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 Schematics and other handouts serve for informational purposes only!

Design drawn by:	ED
Checked by:	MR
Assembly variant:	72I31-A
Created by:	MR
Modified by:	MR
Modified at:	2021-02-19



Title: TE0745 - Legal Notices Modules		
A4	Number: TE0745 72I31-A	Rev. 03
Date: 15.06.2023	Copyright: Trenz Electronic GmbH	Page 1 of 26
Filename: Legal Notices Modules.SchDoc		

REV	Description	
-01	Initial revision	
-02	1. MAC EEPROM Address patch fixed on PCB. 2. Lib components update.	
-03	<p>1. Removed serial number S/N. Connected U2 pin 20 to net "BOOTMODE".</p> <p>2. Changed DCDC (U4) from EN63A0Q1 to MP8869SGL-Z and adapted corresponding circuit. Added assembly option to connect U4 to I2C bus via R91/R101 (I2C address 0x61).</p> <p>3. Increase rated voltage for capacitors C108, C142, C147, C148, and C149 from 6.3 V to 25 V.</p> <p>4. Added diode D3 between signal "RST_IN_N" and "PS_1.8V".</p> <p>5. Added resistor R106 between CPLD U2 pin 25 and signal "RST_IN_N".</p> <p>6. Added option for diode D4 population between signal "PROG_B" and "INIT".</p> <p>7. Changed clock U33 from SiT8008A1-73-XXS-52.000000E to SiT8008BI-73-XXS-52.000000E.</p> <p>8. Added testpoints TP1...43.</p> <p>9. Added voltage monitors U20 and U22 with according circuits.</p> <p>10. Added pull-up resistor R73 for net "PWR_PL_OK".</p> <p>11. Added resistor R103 to optionally connect U31 PG to signal "PWR_PS_OK" or voltage monitor U20.</p> <p>12. Changed supply voltage for VCCPLL from PL_1.8V to PS_1.8V.</p> <p>13. Tied DXP/DXN (U1 pins R14 and R13) directly to GND.</p> <p>14. Added soft start capacitor options C62 for U8 and C78 for U11.</p> <p>15. Added decoupling capacitors</p> <ul style="list-style-type: none"> - C126, C127 for U16, - C129 for U14, - C130 for U19, - C131 for U18, - C144 for U8, - C150 for U11, - C151/C152 for U6, - C153/C154 for U17, - C155/C156 for U32, and - C128 and C157 for U1. <p>16. Changed voltage rating from 6.3 V to 10 V for 100 uF capacitors.</p> <p>17. Changed voltage rating from 6.3 V to 16 V for 10 uF capacitors.</p> <p>18. Changed voltage rating from 6.3 V to 10 V and size from 0402 to 0603 for capacitors C21 and C29.</p> <p>19. Changed size from 0201 to 0402 for 1 kOhm resistors R104 and R105.</p> <p>20. Added 100 Ohm termination resistors R109 and R110 for MGT_REF_CLKs.</p> <p>21. Changed VCCADC_0 supply from VCCIO_0 to PL_1.8V.</p> <p>22. Added UKCA logo.</p> <p>23. Changed voltage divider R21 and R22 to set threshold to 0.936 V.</p> <p>24. Changed DDR clock termination resistor R9 placement position.</p> <p>25. Changed fiducials to standard fiducial type.</p> <p>26. Update revision history.</p> <p>27. Update schematic template.</p> <p>28. Updated power overview.</p> <p>29. Removed page "ZYNQ.SchDoc" and added pages Legal Notices, System Overview.</p>	ED

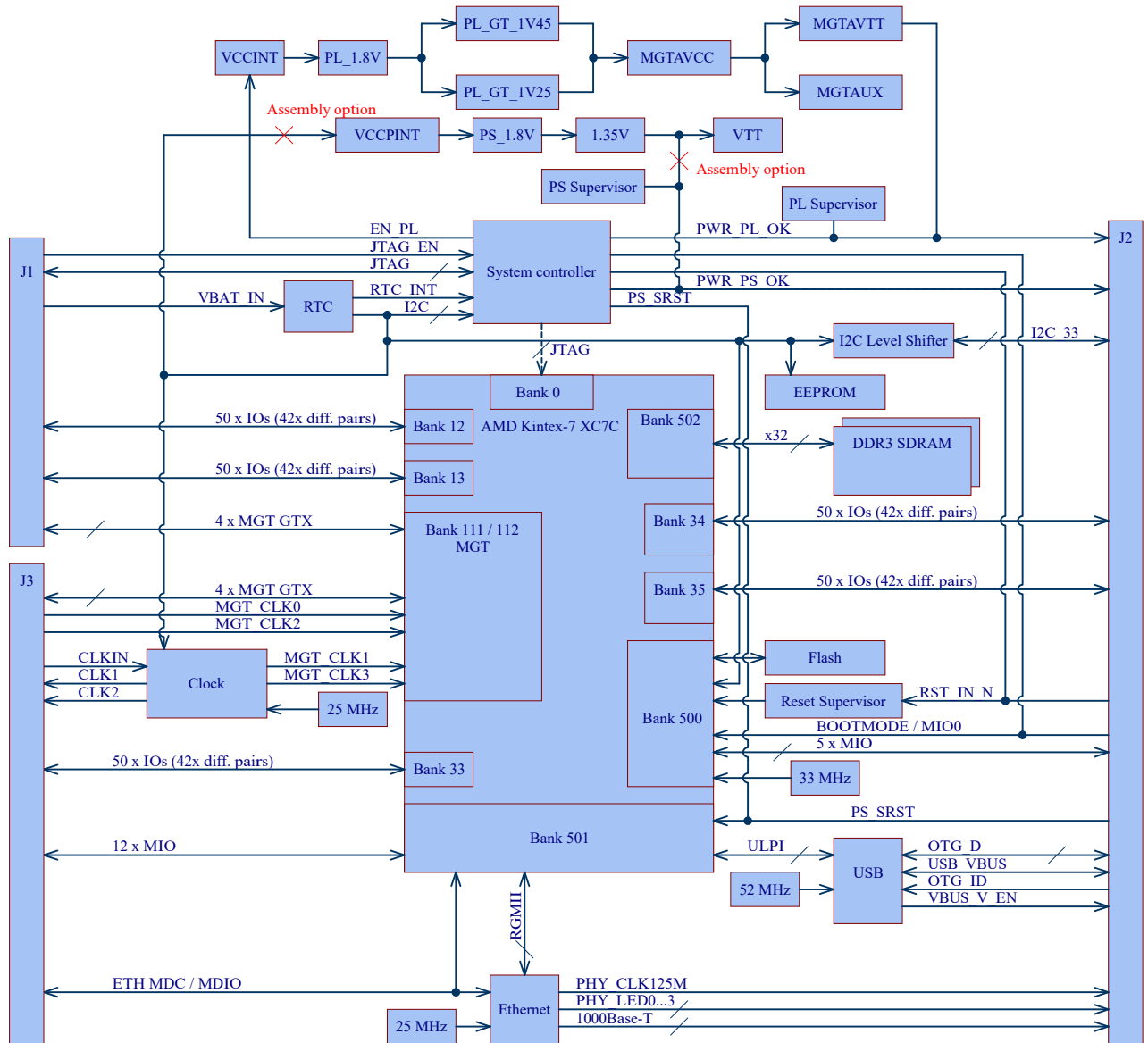
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		A4	Number: TE0745 72131-A	Rev. 03
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I2C Address:

Device	I2C ADDR	Note
SoC U1G	-	I2C Master
CPLD U2	0x30	Firmware dependent
DCDC U4	0x61	Assembly option
PLL U16	0x70	-
EEPROM U23	0x53	-

Supported Voltage Ranges:

Power Rail	Direction	Range	Tolerance	Description	Note
PS_3.3V	IN	3.3 V	+/- 5 %	Micromodule Power	-
PS_VIN	IN	3.3 V	+/- 5 %	Micromodule Power	-
PL_VIN	IN	3.2 V - 4.5 V	-	Micromodule Power	within given range
VCCIO12	IN	1.2 V - 3.3 V	+/- 3 %	HR IO Bank 12	-
VCCIO13	IN	1.2 V - 3.3 V	+/- 3 %	HR IO Bank 13	-
VCCIO33	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 33	-
VCCIO34	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 34	-
VCCIO35	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 35	-
VBAT_IN	IN	1.8 V - 3.3 V	-	RTC	within given range
PS_1.8V	OUT	1.8 V	+/- 3 %	Power for Carrier	-
PL_1.8V	OUT	1.8 V	+/- 3 %	Power for Carrier	-

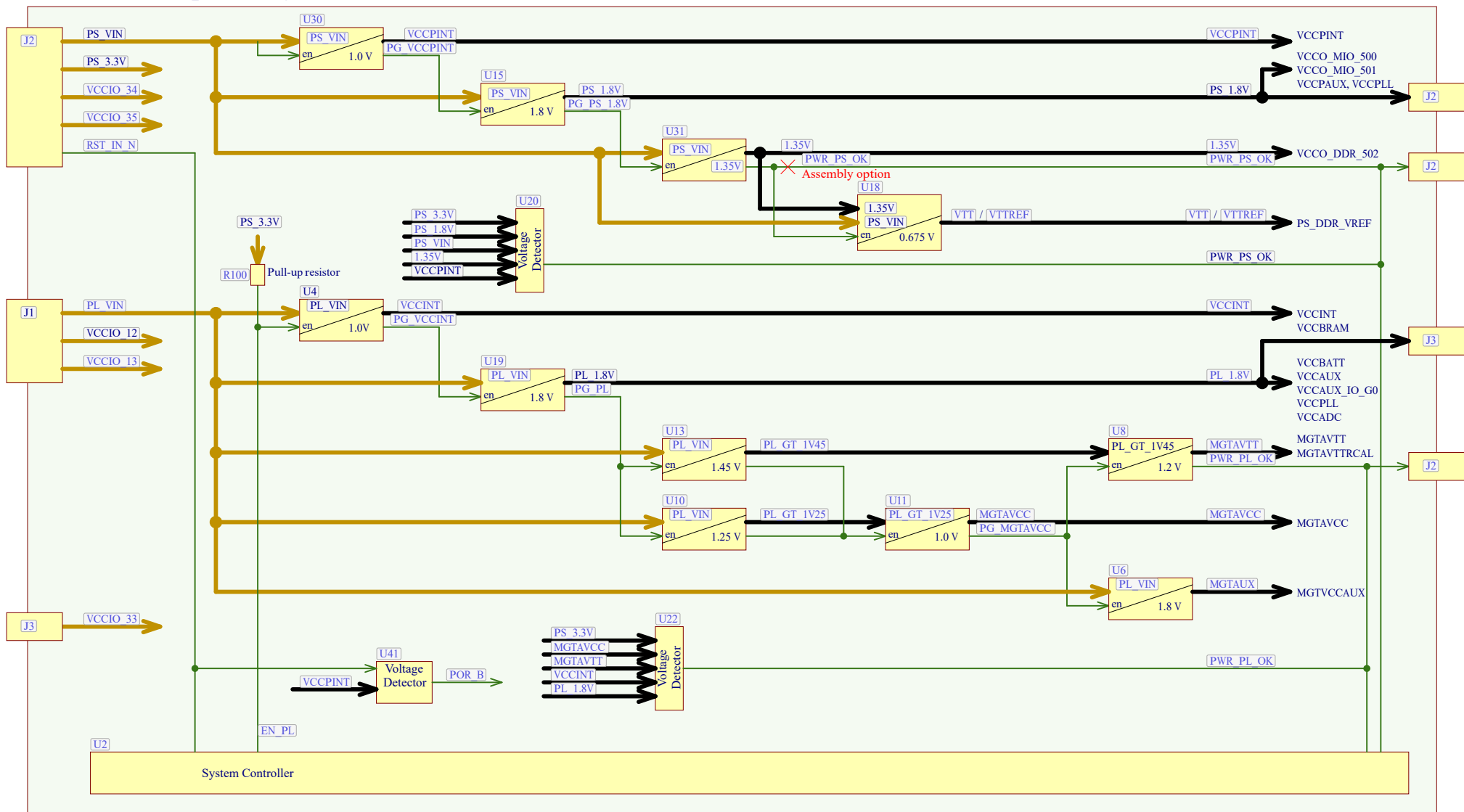


FPGA-PWR



Title: TE0745 - System Overview		
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Power-on sequencing:



