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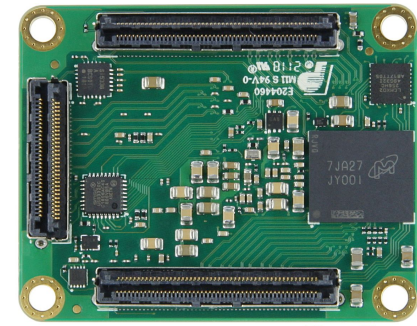


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Schematics and other handouts serve for informational purposes only!



Title: <b>TE0820 - Legal Notices</b>		
A4	Number: <b>TE0820 5DI21MA</b>	Rev. <b>05</b>
Date: <b>2022-05-10</b>	Copyright: <b>Trenz Electronic GmbH</b>	Page <b>1</b> of <b>24</b>
Filename: <b>Legal Notices Modules.SchDoc</b>		

REV	Description	
-01	Initial revision	VT
-02	<ul style="list-style-type: none"> <li>1) Added MAC EEPROM (slave address:)</li> <li>2) LIB components update</li> <li>3) Fixed SD Card connection</li> <li>4) Fixed sense connection from DCDC</li> <li>5) Made correct power connection for VCU (removed DCDC, added resistors and caps like as Xilinx recommended)</li> <li>6) Added resistors for variants (ZU+ with/without VCU)</li> <li>7) Added termination resistors (240R) to VRP pins fro all HP-banks</li> </ul>	VT
-03	<ul style="list-style-type: none"> <li>1) Fixed VCU connection: add additional DCDC (0.9V)</li> <li>2) LIB components update</li> <li>3) Change package 1K resistors (0402 -&gt; 0201)</li> <li>4) Added LEDs (1x user LED, 1x LED for ERR_STATUS, 1xLED for ERR_OUT)</li> <li>5) Change obsolete 2xSPI Flash (256MBit) -&gt; 2xSPI Flash (512MBit)</li> <li>6) Added additional DCDCs (PL_VCCINT_IO, PS_FP0V85)</li> <li>7) Changed DCDC (U5) 6A (optional 4A)</li> </ul>	VT
-04	<ul style="list-style-type: none"> <li>1) Fixed DDR4 connection (BG1), support B-die DDR4 Industrial grade chips</li> <li>2) Added R93, changed value C62, change obsolete U28</li> <li>3) Added R89 (10R)</li> <li>4) Added additional caps 4.7uF to PS_AVTT/PS_AVCC (Xilinx doc UG583)</li> <li>5) Changed R51 20k -&gt;10K (PS_AVCC = 0.85V, Xilinx doc DS925 v1.17)</li> <li>6) Fixed DDR4 connection (Alert)</li> <li>7) Added 3.3V signal to CPLD</li> <li>8) Added testpoints</li> <li>9) LIB components update</li> </ul>	VT
-04A	<ul style="list-style-type: none"> <li>1) Added block diagram, updated module pictures</li> </ul>	VY
-05	<ul style="list-style-type: none"> <li>1) Changed EOL Ferrite Beads L1..5,L7,L9..12</li> <li>2) Changed EOL DCDC U5 (EN6363QI -&gt; MPM3860GQW-Z)</li> <li>3) Changed EOL Load Switch U28 (TPS27082LDDCR -&gt; MP5077GG-Z)</li> <li>4) Added additional Decoupling Capacitors and changed caps 4.7uF to 10uF (Xilinx doc UG583 v1.23)</li> <li>5) Added pull-down and testpoint to TEN DDR4 signal</li> <li>6) Changed EOL Transistor T1 (AO7800 -&gt; BSD840NH6327XTSA1)</li> <li>7) Added Voltage Detector U30 (BD39040MUF-CE2)</li> <li>8) Changed EOL eMMC U6 (MTFC4GACAJCN-4M -&gt; SDINBDG4-8G-XI2)</li> <li>9) Changed EOL MEMS U14 (SiT8008AI-73-XXS-52.000000E -&gt; SiT8008BI-73-XXS-52.000000E)</li> <li>10) Added signal PG_ALL (U30) to CPLD (pin5)</li> <li>11) Added option (depends assembly variants, for all assembly variants R128 set as populated, instead special inquiry) signal POR_B through R128, T2 to CPLD (pin27)</li> <li>12) Added option (depends assembly variants, for all assembly variants R95 set as DNP, instead special inquiry) signal EN1 through R95 to DCDC U5</li> <li>13) Added option (depends assembly variants, for all assembly variants U29 and R129 set as populated, instead special inquiry) signal PHY_LED1 through Level Translator U29 to FPGA (U1.K7)</li> <li>14) Added Resistors R130 &amp; R131 (select Power-on delay override, for all assembly variants R130 set as DNP -&gt; Standard PL Power-on delay time)</li> <li>15) Added Diode D5</li> <li>16) Added Power Diagram Sheet</li> <li>17) LIB components update</li> </ul>	VT

	Title: <b>TE0820 - Revision Changes</b>	
	A4	Number: <b>TE0820 5DI21MA</b>
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Filename: <b>Revision Changes.SchDoc</b>		

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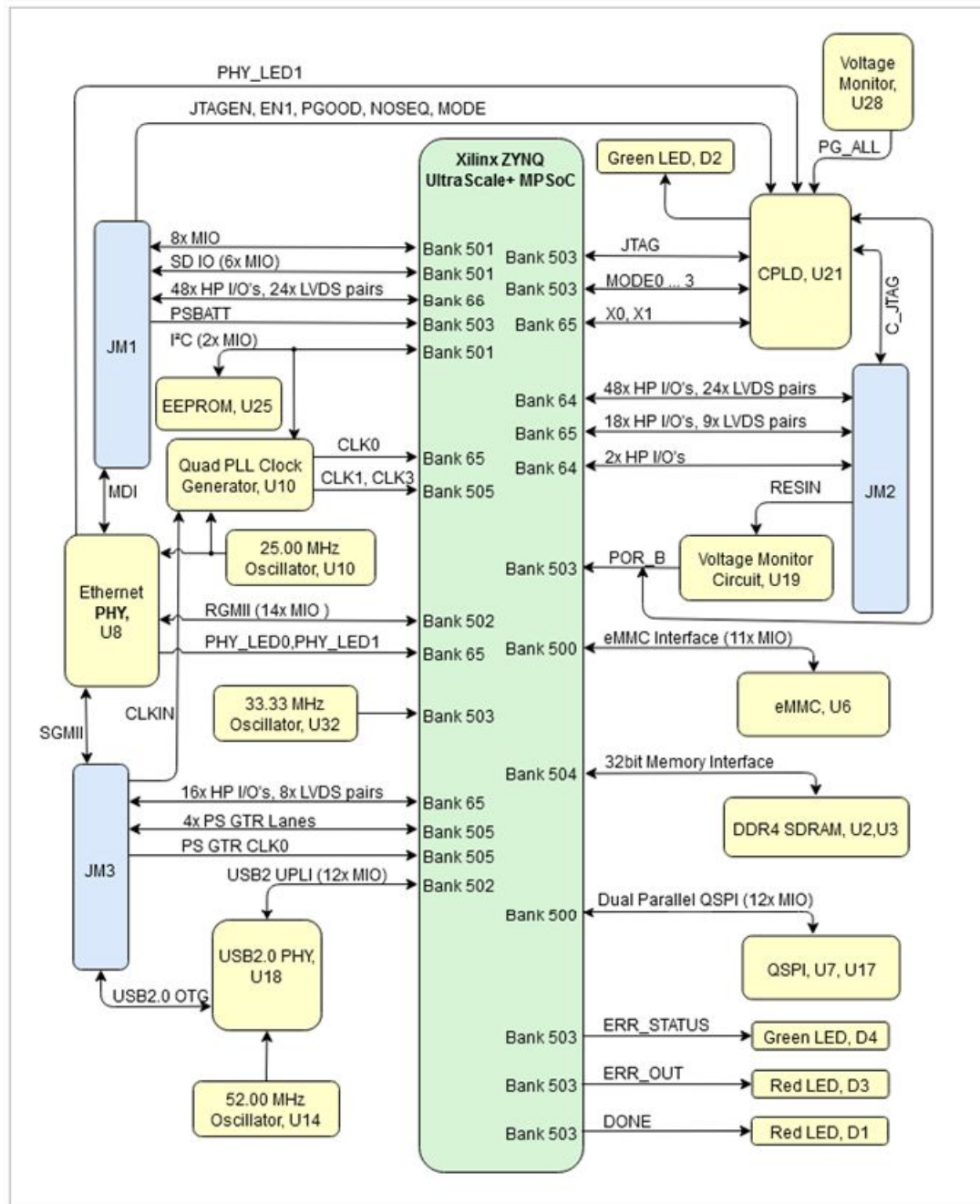
C

C

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D





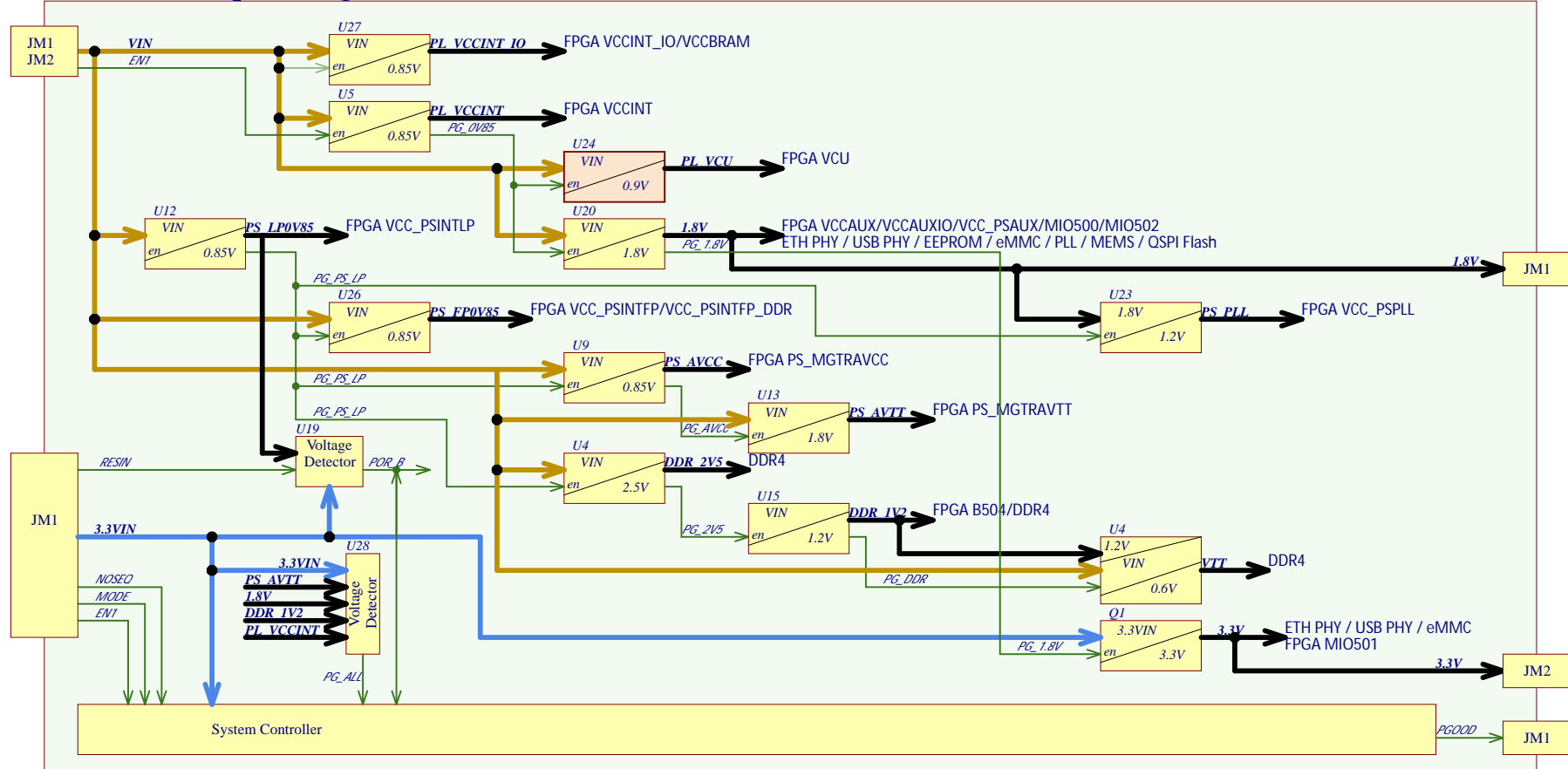
## TE0820 List of Web Documentation

Web Document Name	Link	QR-code
TE0820 Resources	<a href="#">URL</a>	
TE0820 TRM	<a href="#">URL</a>	
TE0820 Reference Designs	<a href="#">URL</a>	
TE0820 CPLD Firmware	<a href="#">URL</a>	
TE0820 Product Change Notifications	<a href="#">URL</a>	
TE0820 Design and Advisory Notes	<a href="#">URL</a>	



