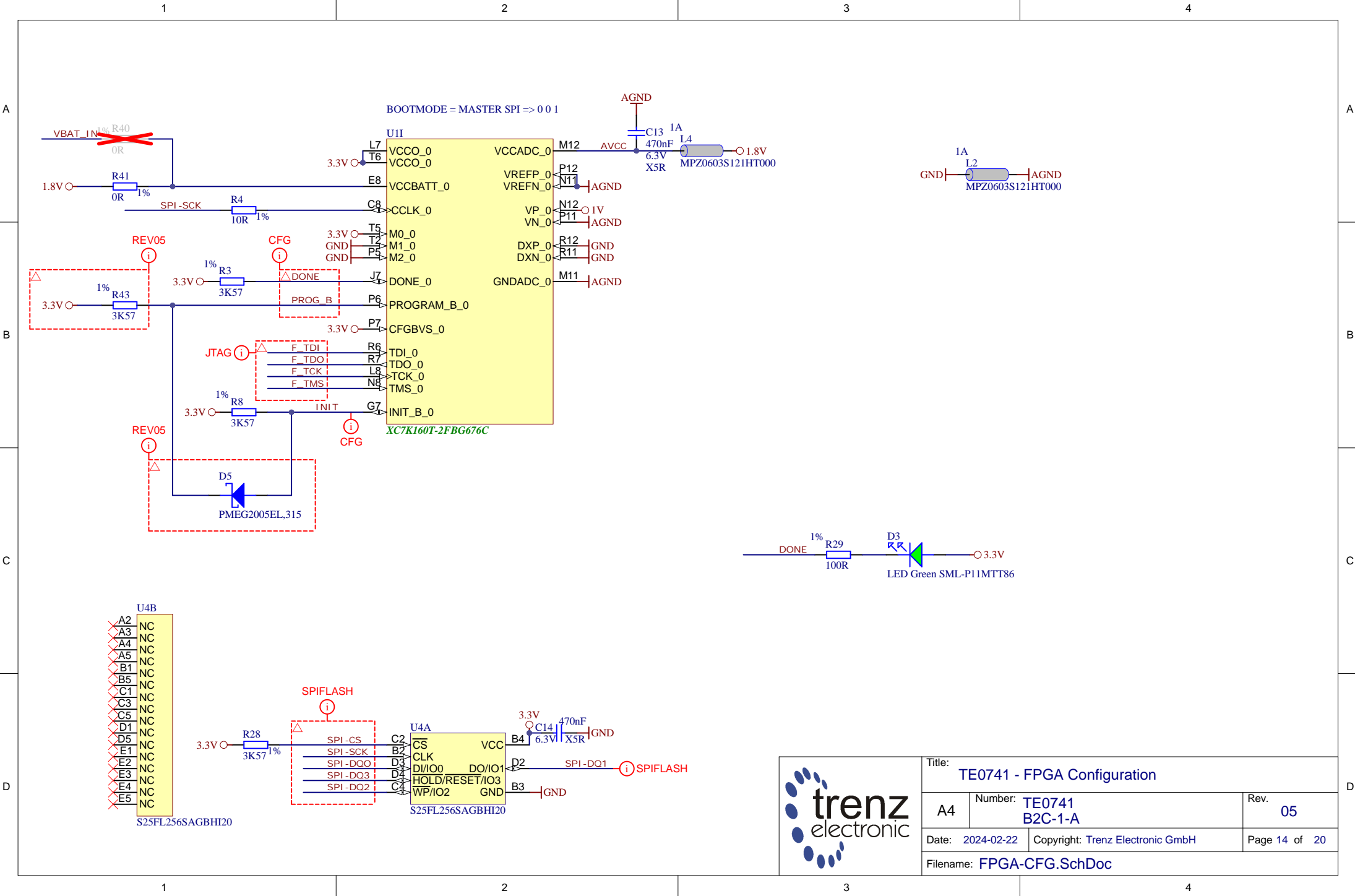
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| Filename: B15.SchDoc | | |



