


Regarding the usage of our schematics and alike documentation for Trenz module TE0712.

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. TE0712 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:		
	A4	Number: TE0712 82C36-AW	Rev. 03
	Date: *	Copyright: Trenz Electronic GmbH / TT	Page 1 of 20
	Filename: Legal Notices Modules.SchDoc		

REV	Description	
-01	Initial revision	
-02		
-03	<p>1. Added Legal notices, project overview and revision changes. Updated page count and page order.</p> <p>2. Added a D3 diode between the INIT and PROG_B signals to keep the FPGA in the reset state while PROG_B is low during the initial power-up.</p> <p>3. Resistors R2 , R68 replaced by 2K2 (were 4K87) to improve I2C stability at higher baud rates.</p> <p>4. Change obsolete ferrite beads BKP0603HS121-T to MPZ0603S121HT000.</p> <p>5. Revised power supply circuit. Change obsolete components: - EN63A0QI - MP8869SGL-Z (U14); - EP53F8QI - MPM3834CGPA (U6 , U16).</p> <p>6. Change Q1 power switch TPS27082LDDCR to MP5077GG-Z.</p> <p>7. Added power monitors U10 , U11 STM6710LWB6F. System controller pin U3.25 connected to net PG_ALL instead of 3.3V .</p> <p>8. U14 I2C interface connected to bus PLL_SDA / PLL_SCL U1B . Added table with device addresses on the I2C bus. A new device will be detected during a bus scan</p> <p>9. Change capacitors in net "VIN" from 47 uF 6.3 V to 22 uF 10 V for C70 , C80 , C126 , C127 , C132 , C176 , C177 .</p>	VY

	Title: Revision History		
	A4	Number: TE0712 82C36-AW	Rev. 03
	Date: 2019-10-02	Copyright: Trenz Electronic GmbH	Page 2 of 20
	Drawn by: VY	Filename: Revision Changes.SchDoc	

1

2

3

4

A

A

B

B

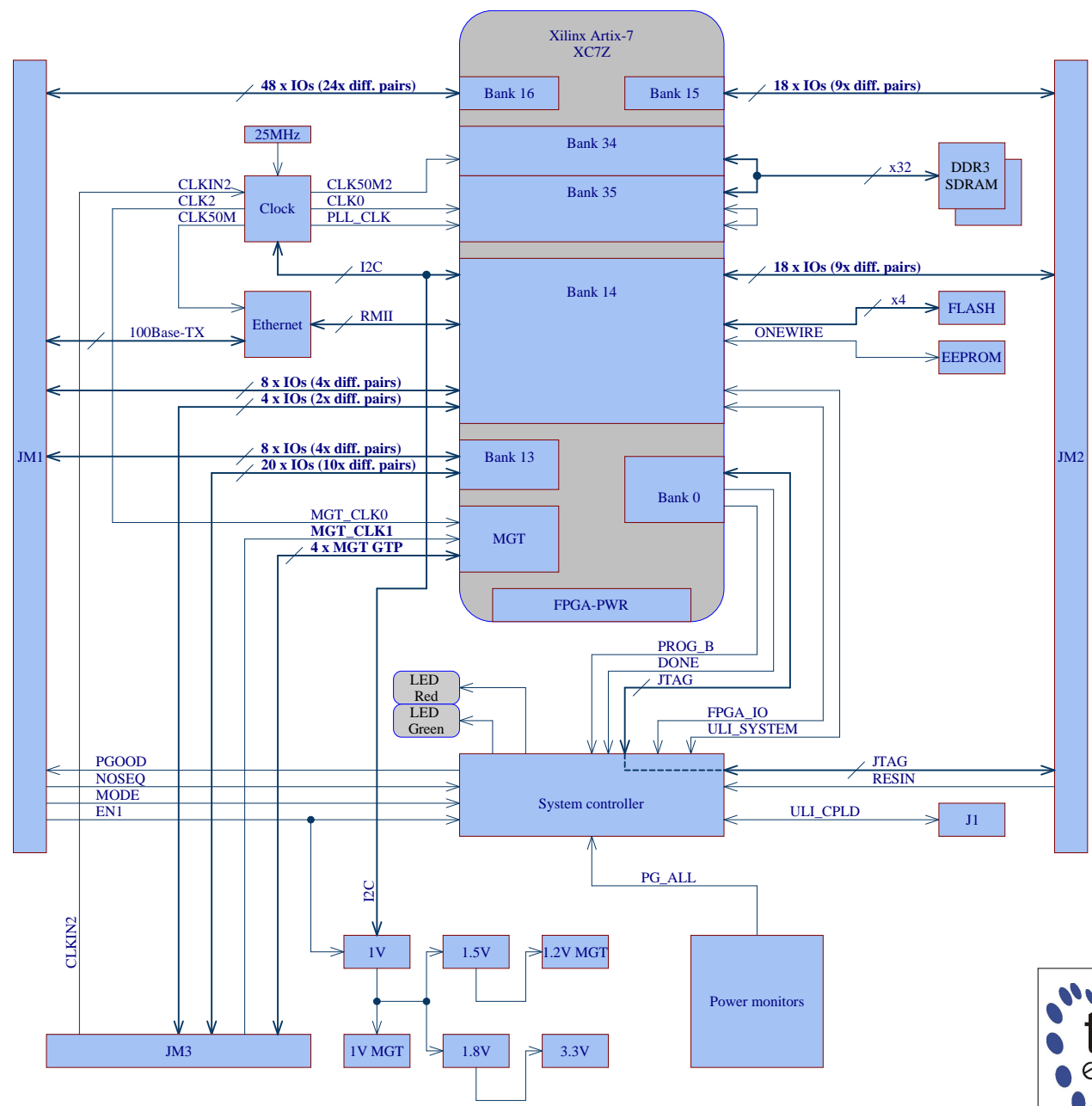
C

C

D

D

- U_Revision Changes
- U_TE0712
- U_Power_Diagram



Special notes:

-
-



Title: System Overview		
A4	Number: TE0712 82C36-AW	Rev. 03
Date:	Copyright: Trenz Electronic GmbH	Page 3 of 20
Filename: Overview.SchDoc		