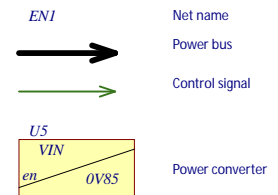
Title: TE0820 - System Overview		
A4	Number: TE0820 5DI21MA	Rev. 05
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## Power-on sequencing:



## Supported Voltage Ranges:

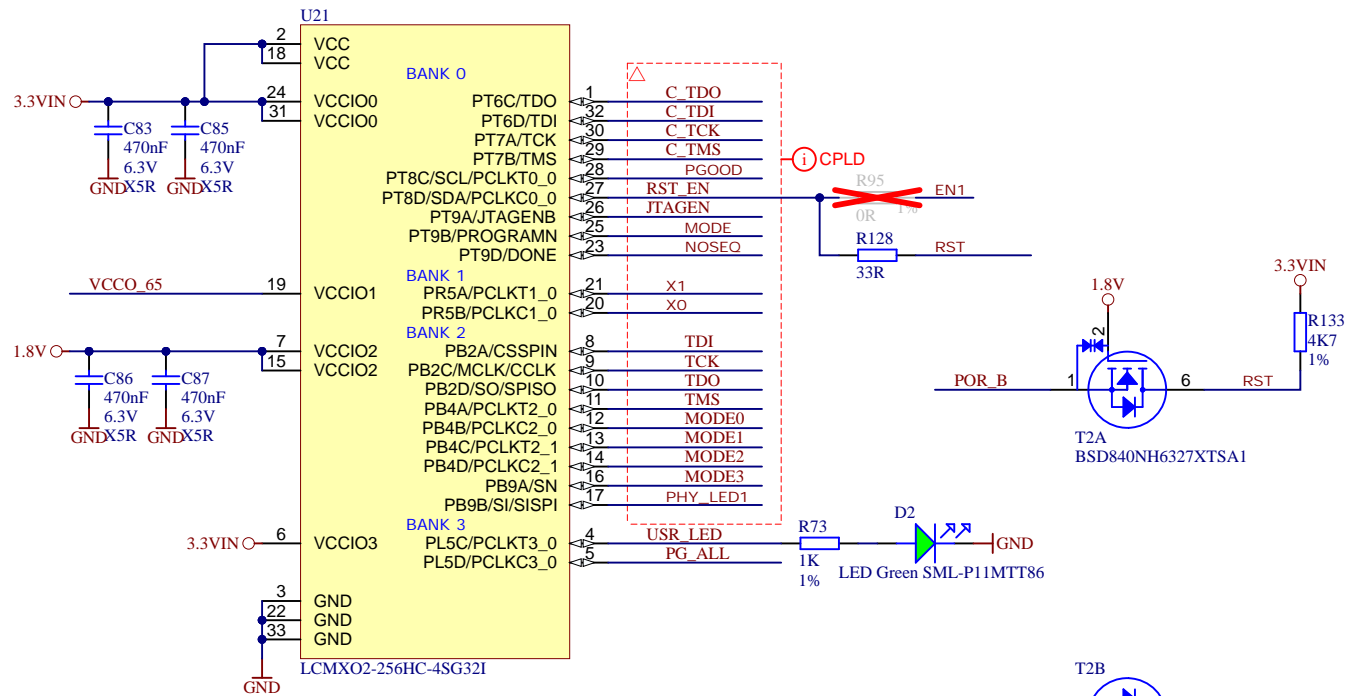
Power Rail	Direction	Range	Tolerance	Description	Note
VIN	IN	3.3 - 5V	+/-5%	Micromodule Power	-
3.3VIN	IN	3.3V	+/-5%	Micromodule Power	-
VCCO64	IN	1.2 - 1.8V	+/-3%	HP IO Bank64	-
VCCO65	IN	1.2 - 1.8V	+/-3%	HP IO Bank65	-
VCCO66	IN	1.2 - 1.8V	+/-3%	HP IO Bank66	-
PSBATT	IN	1.2 - 1.5V	+/-3%	PS battery-backed RAM and battery RTC	-
1.8V	OUT	1.8V	+/-3%	Power for Carrier	-
3.3V	OUT	3.3V	+/-3%	Power for Carrier	-



Title: TE0820 - Power Diagram		
A4	Number: TE0820 5DI21MA	Rev. 05
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Filename: Power_Diagram.SchDoc		

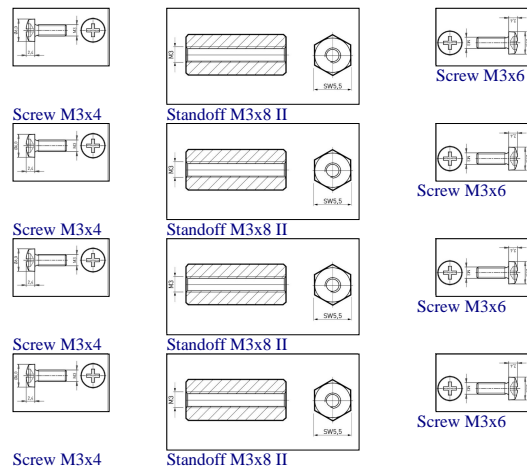
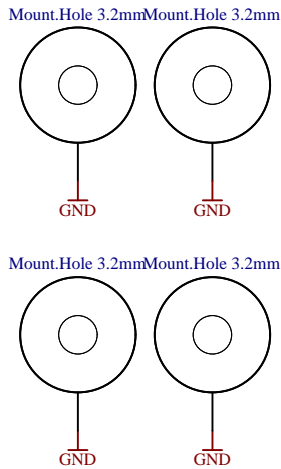
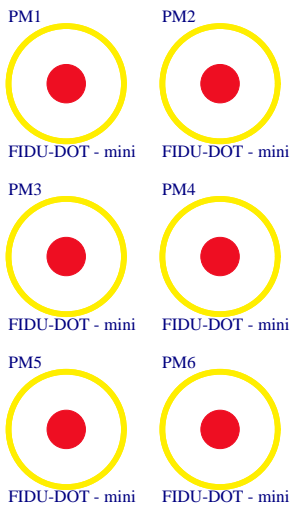
U_USB-PHY	USB-PHY.SchDoc
U_ETH-PHY	ETH-PHY.SchDoc
U_B_HD	B_HD.SchDoc
U_B64	B64.SchDoc
U_B65	B65.SchDoc
U_B66	B66.SchDoc
U_CONFIG	CONFIG.SchDoc
U_B_MIO	B_MIO.SchDoc
U_B_PS_GT	B_PS_GT.SchDoc
U_CLK	CLK.SchDoc

U_B2B-Connectors	B2B-Connectors.SchDoc
U_eMMC	eMMC.SchDoc
U_PS_DDR	PS_DDR.SchDoc
U_ZU_POWER	ZU_POWER.SchDoc
U_ZU_PS_POWER	ZU_PS_POWER.SchDoc
U_DDR4-RAM_2	DDR4-RAM_2.SchDoc
U_POWER	POWER.SchDoc
U_POWER_1	POWER_1.SchDoc



Special notes:

Serial  
Serial  
Serialnumber 6,3 x 6,3mm



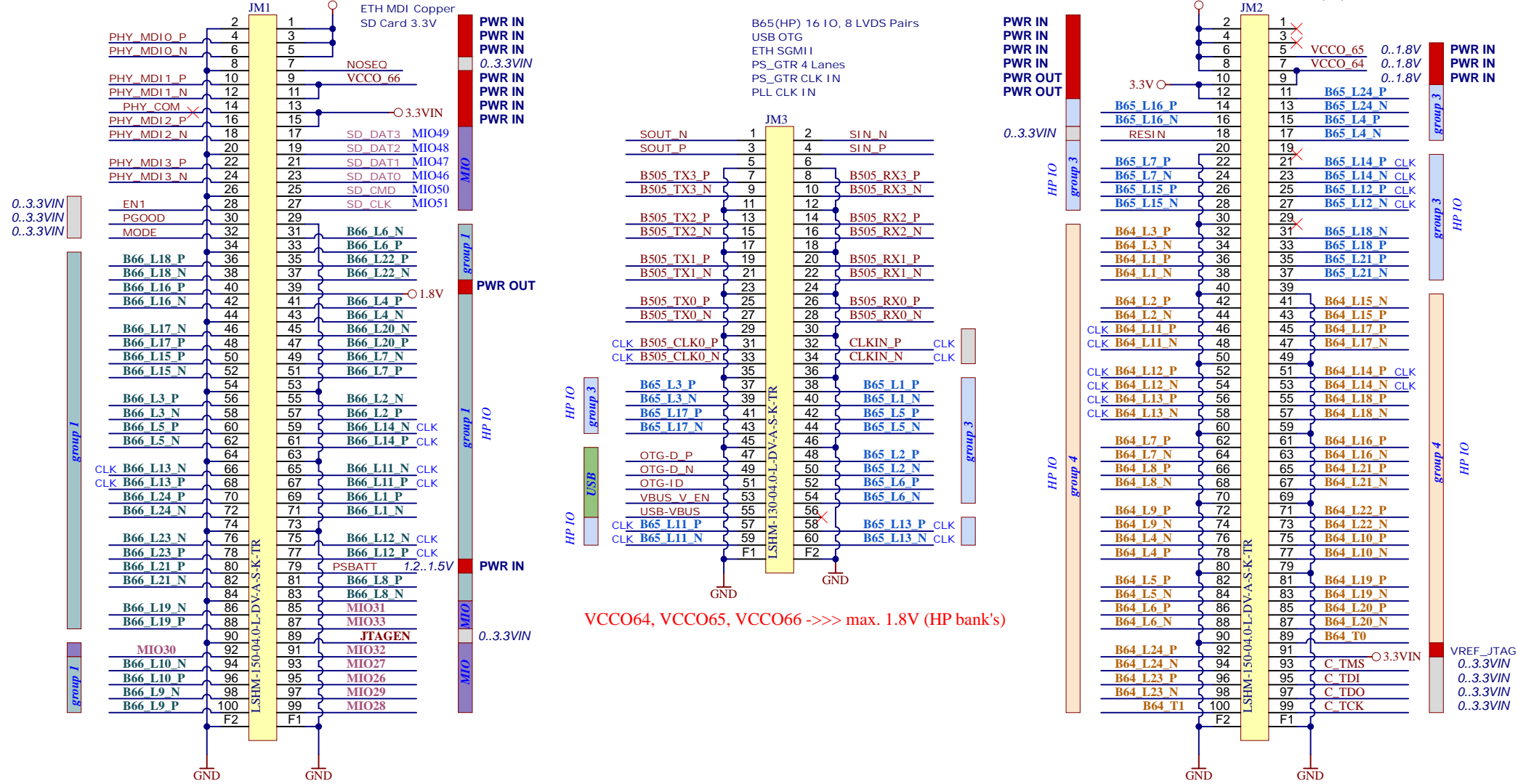
Assembly variant	5DI21MA
Created by	RM
Modified by	VT
Modified at	2022-05-31
SVN Revision	13497

Title: TE0820		
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B66(HP) 48 IO, 24 LVDS Pairs  
 MIO501 8 IO, 3.3V  
 ETH MDI Copper  
 SD Card 3.3V

B65(HP) 16 IO, 8 LVDS Pairs  
 USB OTG  
 ETH SGMII  
 PS\_GTR 4 Lanes  
 PS\_GTR CLK IN  
 PLL CLK IN

B65(HP) 18 IO, 9 LVDS Pairs  
 B64(HP) 50 IO, 24 LVDS Pairs



0..3.3VIN  
 0..3.3VIN  
 0..3.3VIN

0..3.3VIN

VCCO64, VCCO65, VCCO66 ->>> max. 1.8V (HP bank's)