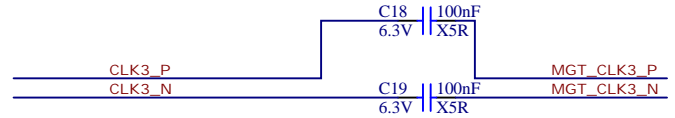
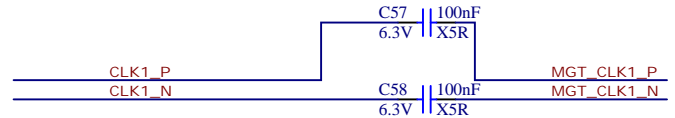
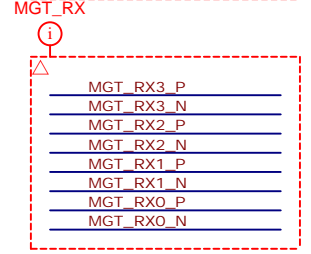
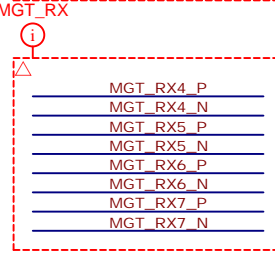
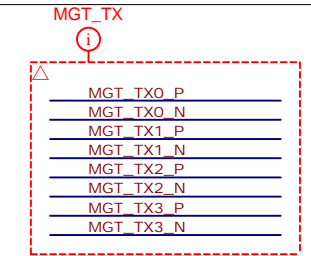
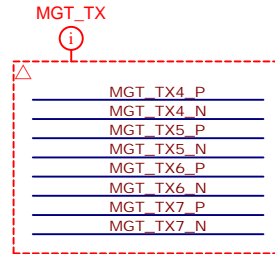
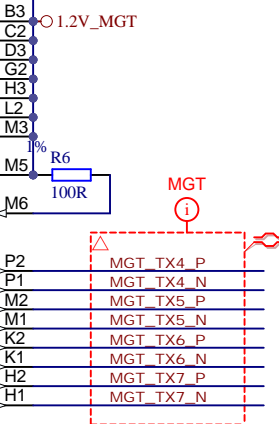
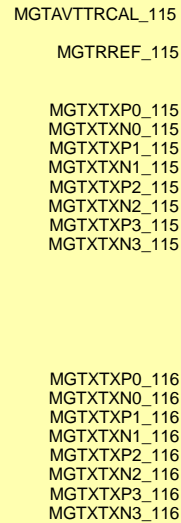
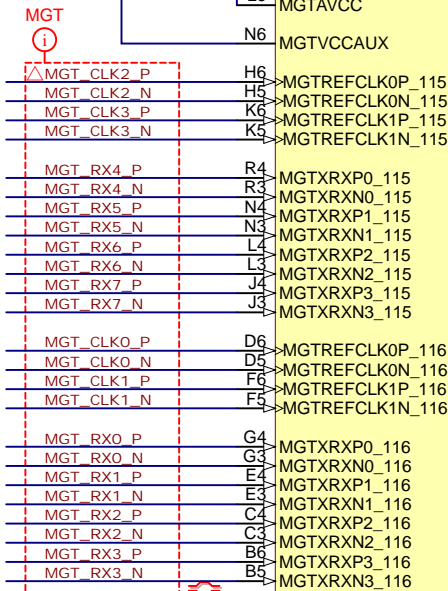
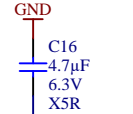
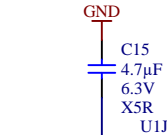
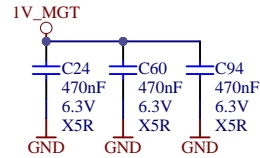
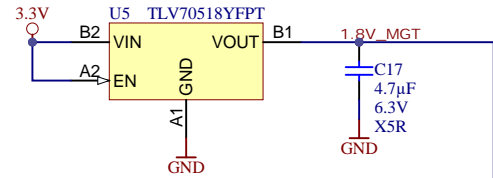
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| A4 | Number: TE0741 B2C-1-A | Rev. 05 | |
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| Filename: B32_B33.SchDoc | | | |



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|---|--|----------------------------------|---------------------------|
|  | | Title: TE0741 - FPGA Bank 34 | |
| | | A4 | Number: TE0741 B2C-1-A |
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| Filename: B34.SchDoc | | Page 13 of 20 | |