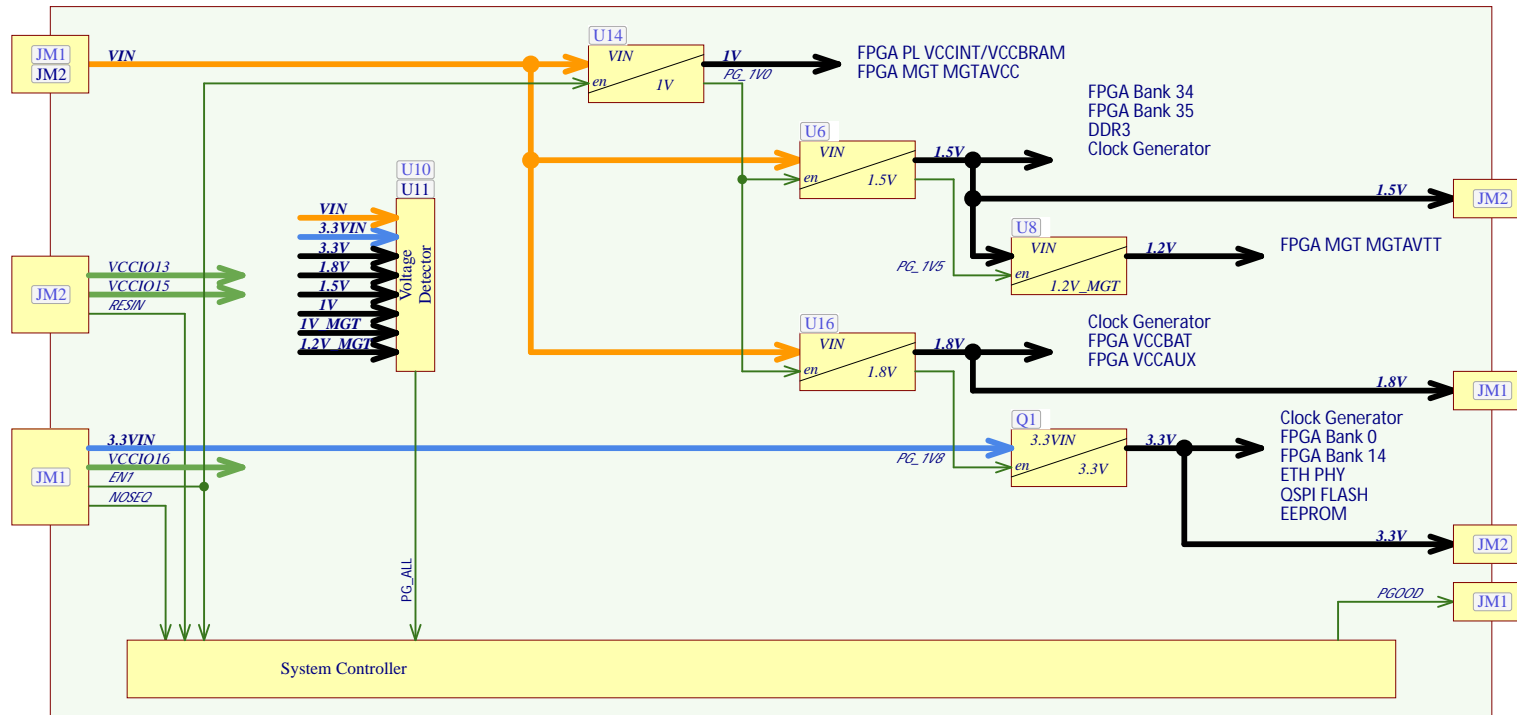
1

2

3

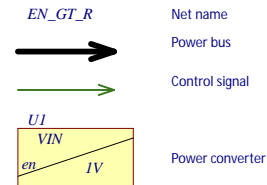
4

Power-on sequencing:



Recommended Operating Conditions

Power Rail	Direction	Range	Tolerance	Description	Note
VIN	IN	3.3 - 5V	+/-5%	Micromodule Power	Mandatory
3.3VIN	IN	3.3V	+/-3%	Micromodule Power	Mandatory
VCCIO13	IN	1.2 - 3.3V	+/-3%	HR IO Bank13	-
VCCIO14	IN	3.3V	+/-3%	HR IO Bank14	Fixed
VCCIO15	IN	1.2 - 3.3V	+/-3%	HR IO Bank15	-
VCCIO16	IN	1.2 - 3.3V	+/-3%	HR IO Bank16	-
1.5V	OUT	1.5V	+/-3%	For Carrier card Periphery	-
1.8V	OUT	1.8V	+/-3%	For Carrier card Periphery	-
3.3V	OUT	3.3V	+/-3%	For Carrier card Periphery	-
VREF_JTAG	OUT	3.3V	+/-3%	For Carrier card Periphery	Connected to 3.3V



Title: GigaZee - Power Diagram		
A4	Number: TE0712 82C36-AW	Rev. 04
Date: 23.11.2022	Copyright: Trenz Electronic GmbH / TT	Page 4 of 20
Filename: Power_Diagram.SchDoc		

1

2

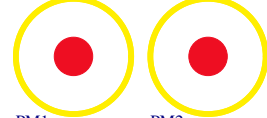
3

4

Special notes:

- .
- .

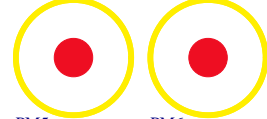
FIDU-DOT - mini FIDU-DOT - mini



PM1 PM2
FIDU-DOT - mini FIDU-DOT - mini

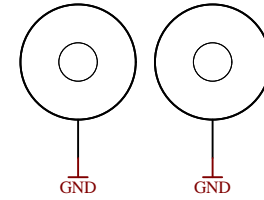


PM3 PM4
FIDU-DOT - mini FIDU-DOT - mini

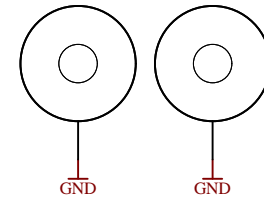


PM5 PM6

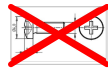
Mount.Hole 3.2mm Mount.Hole 3.2mm



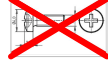
Mount.Hole 3.2mm Mount.Hole 3.2mm



Top of Board



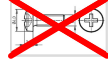
Screw M3x4



Screw M3x4



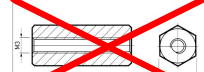
Screw M3x4



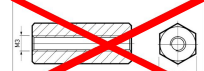
Screw M3x4



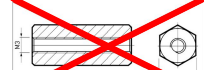
Standoff M3x8 II



Standoff M3x8 II



Standoff M3x8 II



Standoff M3x8 II



Screw M3x6



Screw M3x6



Screw M3x6



Screw M3x6

Serial
Serial
Serialnumber 6,3 x 6.3mm

SerialI
TE Address Overlay
LOGO ADDRESS

Assembly variant	82C36-AW
Created by	MR
Modified by	MR
Modified at	2021-02-16
SVN Revision	14002



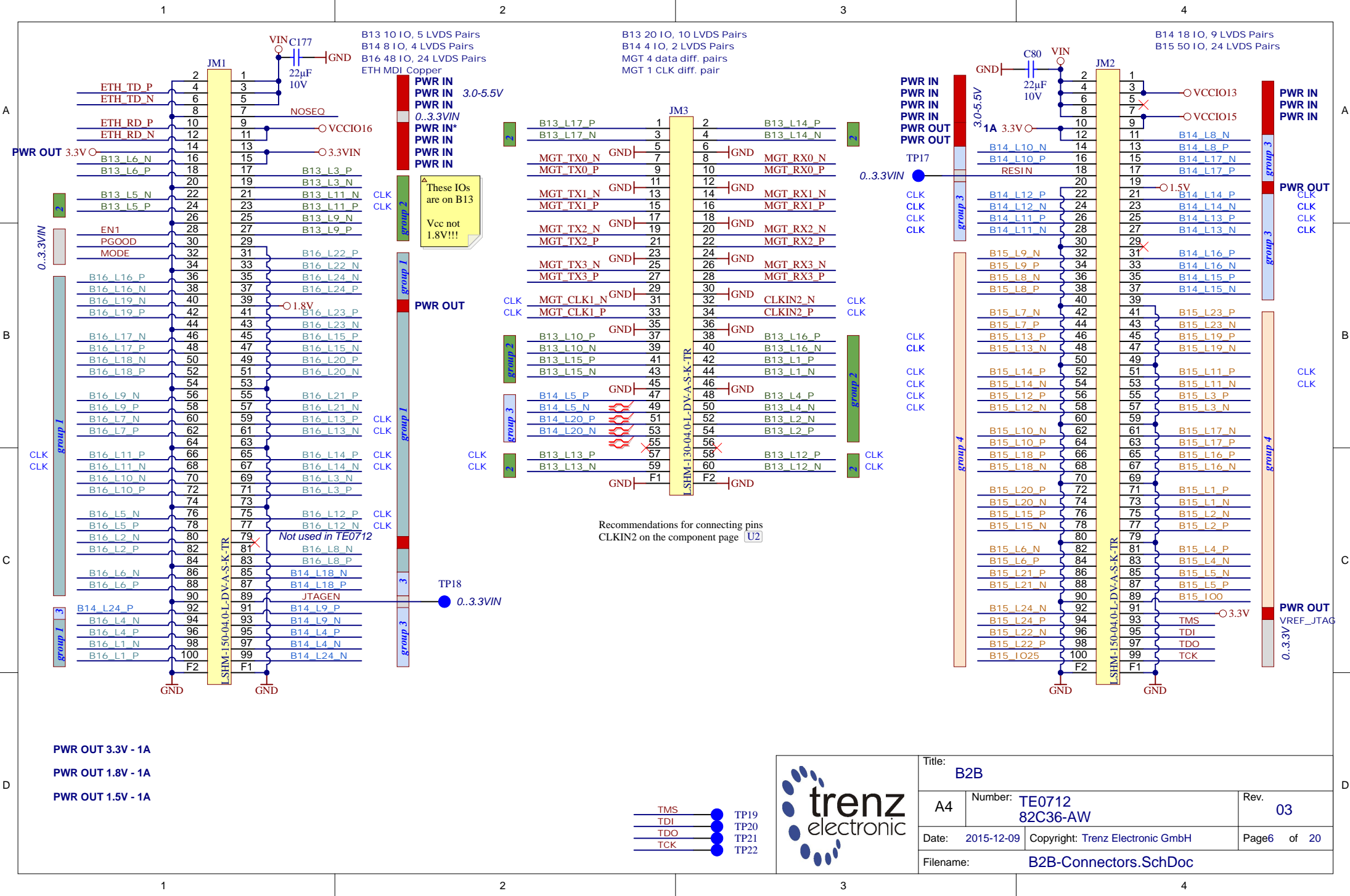
Title: TE0712		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page5 of 20
Filename: TE0712.SchDoc		