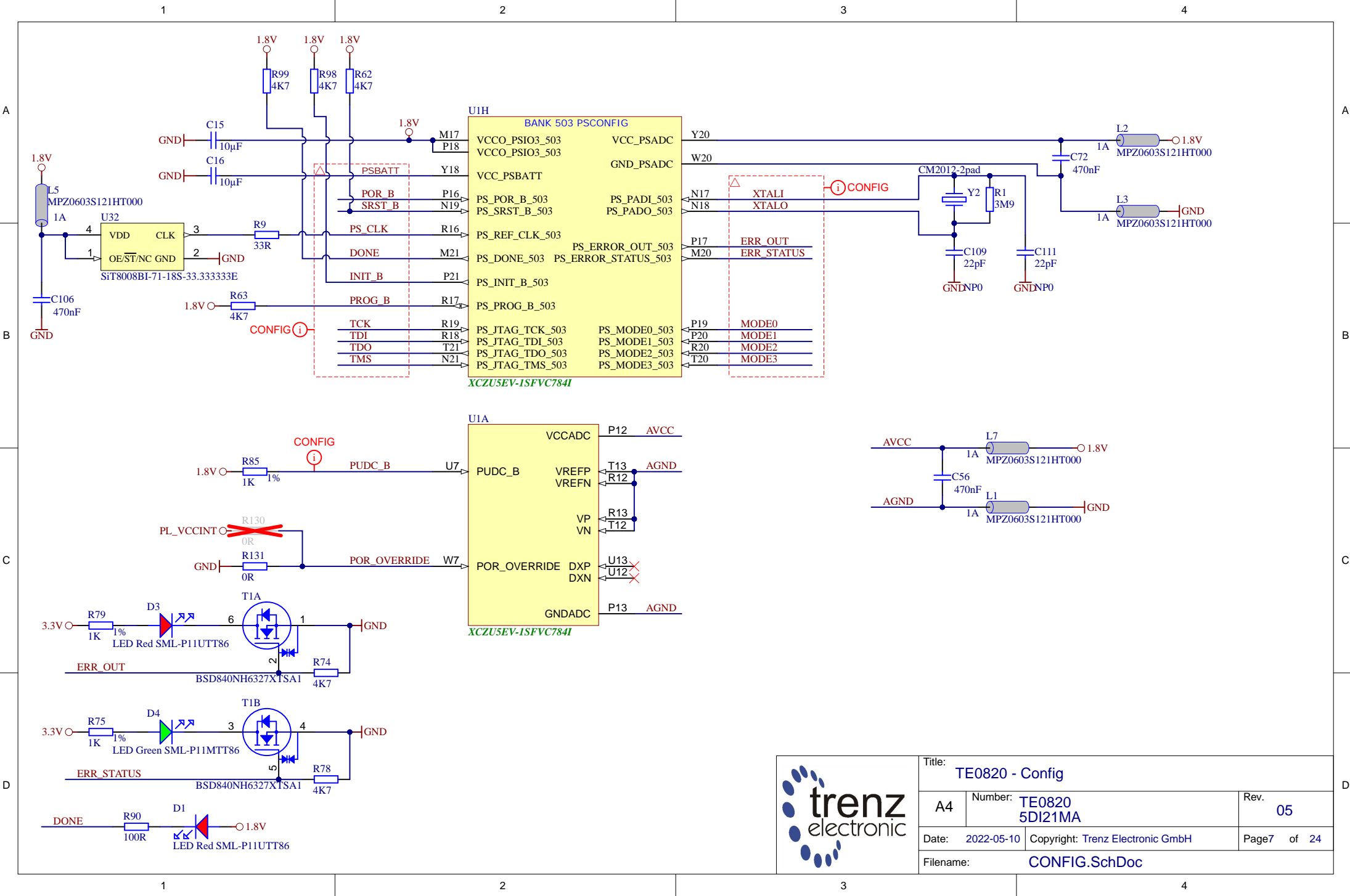
MIO[29..26] ->PJTAG1

- VCCO\_64 0.1.8V
- VCCO\_65 0.1.8V
- VCCO\_66 0.1.8V
- MIO 0..3.3V
- group 1 0..VCCO\_66
- group 3 0..VCCO\_65
- group 4 0..VCCO\_64



Title: TE0820 - B2B Connectors		
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Title: TE0820 - Config		
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UIC

<del>F14</del>	VCCO_46	BANK 46 HD (ZU2/3 BANK 26 HD)	
<del>C15</del>	VCCO_46		
<del>B15</del>	IO_L1P_AD11P_46	IO_L7P_HDGC_AD5P_46	<del>G13</del>
<del>A15</del>	IO_L1N_AD11N_46	IO_L7N_HDGC_AD5N_46	<del>F13</del>
<del>B14</del>	IO_L2P_AD10P_46	IO_L8P_HDGC_AD4P_46	<del>F15</del>
<del>A14</del>	IO_L2N_AD10N_46	IO_L8N_HDGC_AD4N_46	<del>E15</del>
<del>B13</del>	IO_L3P_AD9P_46	IO_L9P_AD3P_46	<del>G15</del>
<del>A13</del>	IO_L3N_AD9N_46	IO_L9N_AD3N_46	<del>G14</del>
<del>C13</del>	IO_L4P_AD8P_46	IO_L10P_AD2P_46	<del>H14</del>
<del>C12</del>	IO_L4N_AD8N_46	IO_L10N_AD2N_46	<del>H13</del>
<del>D15</del>	IO_L5P_HDGC_AD7P_46	IO_L11P_AD1P_46	<del>K14</del>
<del>D14</del>	IO_L5N_HDGC_AD7N_46	IO_L11N_AD1N_46	<del>J14</del>
<del>E14</del>	IO_L6P_HDGC_AD6P_46	IO_L12P_AD0P_46	<del>L14</del>
<del>E13</del>	IO_L6N_HDGC_AD6N_46	IO_L12N_AD0N_46	<del>L13</del>

BANK 43 HD (ZU2/3 BANK 44 HD)

<del>AC10</del>	VCCO_43		
<del>AG12</del>	VCCO_43		
<del>AG10</del>	IO_L1P_AD11P_43	IO_L7P_HDGC_AD5P_43	<del>AD11</del>
<del>AH10</del>	IO_L1N_AD11N_43	IO_L7N_HDGC_AD5N_43	<del>AD10</del>
<del>AF11</del>	IO_L2P_AD10P_43	IO_L8P_HDGC_AD4P_43	<del>AB11</del>
<del>AG11</del>	IO_L2N_AD10N_43	IO_L8N_HDGC_AD4N_43	<del>AC11</del>
<del>AH11</del>	IO_L3P_AD9P_43	IO_L9P_AD3P_43	<del>AA11</del>
<del>AH10</del>	IO_L3N_AD9N_43	IO_L9N_AD3N_43	<del>AA10</del>
<del>AE10</del>	IO_L4P_AD8P_43	IO_L10P_AD2P_43	<del>W10</del>
<del>AF10</del>	IO_L4N_AD8N_43	IO_L10N_AD2N_43	<del>Y10</del>
<del>AE12</del>	IO_L5P_HDGC_AD7P_43	IO_L11P_AD1P_43	<del>Y9</del>
<del>AF12</del>	IO_L5N_HDGC_AD7N_43	IO_L11N_AD1N_43	<del>AA8</del>
<del>AC12</del>	IO_L6P_HDGC_AD6P_43	IO_L12P_AD0P_43	<del>AB10</del>
<del>AD12</del>	IO_L6N_HDGC_AD6N_43	IO_L12N_AD0N_43	<del>AB9</del>

UIB


XCZU5EV-1SFVC784I

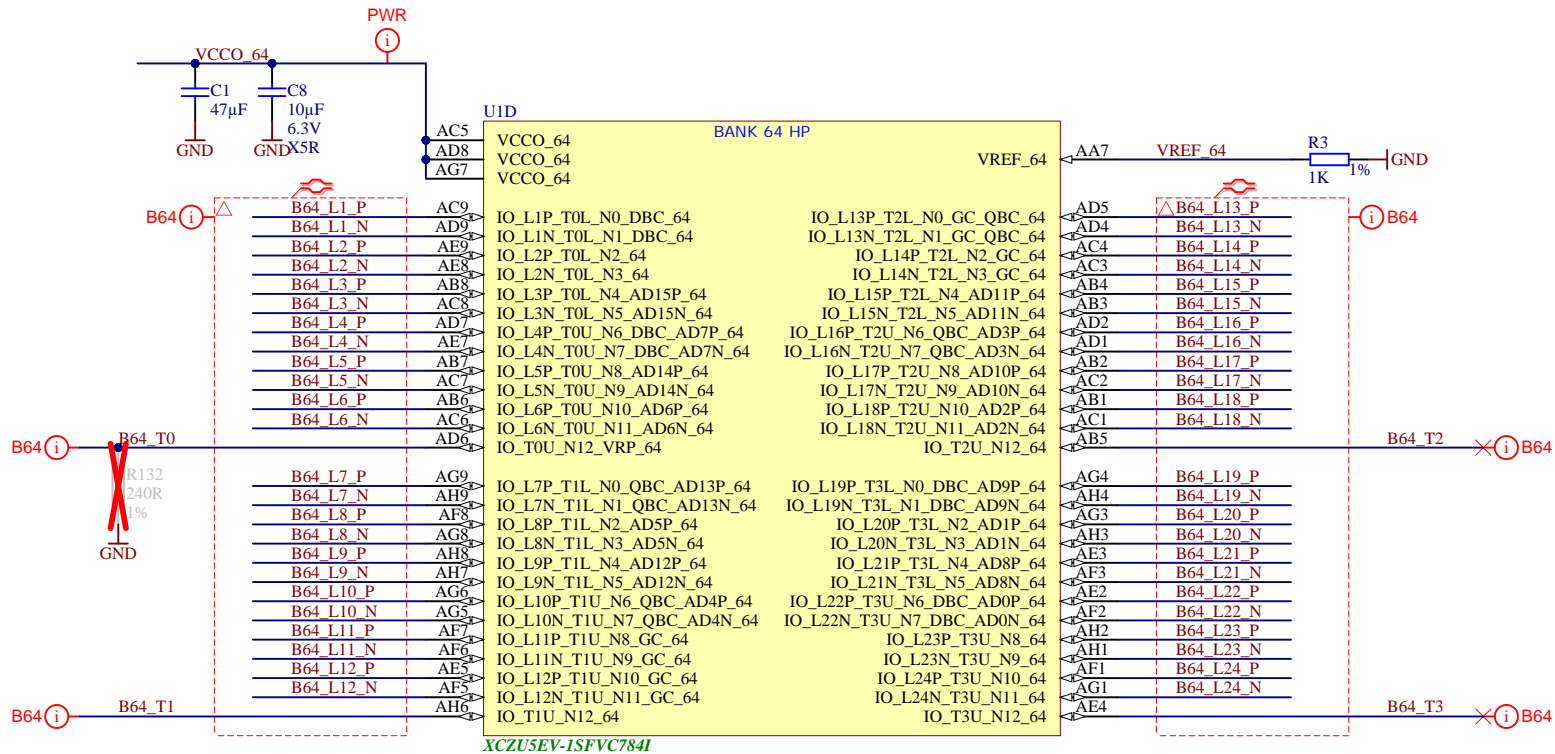
<del>AA14</del>	VCCO_44	BANK 44 HD (ZU2/3 BANK 24 HD)	
<del>AD13</del>	VCCO_44		
<del>AE15</del>	IO_L1P_AD15P_44	IO_L7P_HDGC_44	<del>AA13</del>
<del>AE14</del>	IO_L1N_AD15N_44	IO_L7N_HDGC_44	<del>AB13</del>
<del>AG14</del>	IO_L2P_AD14P_44	IO_L8P_HDGC_44	<del>AB15</del>
<del>AH14</del>	IO_L2N_AD14N_44	IO_L8N_HDGC_44	<del>AB14</del>
<del>AG13</del>	IO_L3P_AD13P_44	IO_L9P_AD11P_44	<del>W14</del>
<del>AH13</del>	IO_L3N_AD13N_44	IO_L9N_AD11N_44	<del>W13</del>
<del>AE13</del>	IO_L4P_AD12P_44	IO_L10P_AD10P_44	<del>Y14</del>
<del>AF13</del>	IO_L4N_AD12N_44	IO_L10N_AD10N_44	<del>Y13</del>
<del>AD13</del>	IO_L5P_HDGC_44	IO_L11P_AD9P_44	<del>W12</del>
<del>AD14</del>	IO_L5N_HDGC_44	IO_L11N_AD9N_44	<del>W11</del>
<del>AC14</del>	IO_L6P_HDGC_44	IO_L12P_AD8P_44	<del>Y12</del>
<del>AC13</del>	IO_L6N_HDGC_44	IO_L12N_AD8N_44	<del>AA12</del>

