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 Schematics and other handouts serve for informational purposes only!

Design drawn by:	ED
Checked by:	MR
Assembly variant:	82I31-A
Created by:	MR
Modified by:	MR
Modified at:	2022-01-19



Title: TE0745 - Legal Notices Modules		
A4	Number: TE0745 82I31-A	Rev. 03
Date: 14.03.2024	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"> <li>- C126, C127 for U16,</li> <li>- C129 for U14,</li> <li>- C130 for U19,</li> <li>- C131 for U18,</li> <li>- C144 for U8,</li> <li>- C150 for U11,</li> <li>- C151/C152 for U6,</li> <li>- C153/C154 for U17,</li> <li>- C155/C156 for U32, and</li> <li>- C128 and C157 for U1.</li> </ul> <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

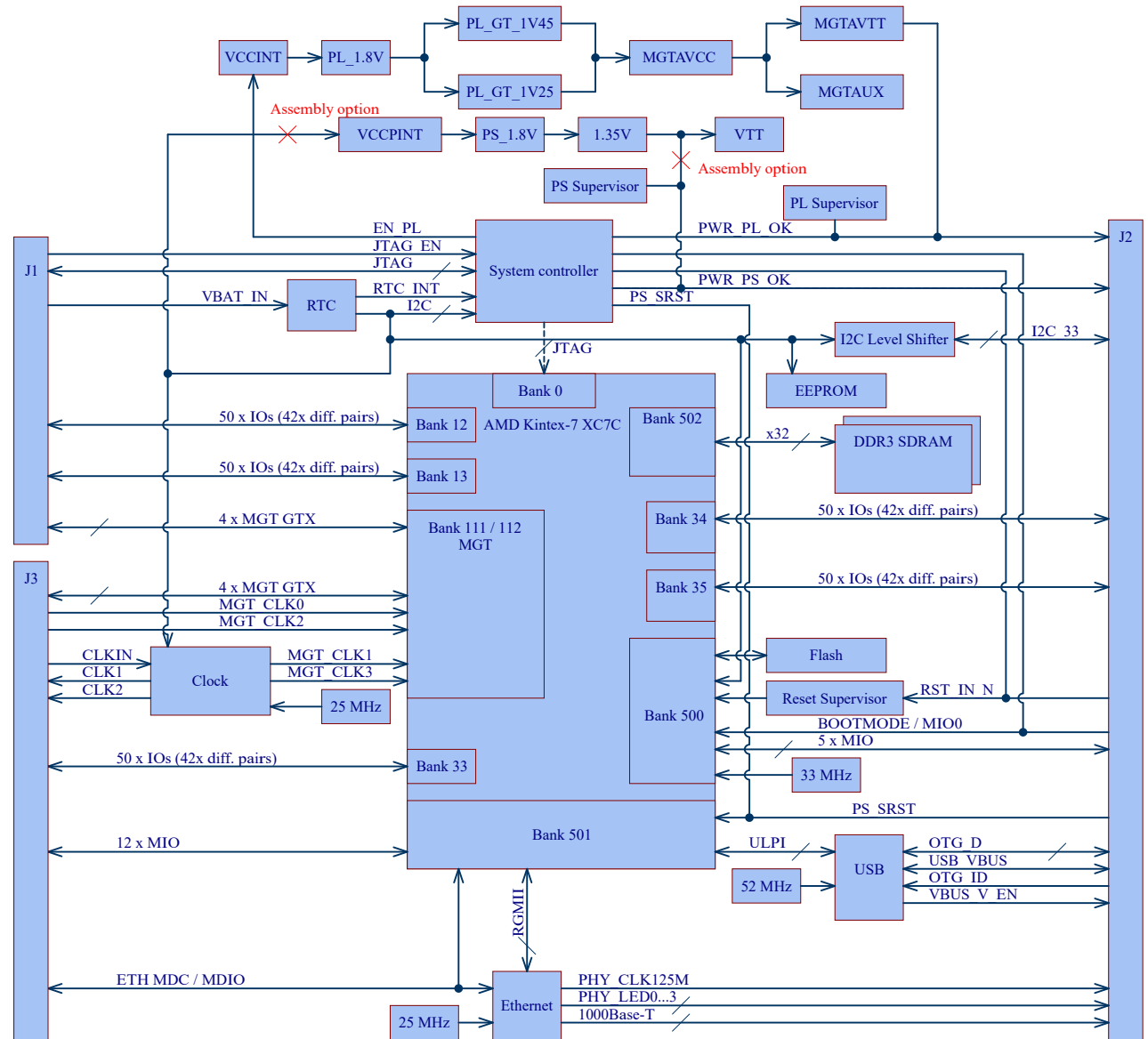
		Title: <b>TE0745 - Revision Changes</b>	
		A4	Number: <b>TE0745 82131-A</b>
Date: <b>14.03.2024</b>		Copyright: <b>Trenz Electronic GmbH</b>	
Filename: <b>Revision Changes.SchDoc</b>		Page <b>2</b> of <b>26</b>	

## I2C Address:

Device	I2C ADDR	Note
SoC U1G	-	I2C Master
CPLD U2	0x30	Firmware dependent
DCDC U4	0x61	Assembly option
PLL U16	0x70	-
RTC U24	0x6F	RTC register
RTC U24	0x57	User SRAM
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
VCCIO_12	IN	1.2 V - 3.3 V	+/- 3 %	HR IO Bank 12	-
VCCIO_13	IN	1.2 V - 3.3 V	+/- 3 %	HR IO Bank 13	-
VCCIO_33	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 33	-
VCCIO_34	IN	1.2 V - 1.8 V	+/- 3 %	HP IO Bank 34	-
VCCIO_35	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	-