Title: TE0745 - Power overview		
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Special notes:

UKCA
UKCA Logo on Top Overlay

CE
CE Logo on Top Overlay

LOGO1
TE Logo PRINT Layer

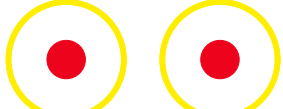
FIDU-DOT - small FIDU-DOT - small



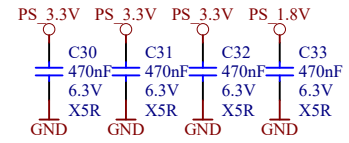
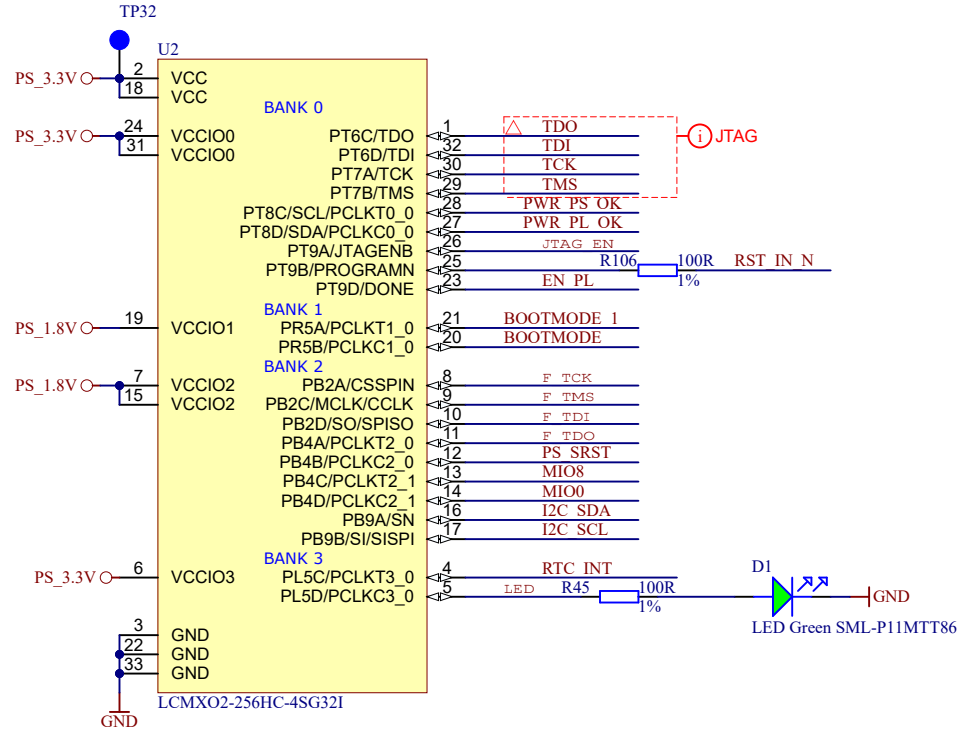
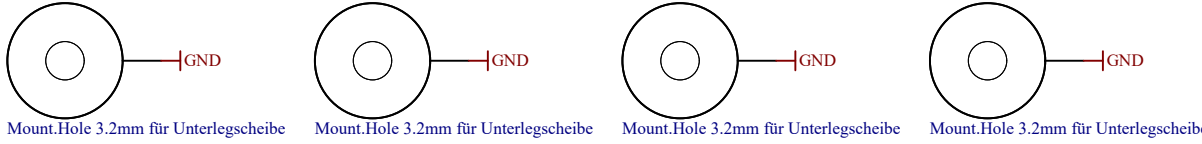
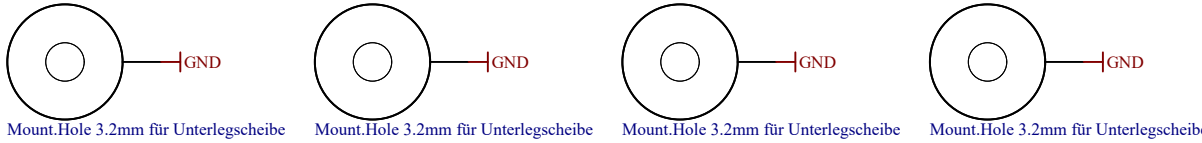
PM1 FIDU-DOT - small PM2 FIDU-DOT - small



PM3 FIDU-DOT - small PM4 FIDU-DOT - small



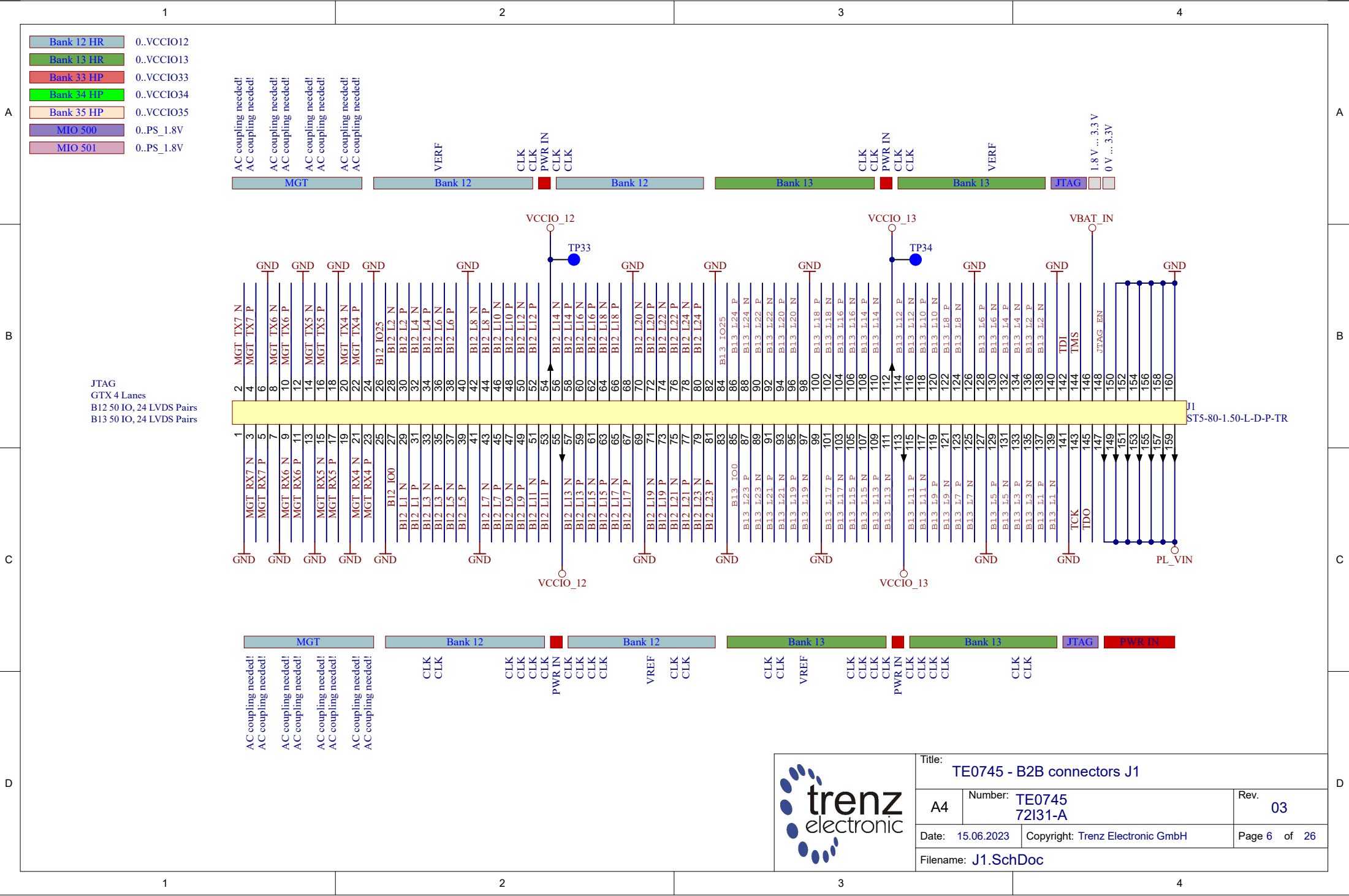
PM5 PM6



Serial
SerialNumber 6,3 x 6.3mm



Title: TE0745 - System Controller		
A4	Number: TE0745 72131-A	Rev. 03
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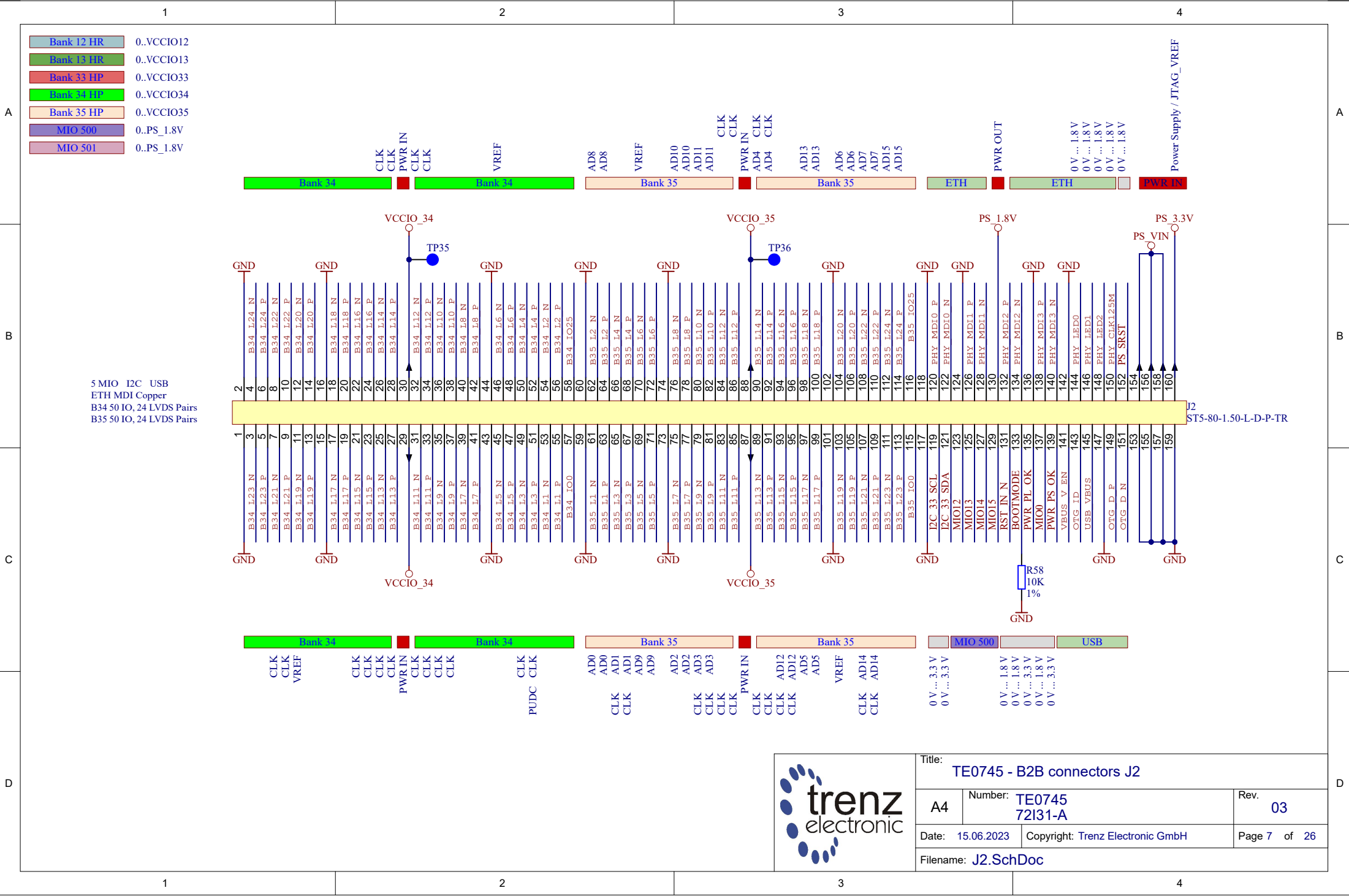