BANK 45 HD (ZU2/3 BANK 25 HD)

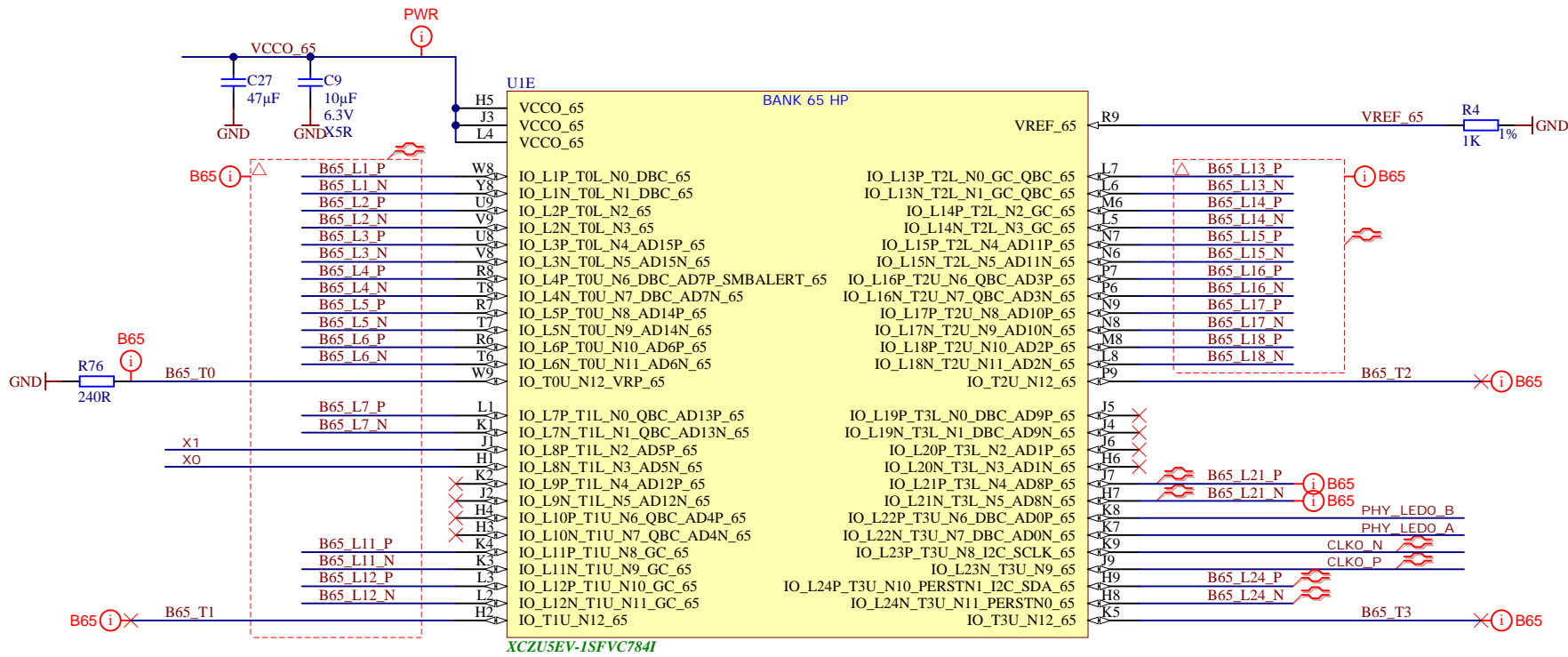
<del>B12</del>	VCCO_45		
<del>E11</del>	VCCO_45		
<del>J11</del>	IO_L1P_AD15P_45	IO_L7P_HDGC_45	<del>E10</del>
<del>J10</del>	IO_L1N_AD15N_45	IO_L7N_HDGC_45	<del>D10</del>
<del>K13</del>	IO_L2P_AD14P_45	IO_L8P_HDGC_45	<del>E12</del>
<del>K12</del>	IO_L2N_AD14N_45	IO_L8N_HDGC_45	<del>D11</del>
<del>H11</del>	IO_L3P_AD13P_45	IO_L9P_AD11P_45	<del>C11</del>
<del>G10</del>	IO_L3N_AD13N_45	IO_L9N_AD11N_45	<del>B10</del>
<del>J12</del>	IO_L4P_AD12P_45	IO_L10P_AD10P_45	<del>B11</del>
<del>H12</del>	IO_L4N_AD12N_45	IO_L10N_AD10N_45	<del>A10</del>
<del>G11</del>	IO_L5P_HDGC_45	IO_L11P_AD9P_45	<del>A12</del>
<del>F10</del>	IO_L5N_HDGC_45	IO_L11N_AD9N_45	<del>A11</del>
<del>F12</del>	IO_L6P_HDGC_45	IO_L12P_AD8P_45	<del>D12</del>
<del>F11</del>	IO_L6N_HDGC_45	IO_L12N_AD8N_45	<del>C12</del>


XCZU5EV-1SFVC784I

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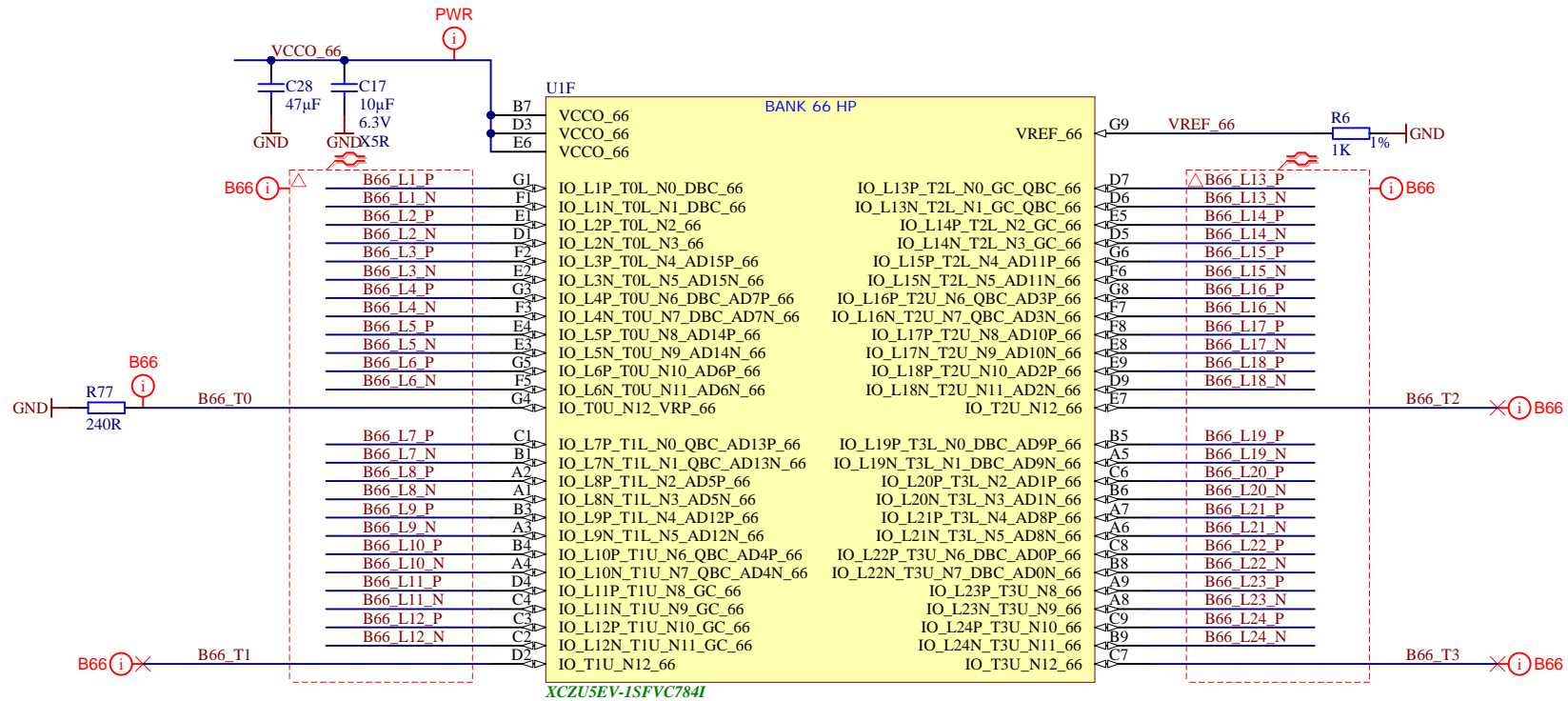



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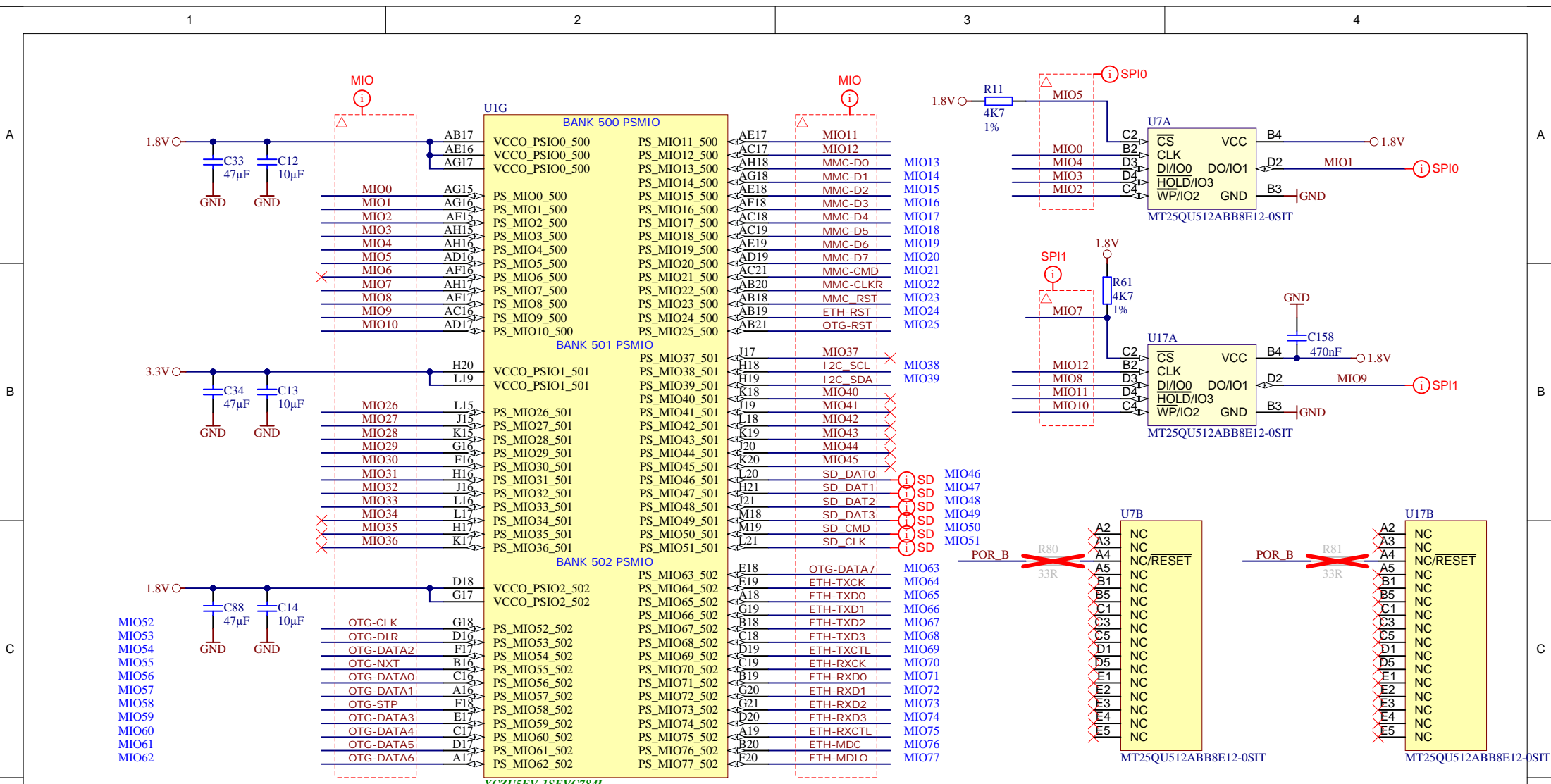


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			A4	Number: TE0820 5DI21MA
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			Title: TE0820 - MIO Banks	
			A4	Number: TE0820 5DI21MA
Date: 2022-05-10		Copyright: Trenz Electronic GmbH		Rev. 05
Filename: B_MIO.SchDoc		Page 12 of 24		

