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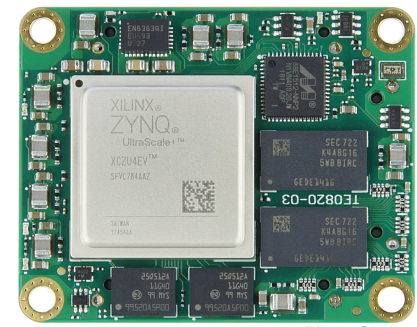


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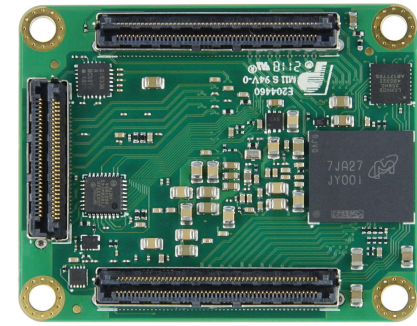


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Schematics and other handouts serve for informational purposes only!



Title: <b>TE0820 - Legal Notices</b>		
A4	Number: <b>TE0820 4BI21KL</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>		

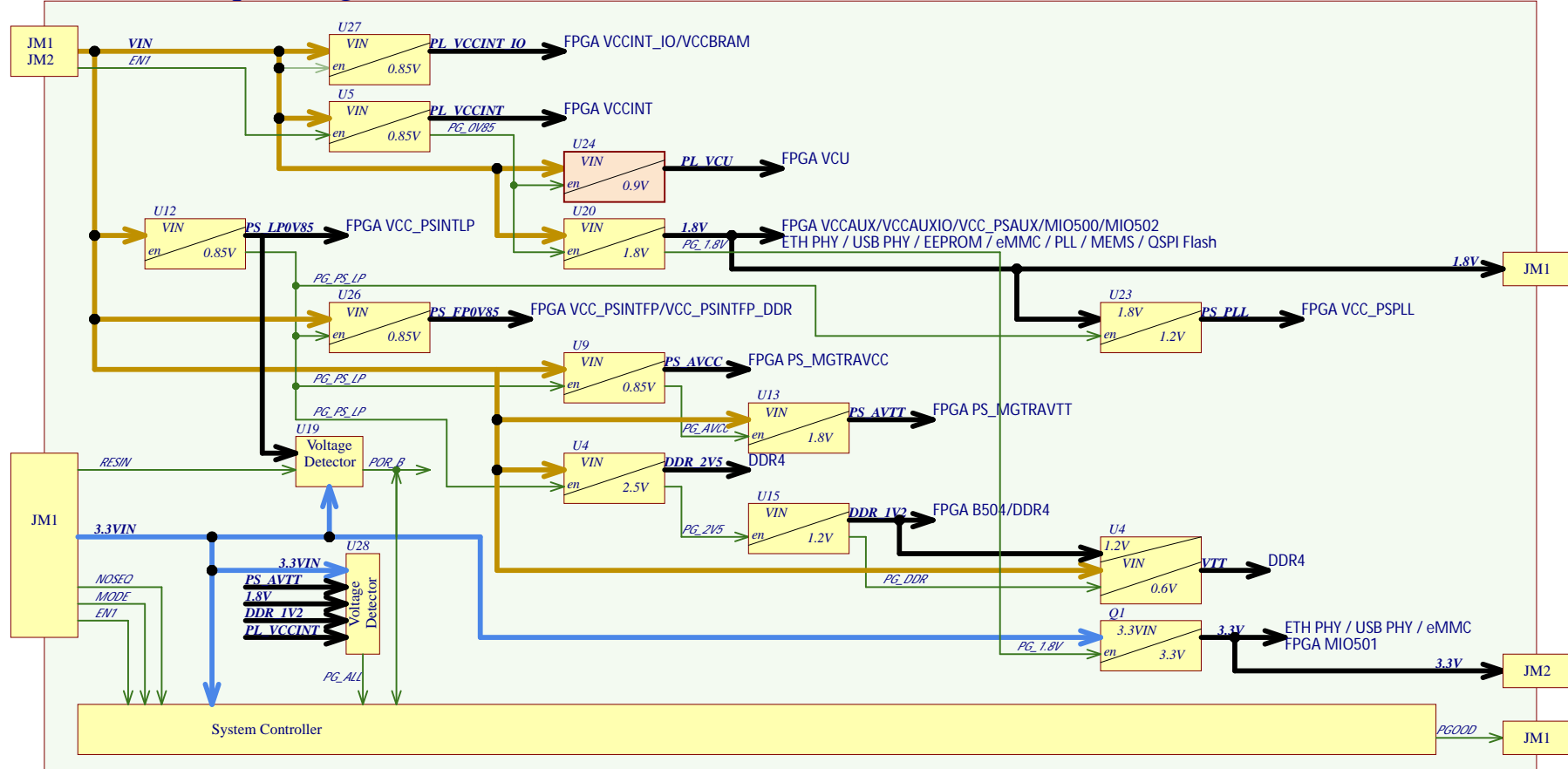
REV	Description	
-01	Initial revision	VT
-02	<ul style="list-style-type: none"> <li>1) Added MAC EEPROM (slave address:)</li> <li>2) LIB components update</li> <li>3) Fixed SD Card connection</li> <li>4) Fixed sense connection from DCDC</li> <li>5) Made correct power connection for VCU (removed DCDC, 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 4BI21KL</b>	Rev. <b>05</b>
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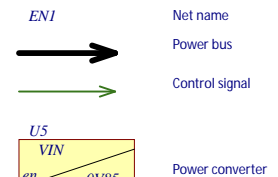


# Power-on sequencing:



## Supported Voltage Ranges:

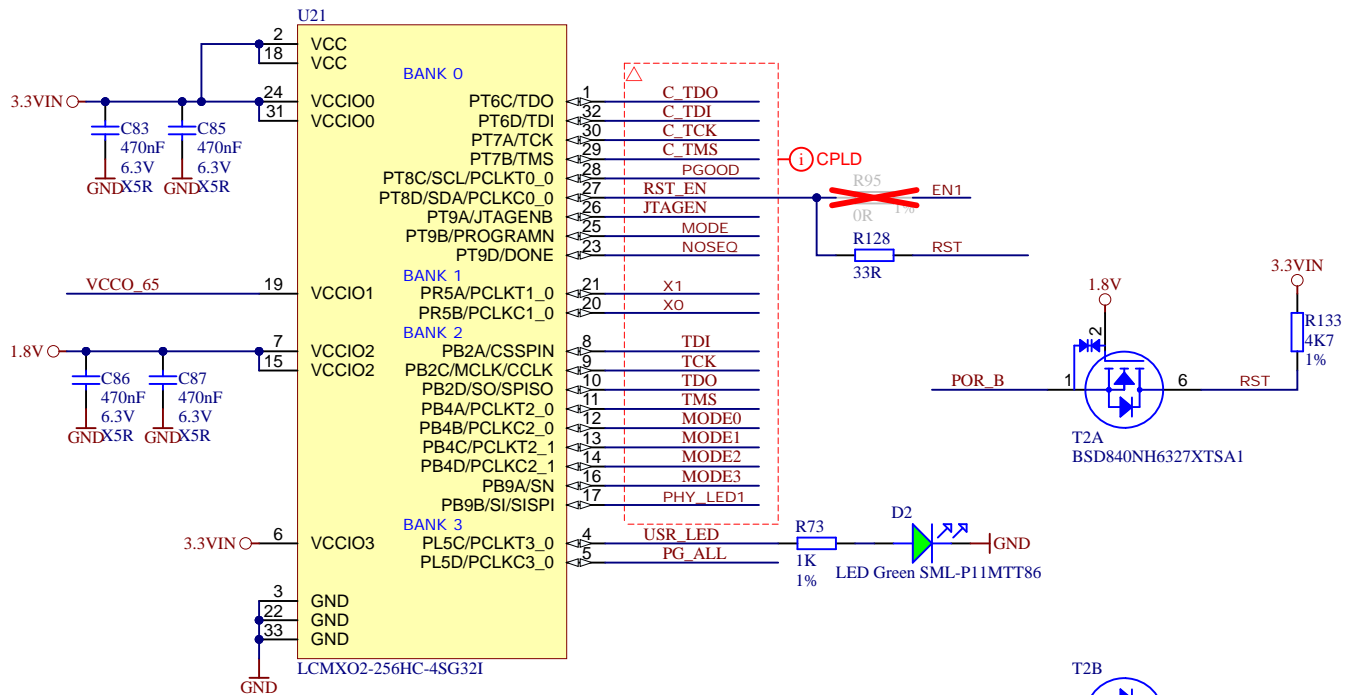
Power Rail	Direction	Range	Tolerance	Description	Note
VIN	IN	3.3 - 5V	+/-5%	Micromodule Power	-
3.3VIN	IN	3.3V	+/-5%	Micromodule Power	-
VCCO64	IN	1.2 - 1.8V	+/-3%	HP IO Bank64	-
VCCO65	IN	1.2 - 1.8V	+/-3%	HP IO Bank65	-
VCCO66	IN	1.2 - 1.8V	+/-3%	HP IO Bank66	-
PSBATT	IN	1.2 - 1.5V	+/-3%	PS battery-backed 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		
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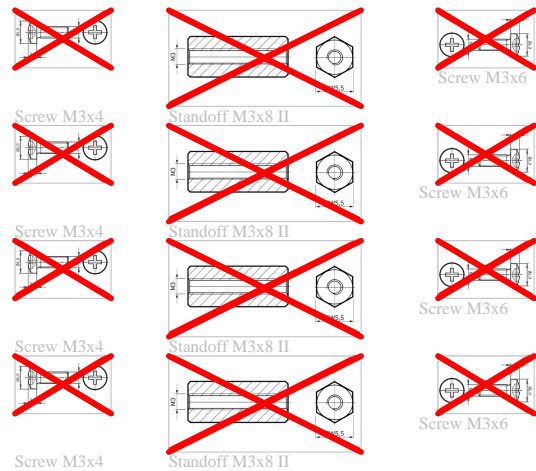
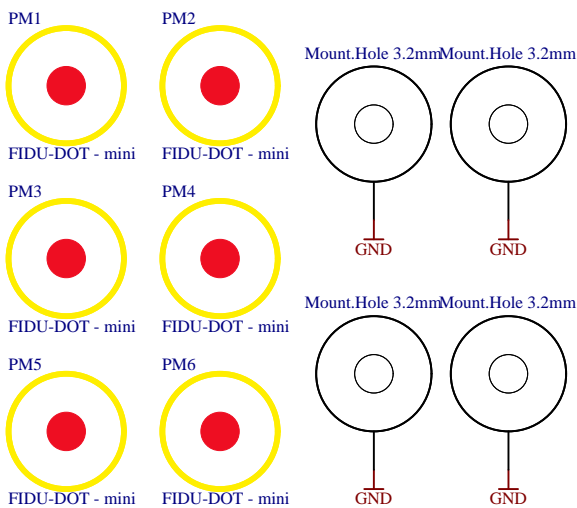
U_USB-PHY	USB-PHY.SchDoc
U_ETH-PHY	ETH-PHY.SchDoc
U_B_HD	B_HD.SchDoc
U_B64	B64.SchDoc
U_B65	B65.SchDoc
U_B66	B66.SchDoc
U_CONFIG	CONFIG.SchDoc
U_B_MIO	B_MIO.SchDoc
U_B_PS_GT	B_PS_GT.SchDoc
U_CLK	CLK.SchDoc