1

2

3

4



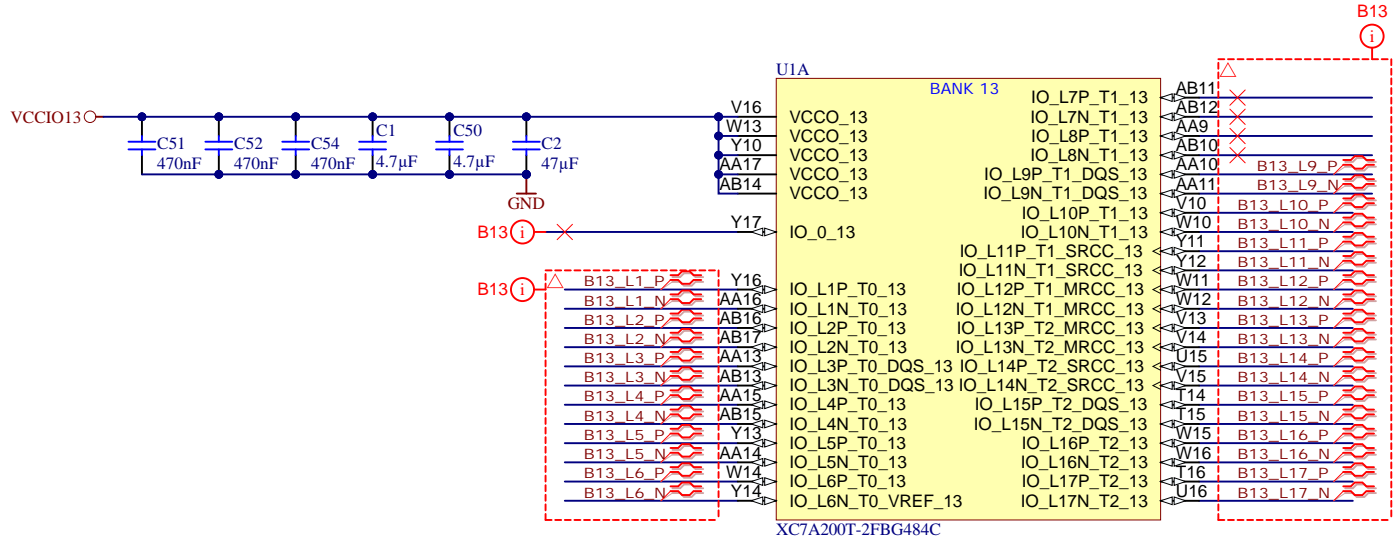
PWR OUT 3.3V - 1A

PWR OUT 1.8V - 1A

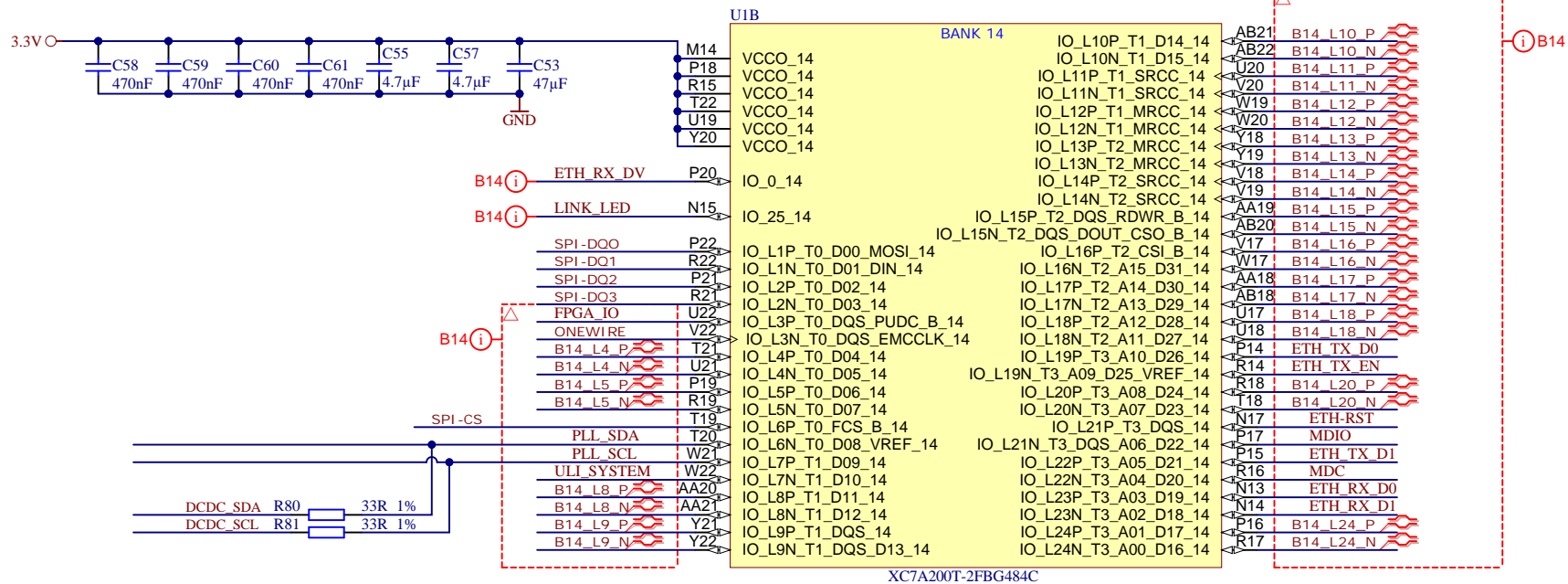
PWR OUT 1.5V - 1A



Title: B2B		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 6 of 20
Filename: B2B-Connectors.SchDoc		



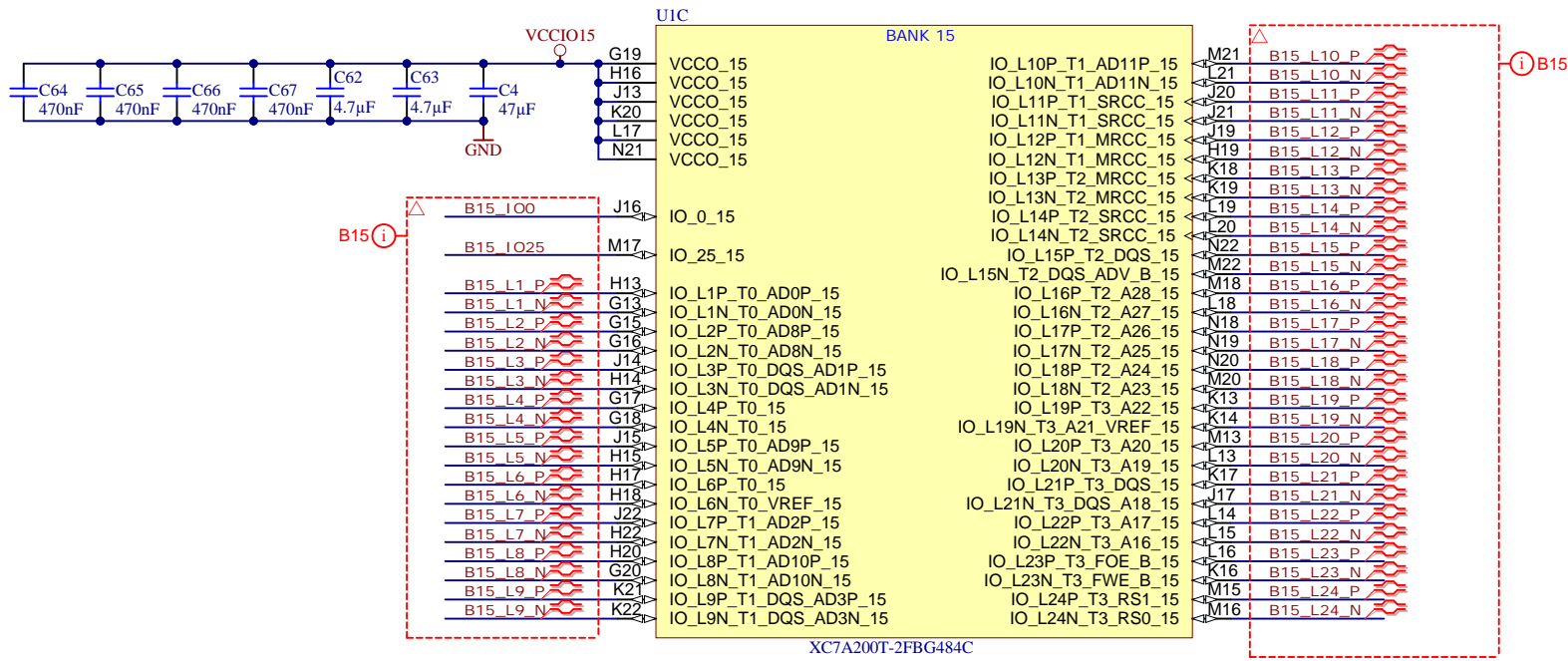
Title: B13		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 7 of 20
Filename: B13.SchDoc		