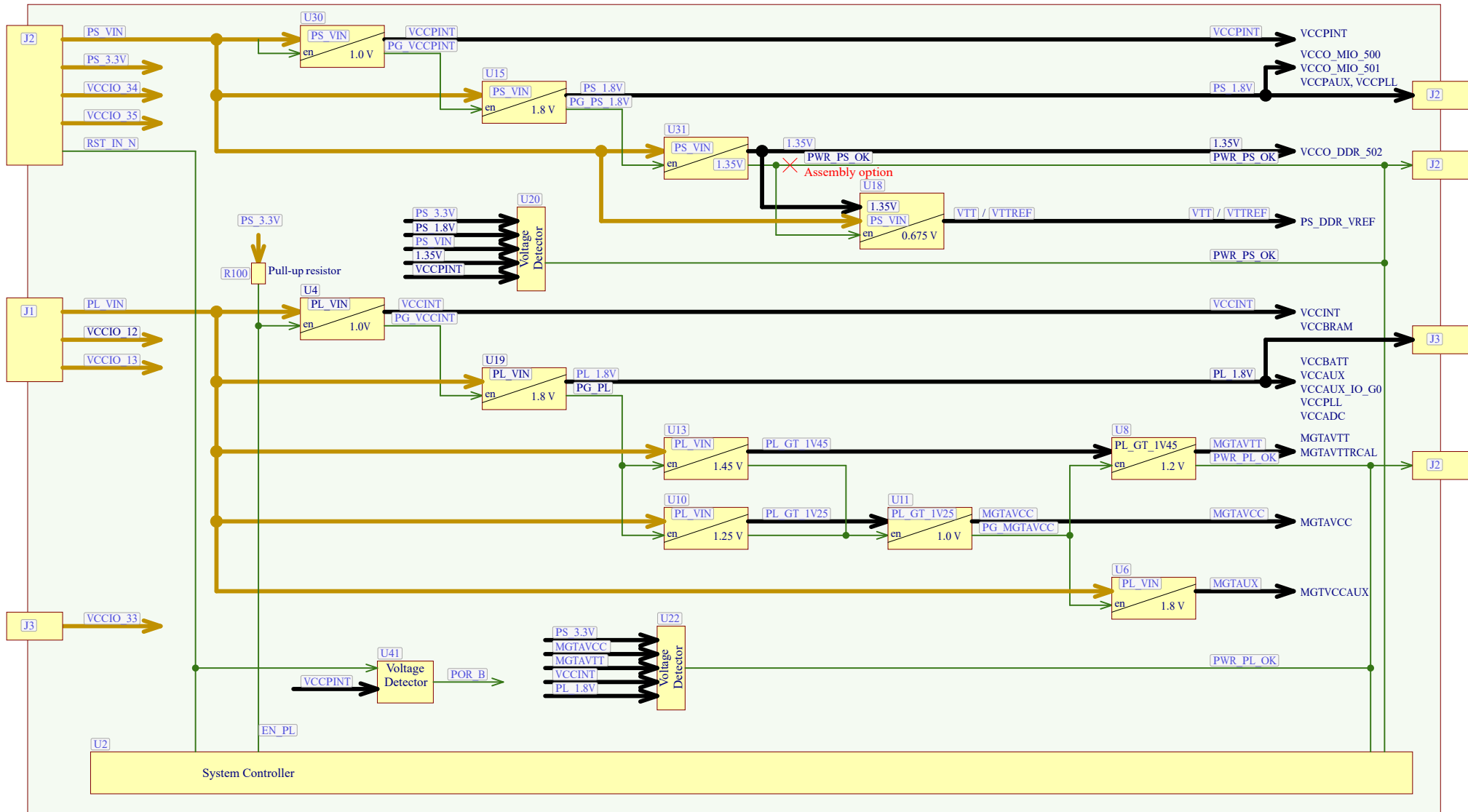


FPGA-PWR



Title: TE0745 - System Overview		
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# Power-on sequencing:



Title: TE0745 - Power overview		
A4	Number: TE0745 82I31-A	Rev. 03
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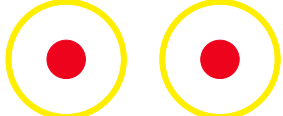
Special notes:

UKCA  
UKCA Logo on Top Overlay

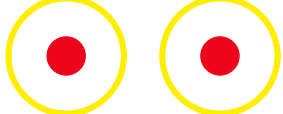
CE  
CE Logo on Top Overlay

LOGO1  
TE Logo PRINT Layer

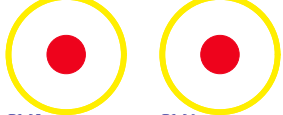
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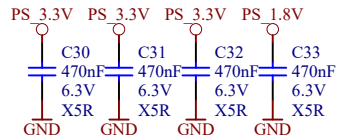
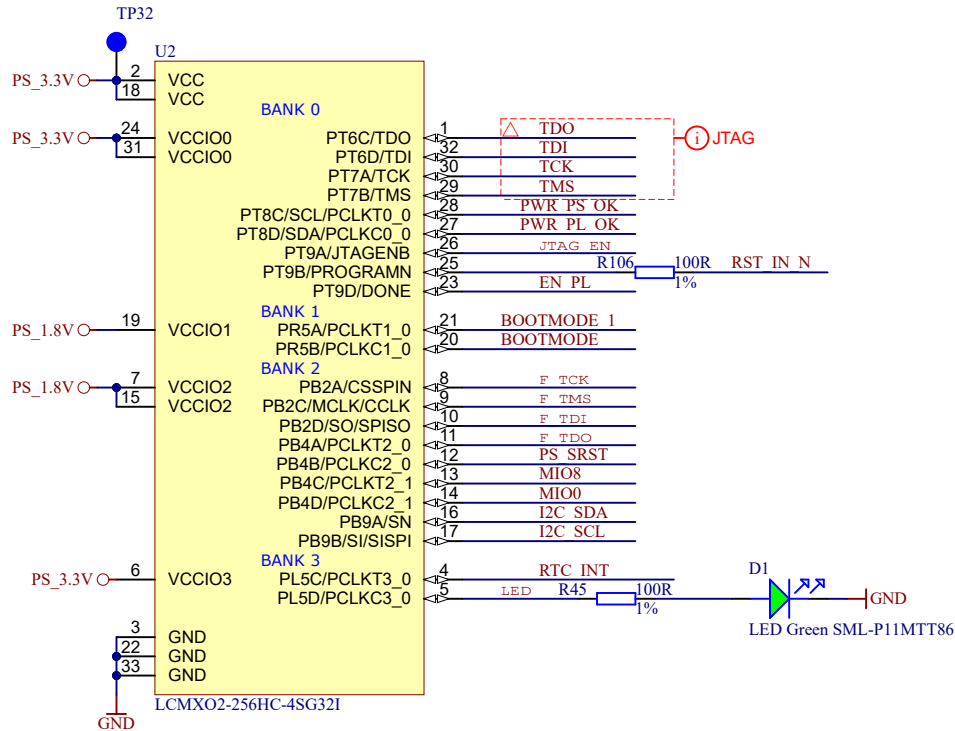
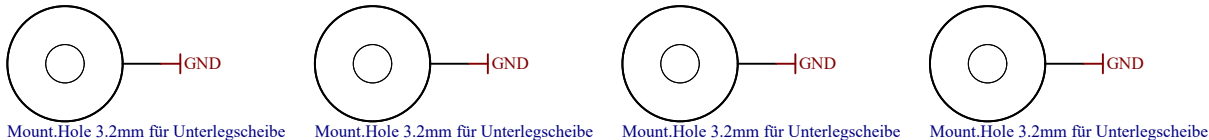
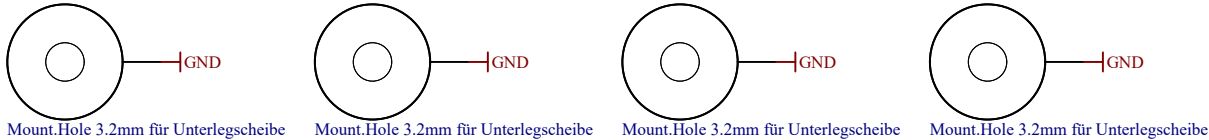
PM1 FIDU-DOT - small PM2 FIDU-DOT - small