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_DDR4-RAM	DDR4-RAM.SchDoc
U_POWER	POWER.SchDoc
U_POWER_1	POWER_1.SchDoc



Special notes:

Serial  
Serialnumber 6,3 x 6,3mm



Assembly variant	4BI21KL
Created by	VY
Modified by	VT
Modified at	2022-05-31
SVN Revision	13497



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A

A

B

B

C

C

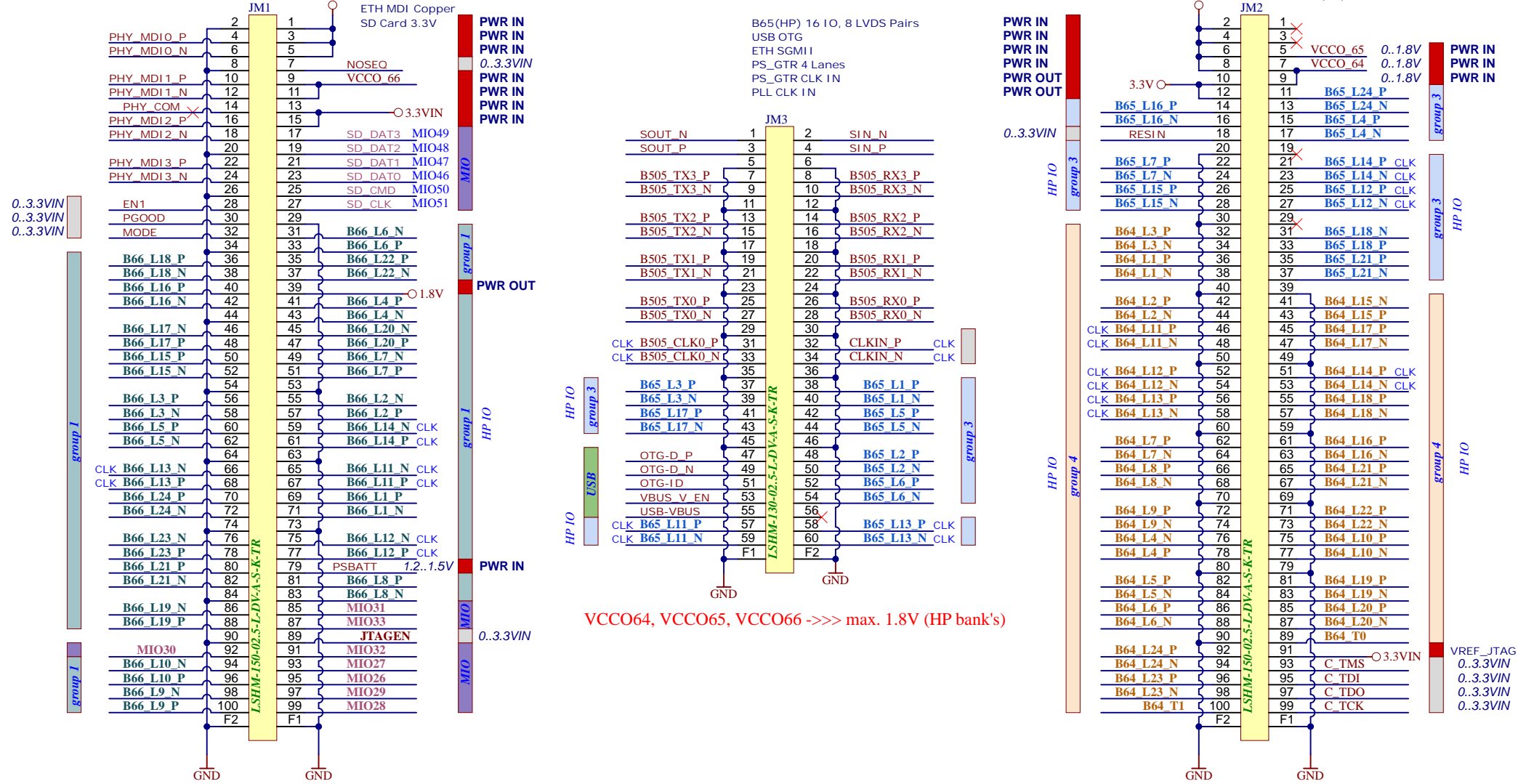
D

D

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



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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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>C14</del>	IO_L4P_AD8P_46	IO_L10P_AD2P_46	<del>H14</del>
<del>C13</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>AH13</del>	IO_L3P_AD9P_43	IO_L9P_AD3P_43	<del>AA11</del>
<del>AH12</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


XCZU4EG-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>AD15</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>

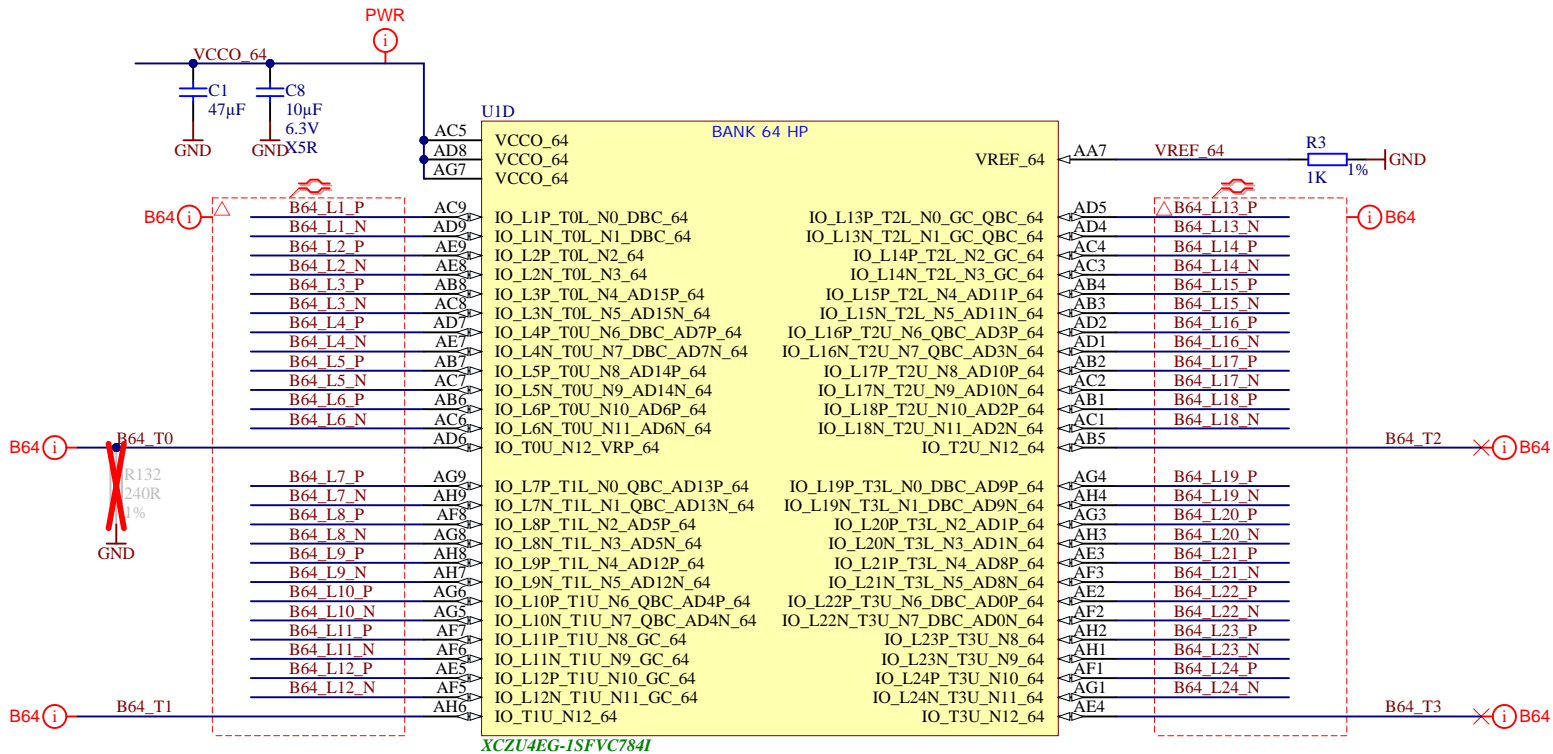
BANK 45 HD (ZU2/3 BANK 25 HD)