I2C bus addresses		
U1B	FPGA B14	h**
U2	Clock generator	h70
U14	DCDC VCCINT	h61



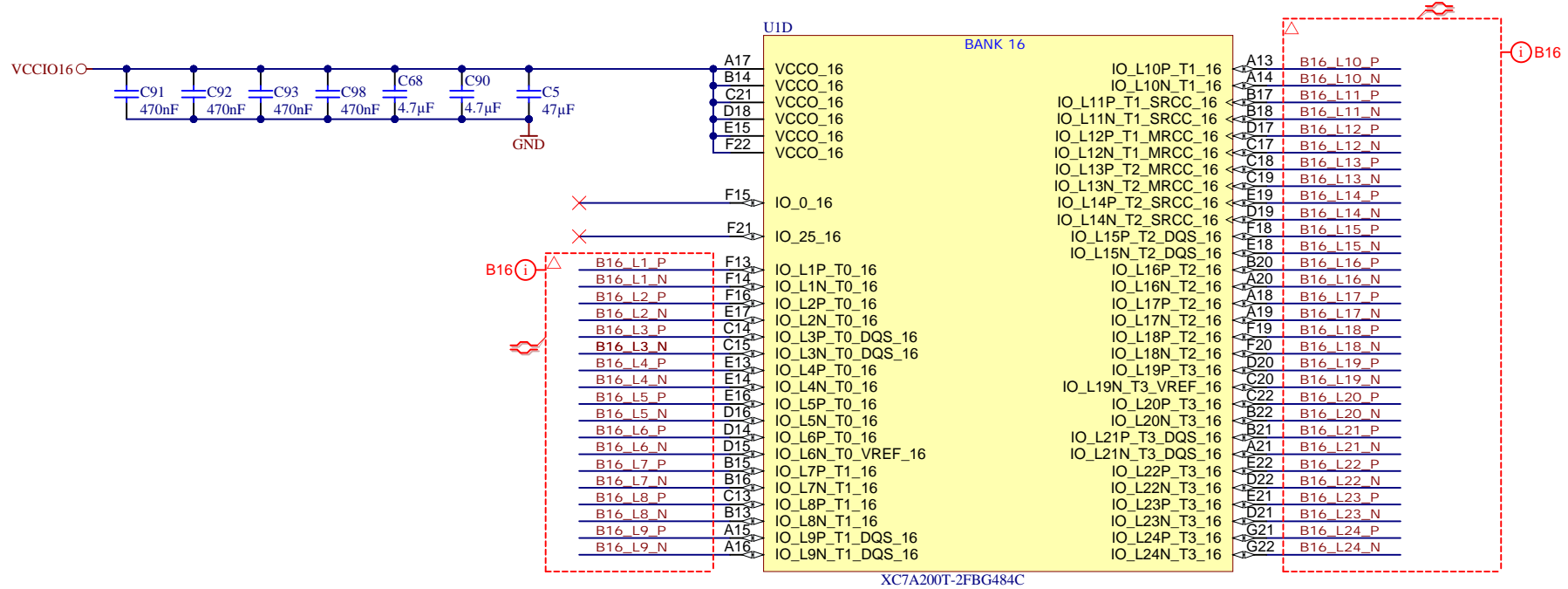
Title: B14		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 8 of 20
Filename: B14.SchDoc		



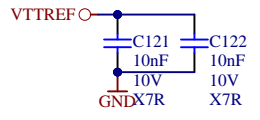
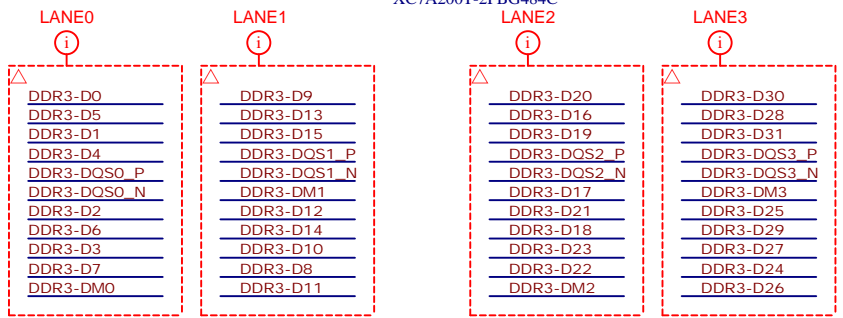
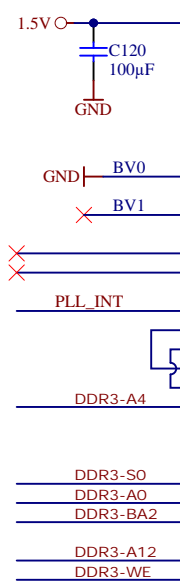
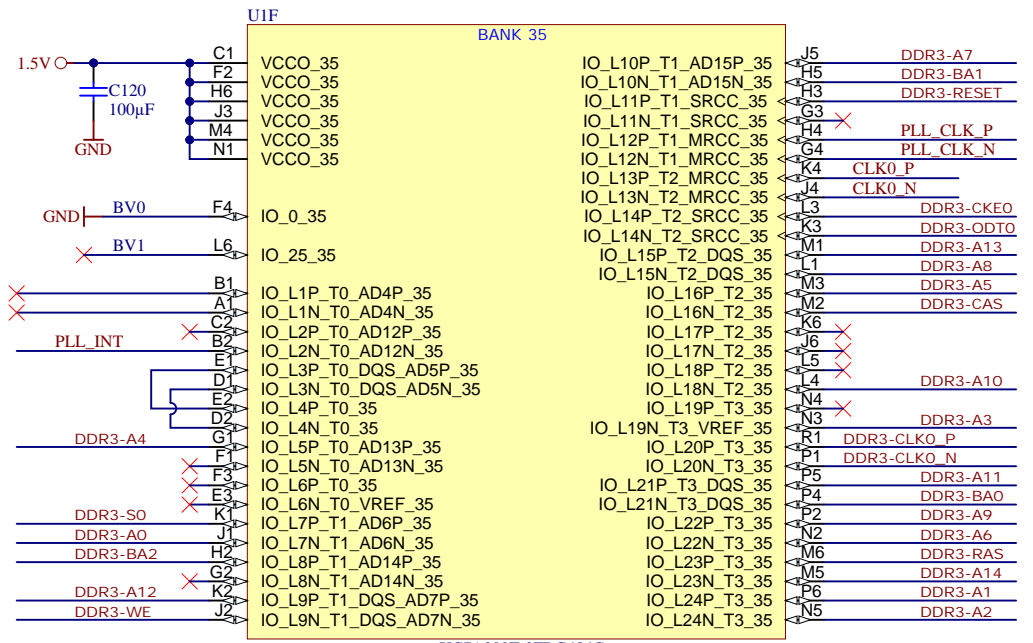
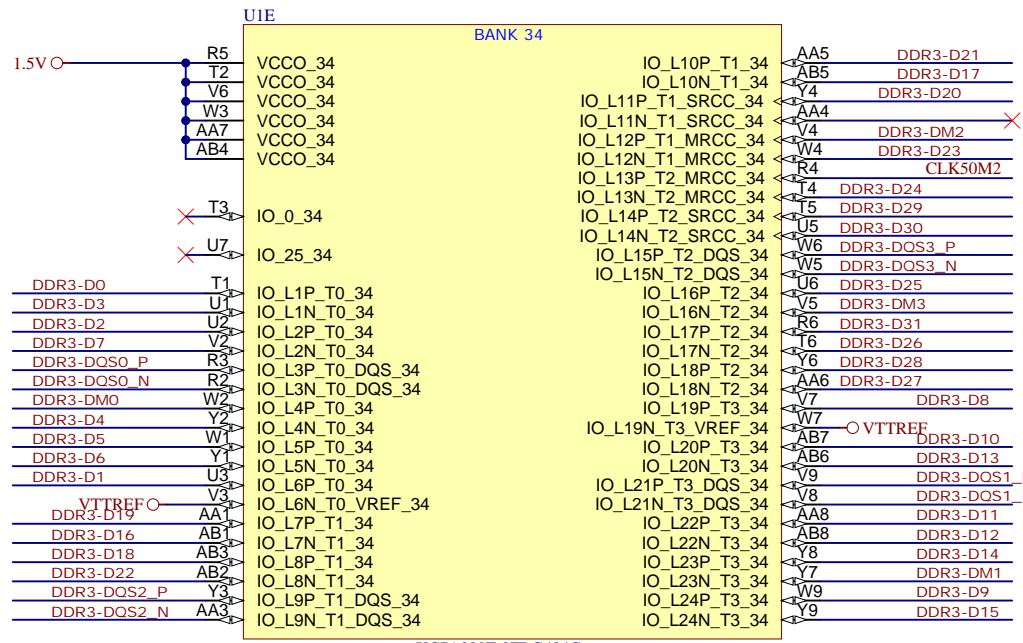
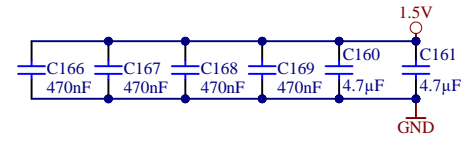
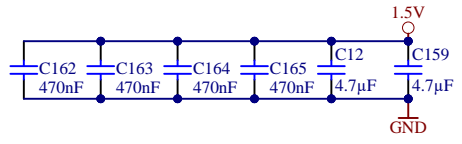
XC7A200T-2FBG484C