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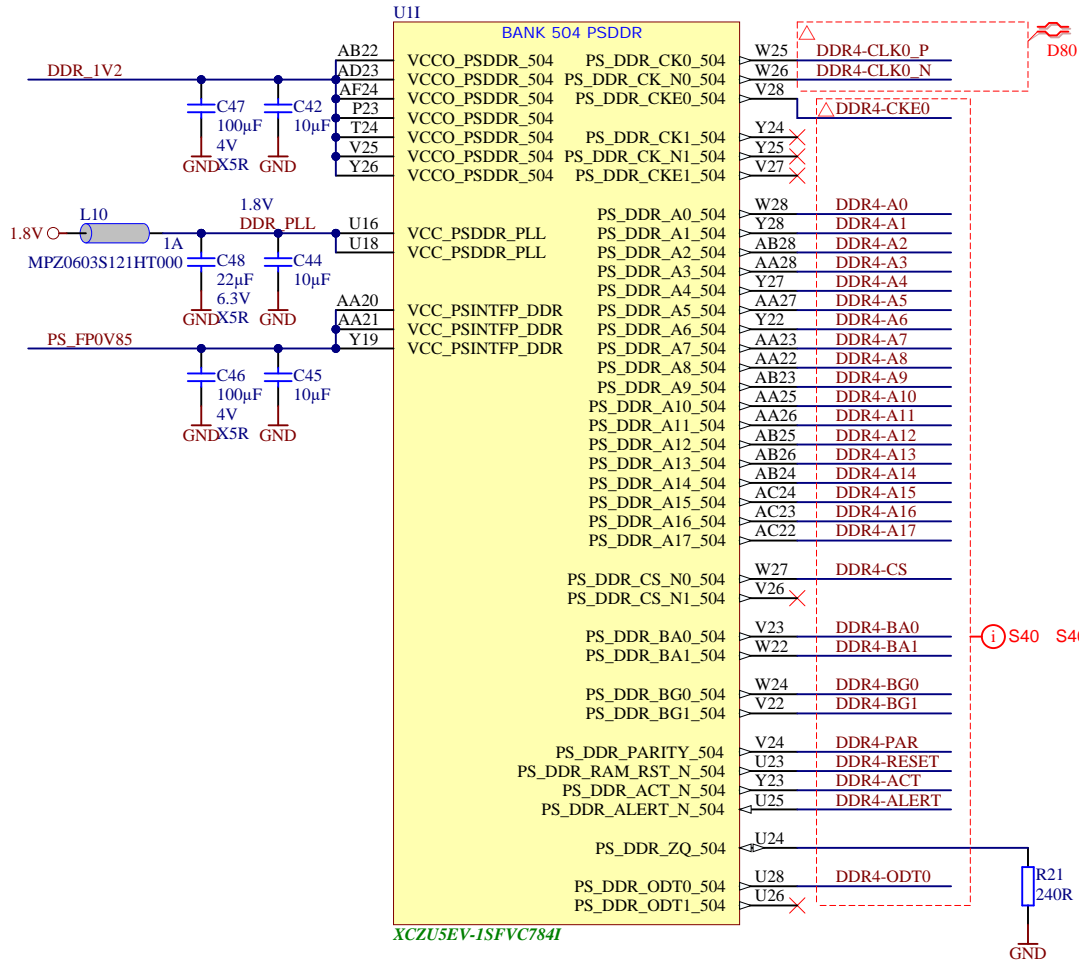
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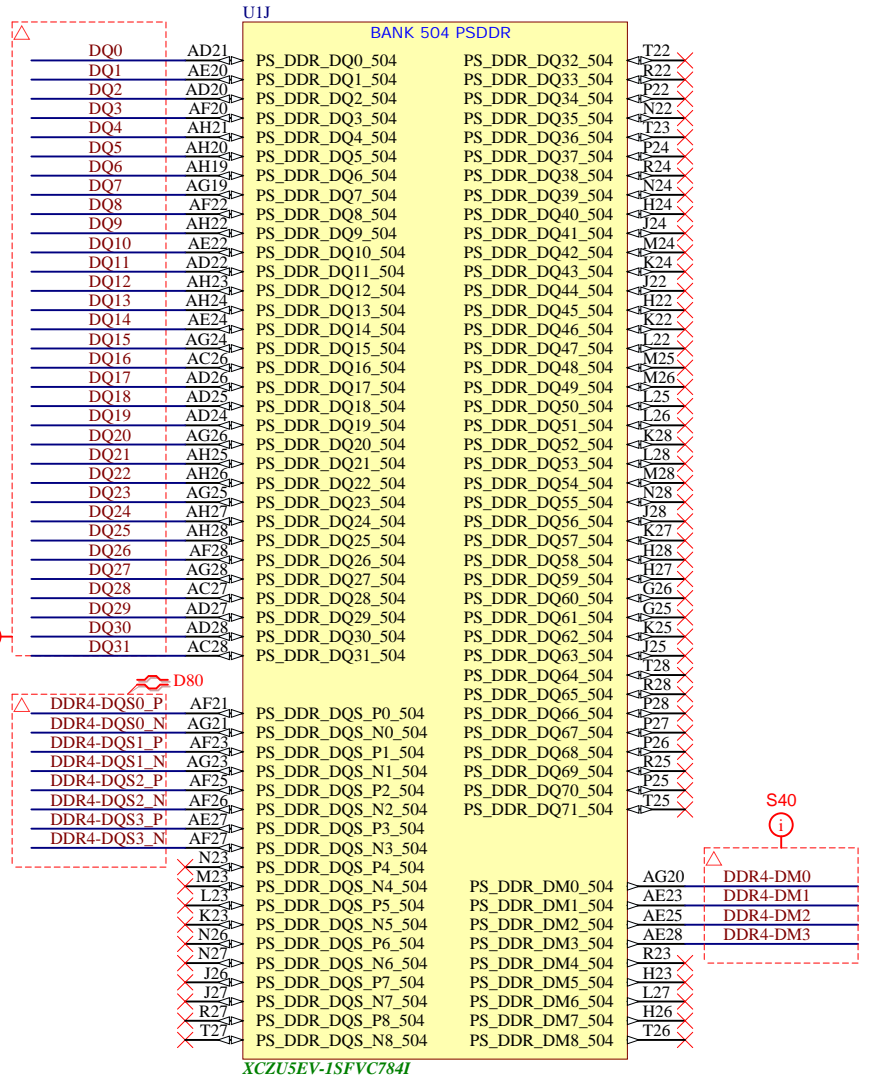
D

D



U1I		BANK 504 PSDDR	
VCCO_PSDDR_504	PS_DDR_CK0_504	W25	DDR4-CLK0_P
VCCO_PSDDR_504	PS_DDR_CK_N0_504	W26	DDR4-CLK0_N
VCCO_PSDDR_504	PS_DDR_CKE0_504	V28	
VCCO_PSDDR_504	PS_DDR_CK1_504	Y24	DDR4-CKE0
VCCO_PSDDR_504	PS_DDR_CK_N1_504	Y25	
VCCO_PSDDR_504	PS_DDR_CKE1_504	Y27	
VCC_PSDDR_PLL	PS_DDR_A0_504	W28	DDR4-A0
VCC_PSDDR_PLL	PS_DDR_A1_504	Y28	DDR4-A1
VCC_PSDDR_PLL	PS_DDR_A2_504	AB28	DDR4-A2
VCC_PSDDR_PLL	PS_DDR_A3_504	AA28	DDR4-A3
VCC_PSDDR_PLL	PS_DDR_A4_504	Y27	DDR4-A4
VCC_PSDDR_PLL	PS_DDR_A5_504	AA27	DDR4-A5
VCC_PSDDR_PLL	PS_DDR_A6_504	Y22	DDR4-A6
VCC_PSDDR_PLL	PS_DDR_A7_504	AA23	DDR4-A7
VCC_PSDDR_PLL	PS_DDR_A8_504	AA22	DDR4-A8
VCC_PSDDR_PLL	PS_DDR_A9_504	AB23	DDR4-A9
VCC_PSDDR_PLL	PS_DDR_A10_504	AA25	DDR4-A10
VCC_PSDDR_PLL	PS_DDR_A11_504	AA26	DDR4-A11
VCC_PSDDR_PLL	PS_DDR_A12_504	AB25	DDR4-A12
VCC_PSDDR_PLL	PS_DDR_A13_504	AB26	DDR4-A13
VCC_PSDDR_PLL	PS_DDR_A14_504	AB24	DDR4-A14
VCC_PSDDR_PLL	PS_DDR_A15_504	AC24	DDR4-A15
VCC_PSDDR_PLL	PS_DDR_A16_504	AC23	DDR4-A16
VCC_PSDDR_PLL	PS_DDR_A17_504	AC22	DDR4-A17
VCC_PSINTFP_DDR	PS_DDR_CS_N0_504	W27	DDR4-CS
VCC_PSINTFP_DDR	PS_DDR_CS_N1_504	V26	
VCC_PSINTFP_DDR	PS_DDR_BA0_504	V23	DDR4-BA0
VCC_PSINTFP_DDR	PS_DDR_BA1_504	W22	DDR4-BA1
VCC_PSINTFP_DDR	PS_DDR_BG0_504	W24	DDR4-BG0
VCC_PSINTFP_DDR	PS_DDR_BG1_504	V22	DDR4-BG1
VCC_PSINTFP_DDR	PS_DDR_PARITY_504	V24	DDR4-PAR
VCC_PSINTFP_DDR	PS_DDR_RAM_RST_N_504	U23	DDR4-RESET
VCC_PSINTFP_DDR	PS_DDR_ACT_N_504	Y23	DDR4-ACT
VCC_PSINTFP_DDR	PS_DDR_ALERT_N_504	U25	DDR4-ALERT
VCC_PSINTFP_DDR	PS_DDR_ZQ_504	U24	
VCC_PSINTFP_DDR	PS_DDR_ODT0_504	U28	DDR4-ODT0
VCC_PSINTFP_DDR	PS_DDR_ODT1_504	U26	

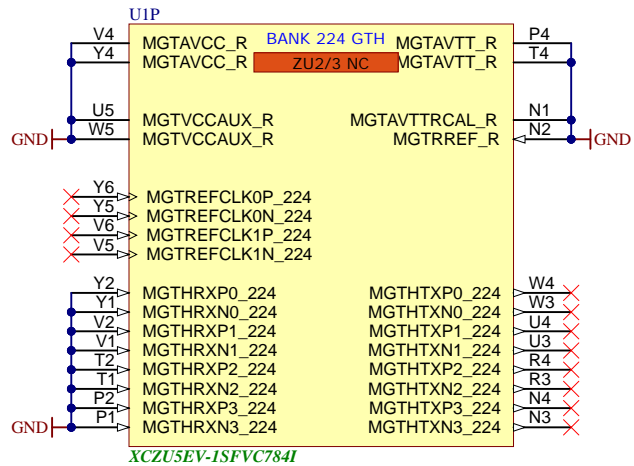
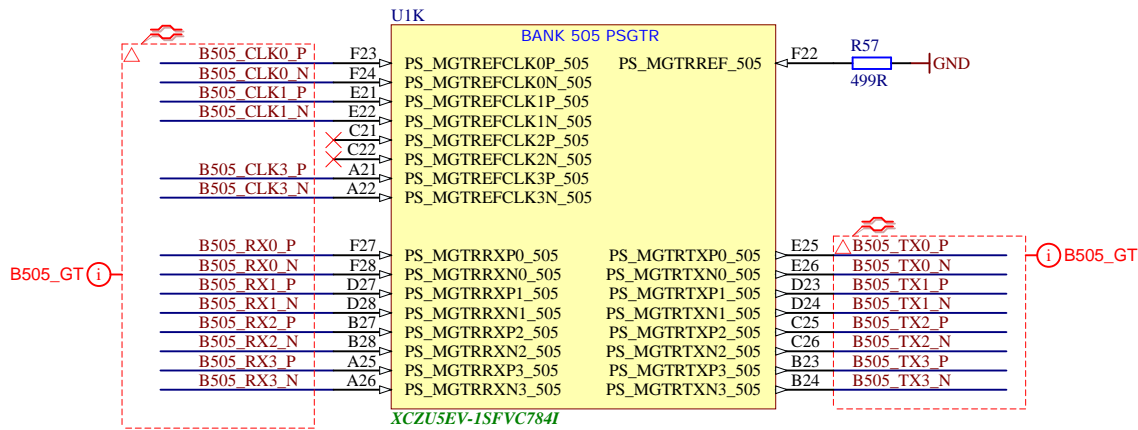
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XCZU5EV-1SFVC784I