<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>H14</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>H13</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>
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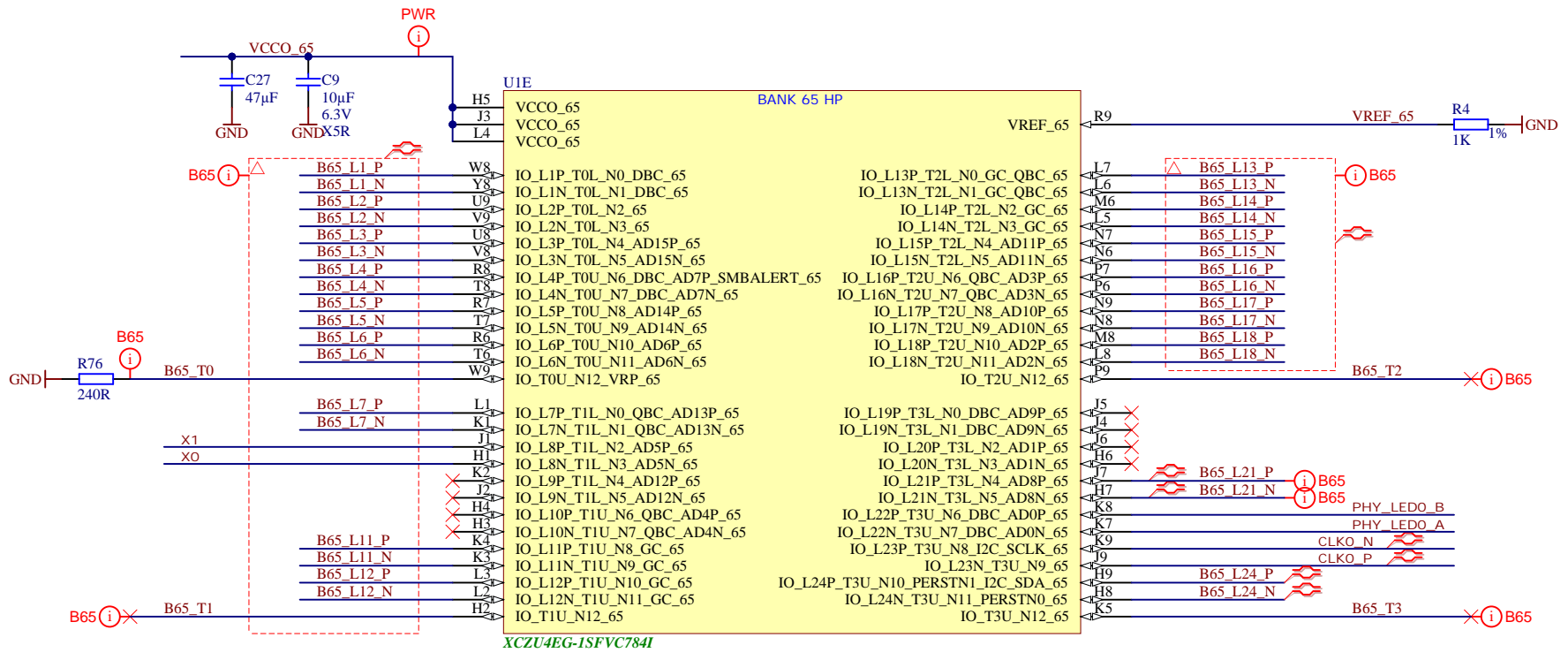
XCZU4EG-1SFVC784I

	Title: TE0820 - HD Banks		
	A4	Number: TE0820 4BI21KL	Rev. 05
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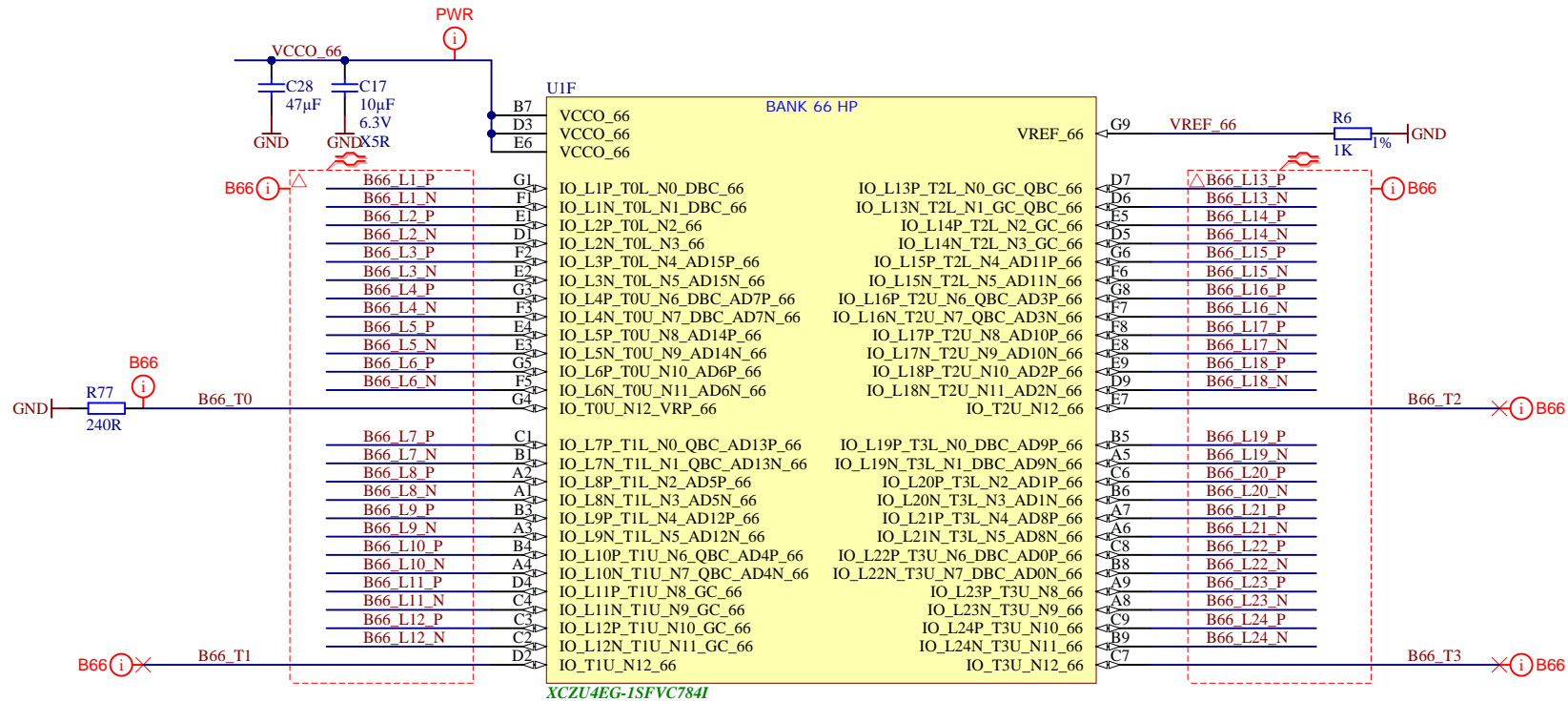




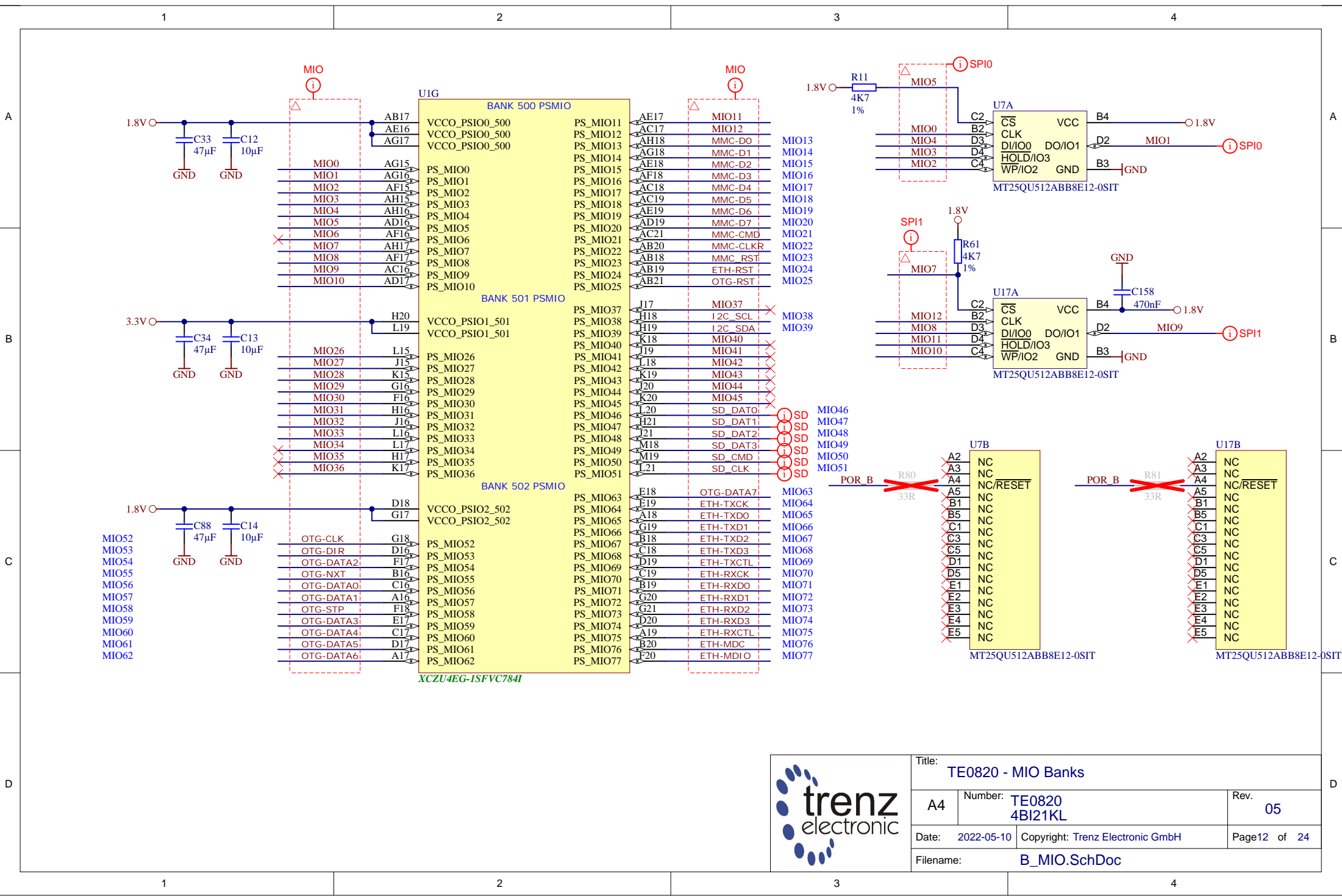
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Date: <b>2022-05-10</b>	Copyright: <b>Trenz Electronic GmbH</b>	Page <b>9</b> of <b>24</b>
Filename: <b>B64.SchDoc</b>		