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



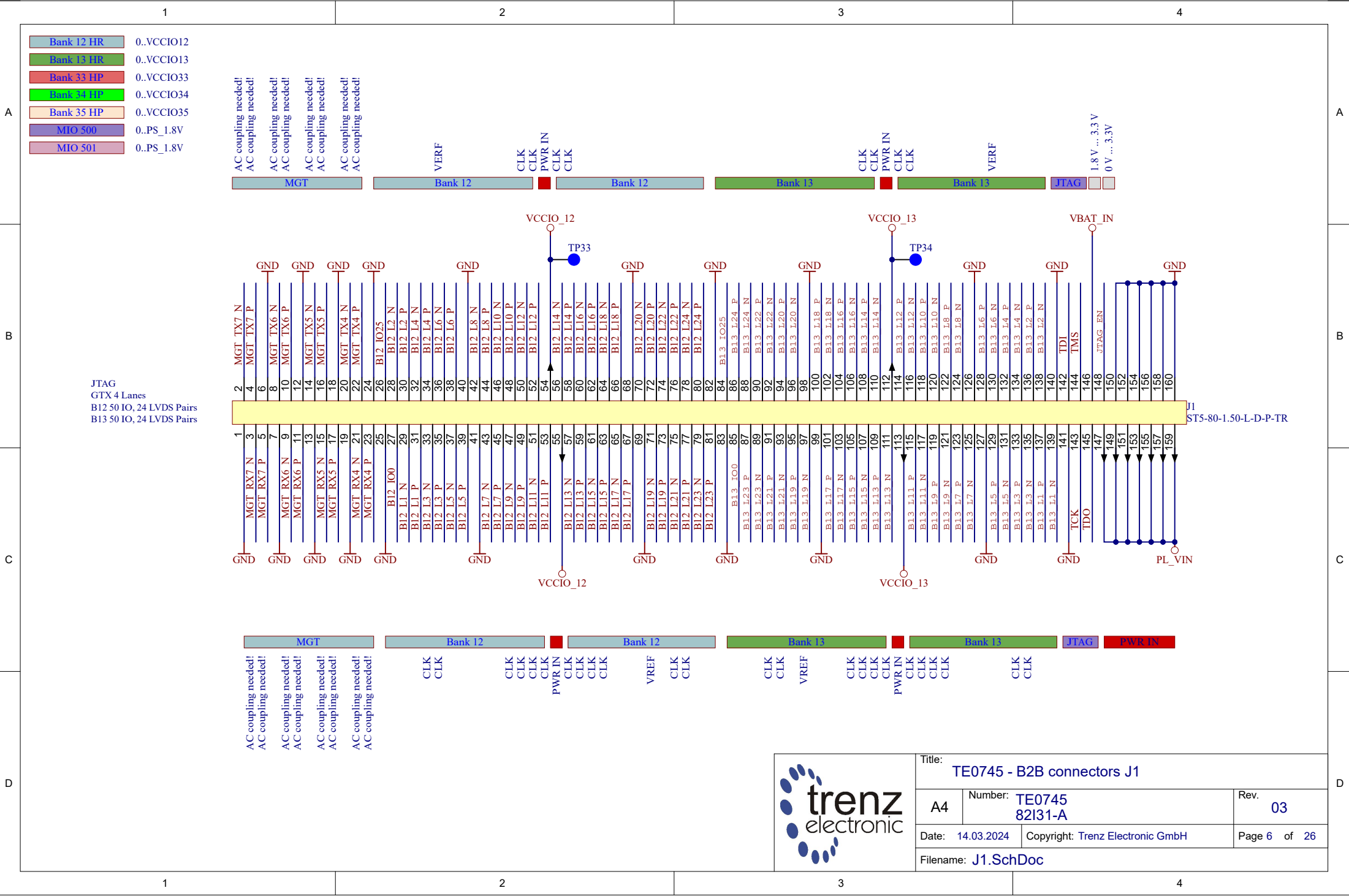
PM5 PM6



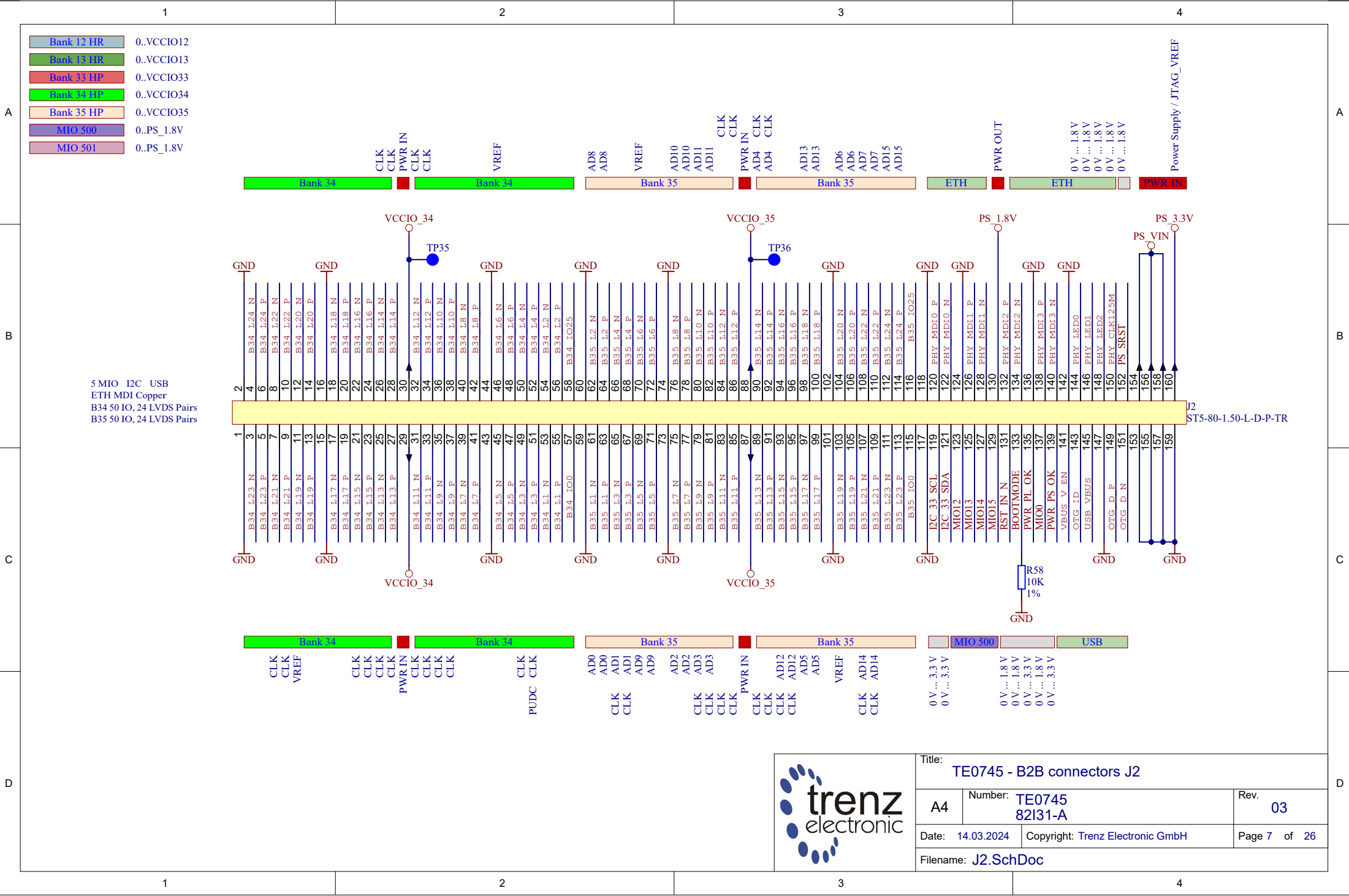
Serial  
SerialNumber 6,3 x 6.3mm



Title: TE0745 - System Controller		
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Title: TE0745 - B2B connectors J1		
A4	Number: TE0745 82I31-A	Rev. 03
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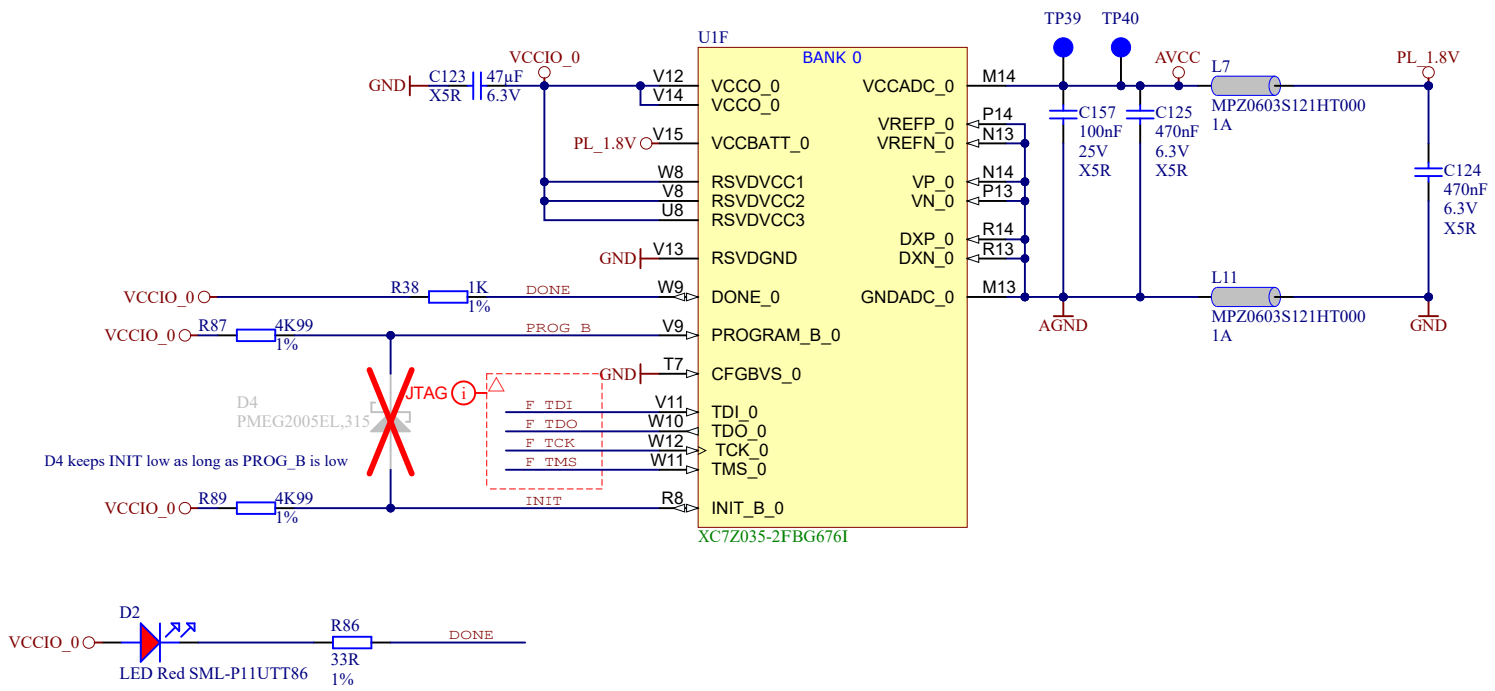
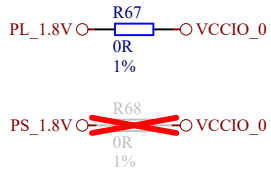
5 MIO I2C USB  
 ETH MDI Copper  
 B34 50 IO, 24 LVDS Pairs  
 B35 50 IO, 24 LVDS Pairs