Title: TE0820 - PS_DDR		
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Title: TE0820 - PS_GT		
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A

A

B

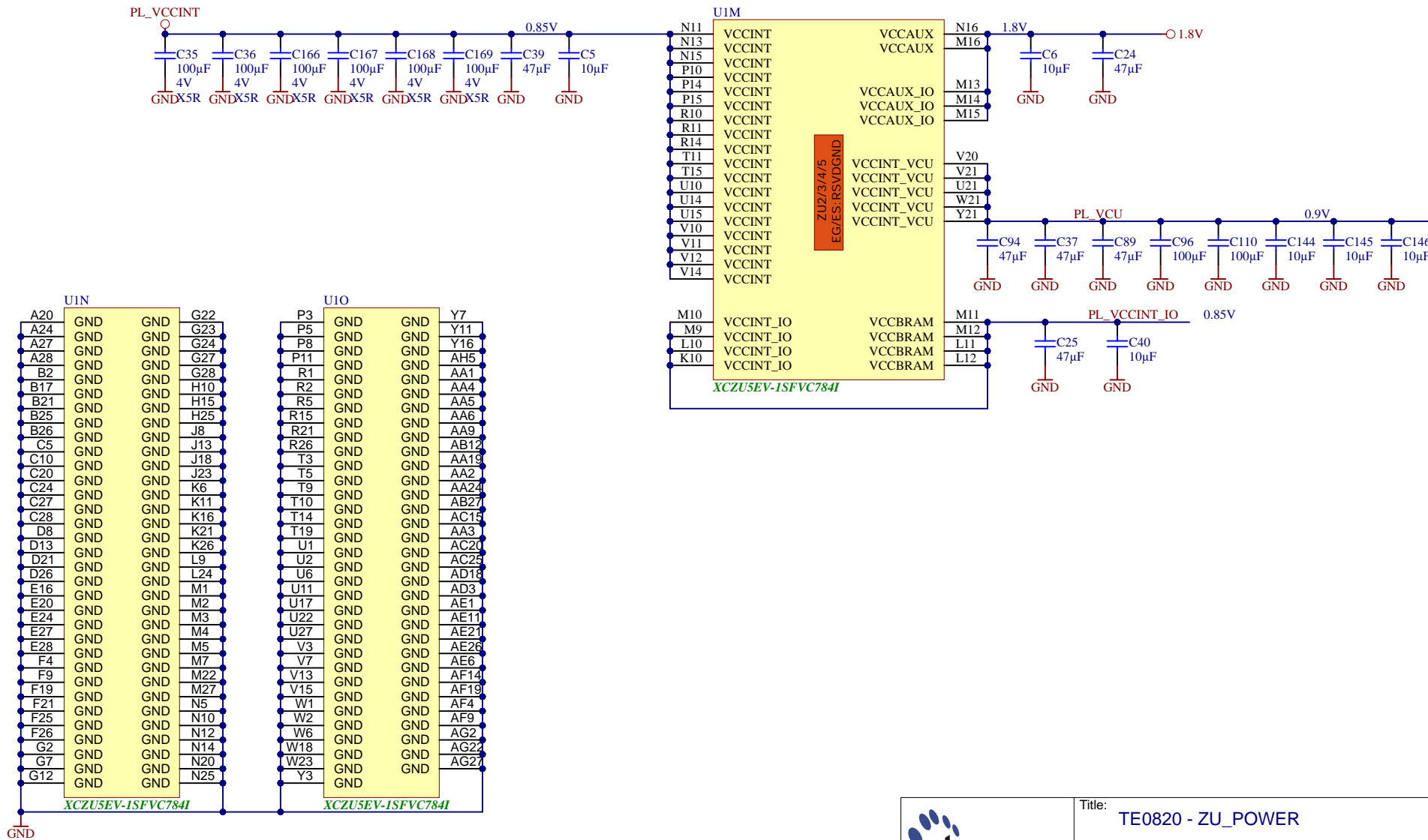
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C

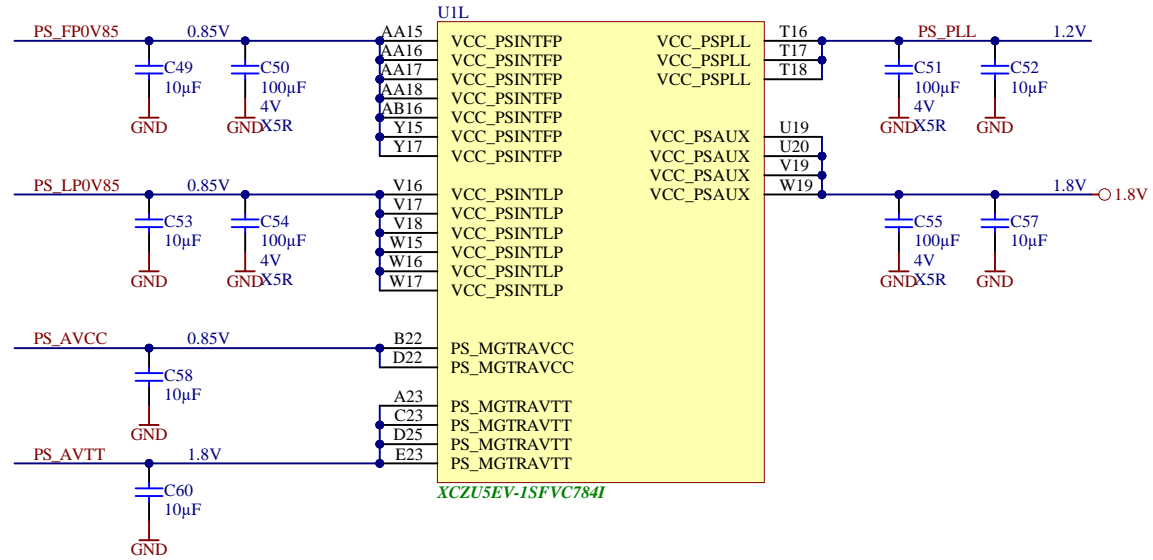
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D

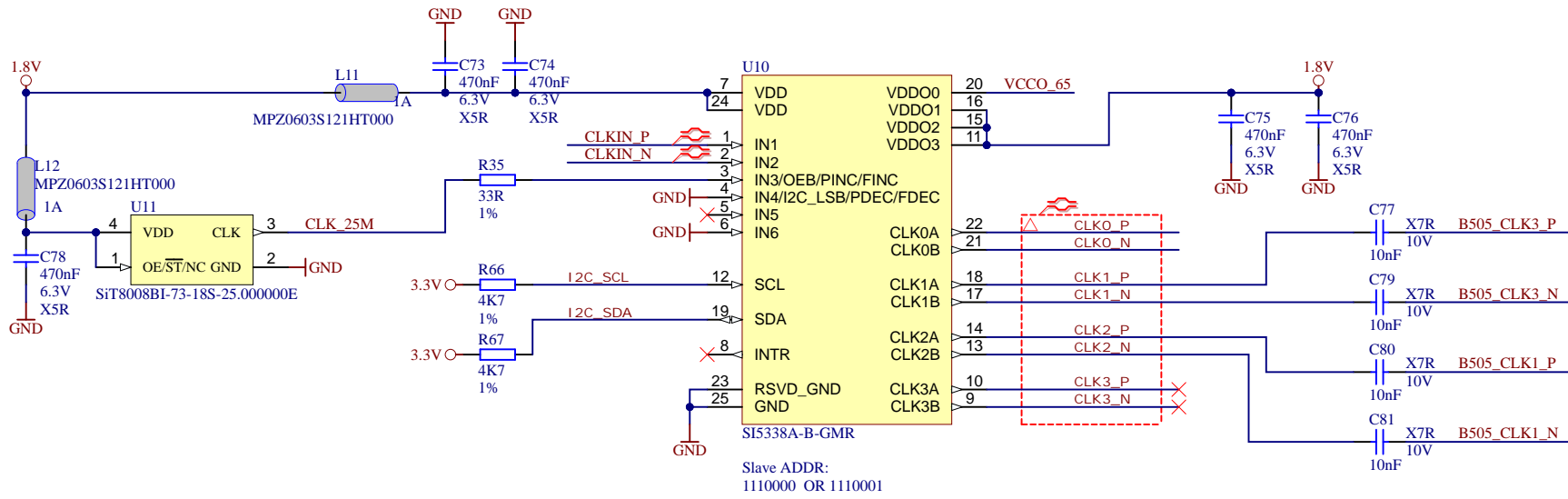
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Title: TE0820 - ZU_POWER		
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		Title: TE0820 - CLK	
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A

B

C

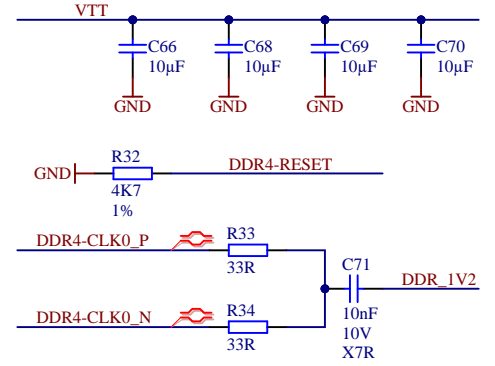
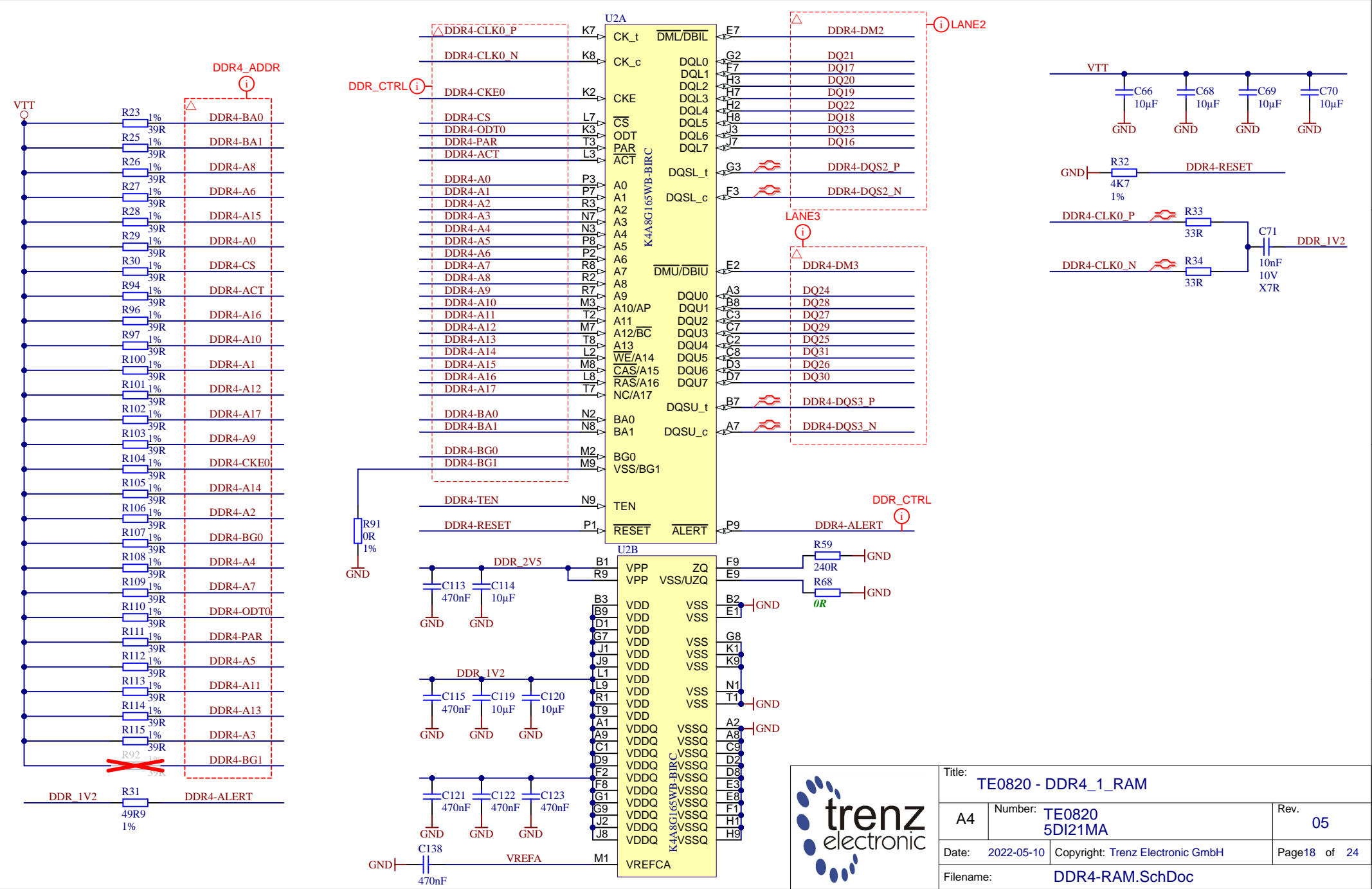
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A