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A

A

B

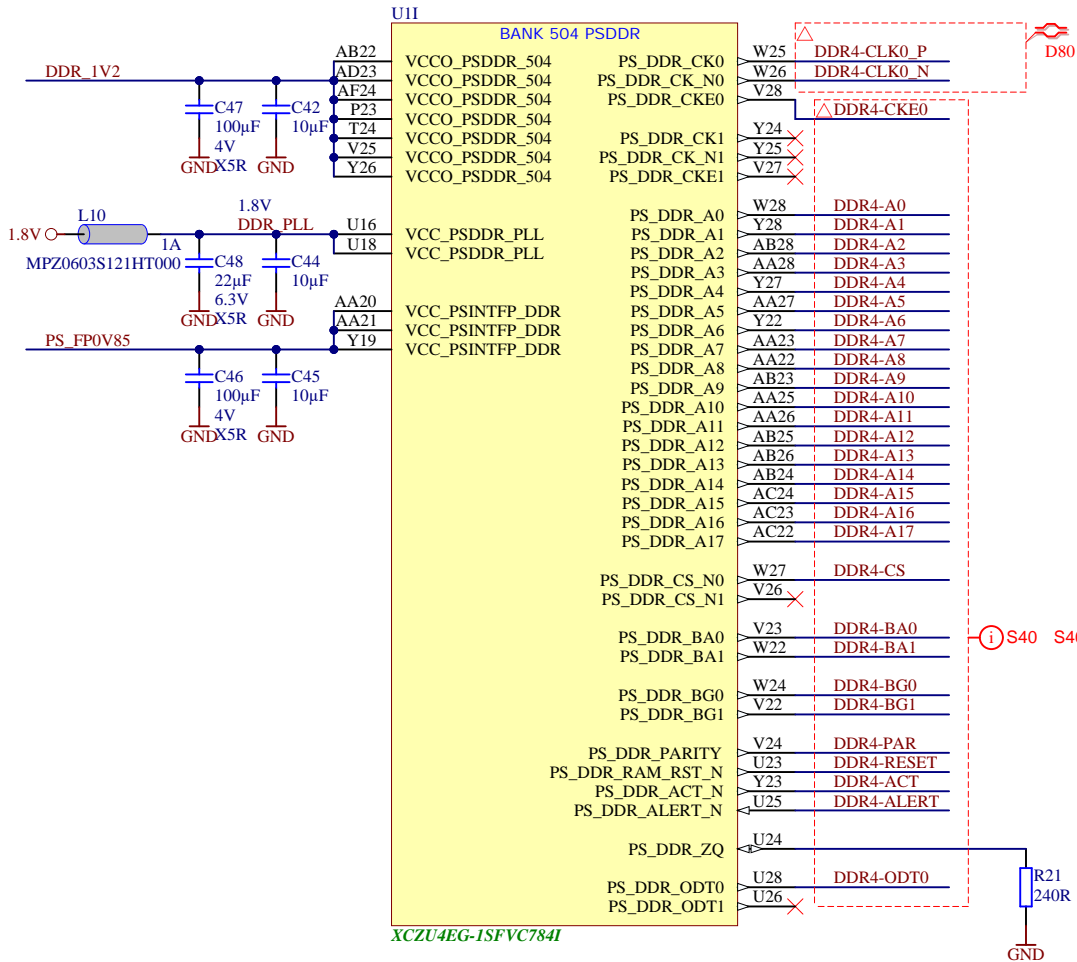
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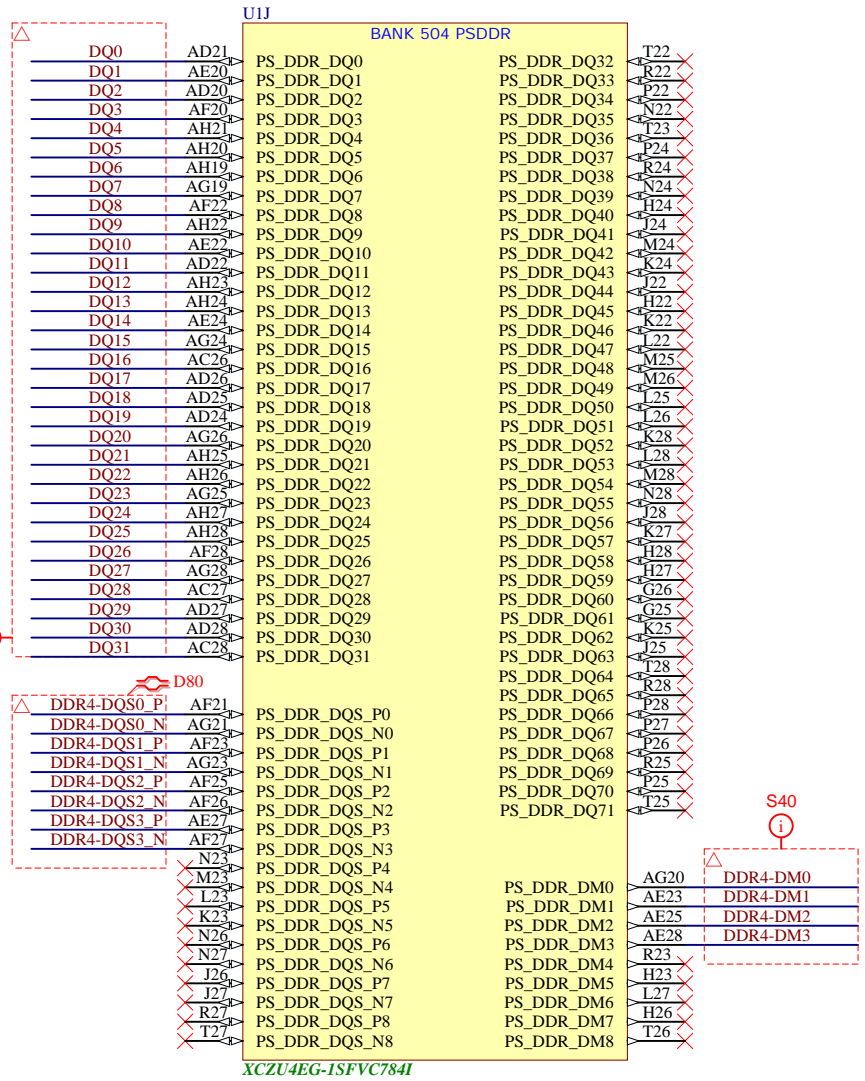
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D