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



Title: TE0745 - B2B connectors J2		
A4	Number: TE0745 82131-A	Rev. 03
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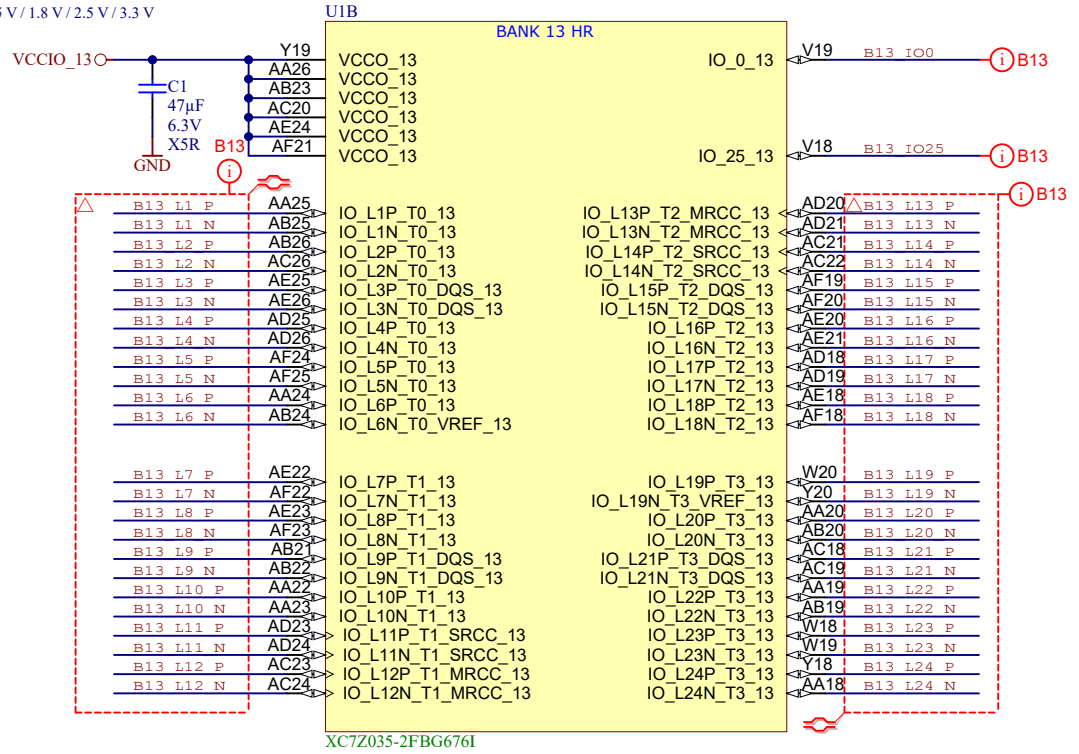




	Title: TE0745 - Zynq_MISC	
	A4	Number: TE0745 82I31-A
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Filename: ZYNQ_MISC.SchDoc		



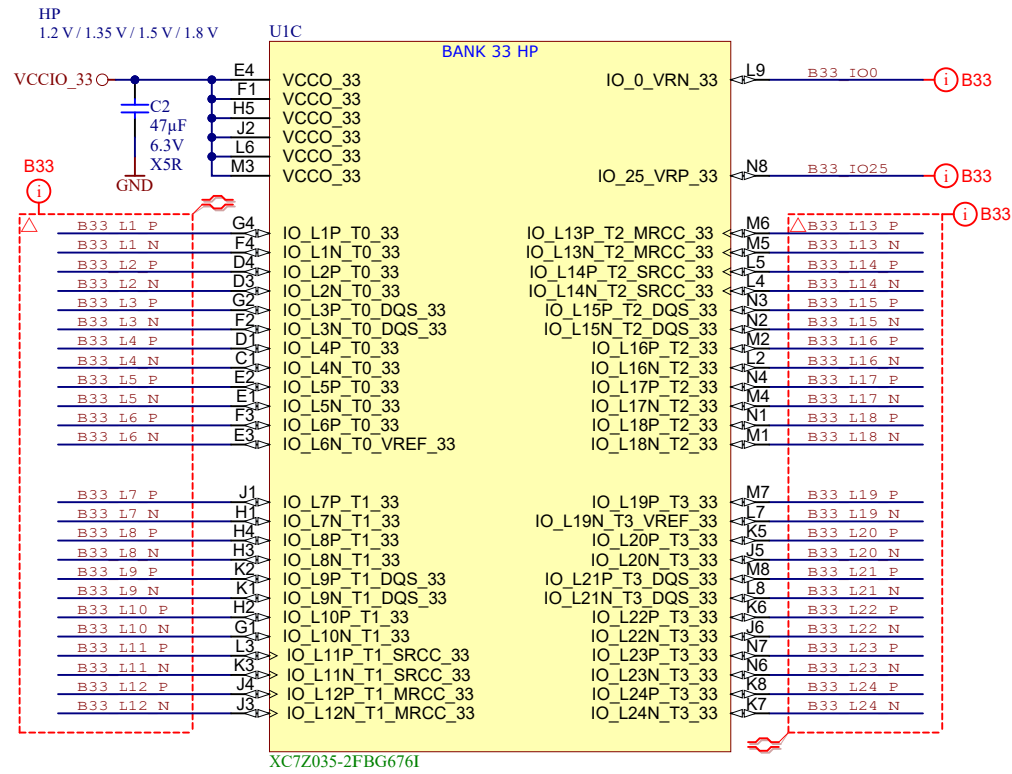
HR  
1.2V/1.35V/1.5V/1.8V/2.5V/3.3V



XC7Z035-2FBG676I



Title: TE0745 - Zynq_B13		
A4	Number: TE0745 82I31-A	Rev. 03
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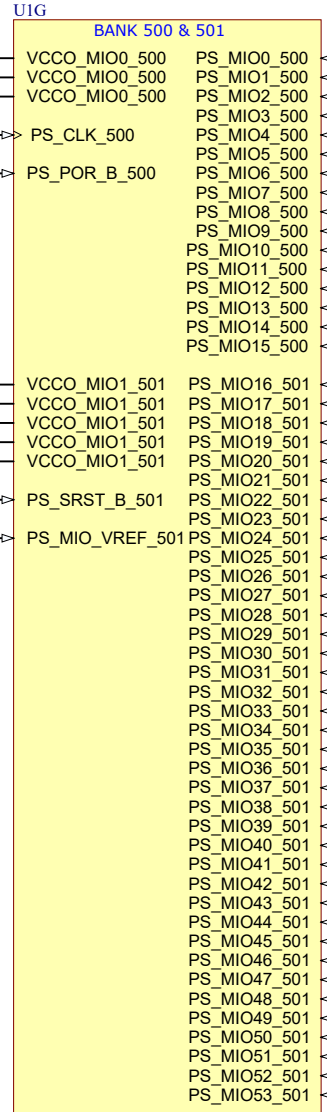
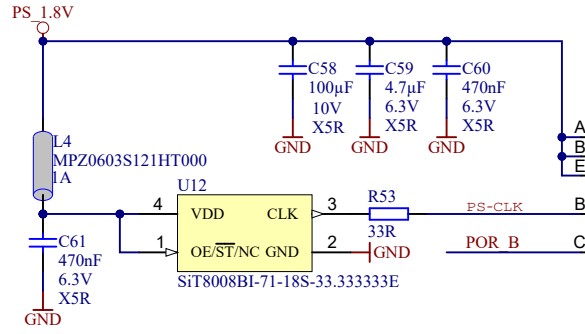