- Bank 12 HR 0..VCCIO12
- Bank 13 HR 0..VCCIO13
- Bank 33 HP 0..VCCIO33
- Bank 34 HP 0..VCCIO34
- Bank 35 HP 0..VCCIO35
- MIO 500 0..PS_1.8V
- MIO 501 0..PS_1.8V

JTAG
 GTX 4 Lanes
 B12 50 IO, 24 LVDS Pairs
 B13 50 IO, 24 LVDS Pairs

Title: TE0745 - B2B connectors J1		
A4	Number: TE0745 72I31-A	Rev. 03
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Filename: J1.SchDoc		Page 6 of 26



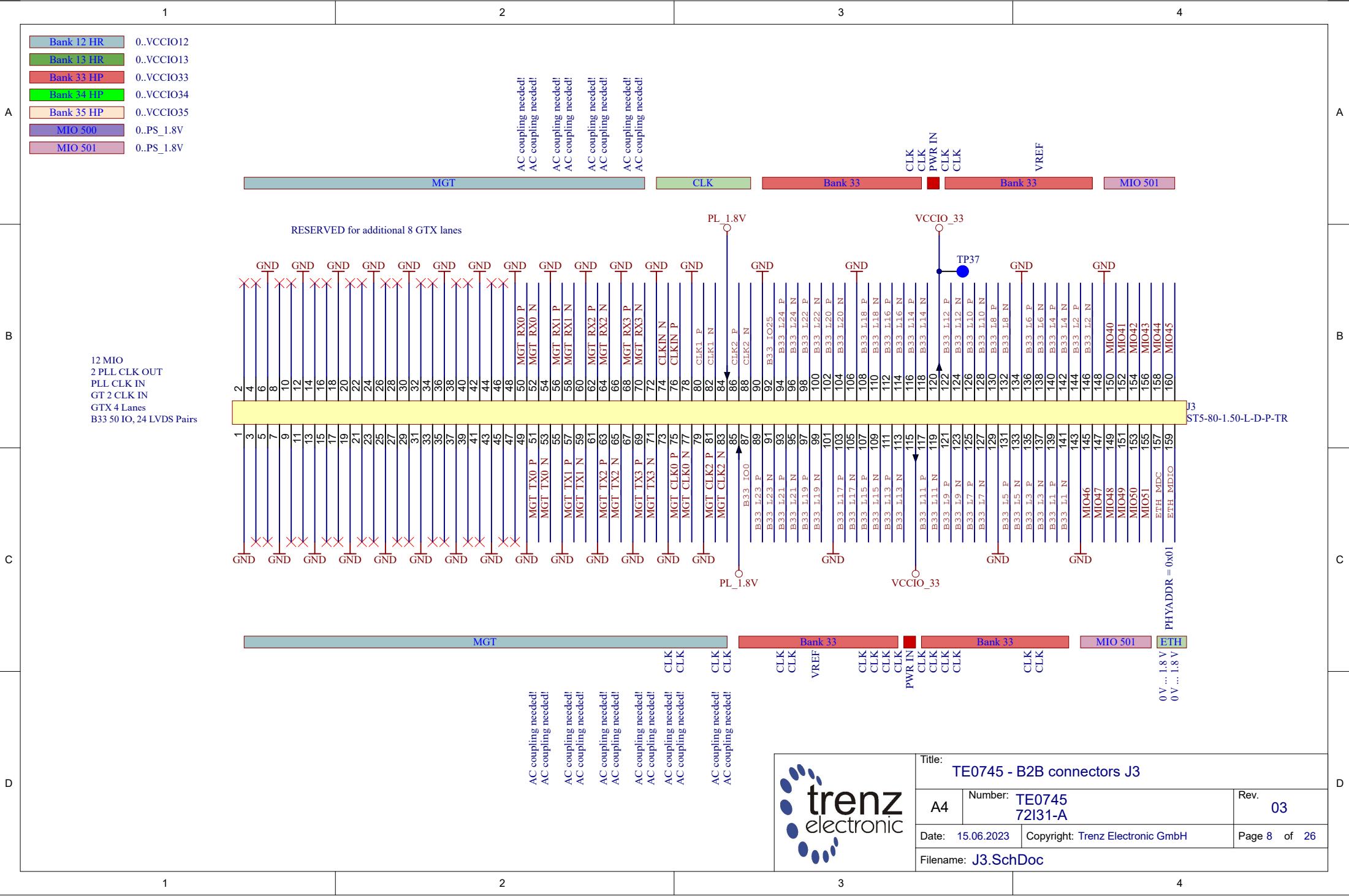


5 MIO I2C USB
ETH MDI Copper
B34 50 IO, 24 LVDS Pairs
B35 50 IO, 24 LVDS Pairs

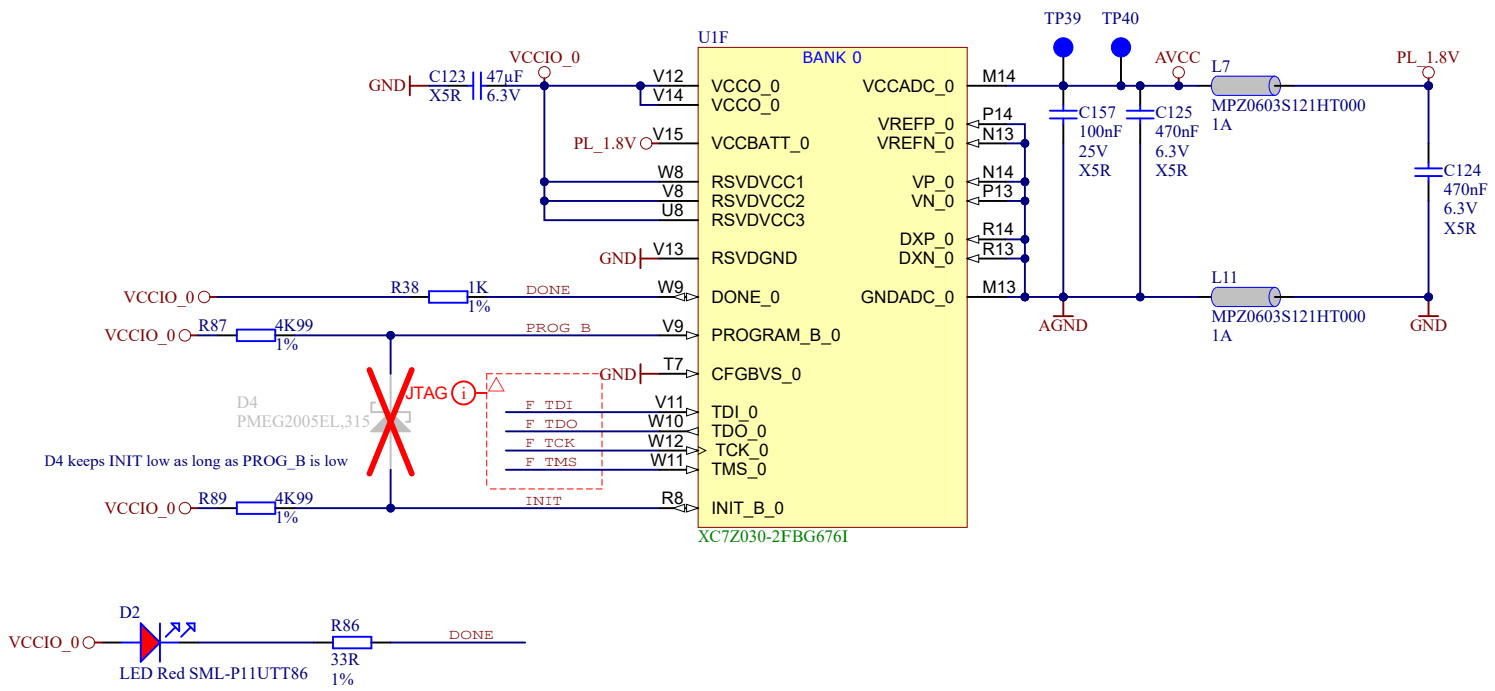
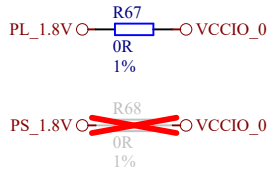
J2
ST5-80-1.50-L-D-P-TR

trenz electronic

Title: TE0745 - B2B connectors J2		
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Filename: J2.SchDoc		