D



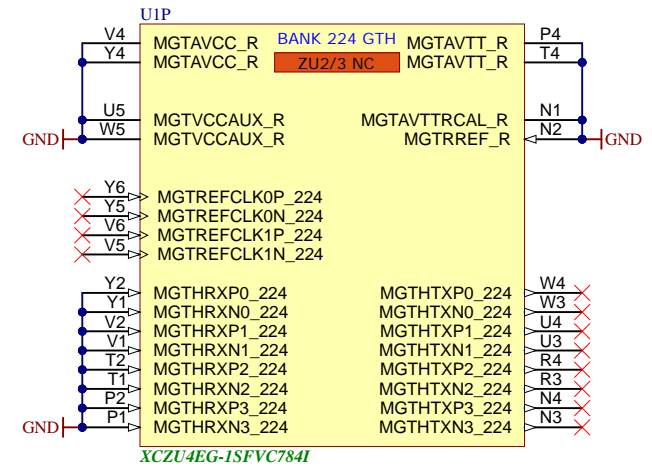
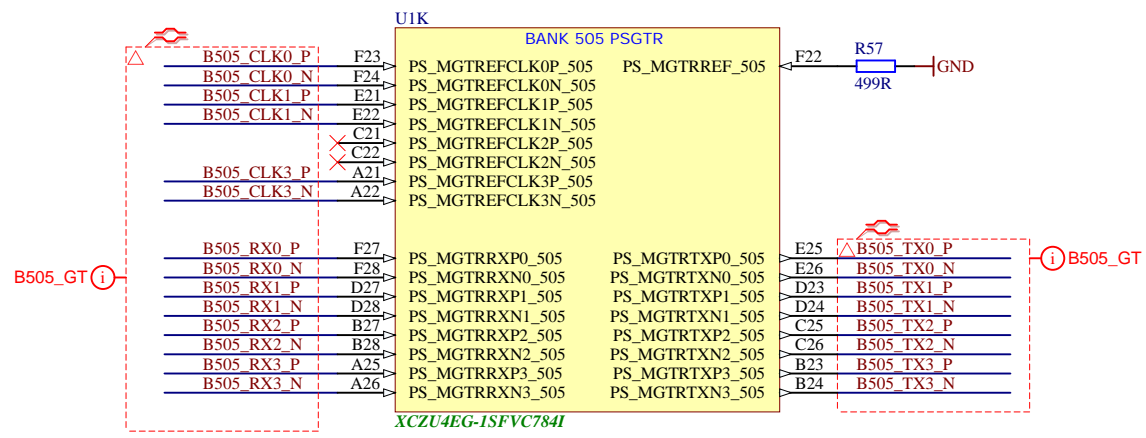
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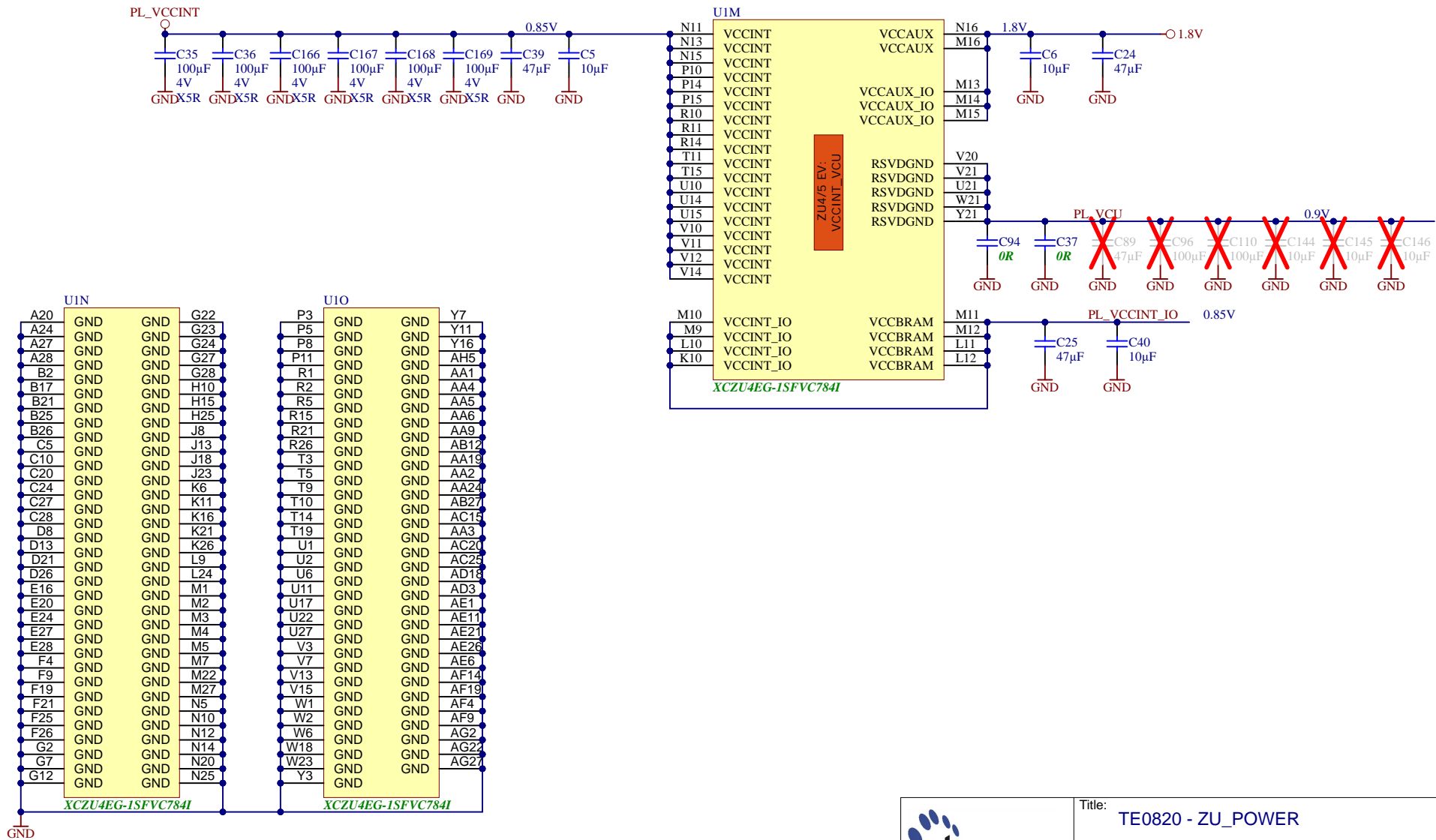
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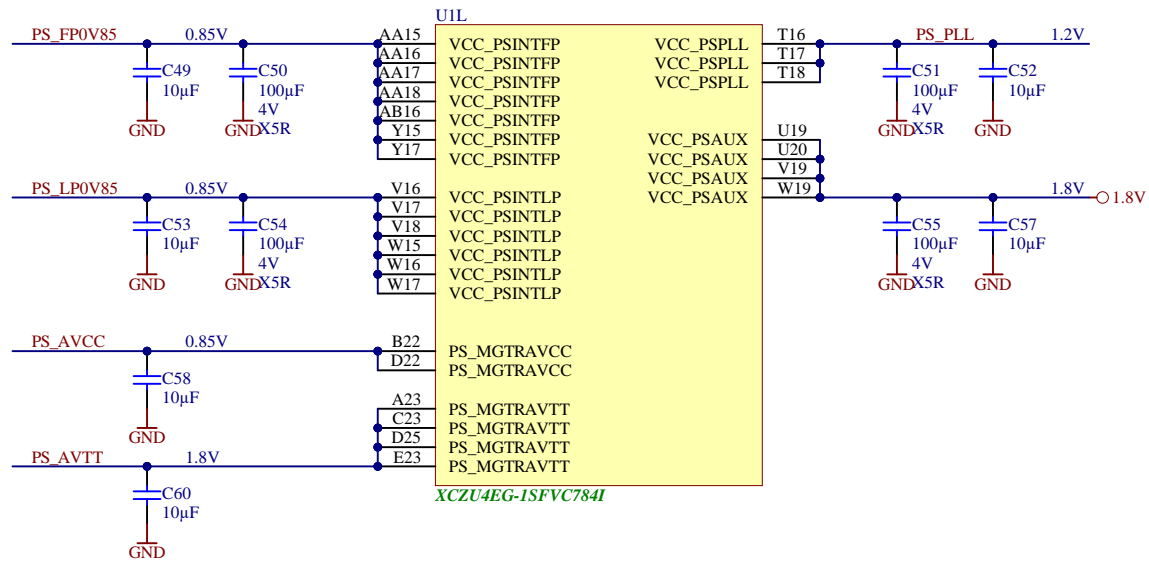
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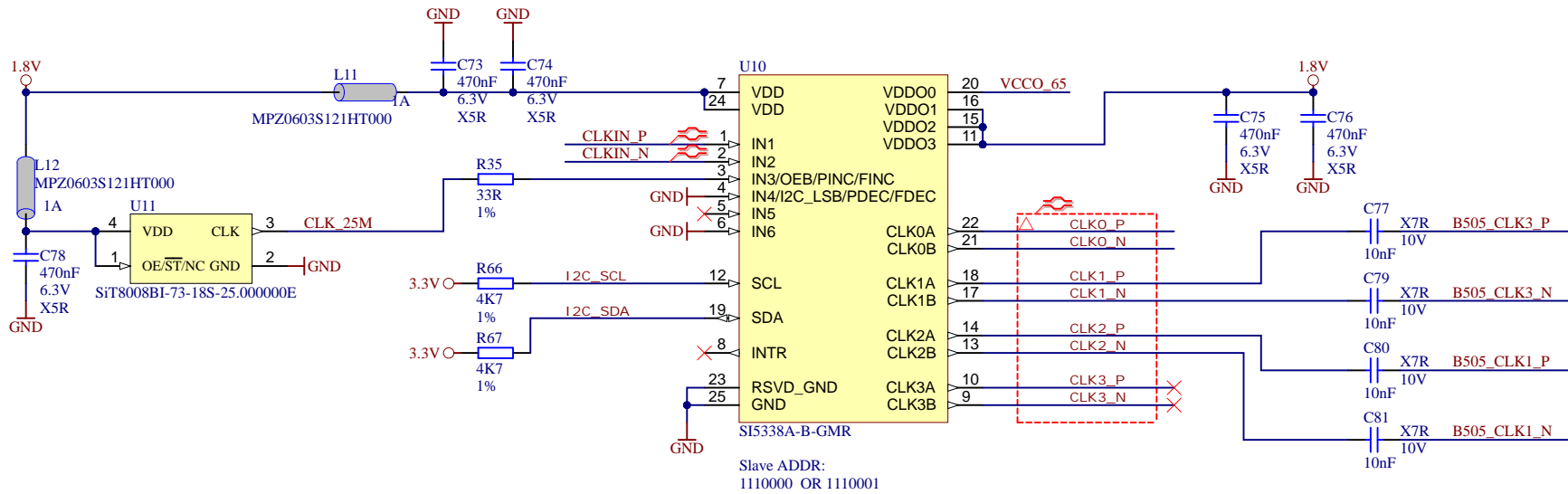