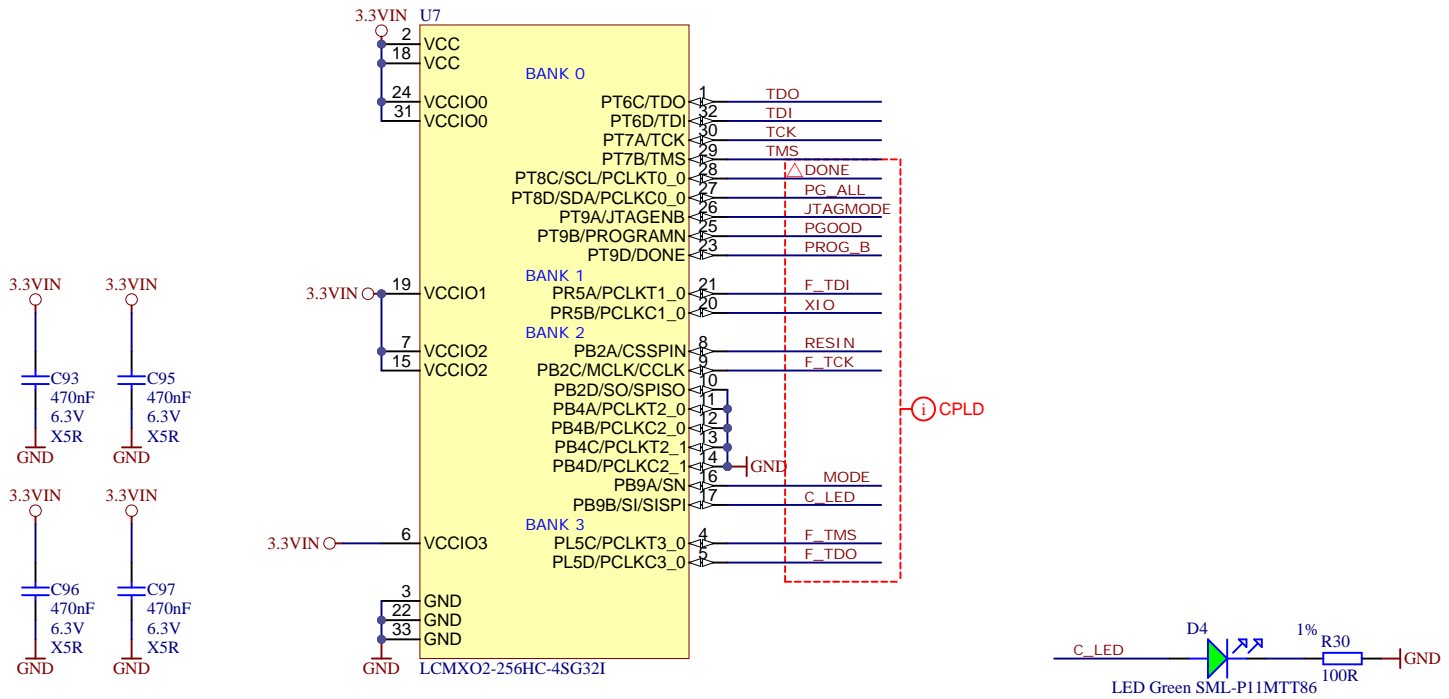
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| A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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| Filename: FPGA-CFG.SchDoc | | |



XC7K160T-2FBG676C



| | | |
|--------------------------------|----------------------------------|---------------|
| Title: TE0741 - FPGA MGT Lanes | | |
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| | | |
|-----------------------------------|----------------------------------|---------------|
| Title: TE0741 - System Controller | | |
| A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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| Filename: FPGA-MISC.SchDoc | | |

1

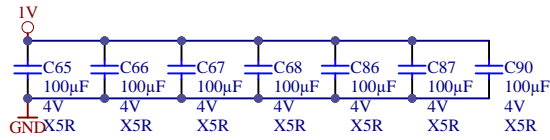
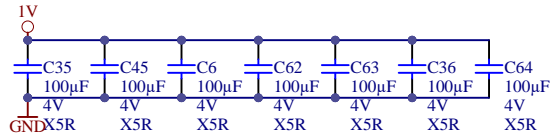
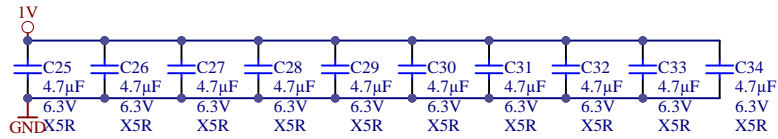
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3