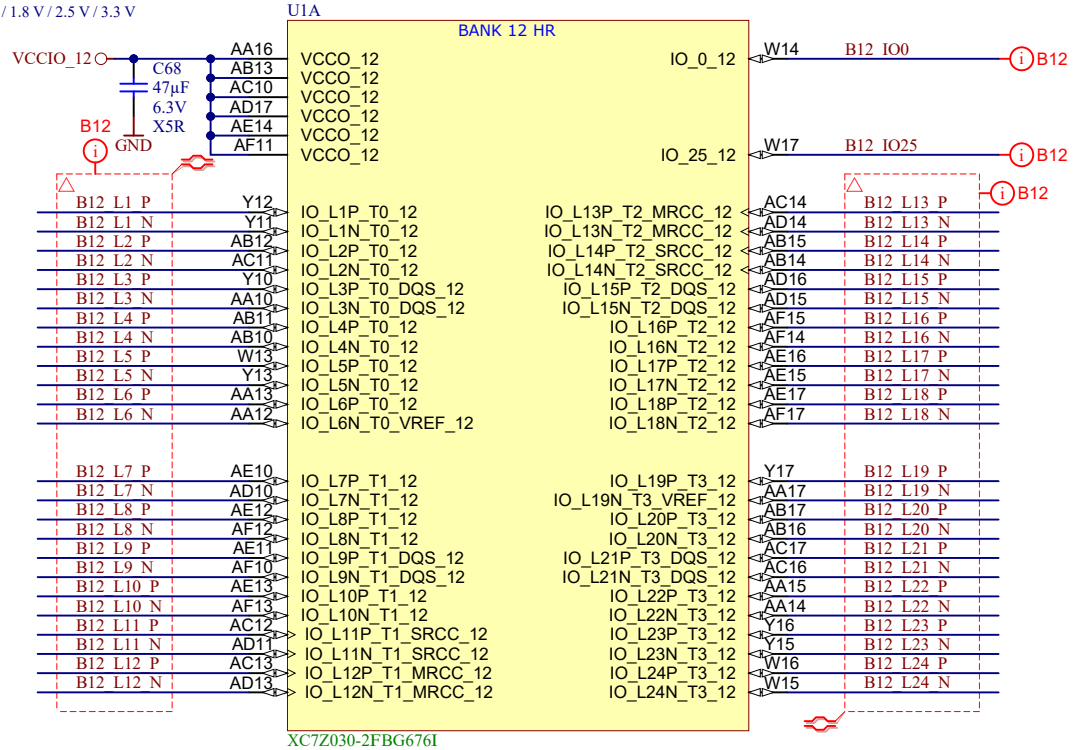


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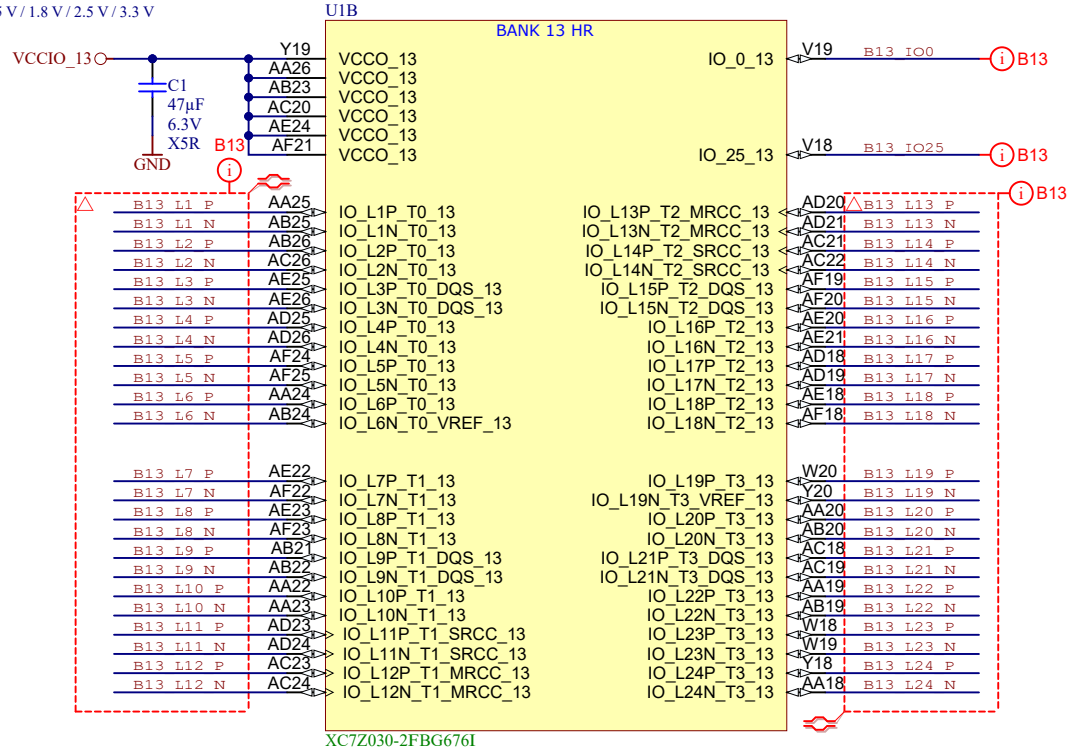
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	A4	Number: TE0745 72131-A
	Date: 10.05.2023	Rev. 03
	Copyright: Trenz Electronic GmbH	
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Filename: ZYNQ_MISC.SchDoc		

HR
1.2 V/1.35 V/1.5 V/1.8 V/2.5 V/3.3 V

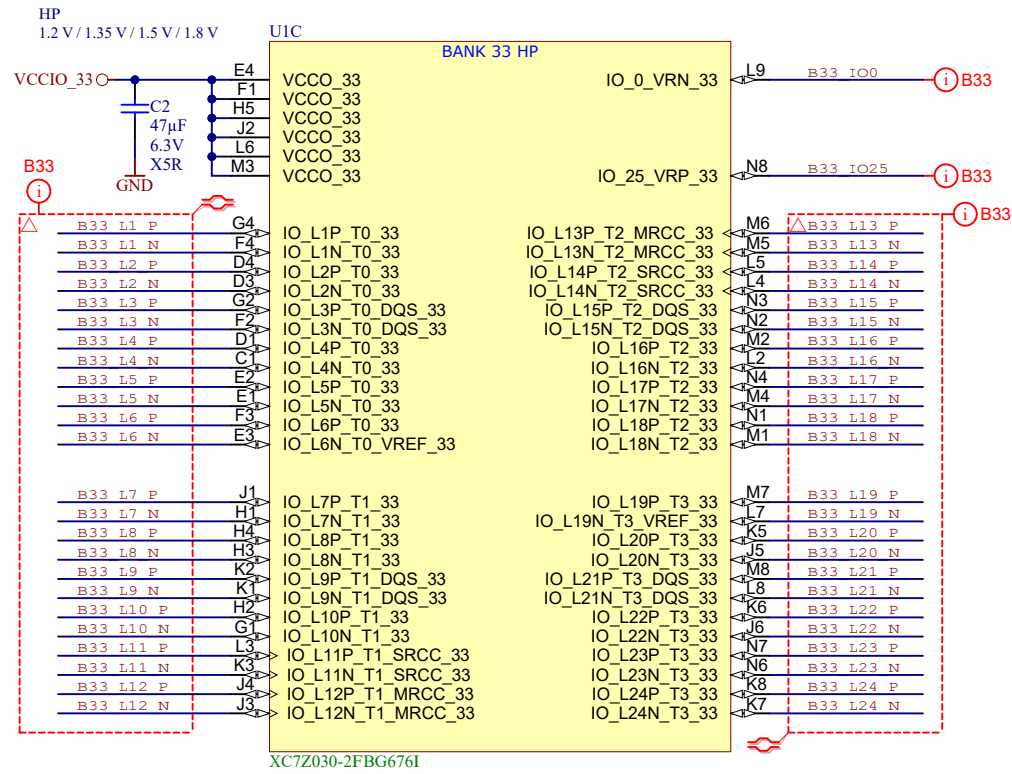


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Date: 22.05.2023	Copyright: Trenz Electronic GmbH	Page 10 of 26
Filename: B12.SchDoc		

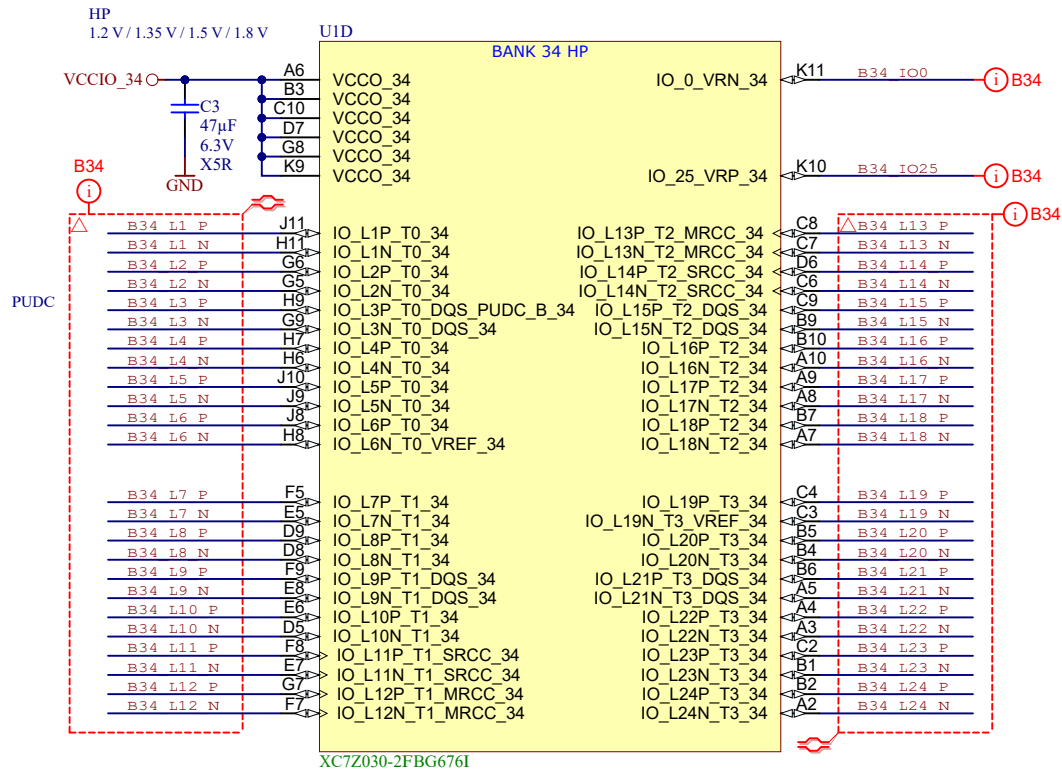
HR
1.2V/1.35V/1.5V/1.8V/2.5V/3.3V



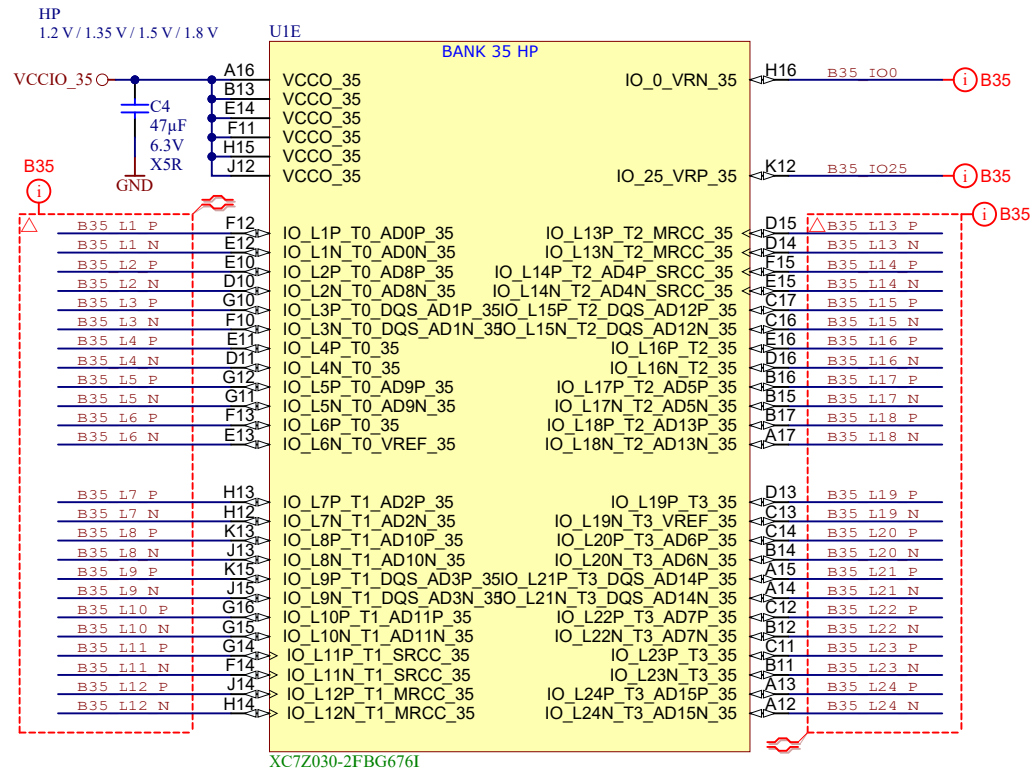
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A4	Number: TE0745 72I31-A	Rev. 03
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Filename: B13.SchDoc		