Title: TE0820 - ZU_POWER		
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A

B

C

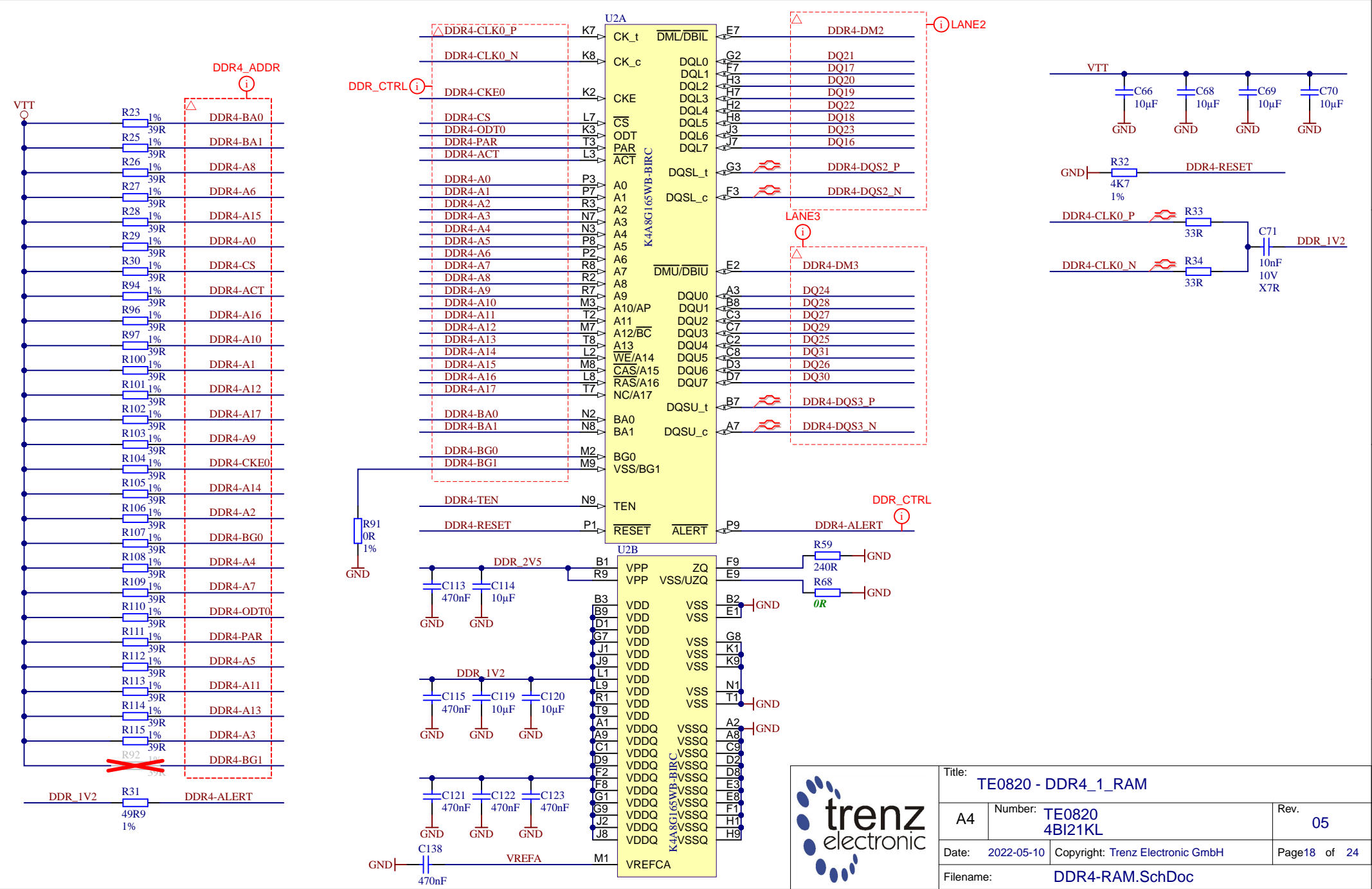
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A

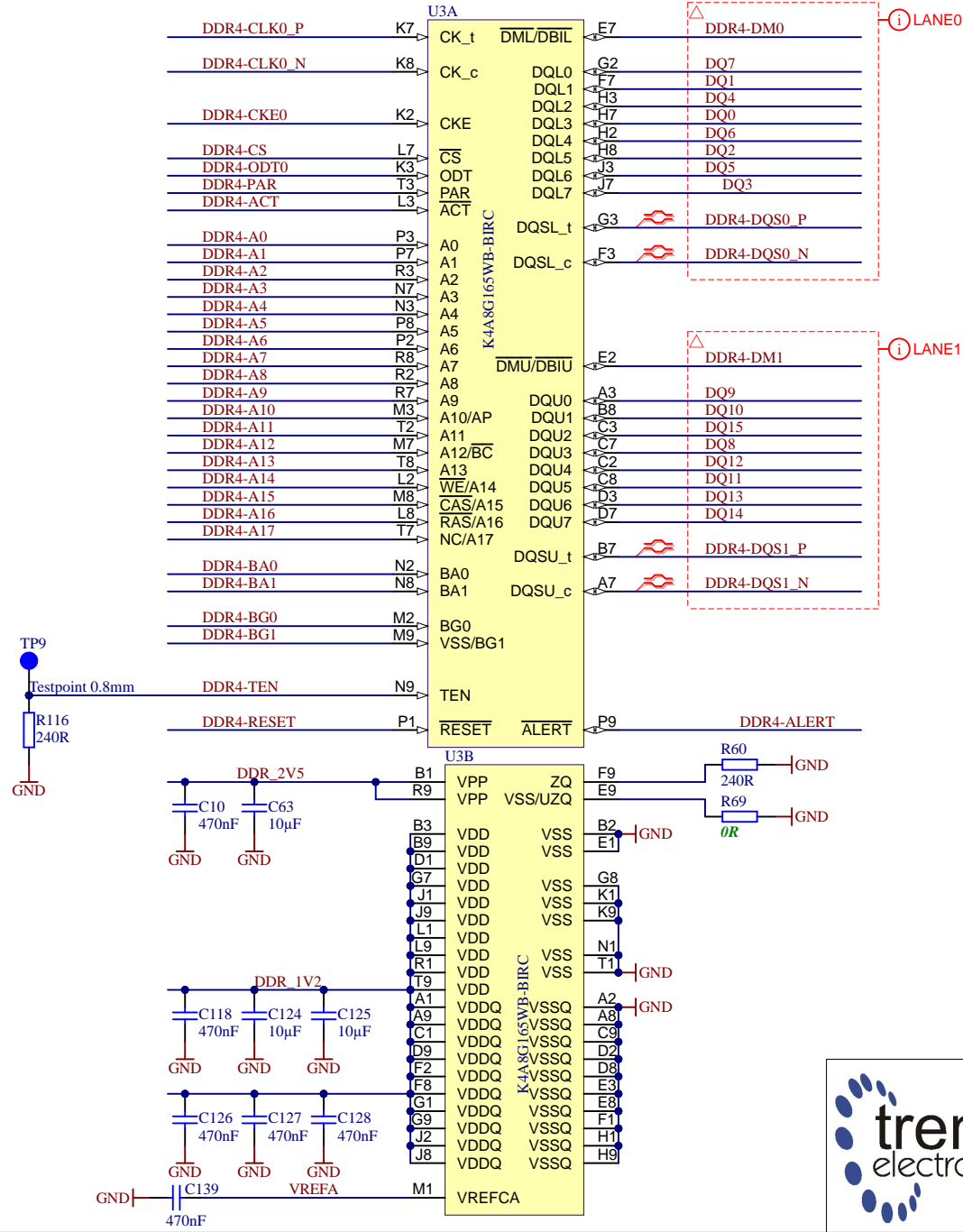
B

C

D



Title: TE0820 - DDR4_1_RAM		
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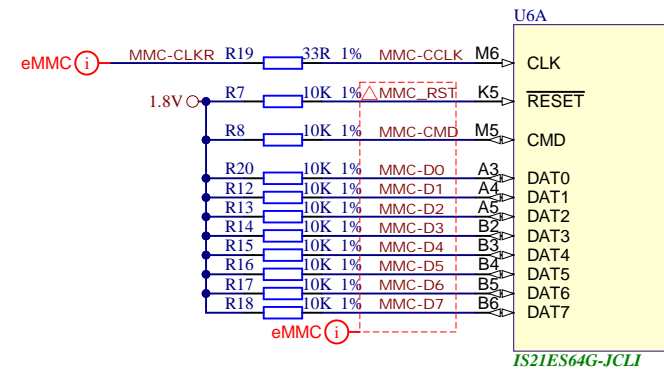


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U6D

A1	NC	NC	H2
A2	NC	NC	H3
A8	NC	NC	H12
A9	NC	NC	H13
A10	NC	NC	H14
A11	NC	NC	J1
A12	NC	NC	J2
A13	NC	NC	J3
A14	NC	NC	J12
B1	NC	NC	J13
B7	NC	NC	J14
B8	NC	NC	K1
B9	NC	NC	K2
B10	NC	NC	K3
B11	NC	NC	K12
B12	NC	NC	K13
B13	NC	NC	K14
B14	NC	NC	L1
C1	NC	NC	L2
C3	NC	NC	L3
C7	NC	NC	L12
C8	NC	NC	L13
C9	NC	NC	L14
C10	NC	NC	M4
C11	NC	NC	M2
C12	NC	NC	M3
C13	NC	NC	M7
C14	NC	NC	M8
D1	NC	NC	M9
D2	NC	NC	M10
D3	NC	NC	M11
D4	NC	NC	M12
D12	NC	NC	M13
D13	NC	NC	M14
D14	NC	NC	N1
E1	NC	NC	N3
E2	NC	NC	N6
E3	NC	NC	N7
E12	NC	NC	N8
E13	NC	NC	N9
E14	NC	NC	N10
F1	NC	NC	N11
F2	NC	NC	N12
F3	NC	NC	N13
F12	NC	NC	N14
F13	NC	NC	P1
F14	NC	NC	P2
G1	NC	NC	P8
G2	NC	NC	P9
G12	NC	NC	P11
G13	NC	NC	P12
G14	NC	NC	P13
H1	NC	NC	P14