4

A

A



B

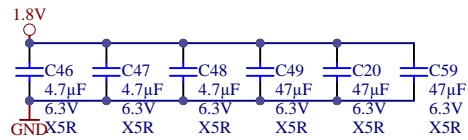
B

C

C

D

D

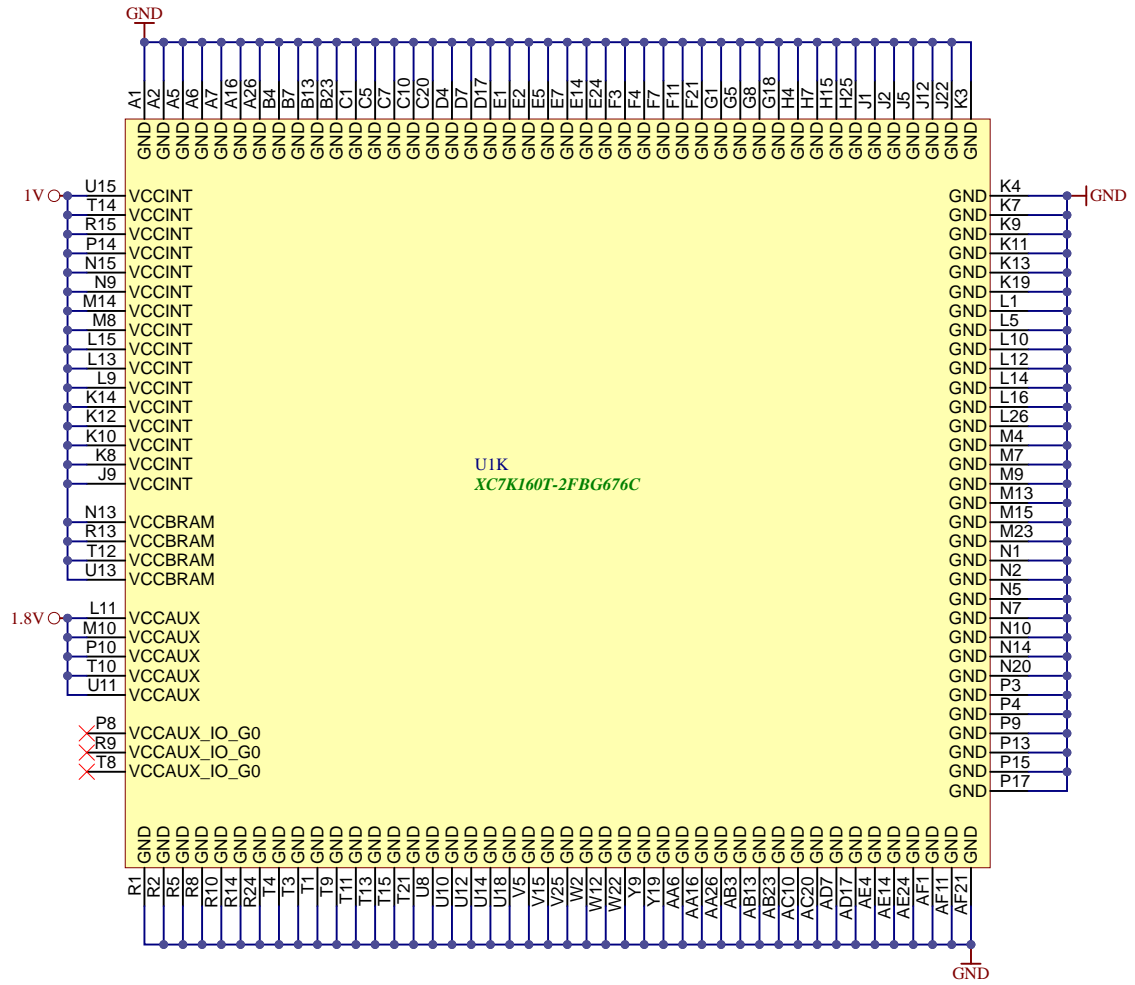


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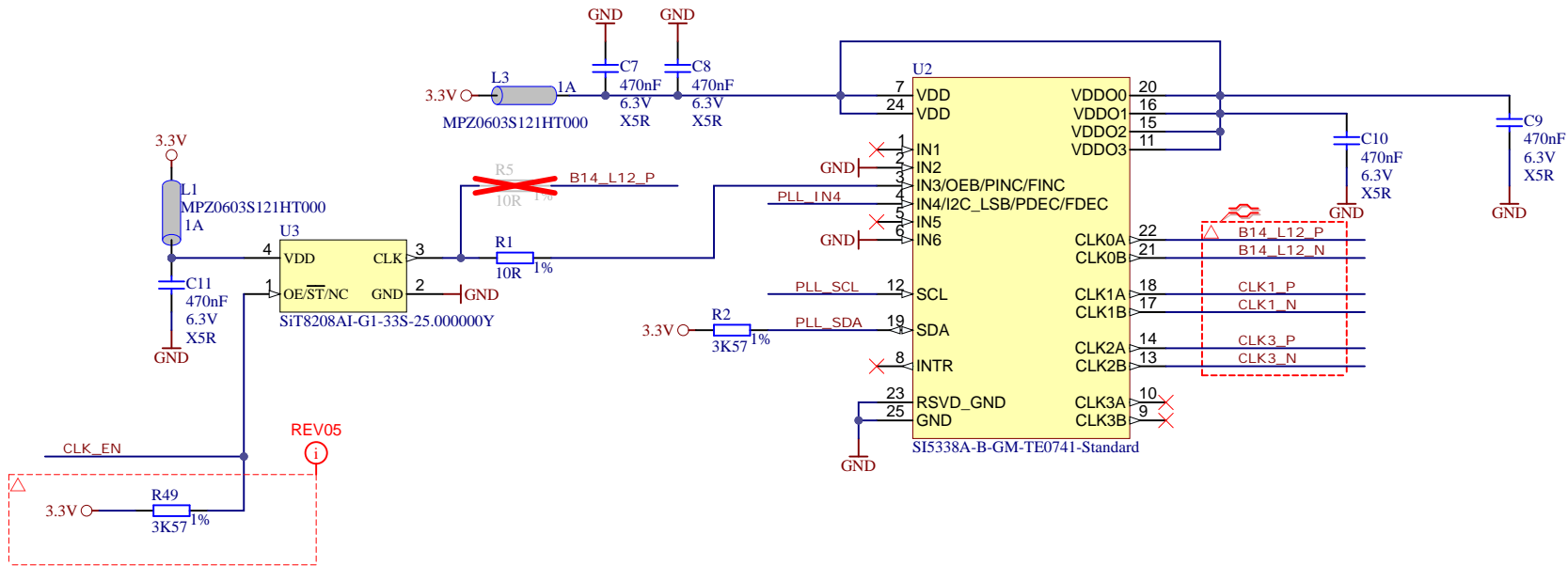
2

3


4



| | | |
|--|---|-----------------------------|
| Title: TE0741 - FPGA Power Pinout | | |
| A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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REV05

| | | | |
|---|--|----------------------------------|------------------------|
|  | | Title: TE0741 - Clock | |
| | | A4 | Number: TE0741 B2C-1-A |
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| Filename: Clock.SchDoc | | Page 18 of 20 | |