Title: TE0745 - Zynq_B33		
A4	Number: TE0745 82I31-A	Rev. 03
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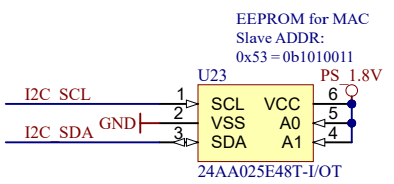
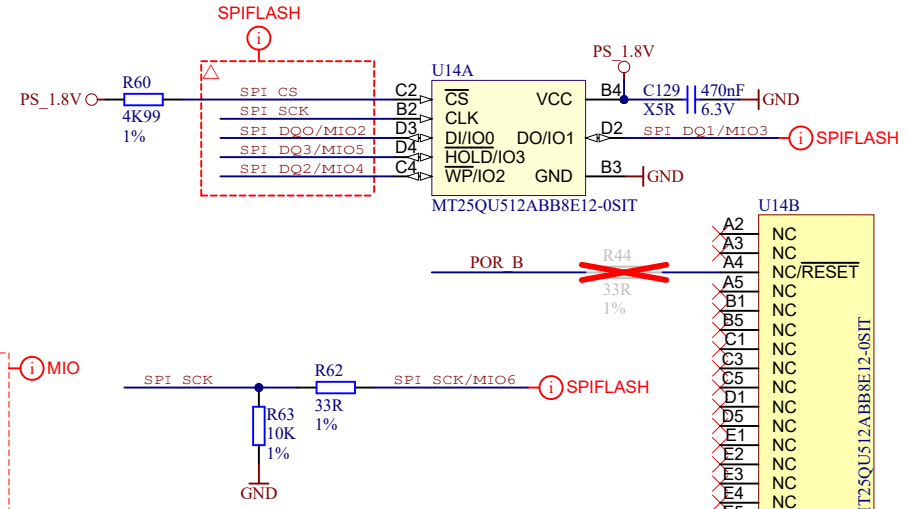
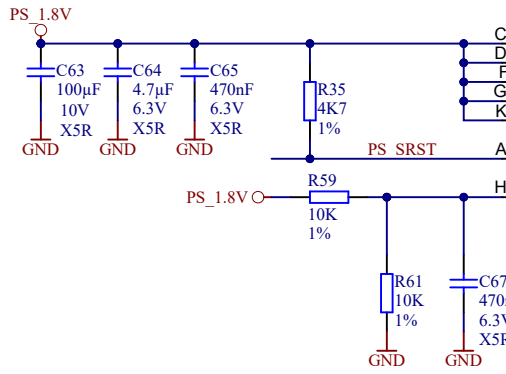






MIO Bank Voltage	MIO7 Bank0	MIO8 Bank1
2.5 V, 3.3 V	0	0
1.8 V	1	1

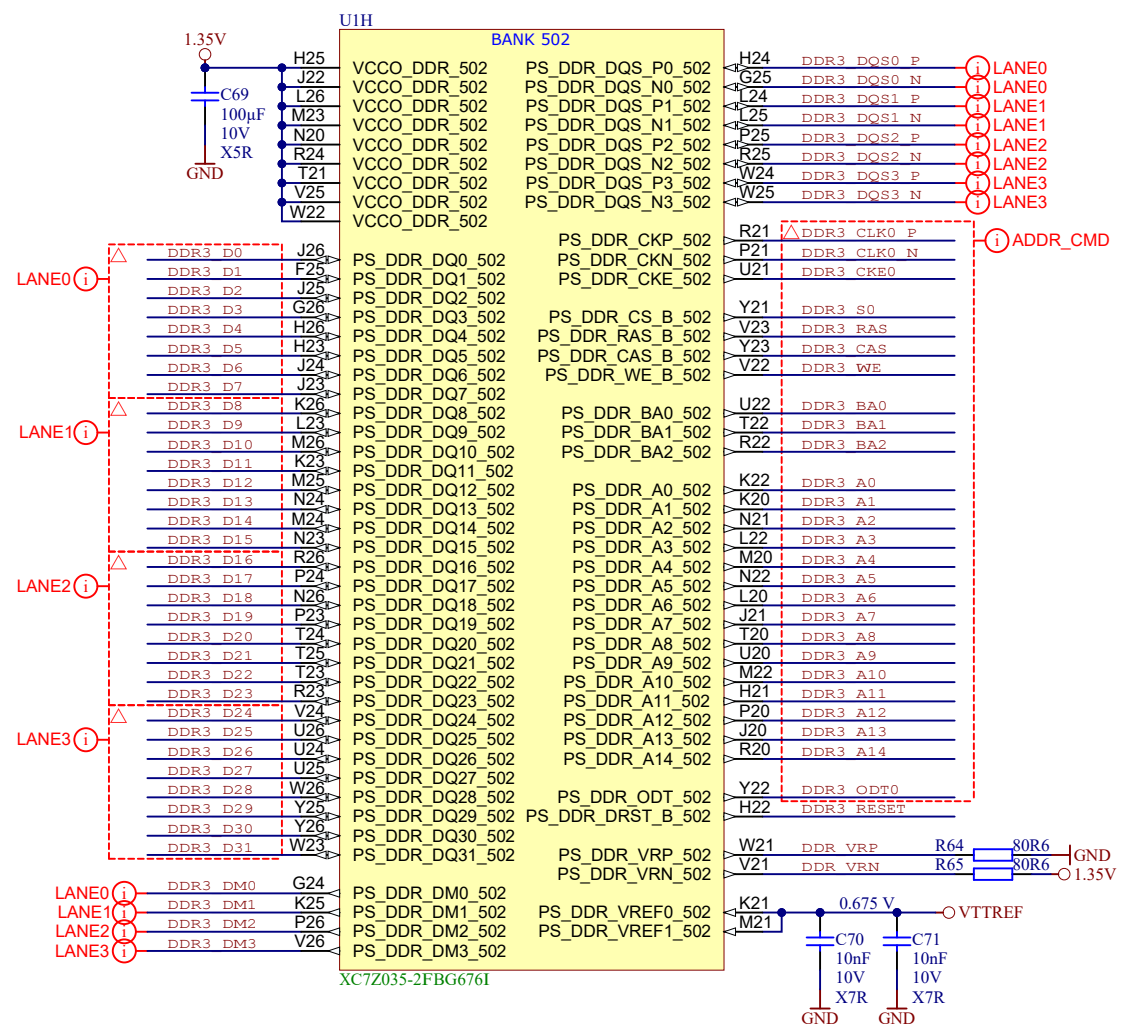

BOOT MODE	MIO5	MIO4	MIO3
JTAG Boot Mode	0	0	0
NOR Boot	0	0	1
NAND	0	1	0
Quad-SPI	1	0	0
SD Card	1	1	0