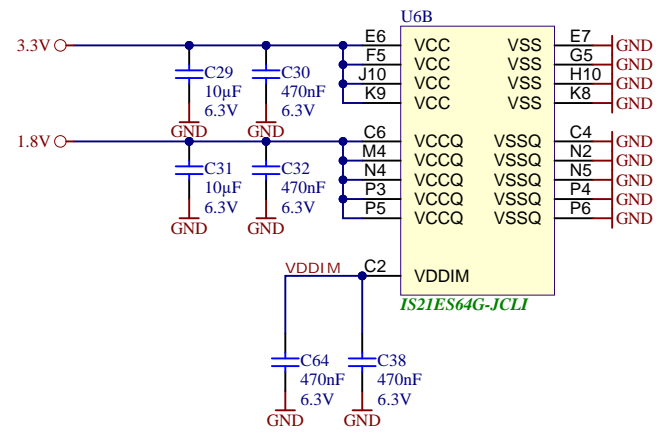
IS21ES64G-JCLI



U6C

A6	RFU/VSS
A7	RFU
C5	RFU/NC
E5	RFU
E8	RFU
E9	RFU
E10	RFU
F10	RFU
G3	RFU/NC
G10	RFU
H5	RFU/DS
J5	RFU/VSS
K6	RFU
K7	RFU
K10	RFU
P7	RFU/NC
P10	RFU

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1

2

3

4

A

A

B

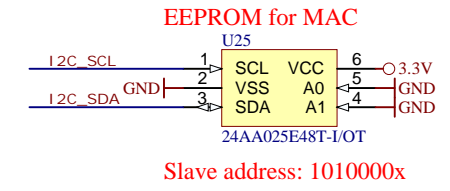
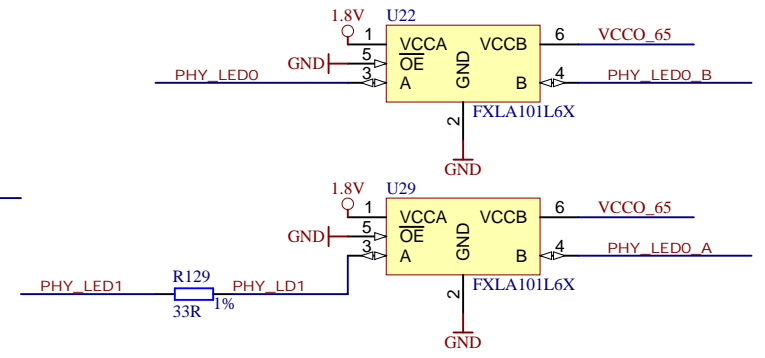
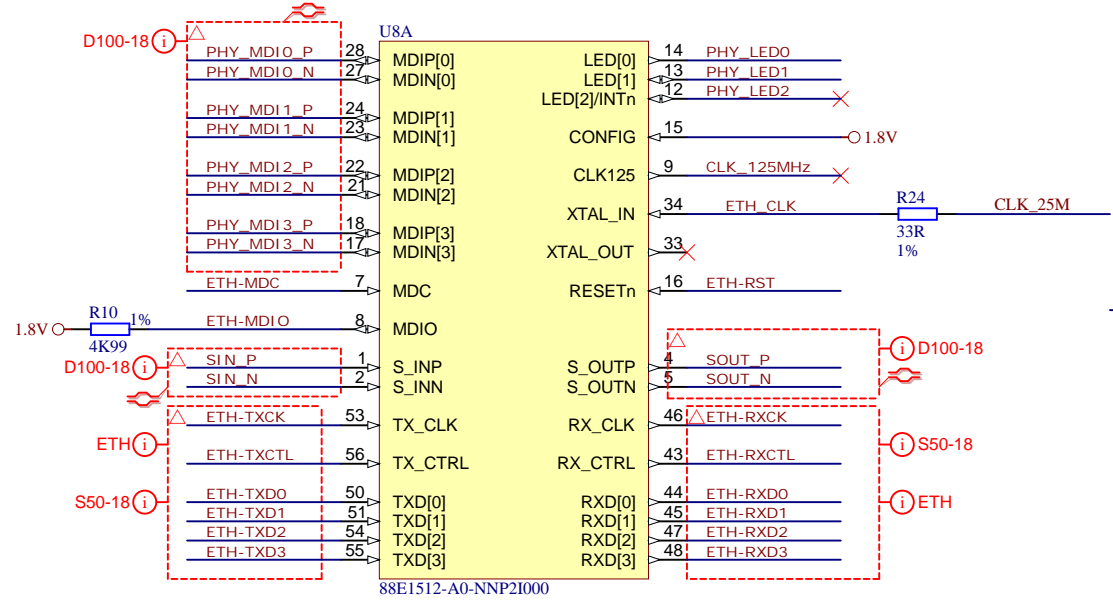
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C

C

D

D



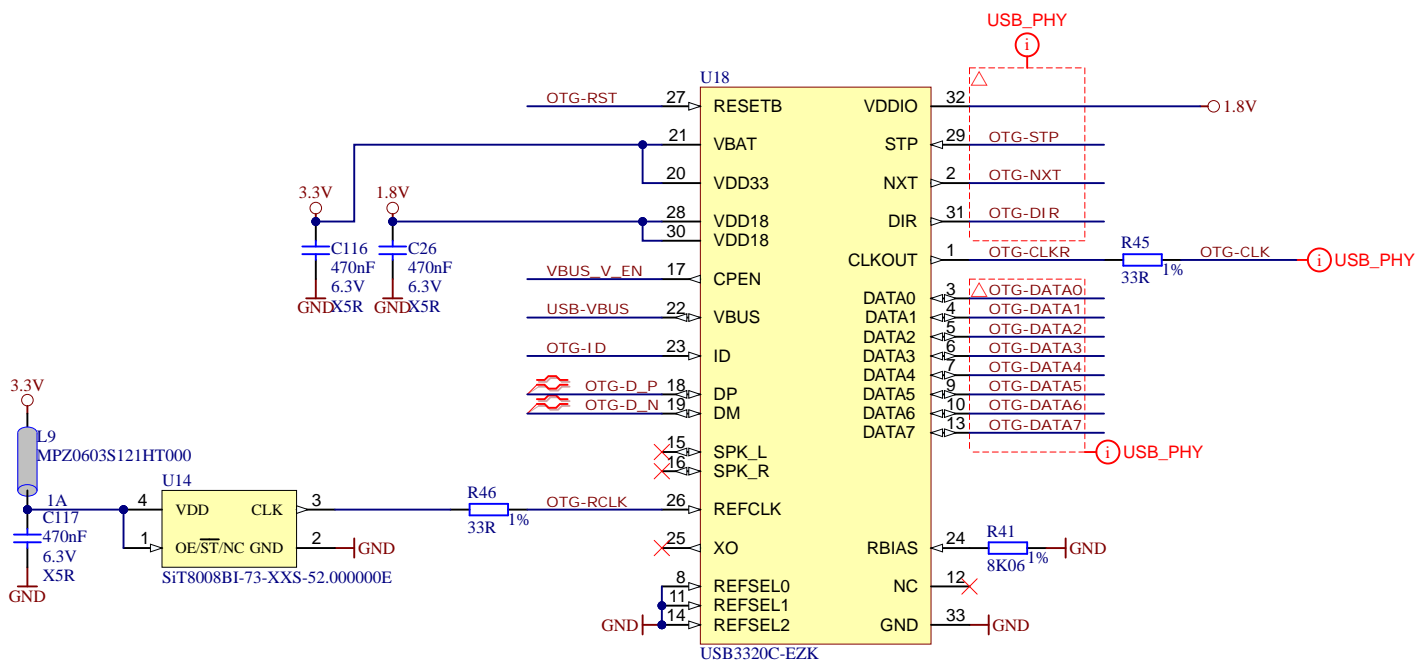
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1