Title: B15		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 9 of 20
Filename: B15.SchDoc		



	Title: B16		
	A4	Number: TE0712 82C36-AW	Rev. 03
	Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 10 of 20
	Filename: B16.SchDoc		



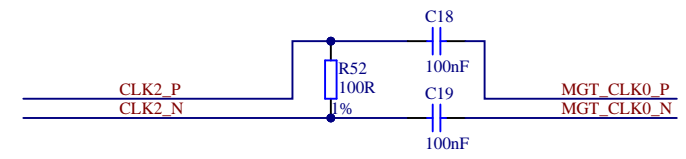
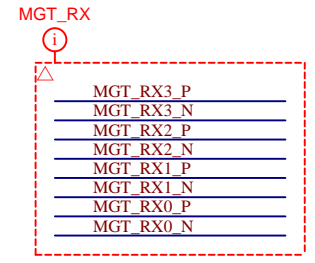
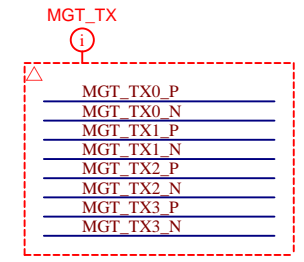
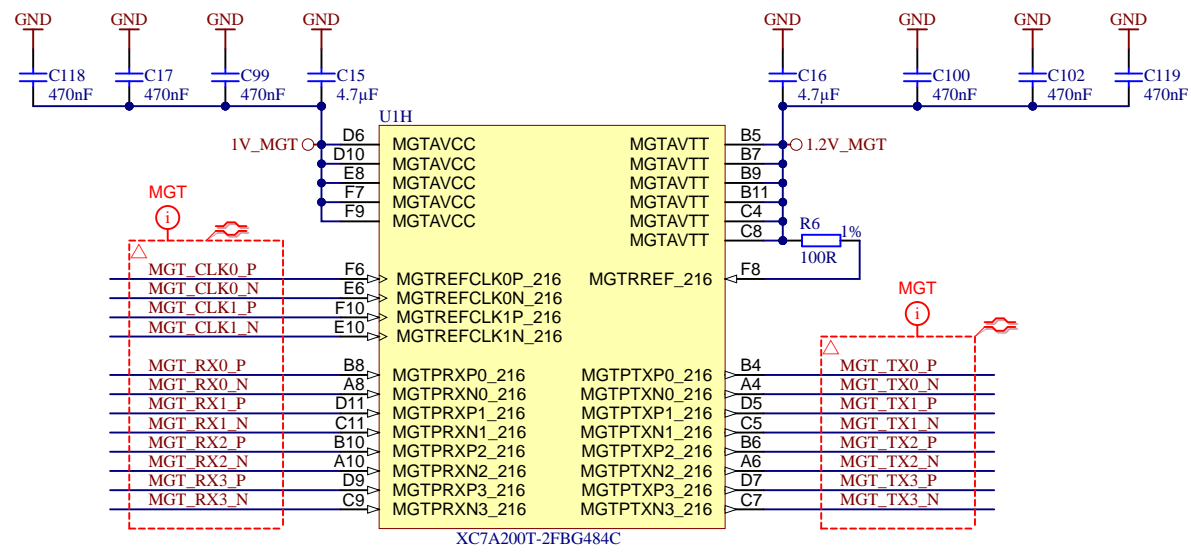
trenz electronic

Title: **B34**

A4 Number: **TE0712 82C36-AW** Rev. **03**

Date: **2015-12-09** Copyright: **Trenz Electronic GmbH** Page **11** of **20**

Filename: **B34.SchDoc**

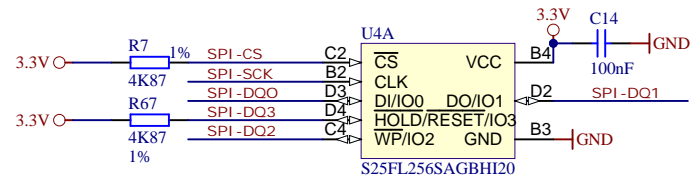
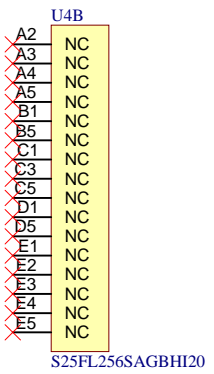
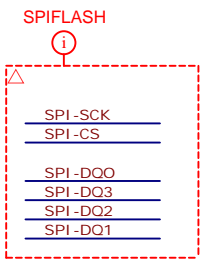
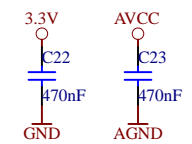
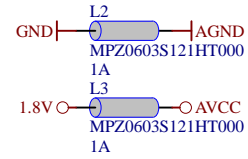
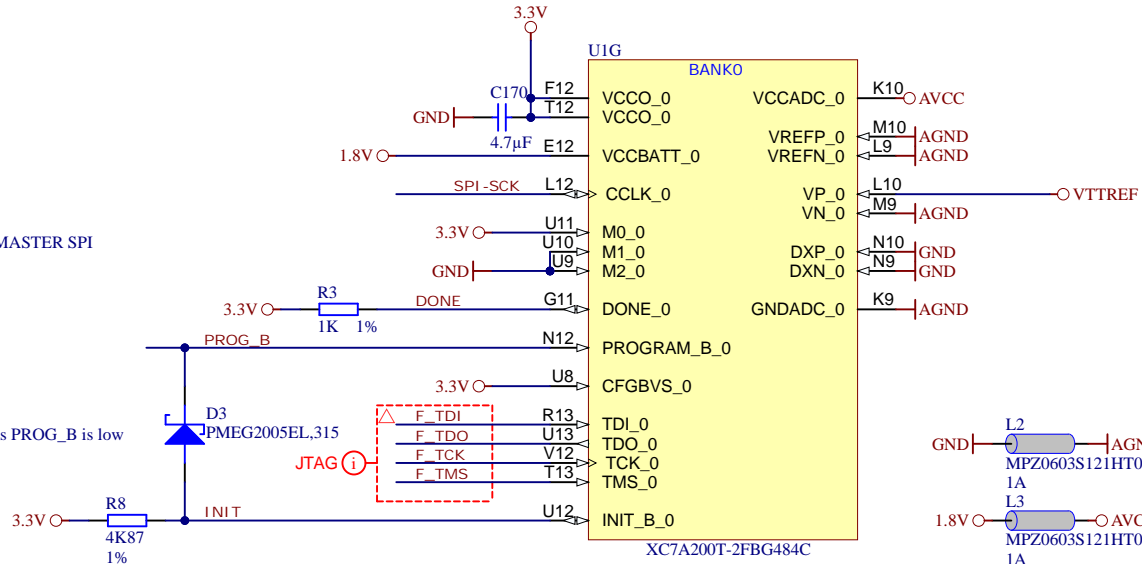


	Title: MGT		
	A4	Number: TE0712 82C36-AW	Rev. 03
	Date: 2015-12-09	Copyright: Trenz Electronic GmbH	
	Filename: FPGA-MGT.SchDoc		Page 12 of 20