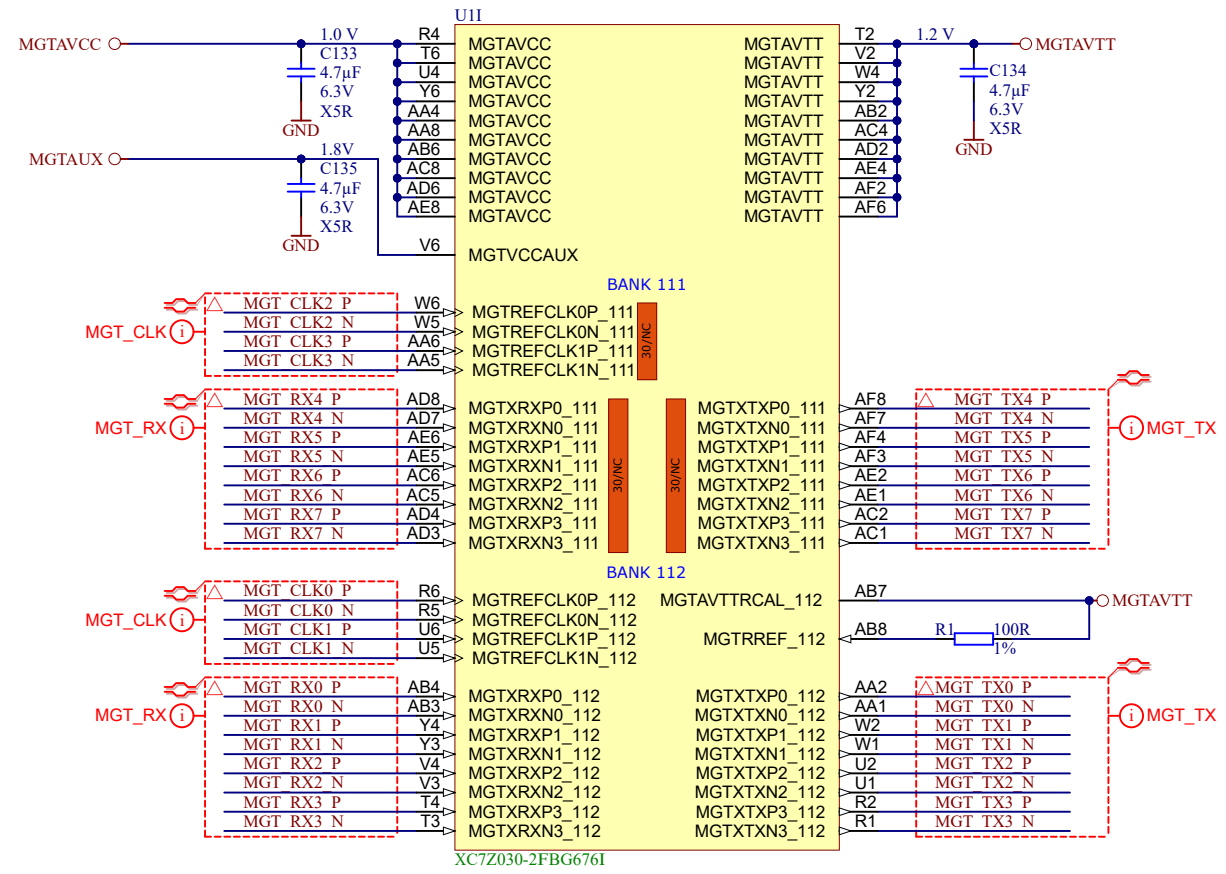
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A4	Number: TE0745 72I31-A	Rev. 03
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Filename: B33.SchDoc		




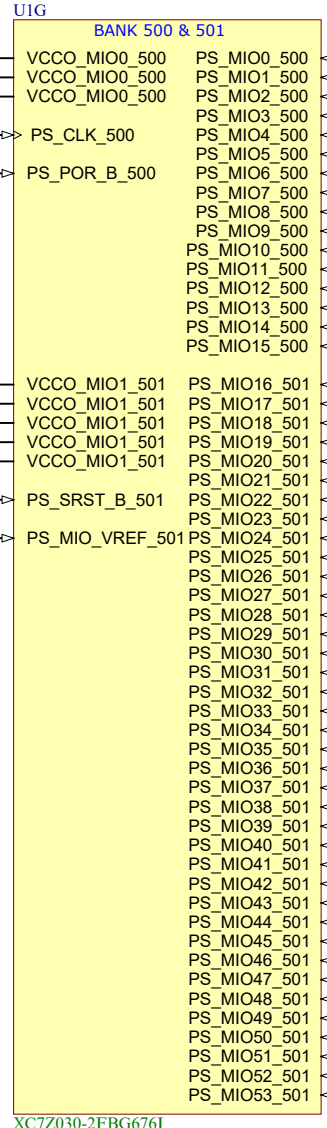
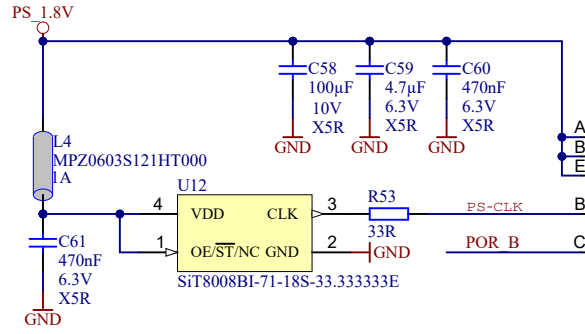
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A4	Number: TE0745 72I31-A	Rev. 03
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		Title: TE0745 - Zynq_B35	
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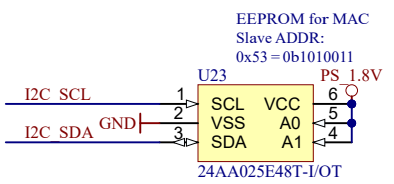
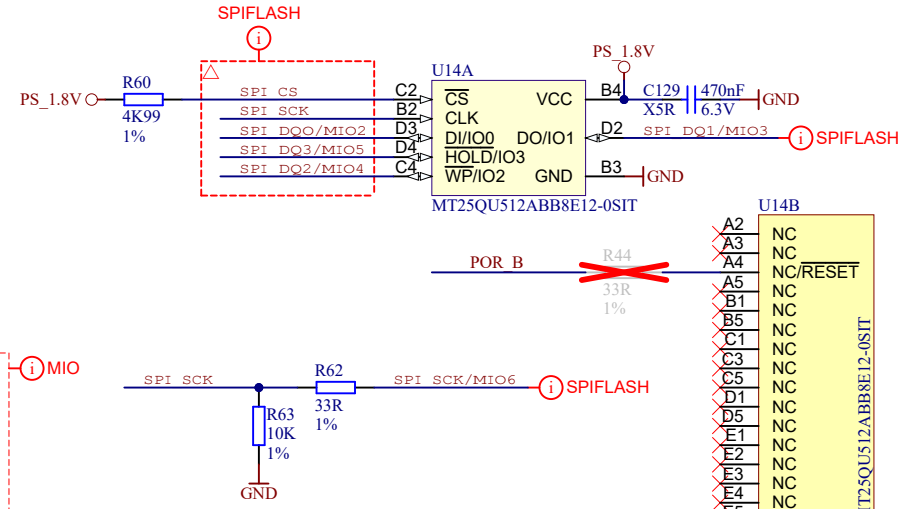
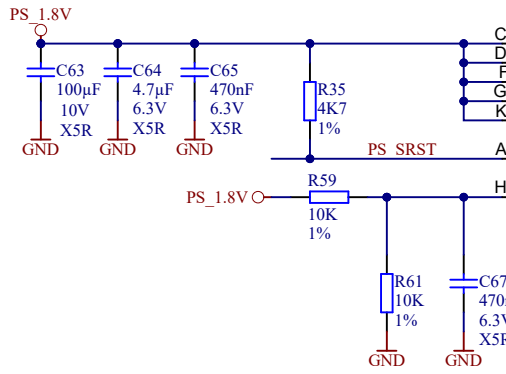


		Title: TE0745 - Zynq_MGT	
		A4	Number: TE0745 72131-A
Date: 22.05.2023		Copyright: Trenz Electronic GmbH	
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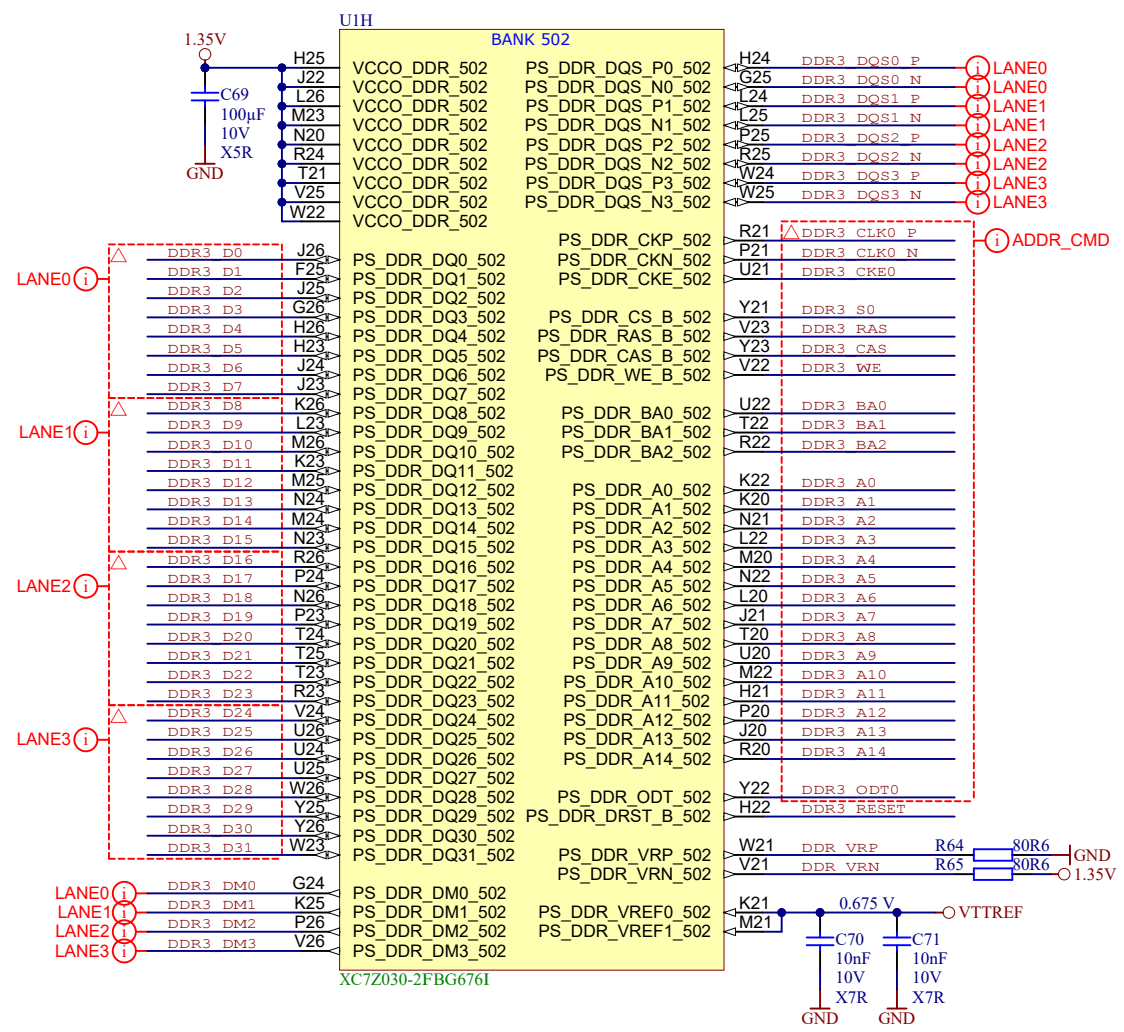



MIO Bank Voltage	MIO7 Bank0	MIO8 Bank1
2.5 V, 3.3 V	0	0
1.8 V	1	1

BOOT MODE	MIO5	MIO4	MIO3
JTAG Boot Mode	0	0	0
NOR Boot	0	0	1
NAND	0	1	0
Quad-SPI	1	0	0
SD Card	1	1	0