Title: TE0745 - Zynq\_MIO\_Banks

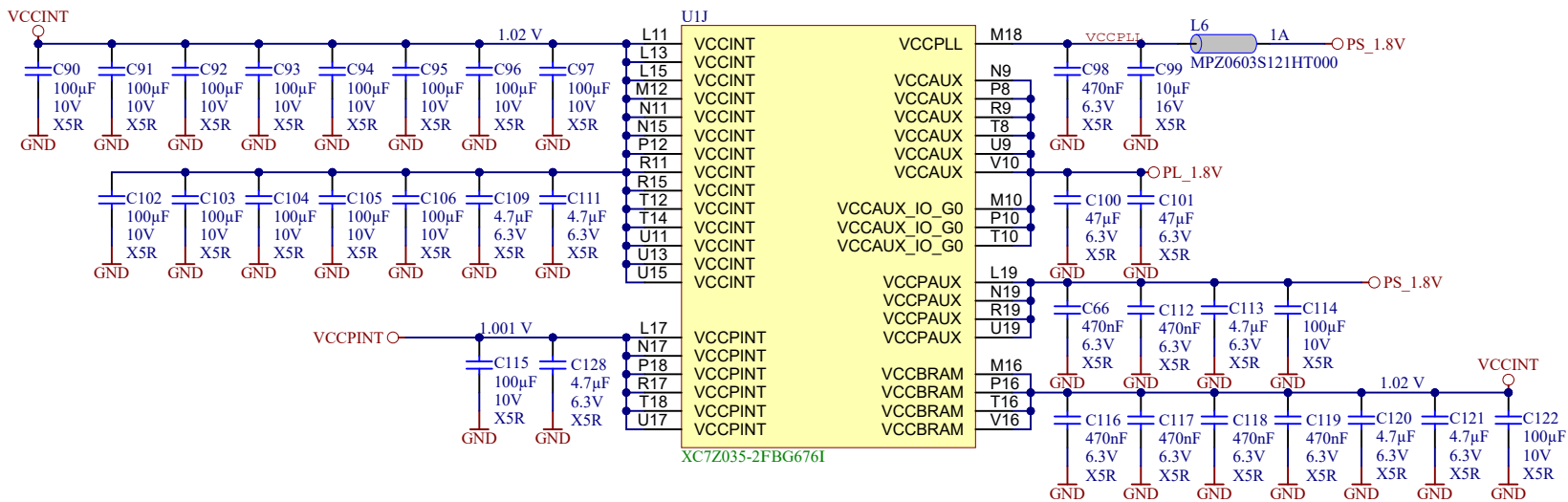
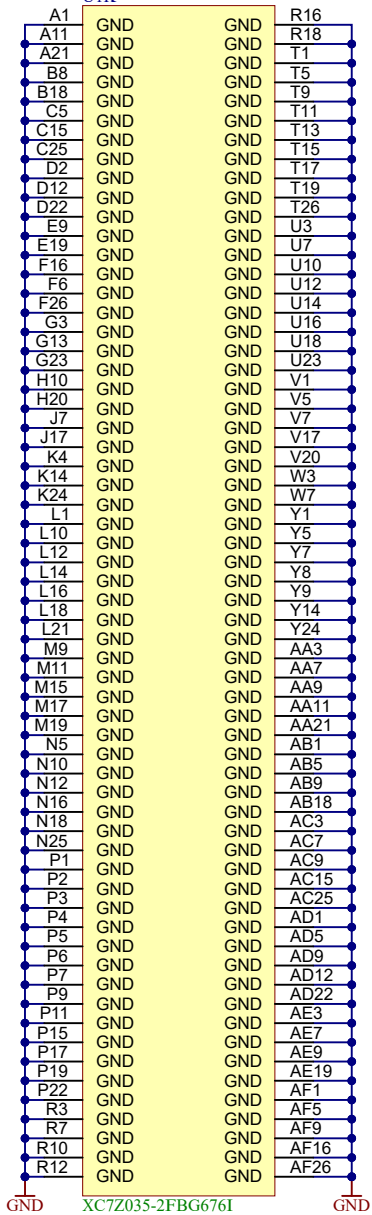
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Filename: MIO\_B500.SchDoc

Title: TE0745 - Zynq_PS_DDR		
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UIK



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A

A

B

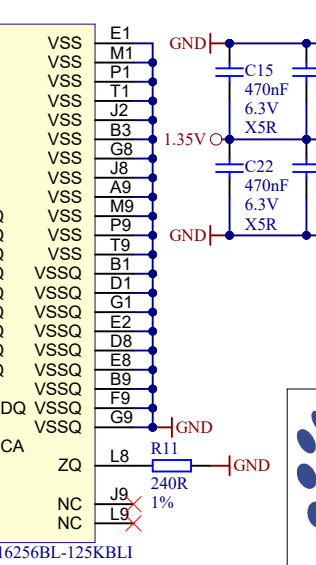
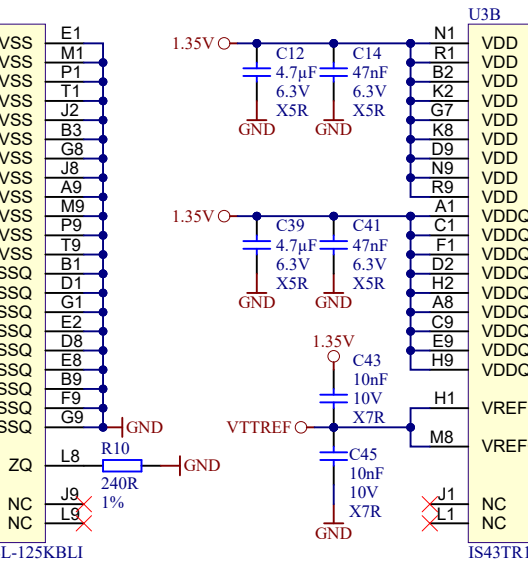
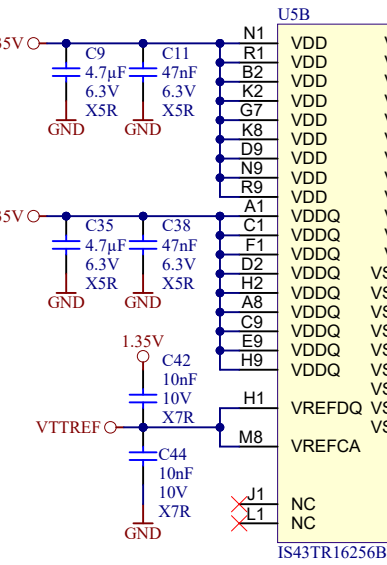
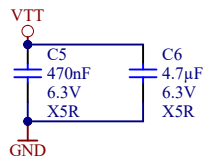
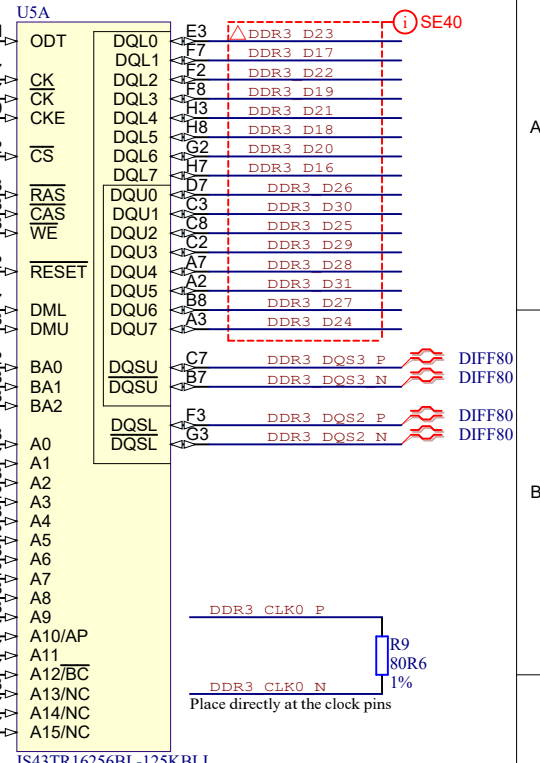
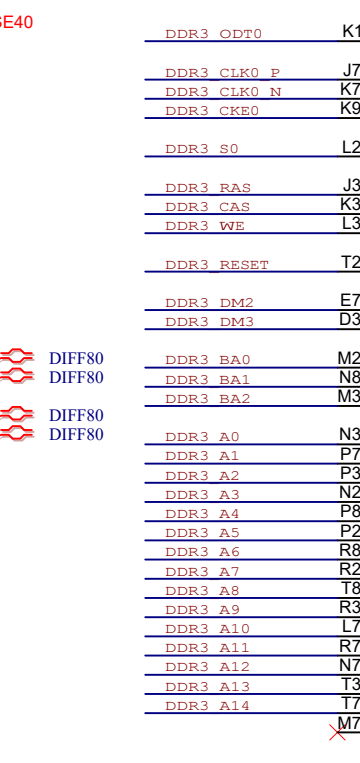
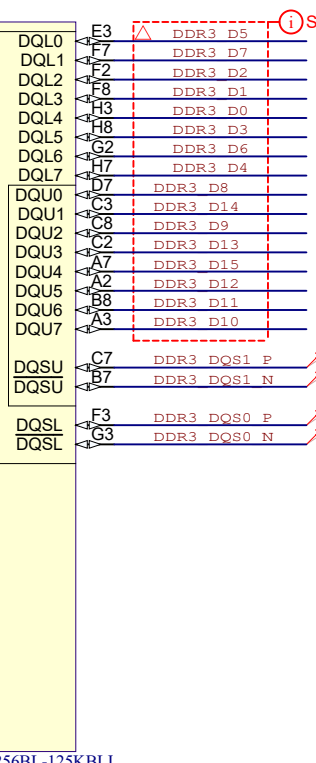
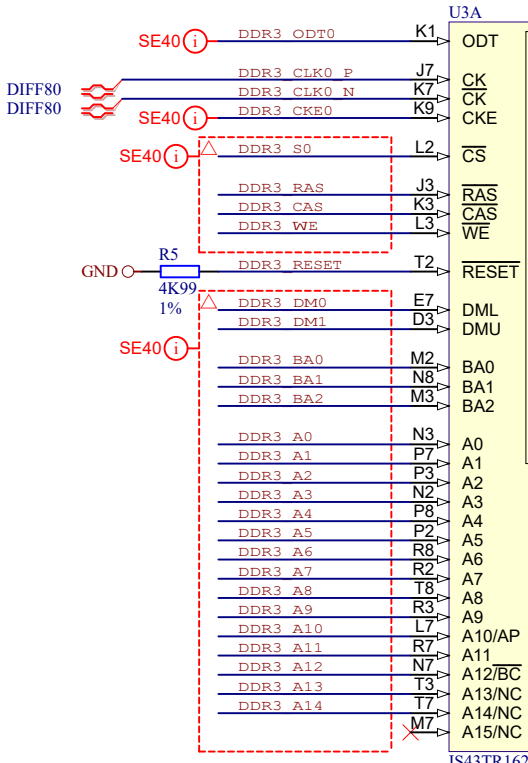
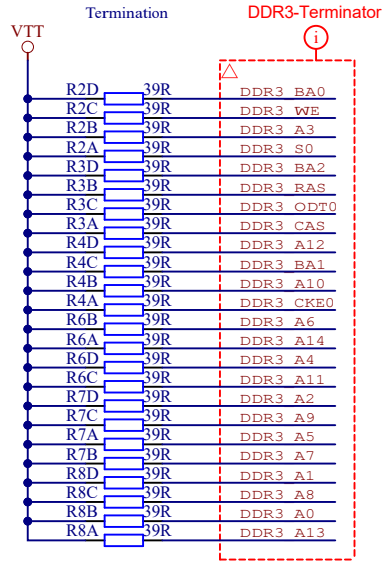
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C