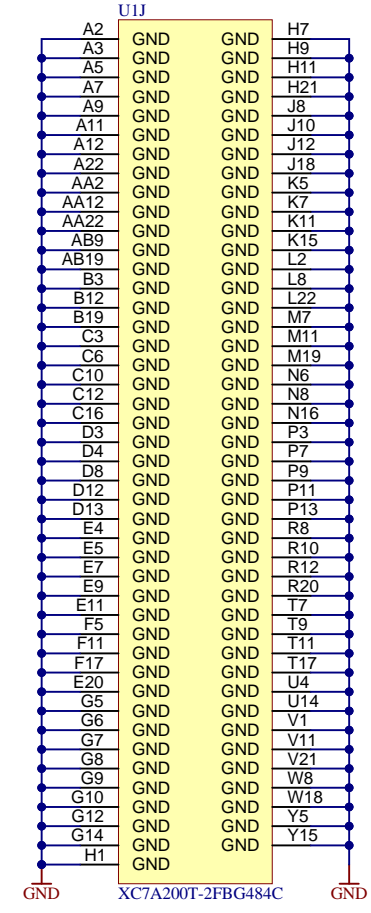
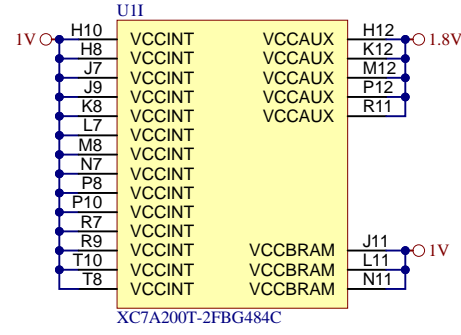
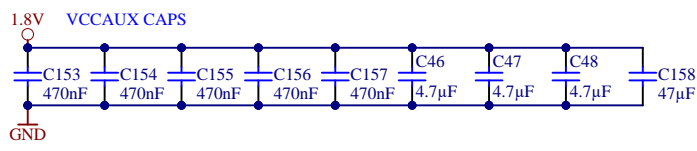
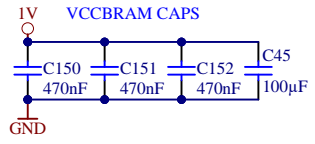
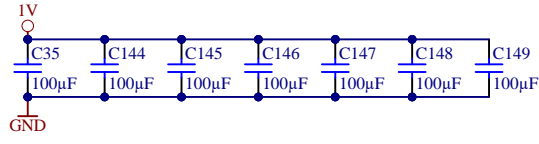
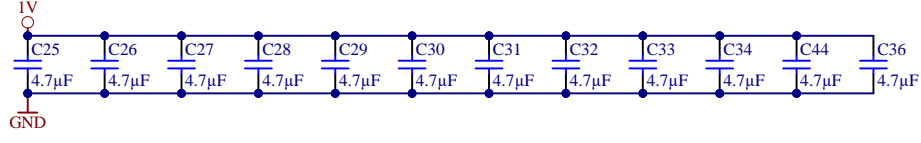
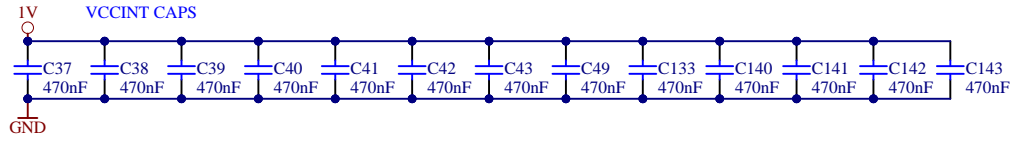


BOOTMODE = MASTER SPI

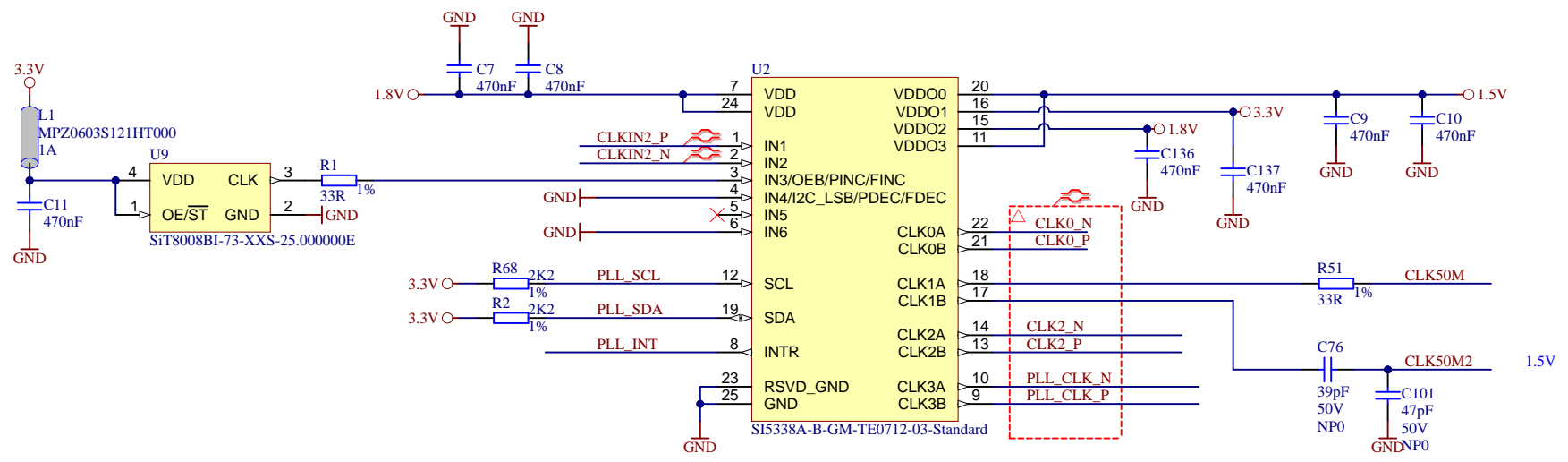
D3 keeps INIT low as long as PROG_B is low



Title: CFG		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page13 of 20
Filename: FPGA-CFG.SchDoc		



Title: PWR		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 14 of 20
Filename: FPGA-PWR.SchDoc		



Datasheet SI5338:

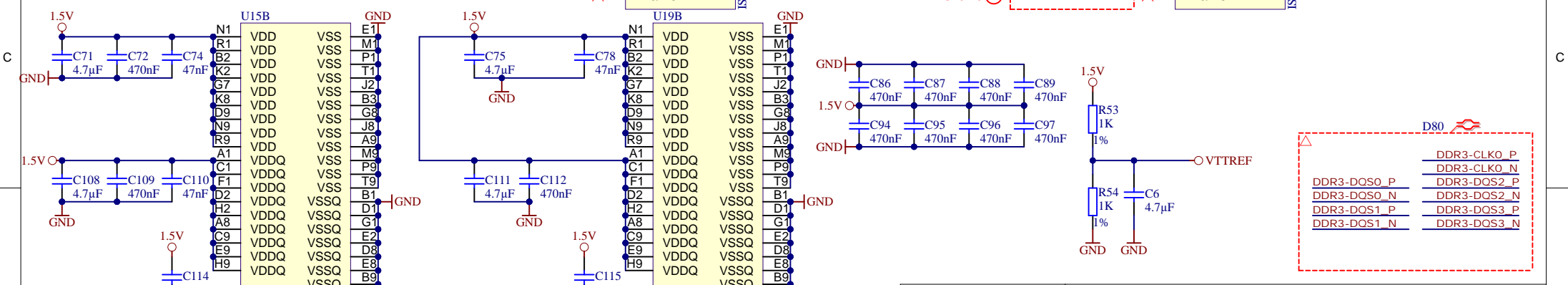
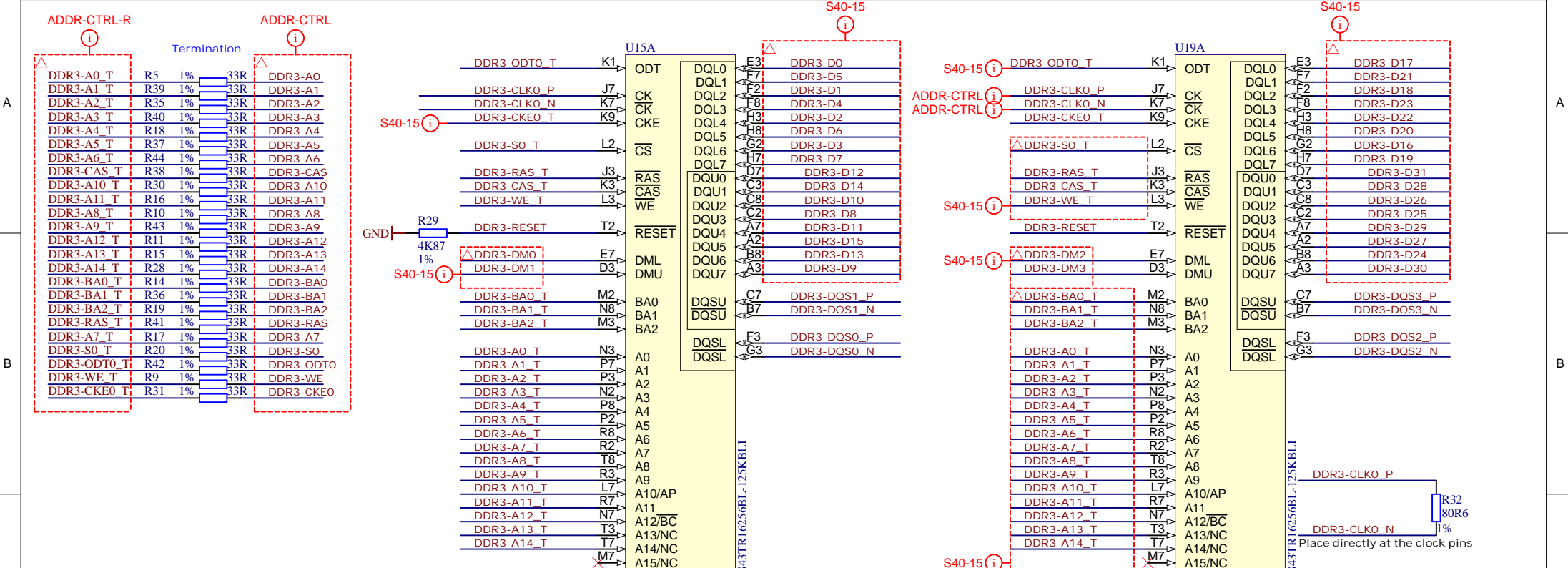
IN1/IN2