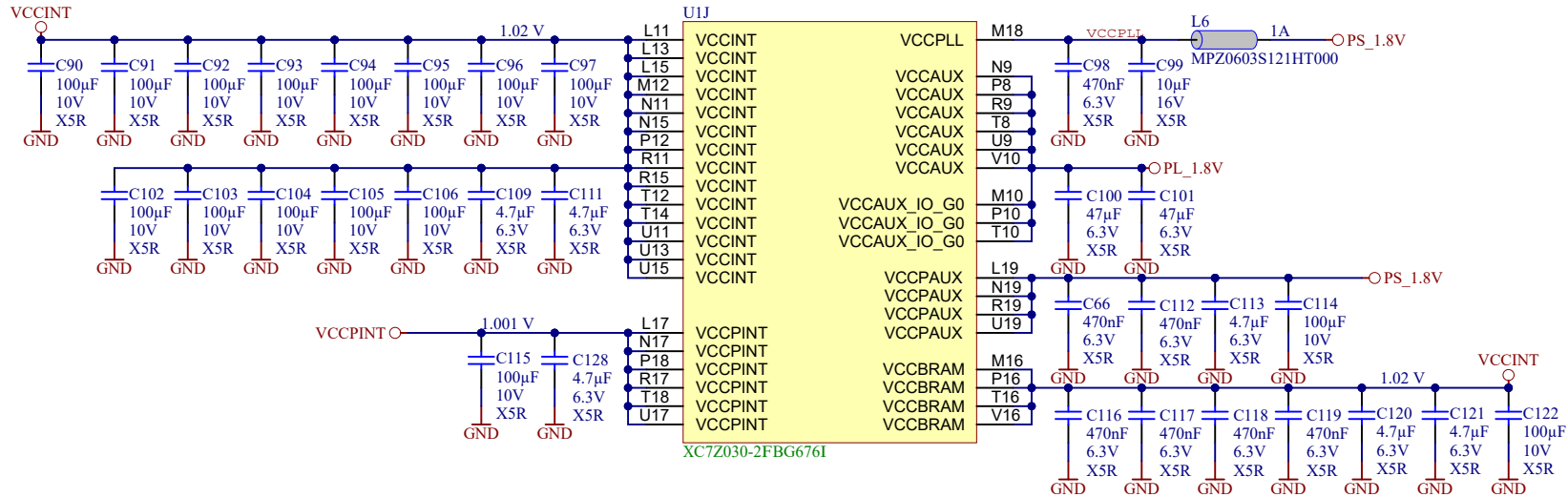
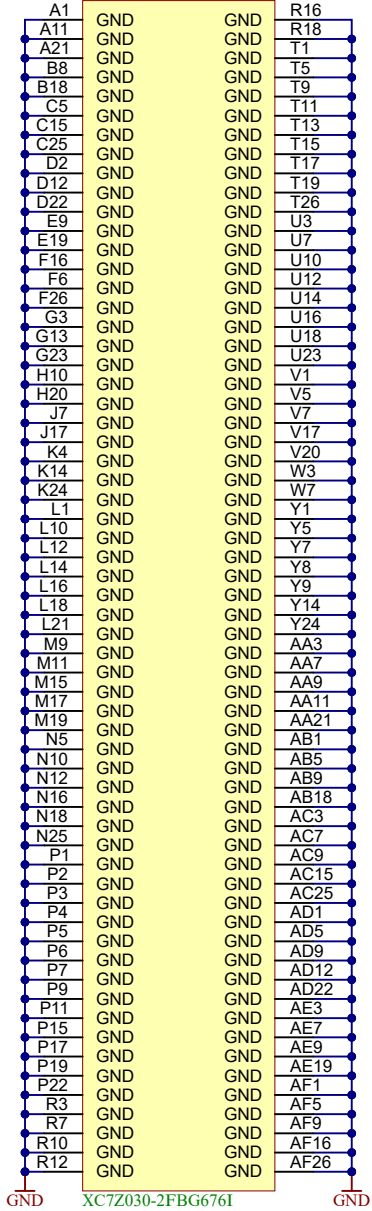


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A4	Number: TE0745 72131-A	Rev. 03
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Title: TE0745 - Zynq_PS_DDR		
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Filename: PS-DDR.SchDoc		

UIK



Title: TE0745 - Zynq_Power		
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Filename: ZYNC_POWER.SchDoc		

A

A

B

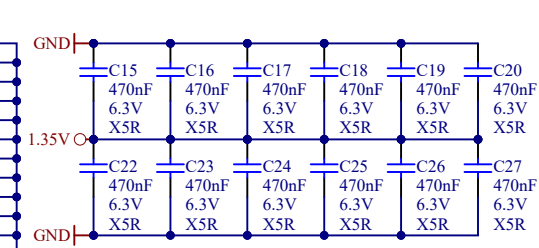
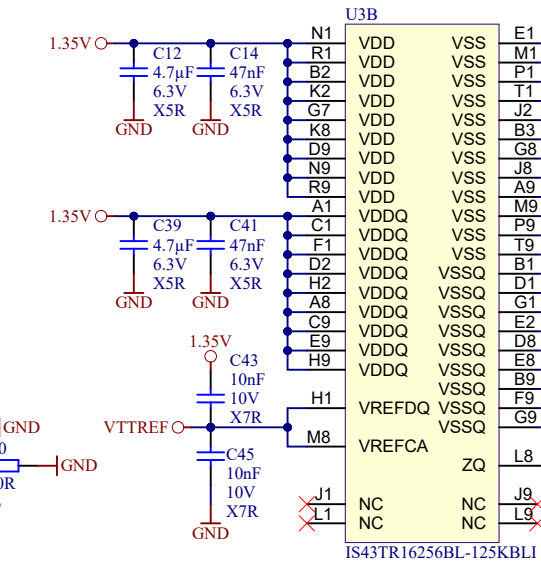
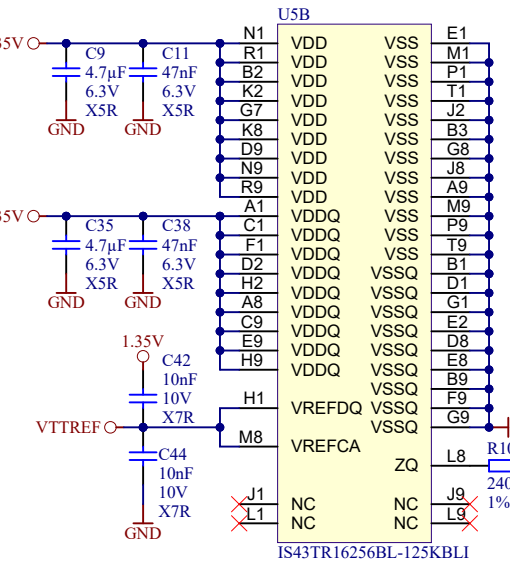
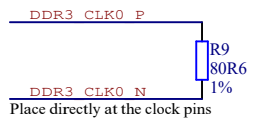
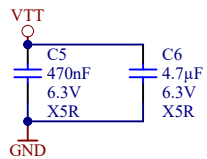
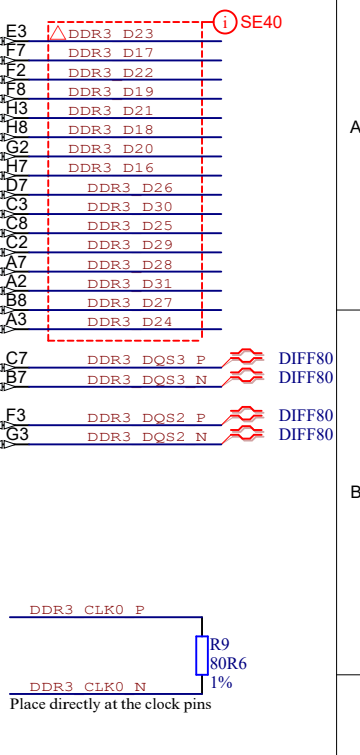
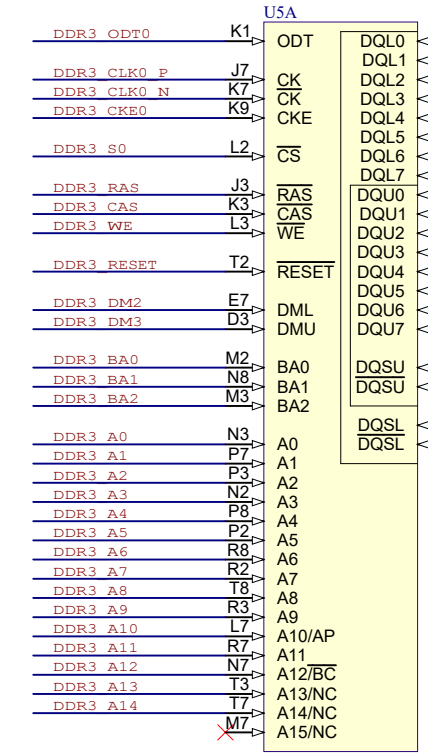
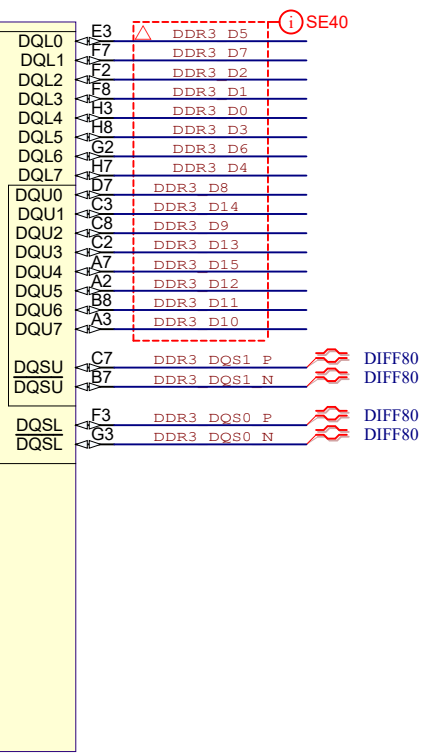
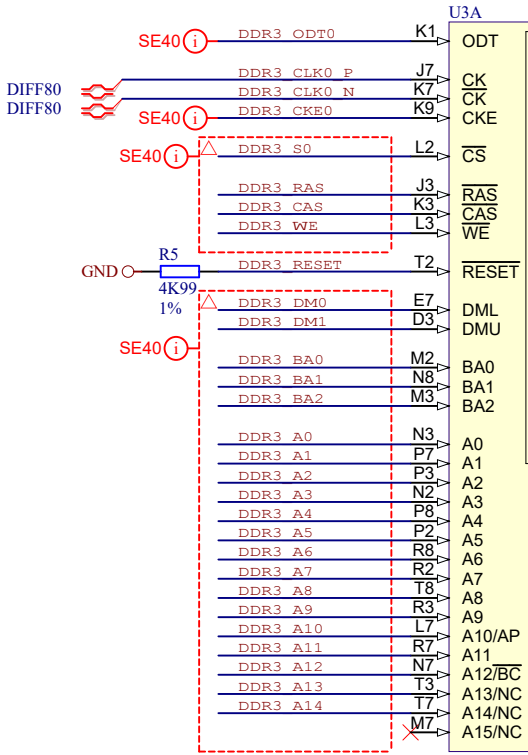
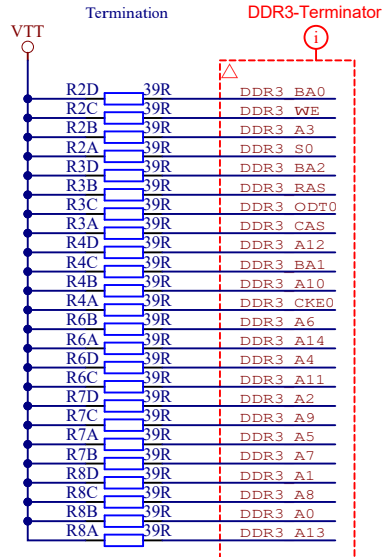
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C