B

C

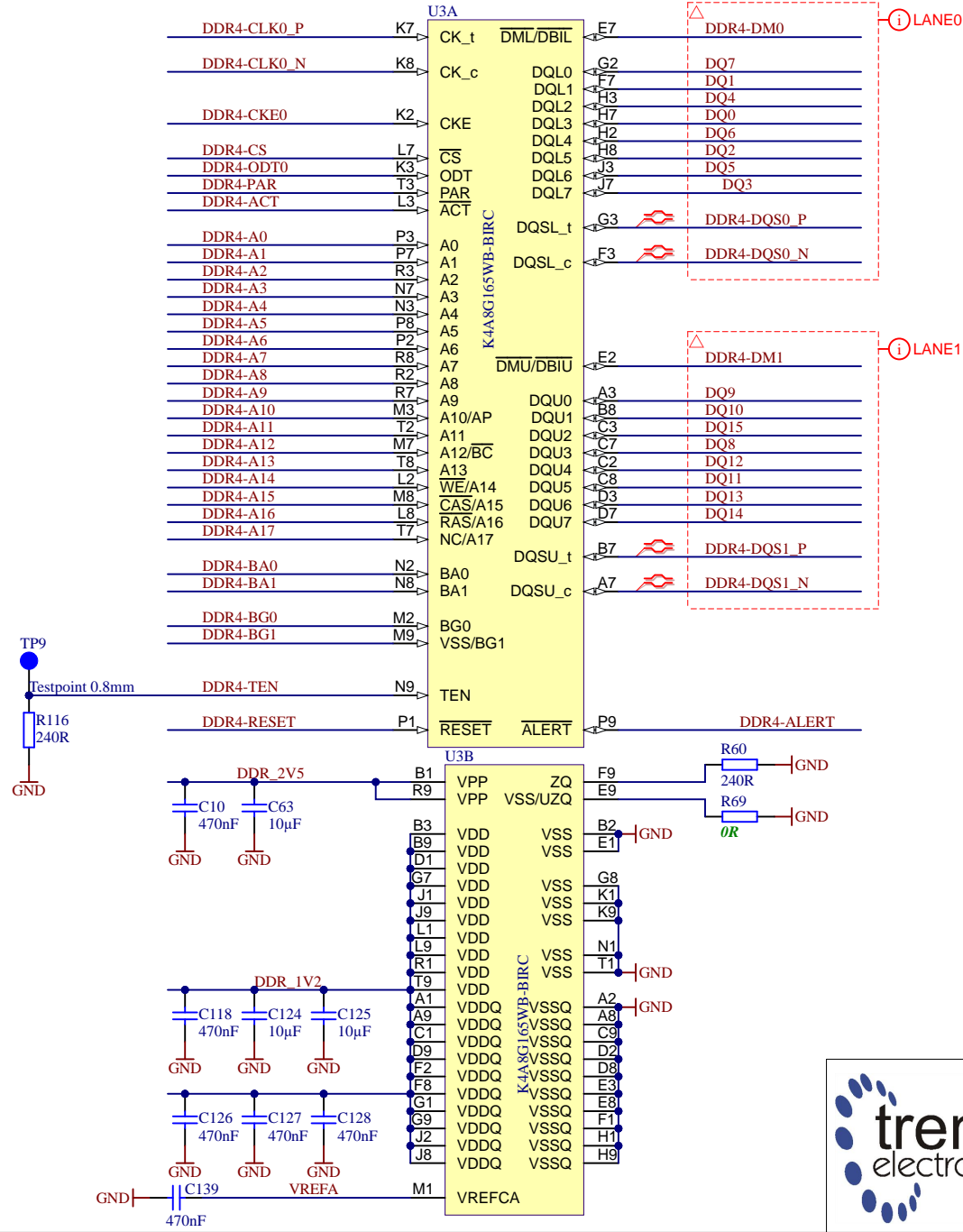
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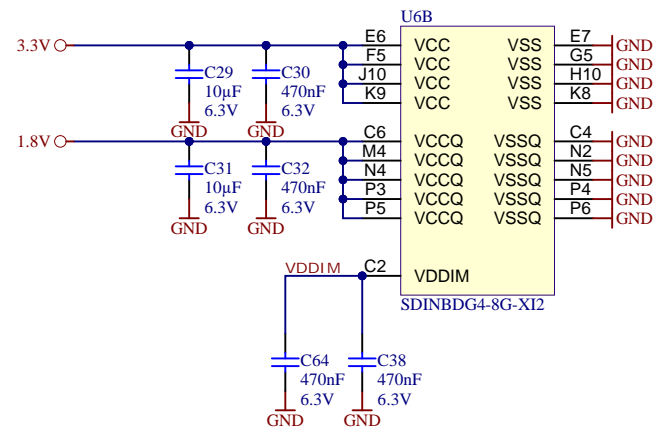
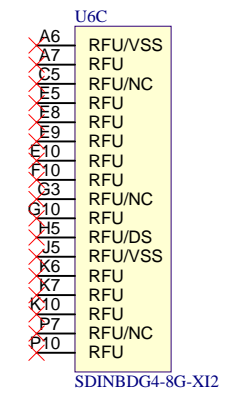
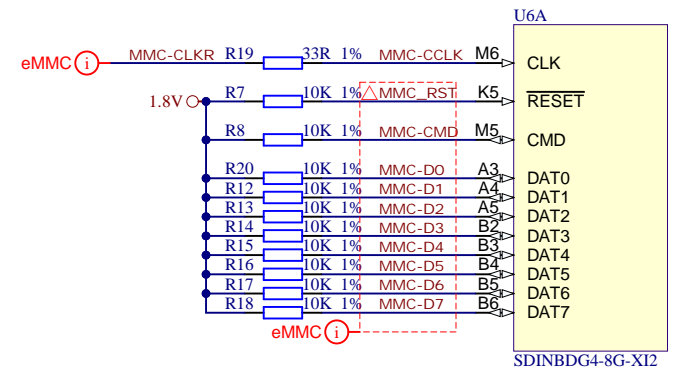
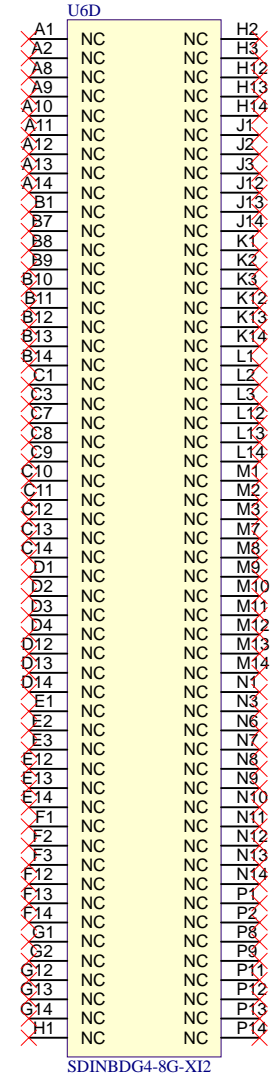
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Title: TE0820 - eMMC		
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Filename: eMMC.SchDoc		

1

2

3

4

A

A

B

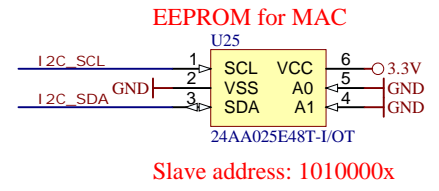
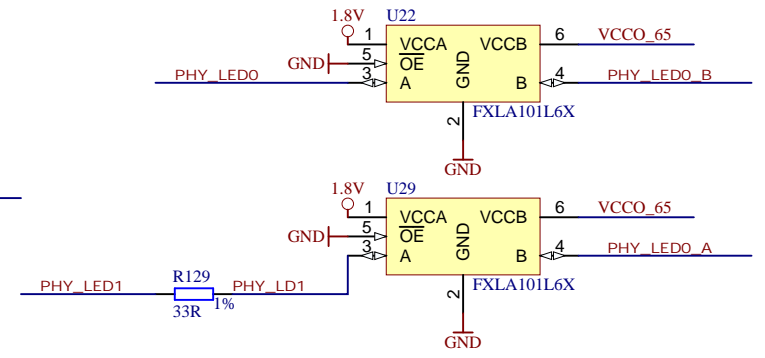
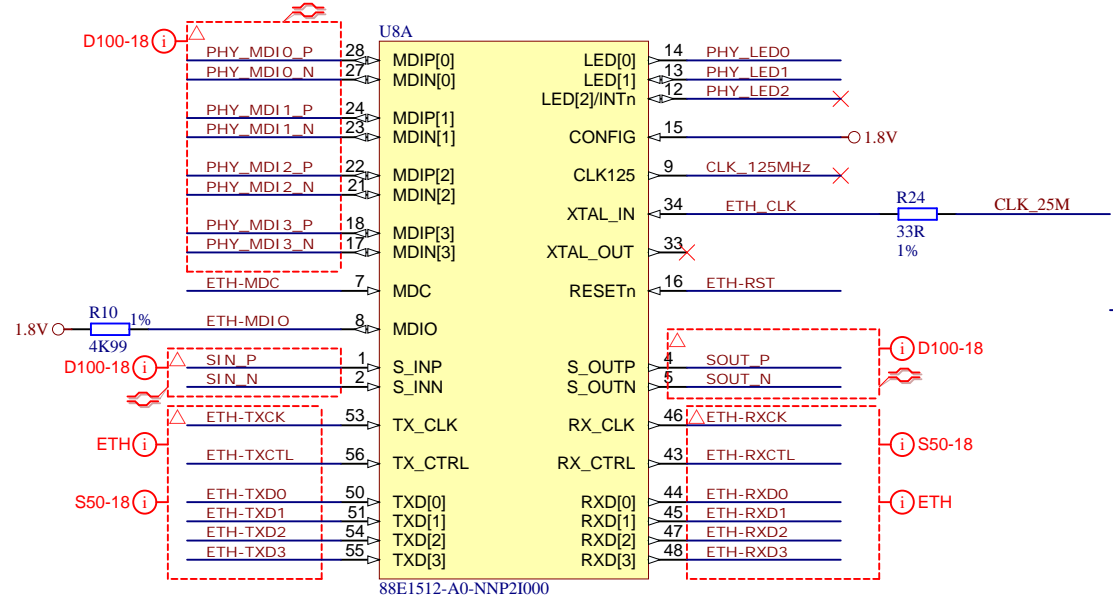
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C