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.

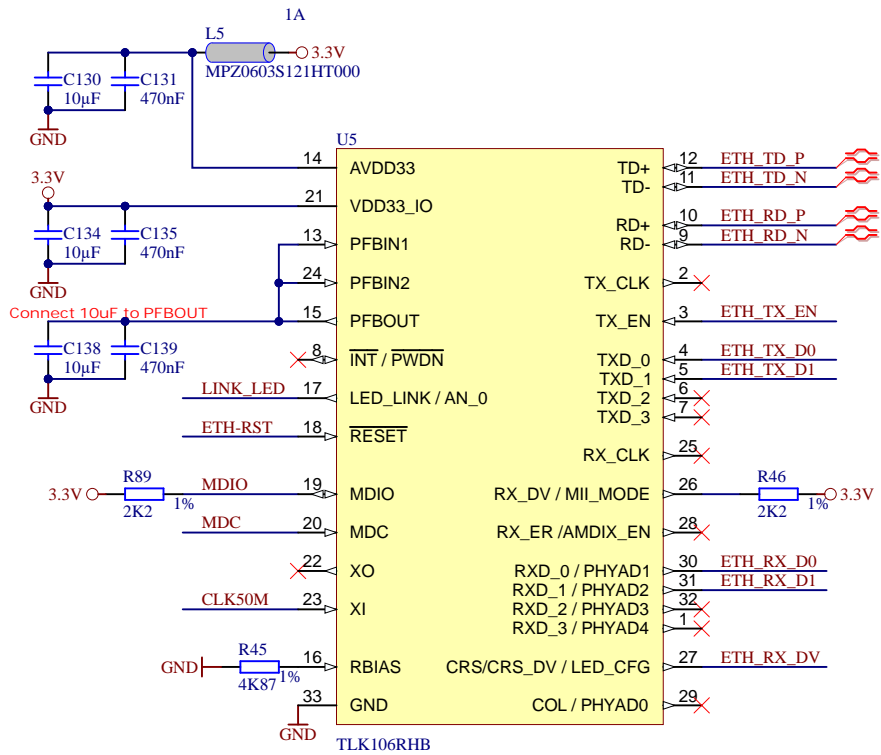


Title: Clock		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 15 of 20
Filename: Clock.SchDoc		

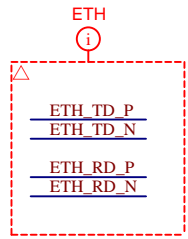
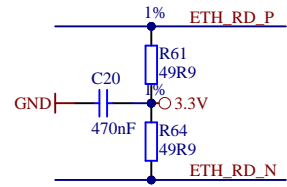
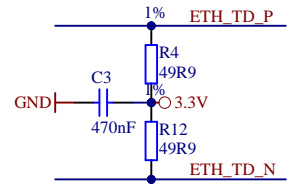



Title: **DDR3**

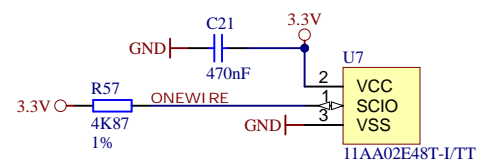
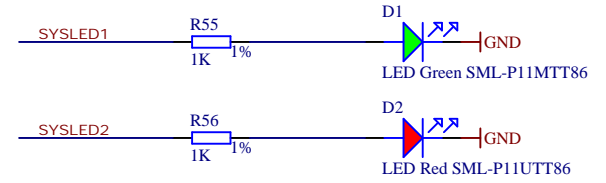
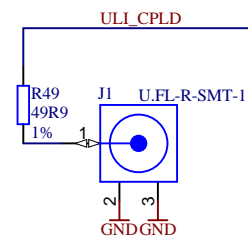
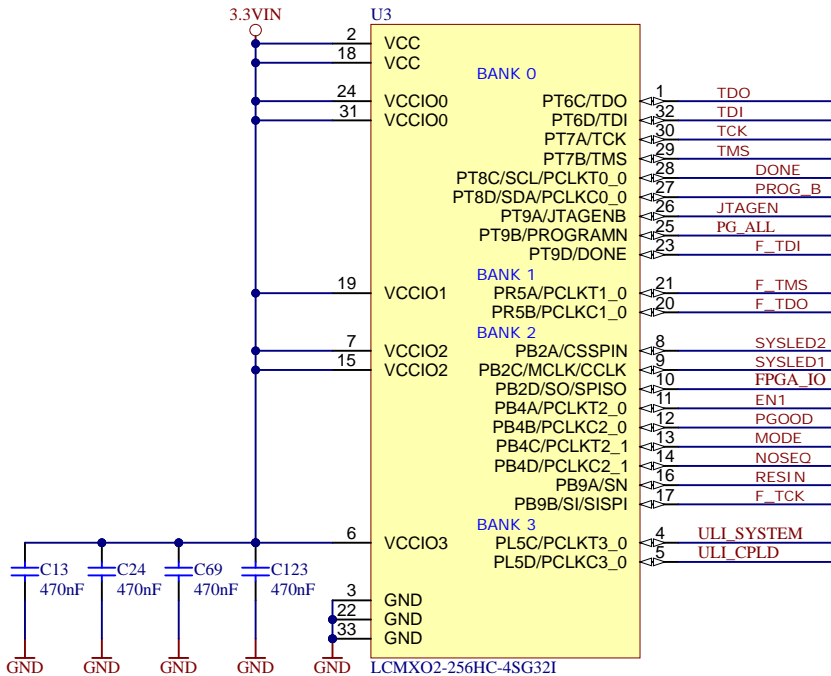
A4	Number: TE0712 82C36-AW	Rev: 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	
Filename: DDR3-RAM.SchDoc		Page 16 of 20