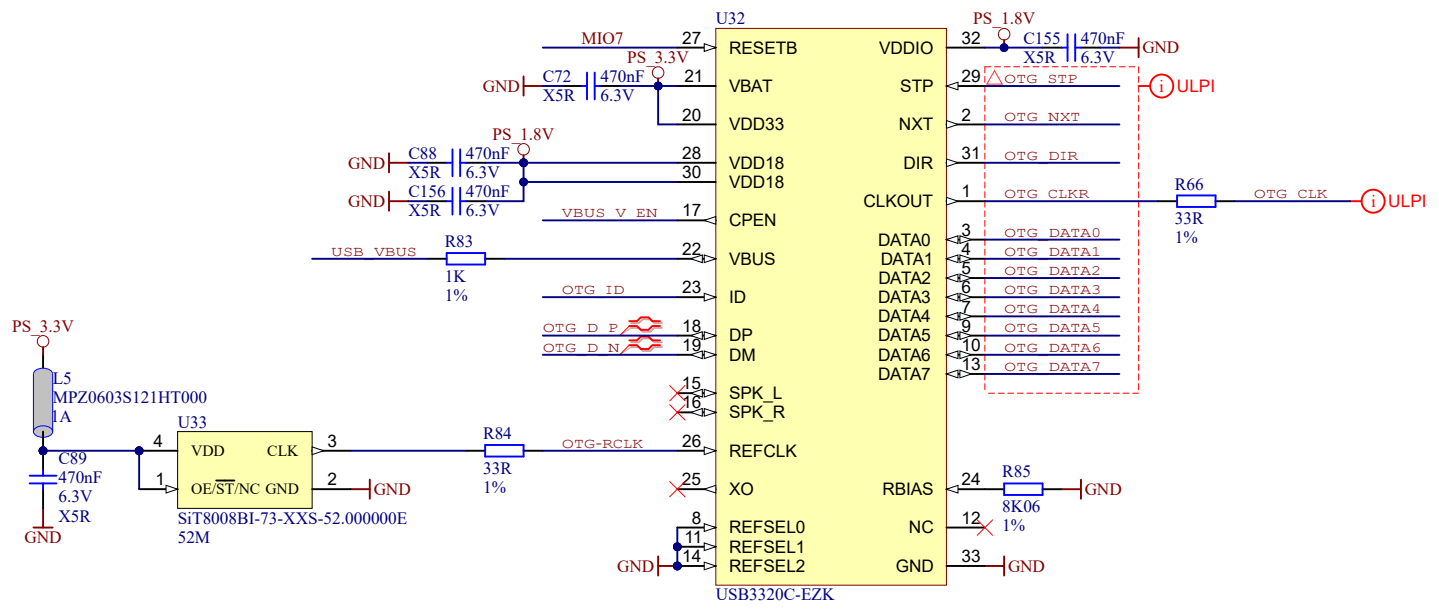
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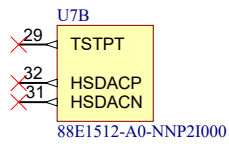
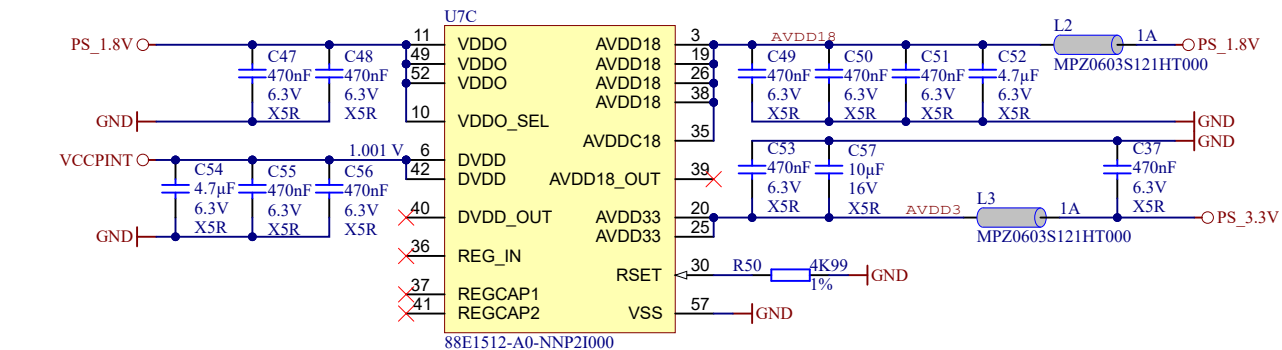
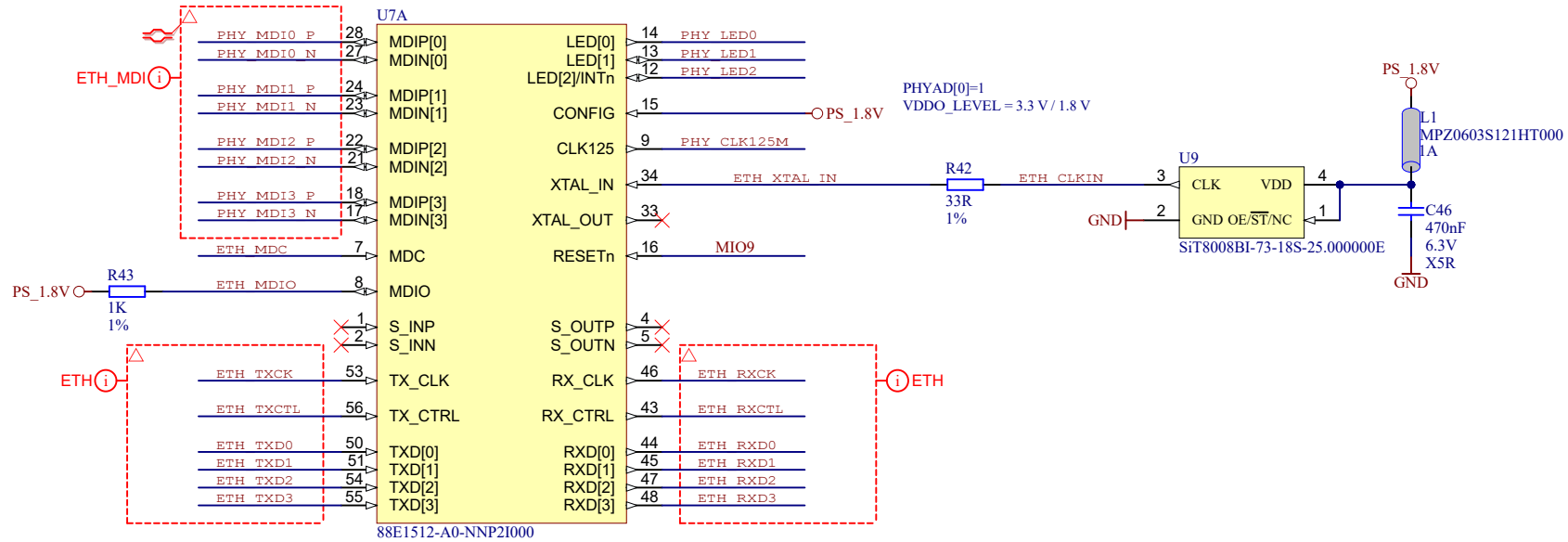
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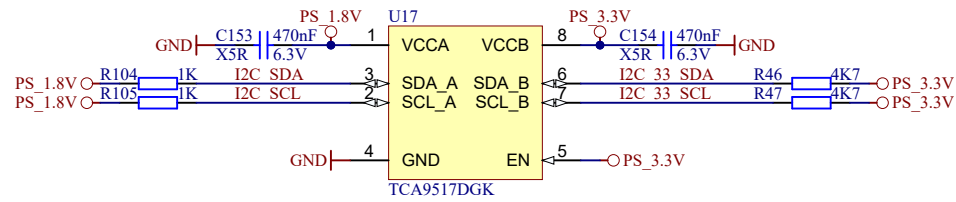
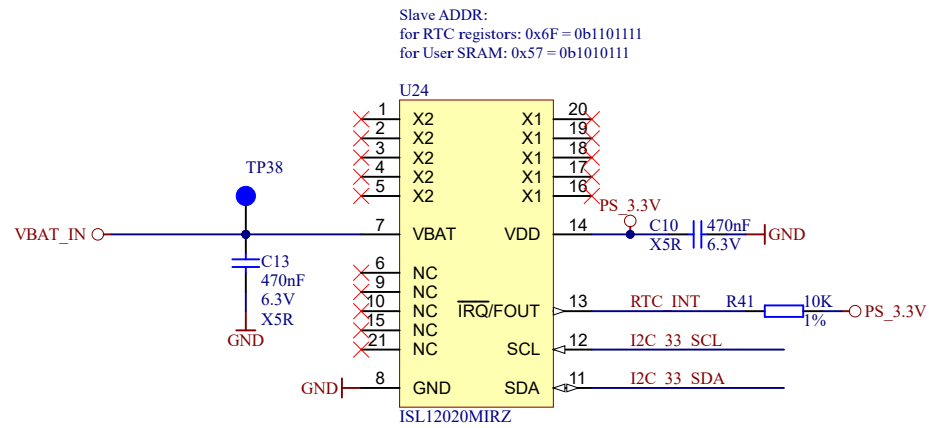
Title: TE0745 - DDR3 RAM		
A4	Number: TE0745 72I31-A	Rev. 03
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	Title: TE0745 - USB_PHY	
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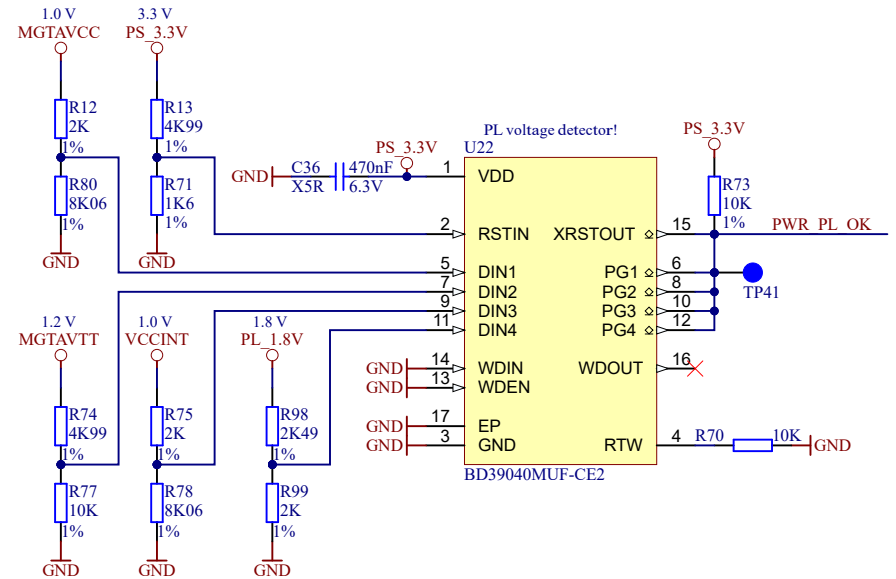
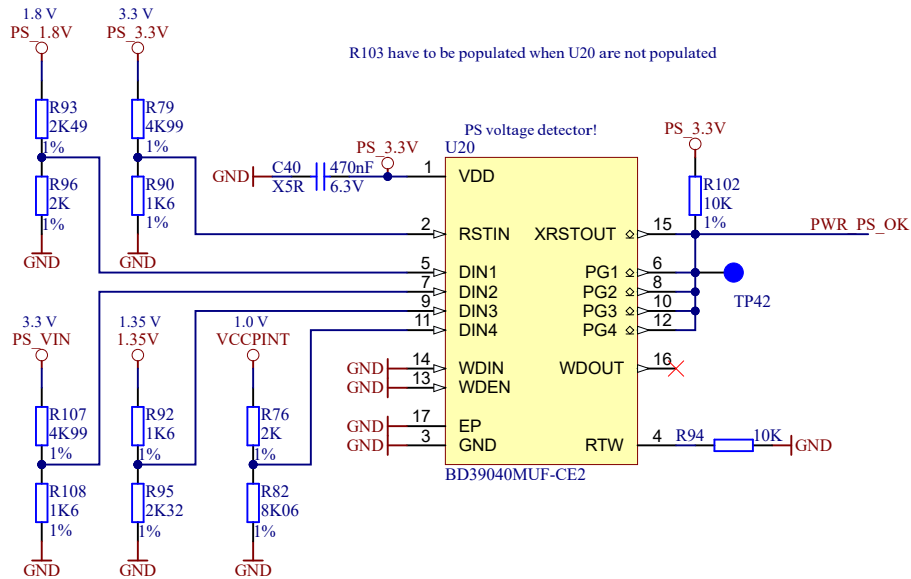
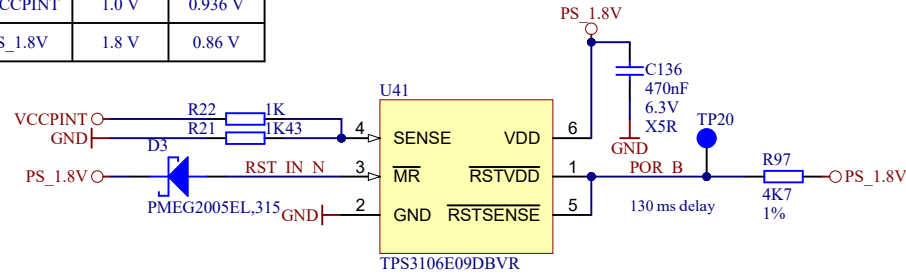