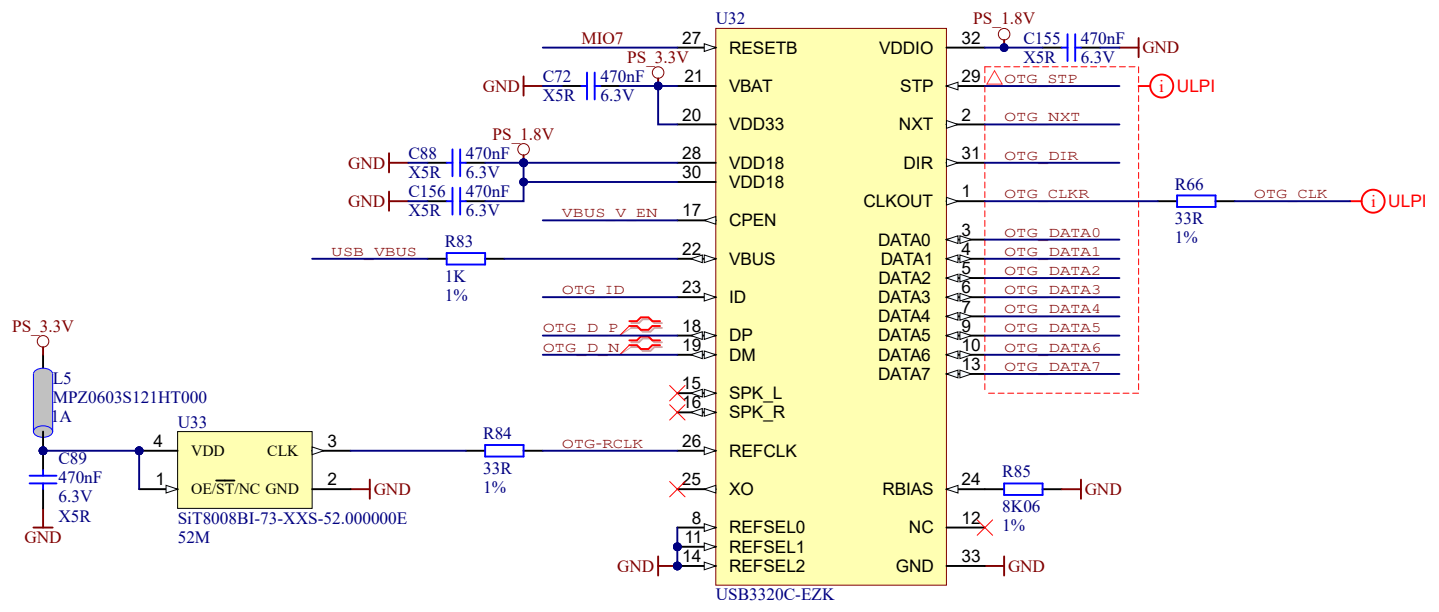
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D

D



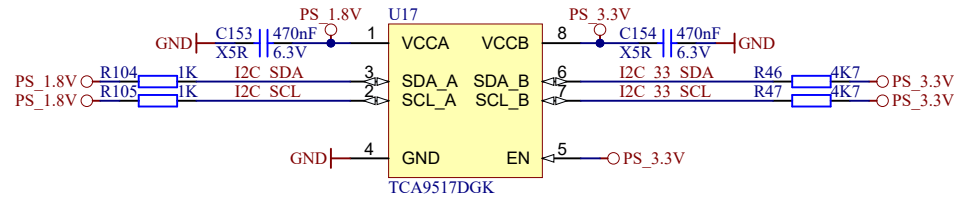
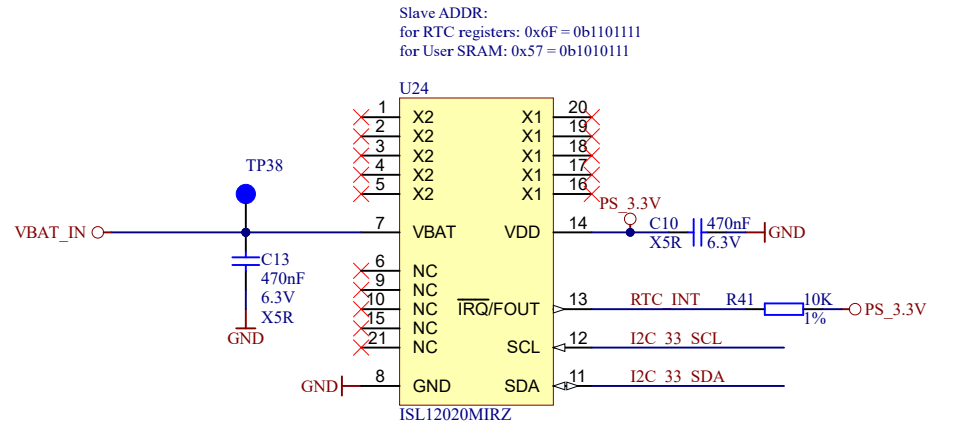