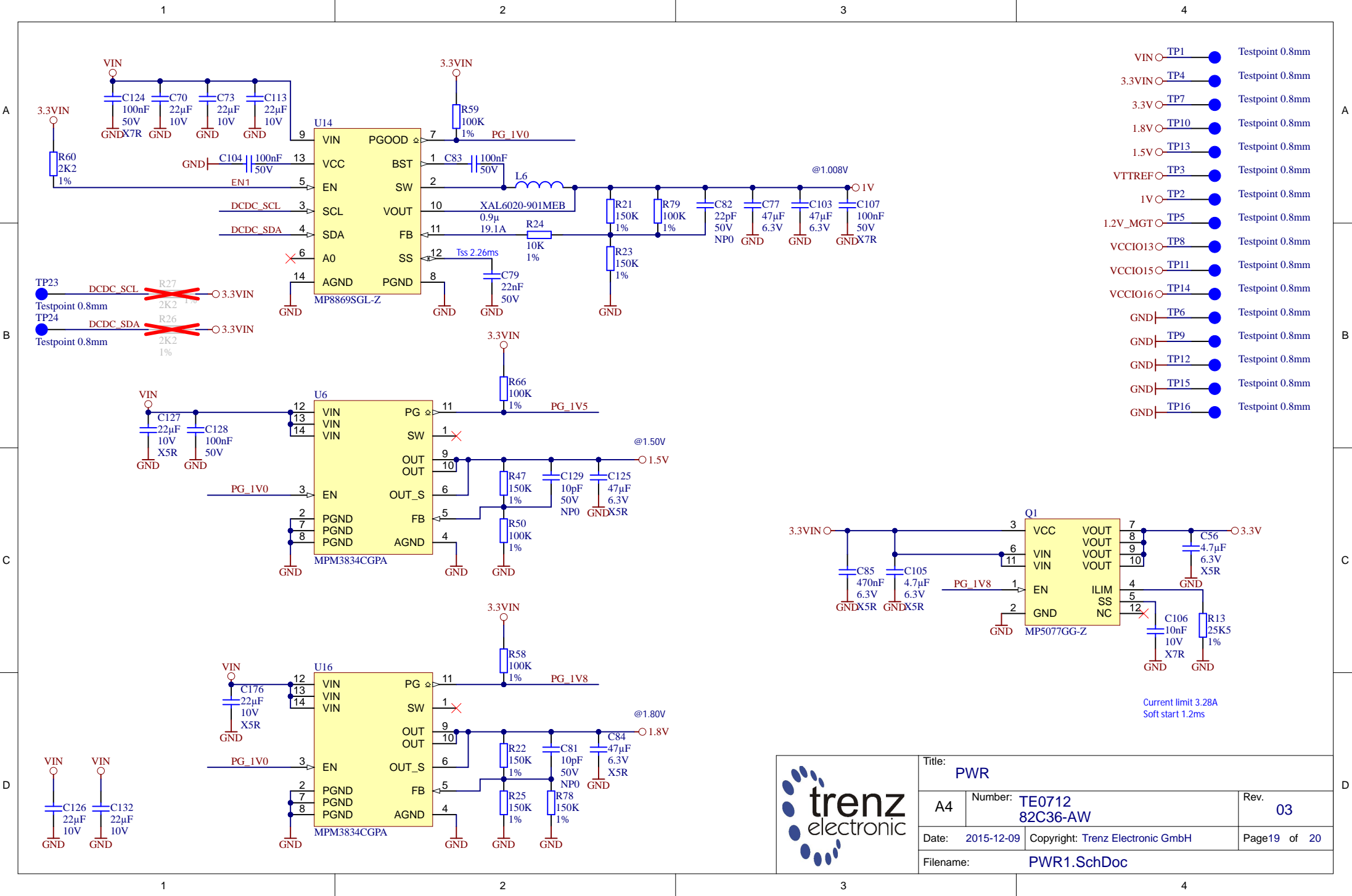
TLK106 is pin compatible with DP83822



	Title: ETH		
	A4	Number: TE0712 82C36-AW	Rev. 03
	Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 17 of 20
	Filename: ETHERNET.SchDoc		



		Title: CPLD	
		A4	Number: TE0712 82C36-AW
Date: 2015-12-09		Copyright: Trenz Electronic GmbH	
Page 18 of 20		Filename: CPLD.SchDoc	

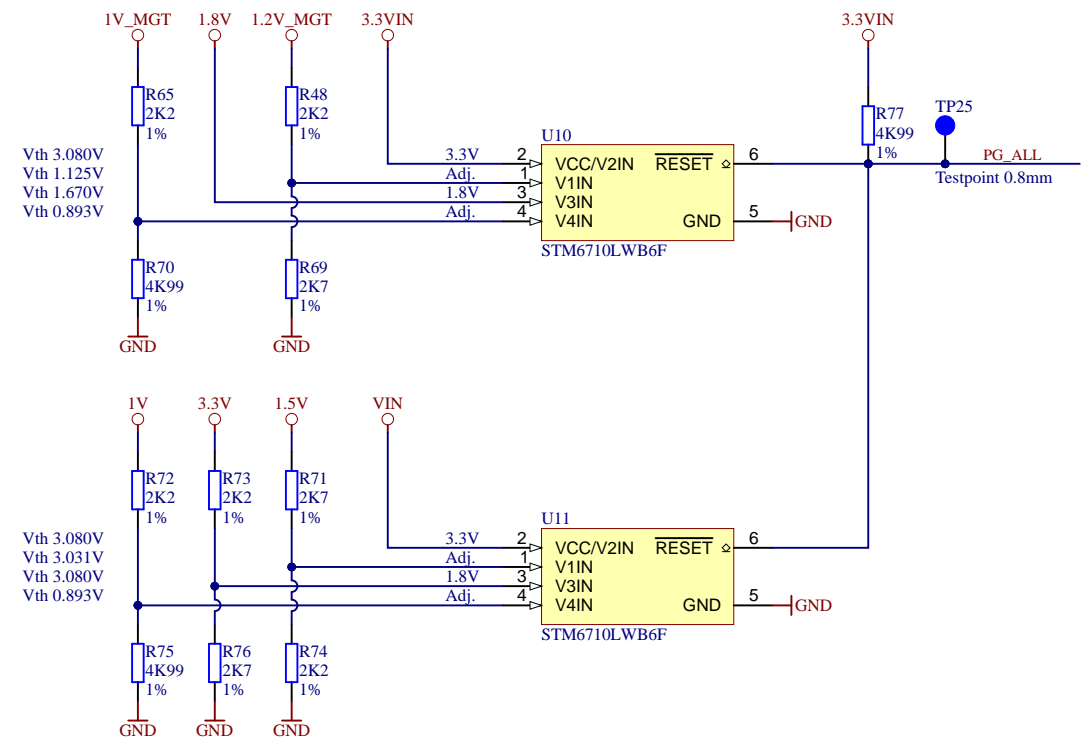
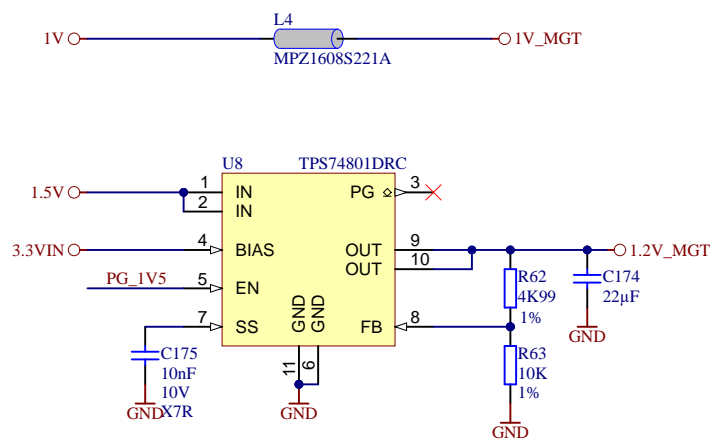



- VIN ○ TP1 ● Testpoint 0.8mm
- 3.3VIN ○ TP4 ● Testpoint 0.8mm
- 3.3V ○ TP7 ● Testpoint 0.8mm
- 1.8V ○ TP10 ● Testpoint 0.8mm
- 1.5V ○ TP13 ● Testpoint 0.8mm
- VTTREF ○ TP3 ● Testpoint 0.8mm
- 1V ○ TP2 ● Testpoint 0.8mm
- 1.2V_MGT ○ TP5 ● Testpoint 0.8mm
- VCCIO13 ○ TP8 ● Testpoint 0.8mm
- VCCIO15 ○ TP11 ● Testpoint 0.8mm
- VCCIO16 ○ TP14 ● Testpoint 0.8mm
- GND ○ TP6 ● Testpoint 0.8mm
- GND ○ TP9 ● Testpoint 0.8mm
- GND ○ TP12 ● Testpoint 0.8mm
- GND ○ TP15 ● Testpoint 0.8mm
- GND ○ TP16 ● Testpoint 0.8mm



Title: PWR		
A4	Number: TE0712 82C36-AW	Rev. 03
Date: 2015-12-09	Copyright: Trenz Electronic GmbH	Page 19 of 20
Filename: PWR1.SchDoc		

Current limit 3.28A
Soft start 1.2ms



			Title: PWR	
			A4	Number: TE0712 82C36-AW
Date: 2015-12-09		Copyright: Trenz Electronic GmbH		Page20 of 20
Filename: PWR2.SchDoc				