C

D

D



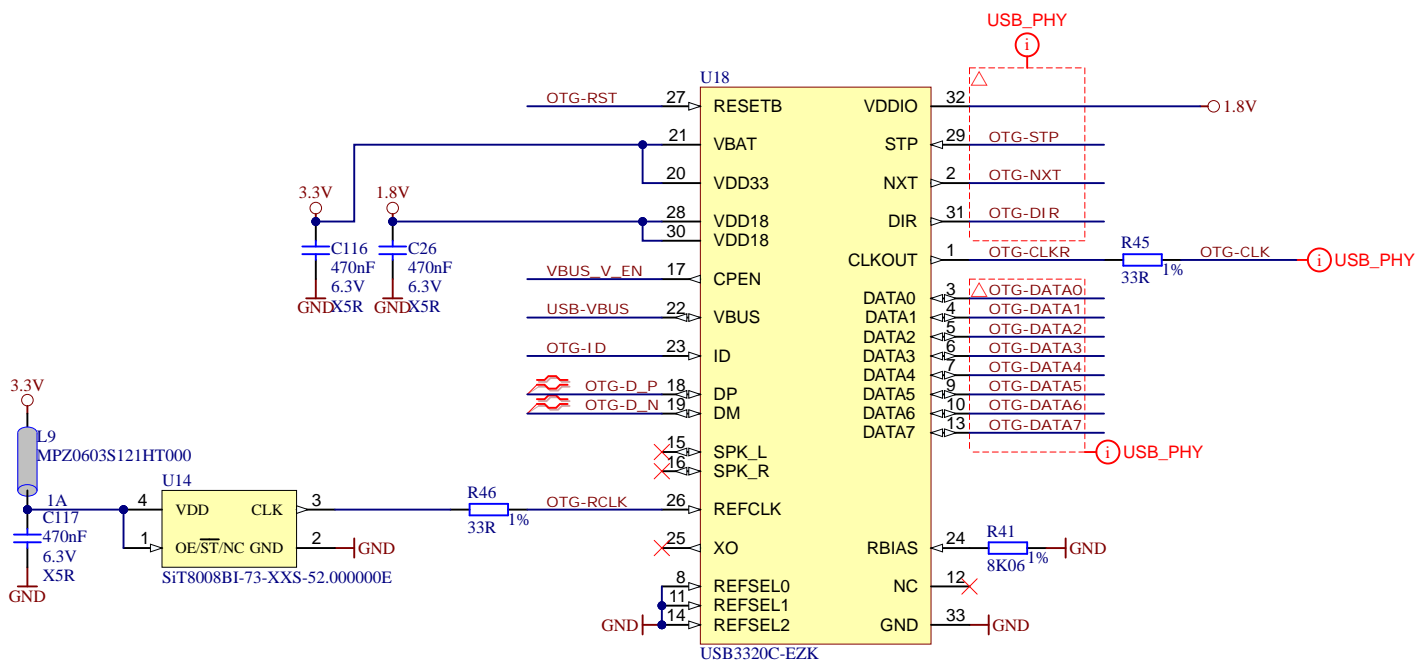
Title: TE0820 - Eth_PHY		
A4	Number: TE0820 5DI21MA	Rev. 05
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Filename: ETH-PHY.SchDoc		


1

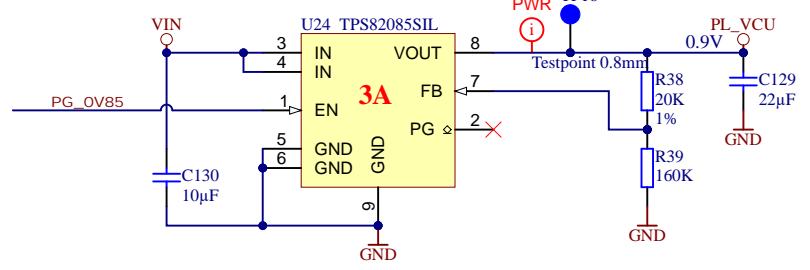
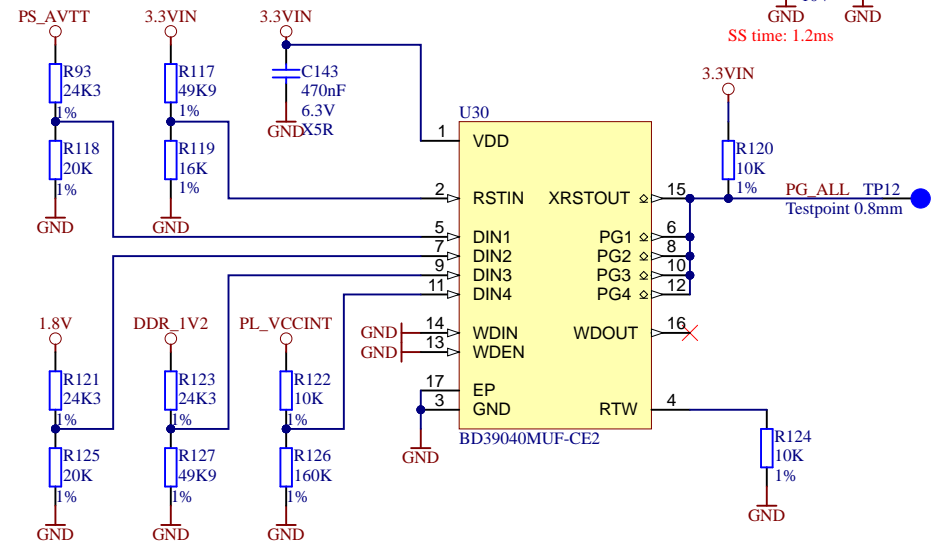
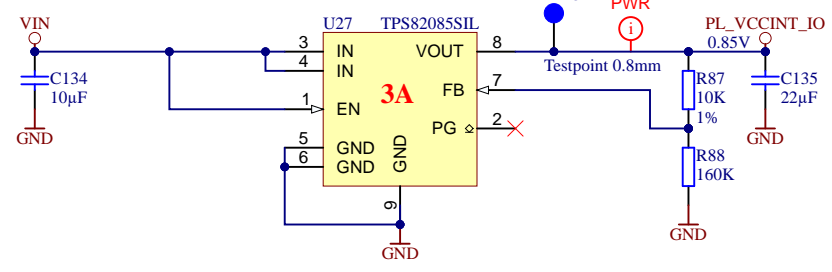
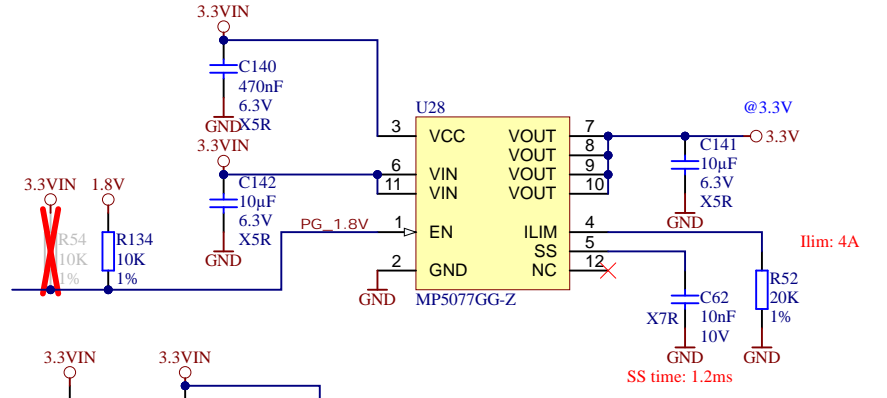
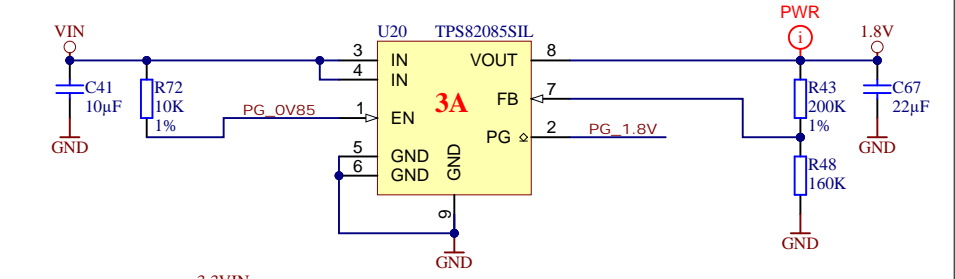
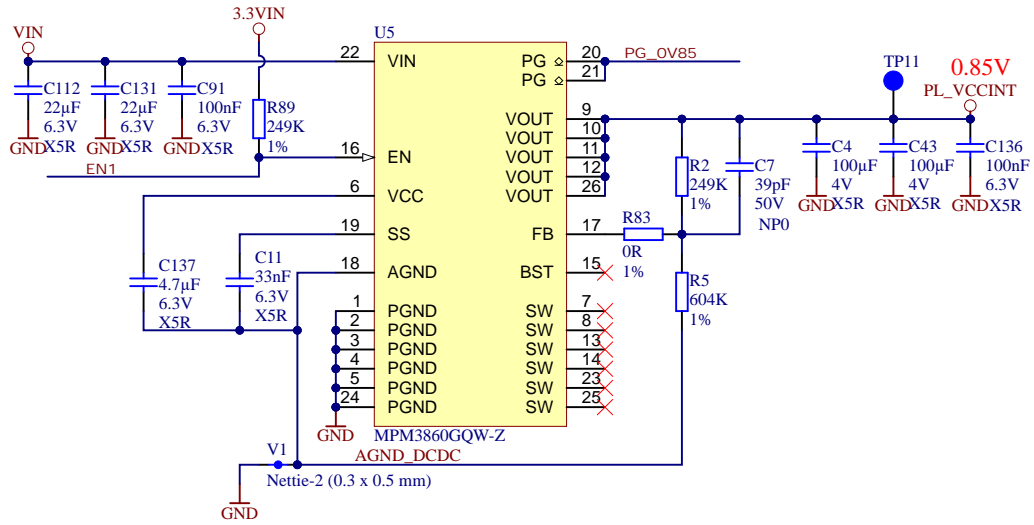
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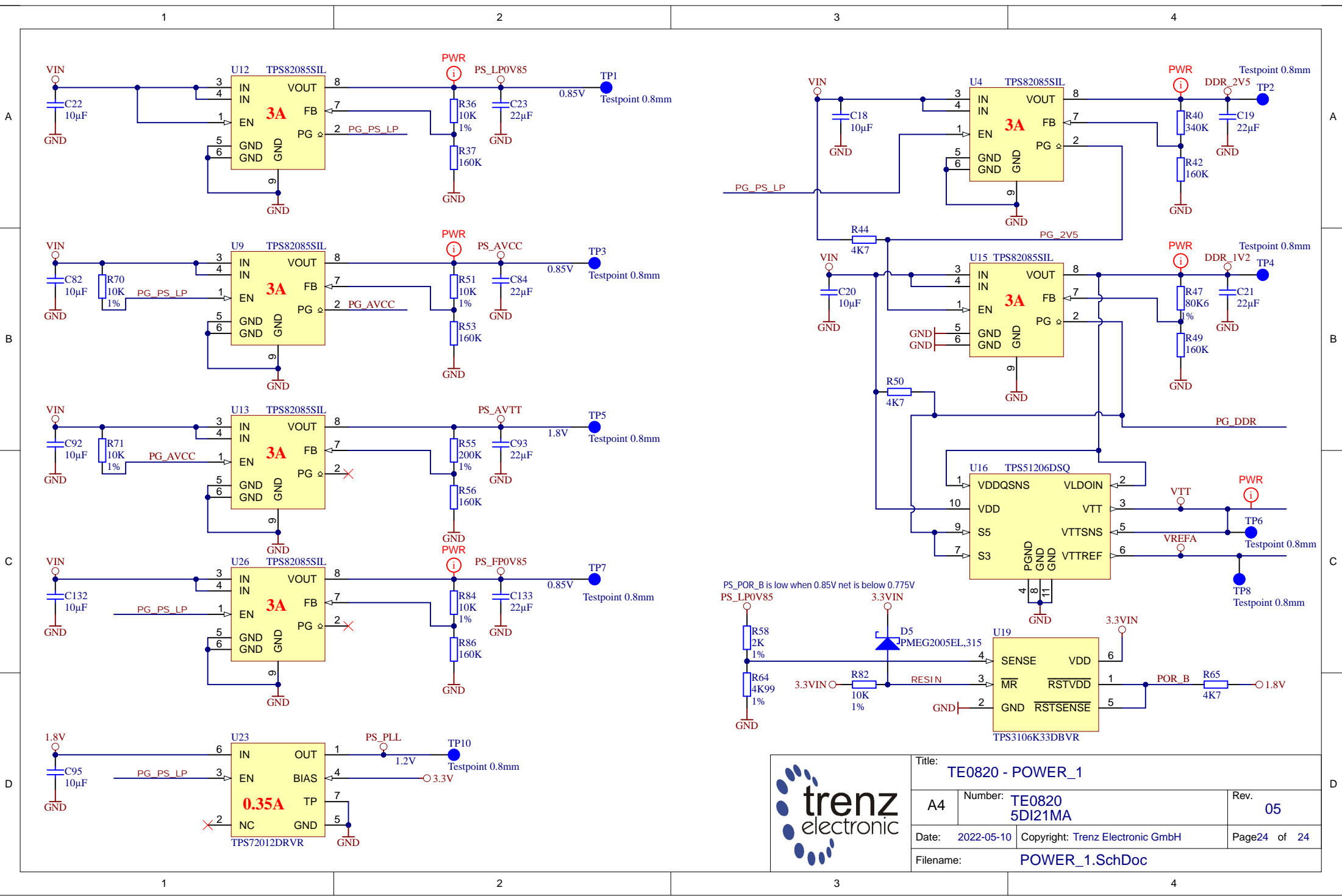
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			Title: TE0820 - USB_PHY	
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