A

A

B

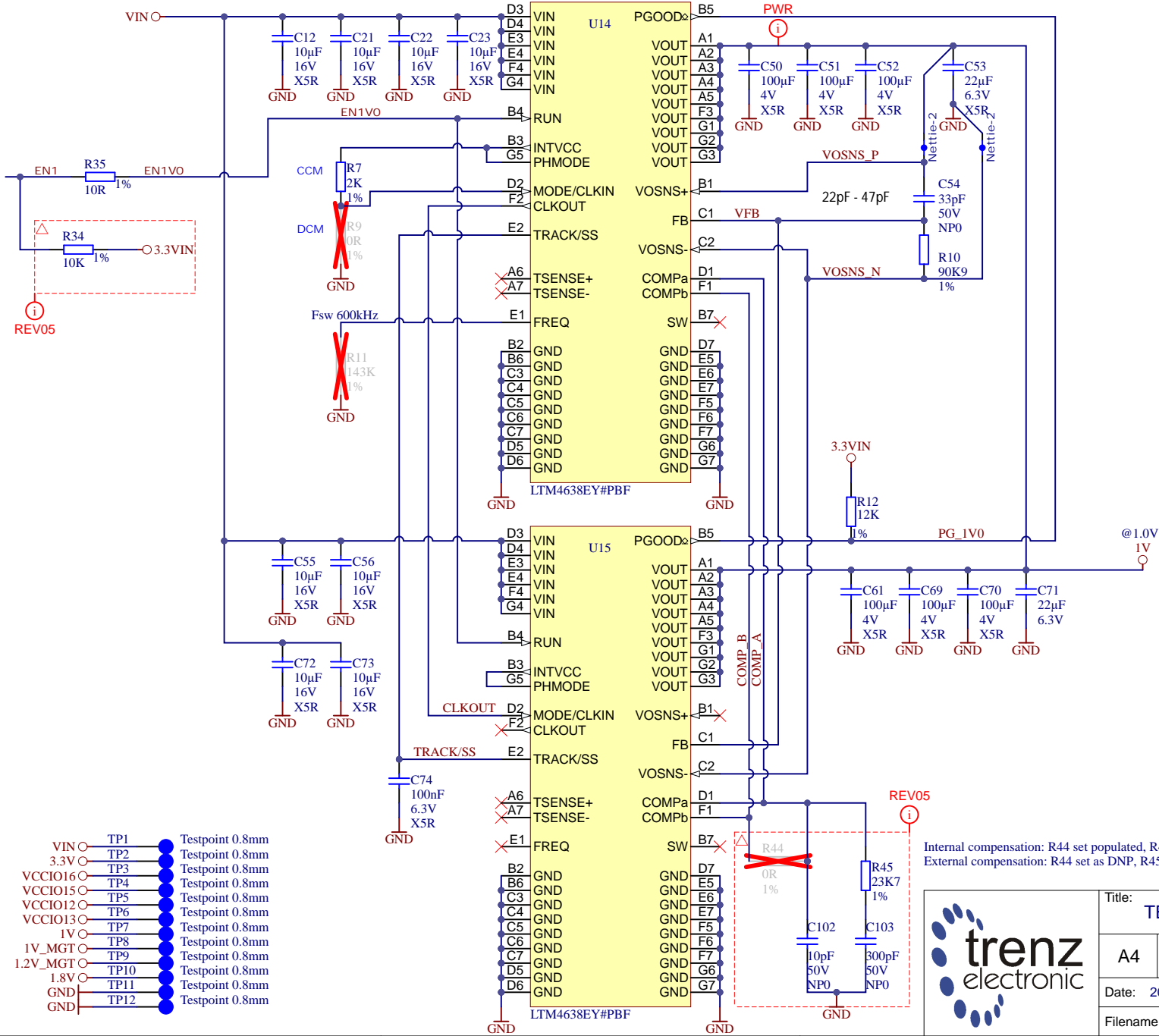
B

C

C

D

D

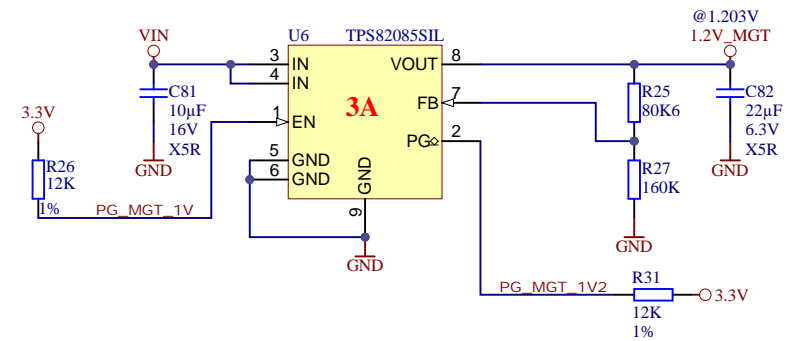
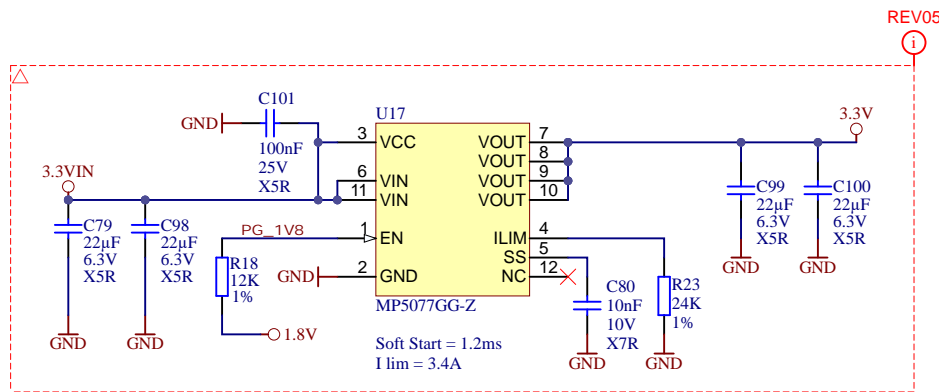
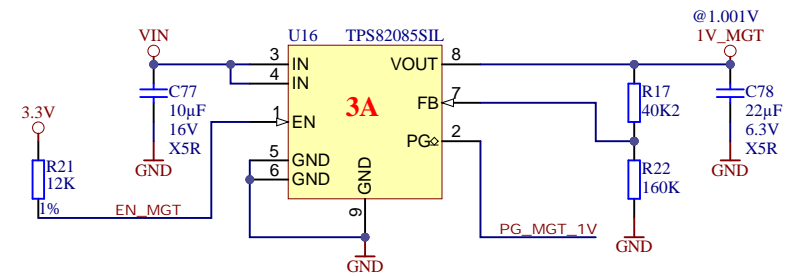
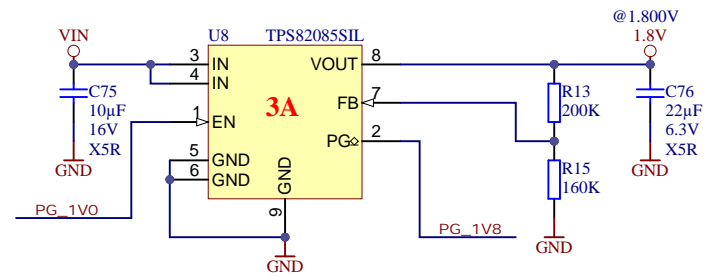
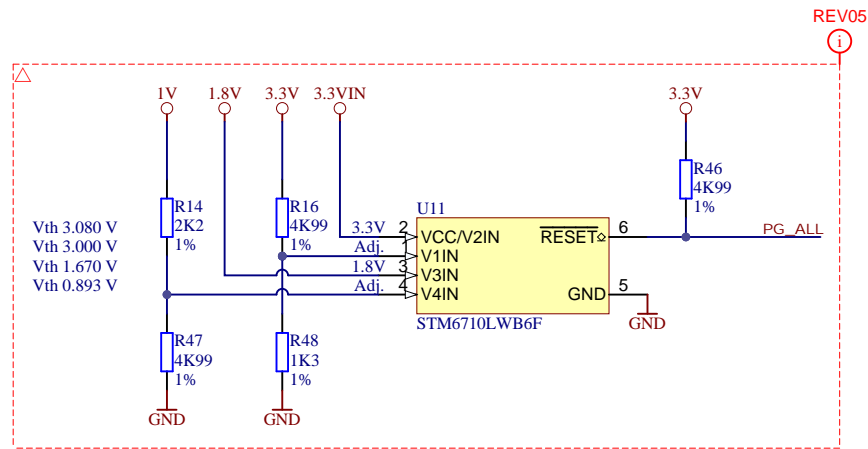


- VIN ○ TP1 ● Testpoint 0.8mm
- 3.3V ○ TP2 ● Testpoint 0.8mm
- VCCIO16 ○ TP3 ● Testpoint 0.8mm
- VCCIO15 ○ TP4 ● Testpoint 0.8mm
- VCCIO12 ○ TP5 ● Testpoint 0.8mm
- VCCIO13 ○ TP6 ● Testpoint 0.8mm
- 1V ○ TP7 ● Testpoint 0.8mm
- 1V_MGT ○ TP8 ● Testpoint 0.8mm
- 1.2V_MGT ○ TP9 ● Testpoint 0.8mm
- 1.8V ○ 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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|------------------------------|----------------------------------|---------------|
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|------------------------------|----------------------------------|---------------|
| Title: TE0741 - Power Part 2 | | |
| A4 | Number: TE0741 B2C-1-A | Rev. 05 |
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