Title: TE0745 - DDR3 RAM		
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	Title: TE0745 - USB_PHY		
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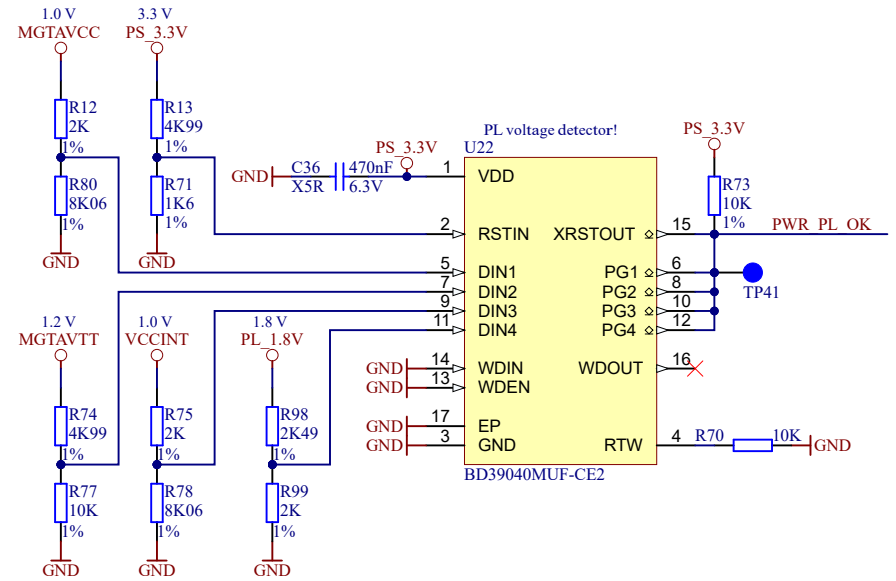
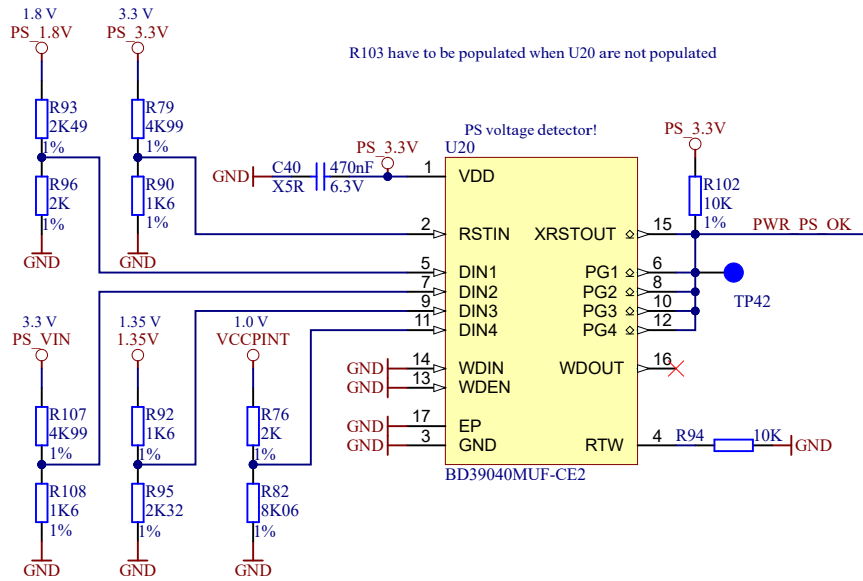
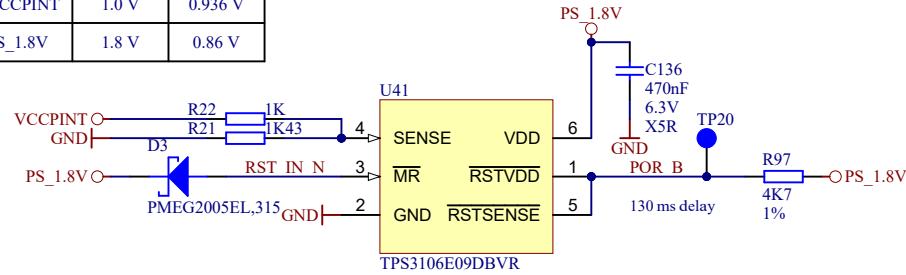




Title: TE0745 - RTC		
A4	Number: TE0745 82I31-A	Rev. 03
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Net Name	Voltage Rail	Low Detect
VCCPINT	1.0 V	0.936 V
PS_1.8V	1.8 V	0.86 V



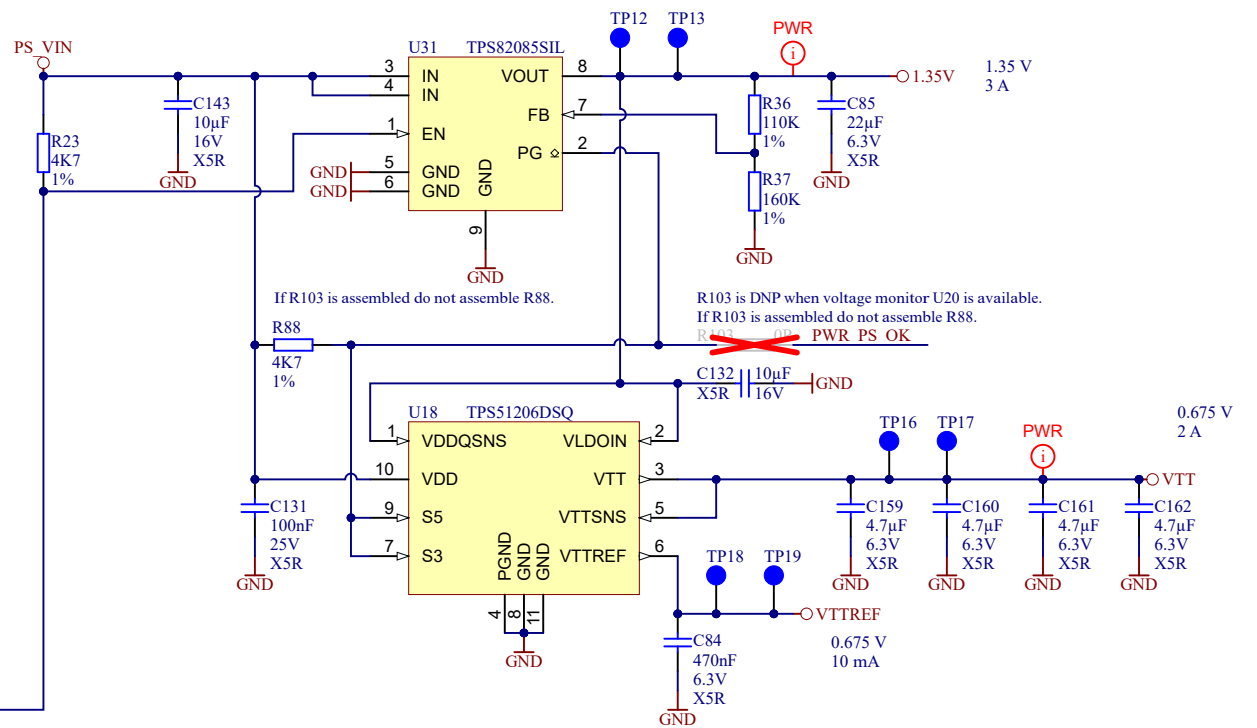
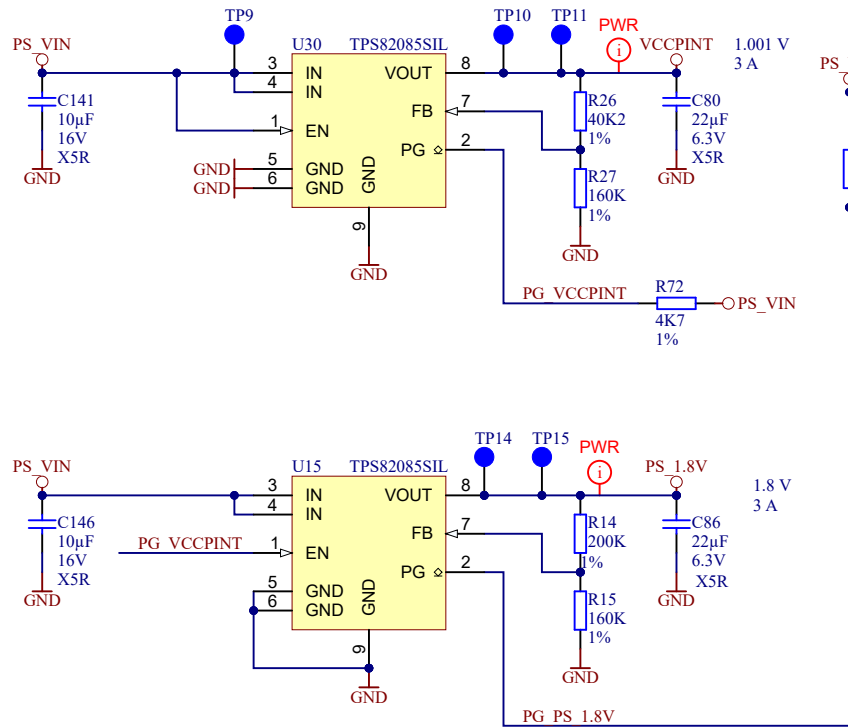
R103 have to be populated when U20 are not populated


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**

A4	Number: <b>TE0745 82131-A</b>	Rev. <b>03</b>
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