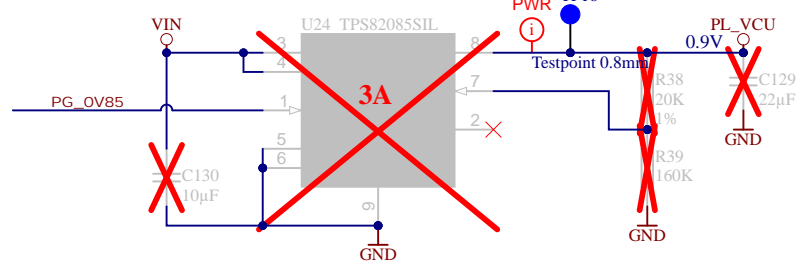
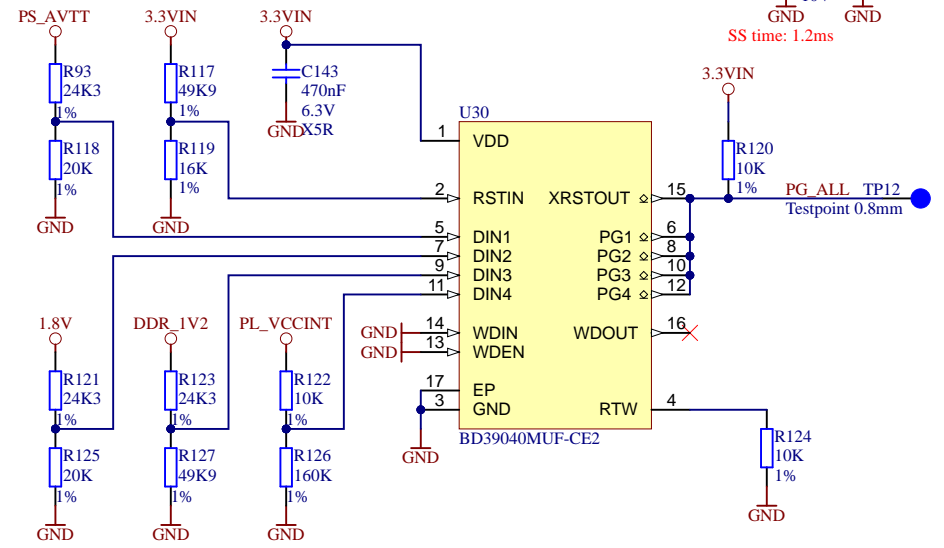
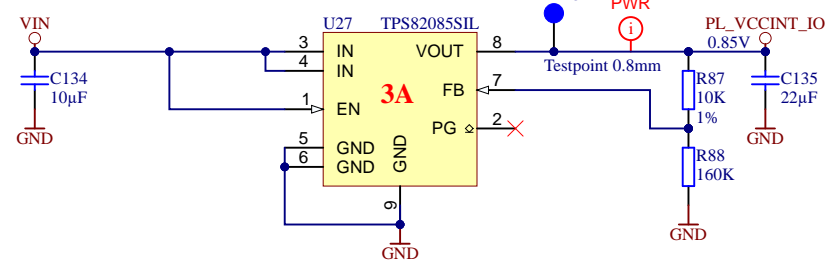
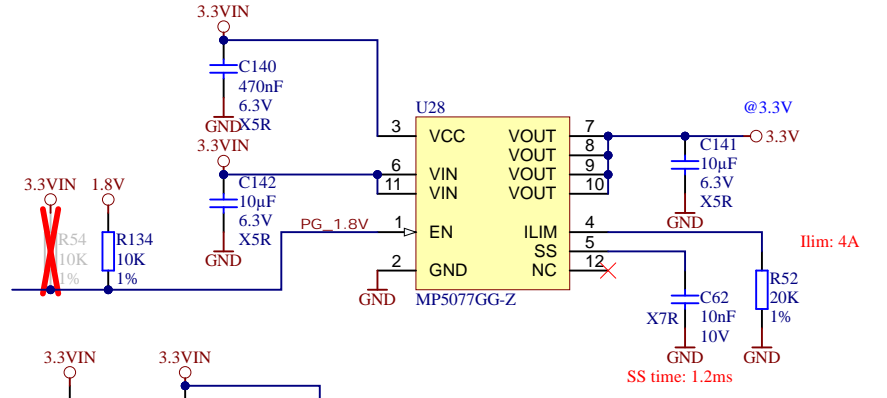
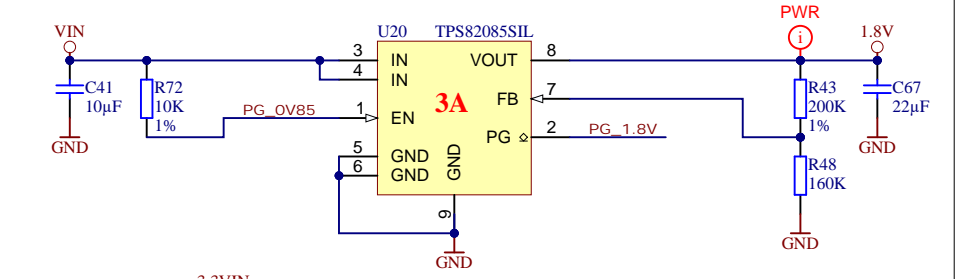
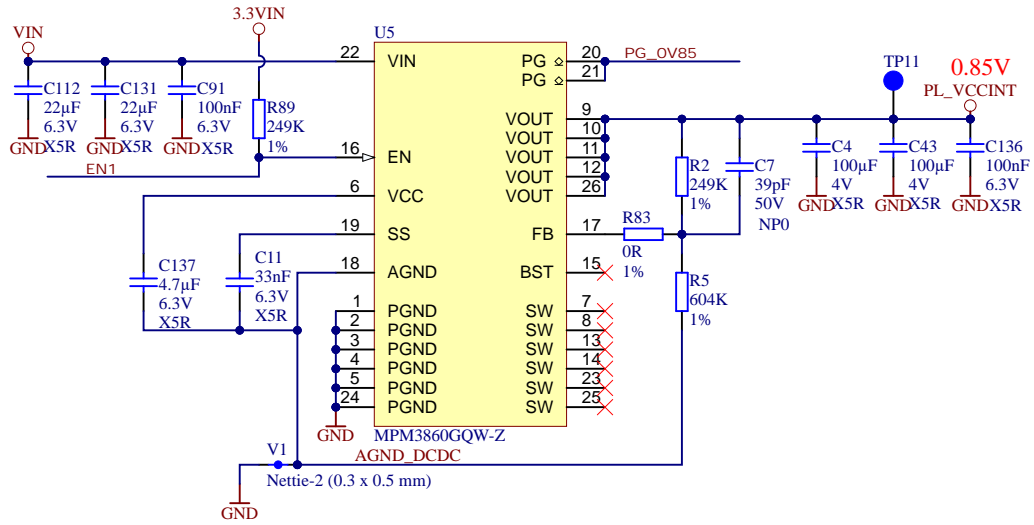
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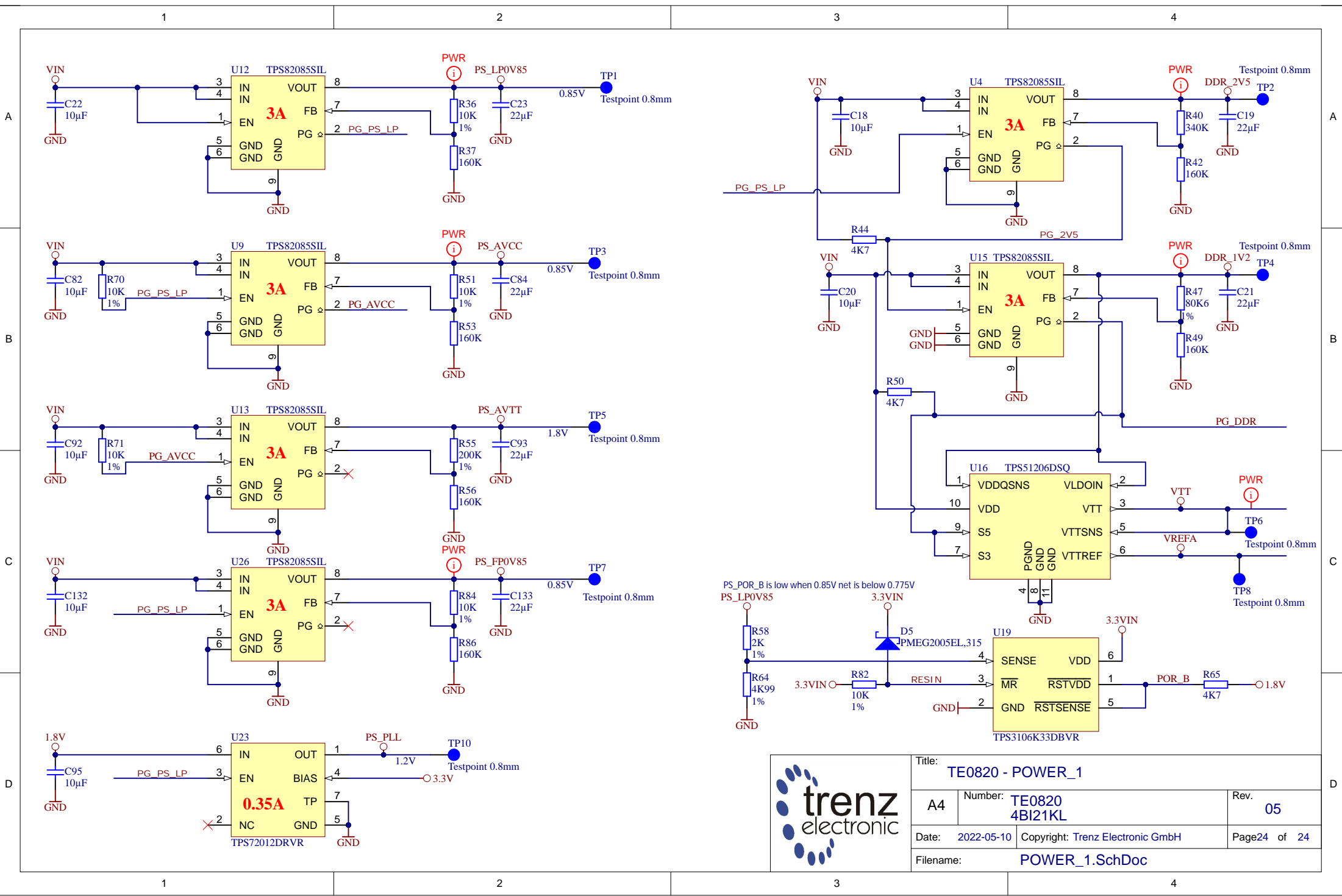
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