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Filename: SENSOR-RTC.SchDoc			

Net Name	Voltage Rail	Low Detect
VCCPINT	1.0 V	0.936 V
PS_1.8V	1.8 V	0.86 V



R103 have to be populated when U20 are not populated

PS voltage detector!

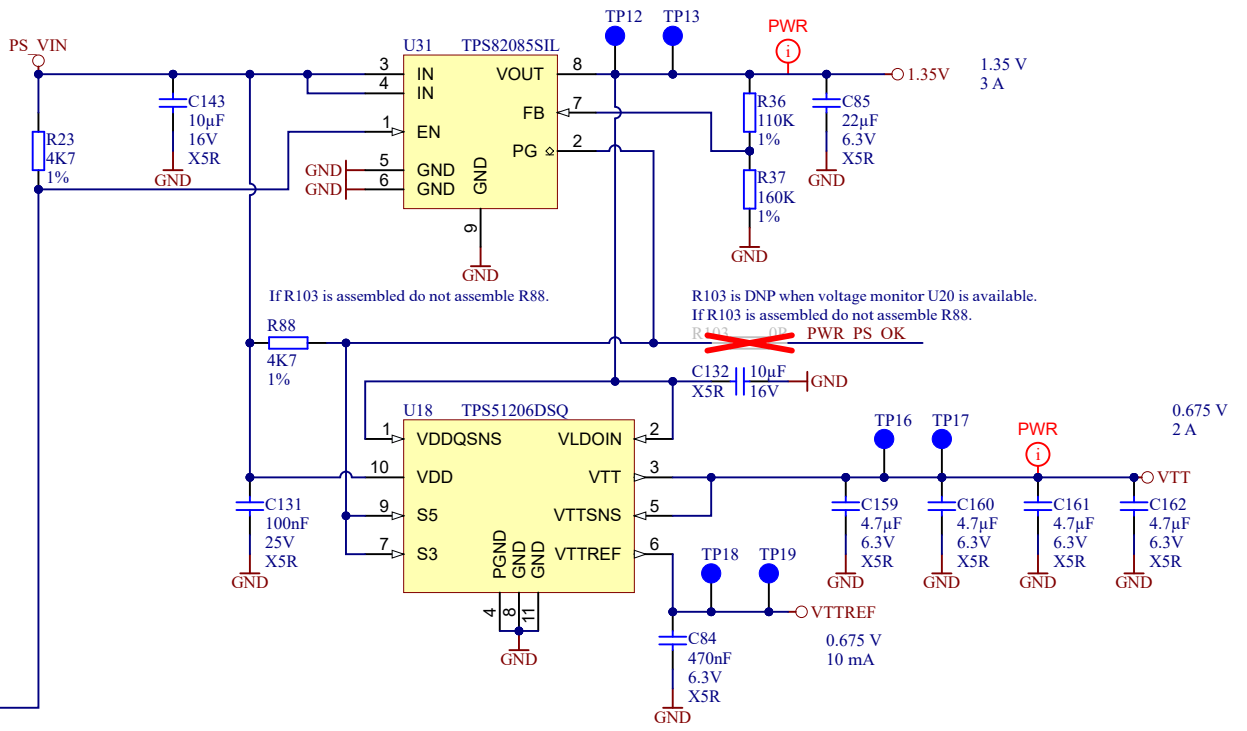
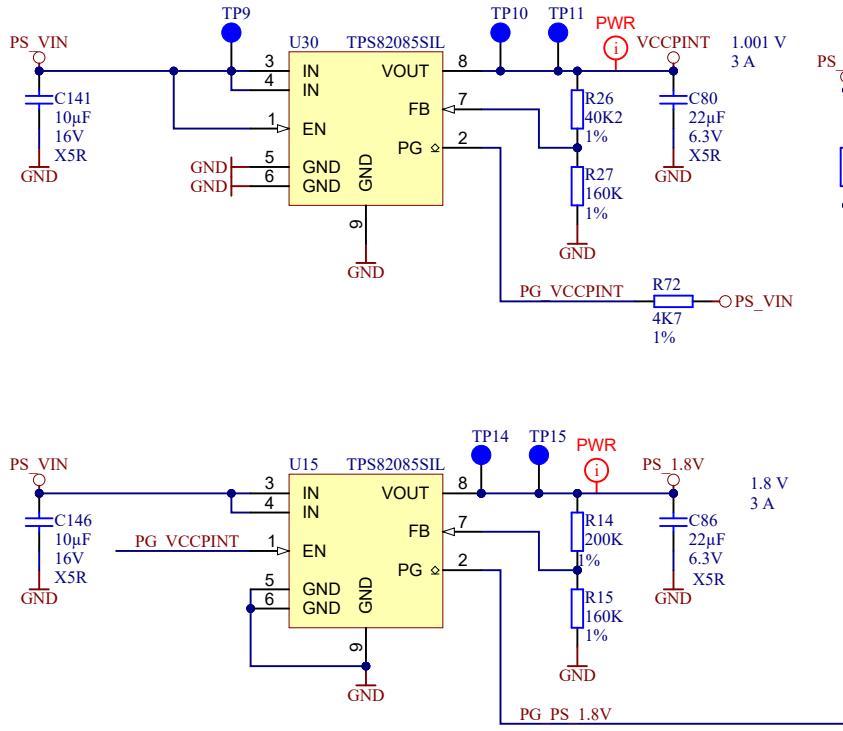
PL voltage detector!


Net Name	Voltage Rail	Low Detect	High Detect
PS_3.3V	3.3 V	2.97 V	3.62 V
PS_1.8V	1.8 V	1.62 V	1.98 V
PS_VIN	3.3 V	2.97 V	3.62 V
1.35V	1.35 V	1.22 V	1.49 V
VCCPINT	1.0 V	0.90 V	1.10 V

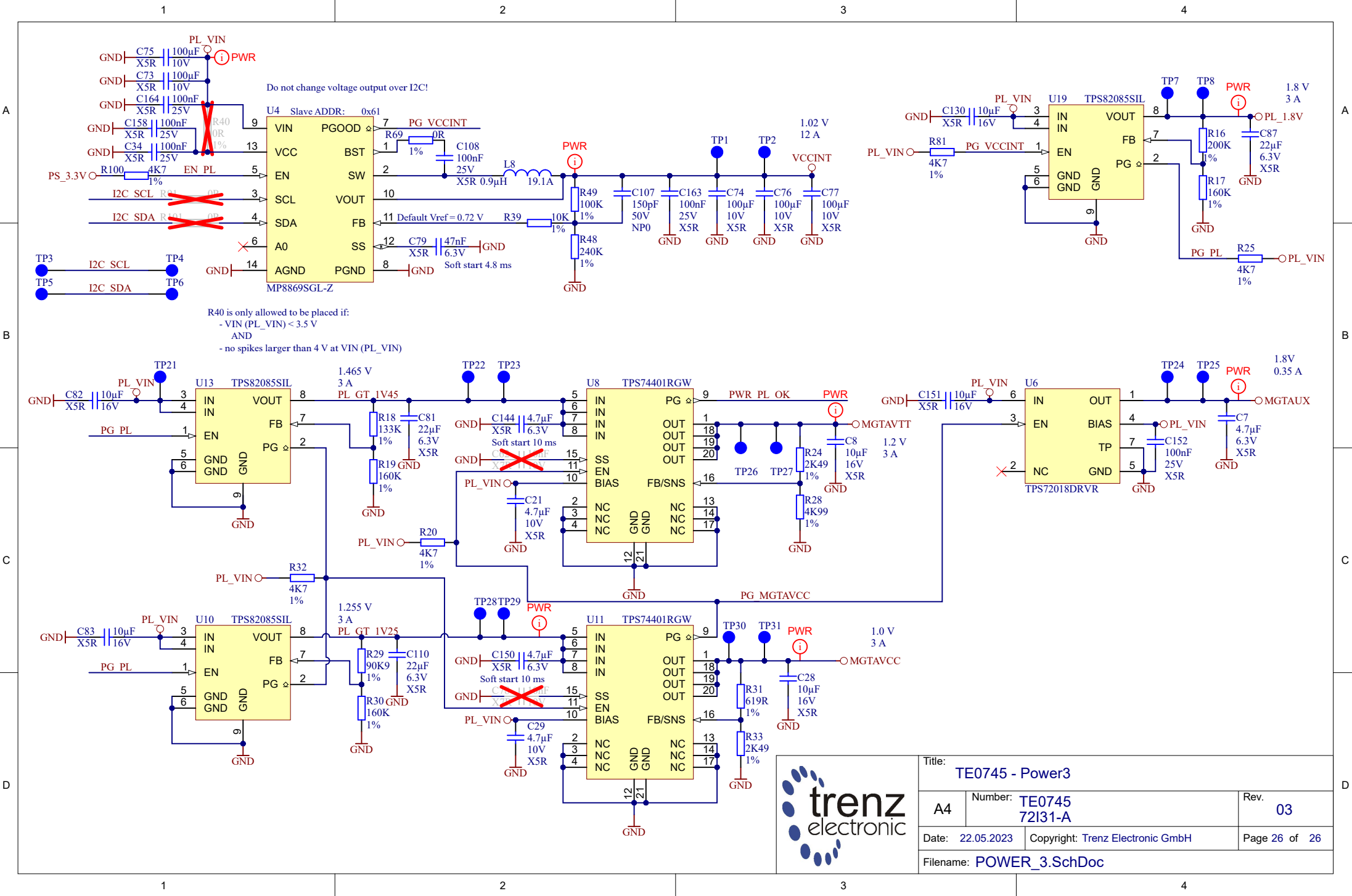
Net Name	Voltage Rail	Low Detect	High Detect
PS_3.3V	3.3 V	2.97 V	3.62 V
MGTAVCC	1.0 V	0.90 V	1.10 V
MGTAVTT	1.2 V	1.08 V	1.32 V
VCCINT	1.0 V	0.90 V	1.10 V
PL_1.8V	1.8 V	1.62 V	1.98 V

Title: **TE0745 - Power**

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		Title: TE0745 - Power2	
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Title: TE0745 - Power3		
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