

A

B

C

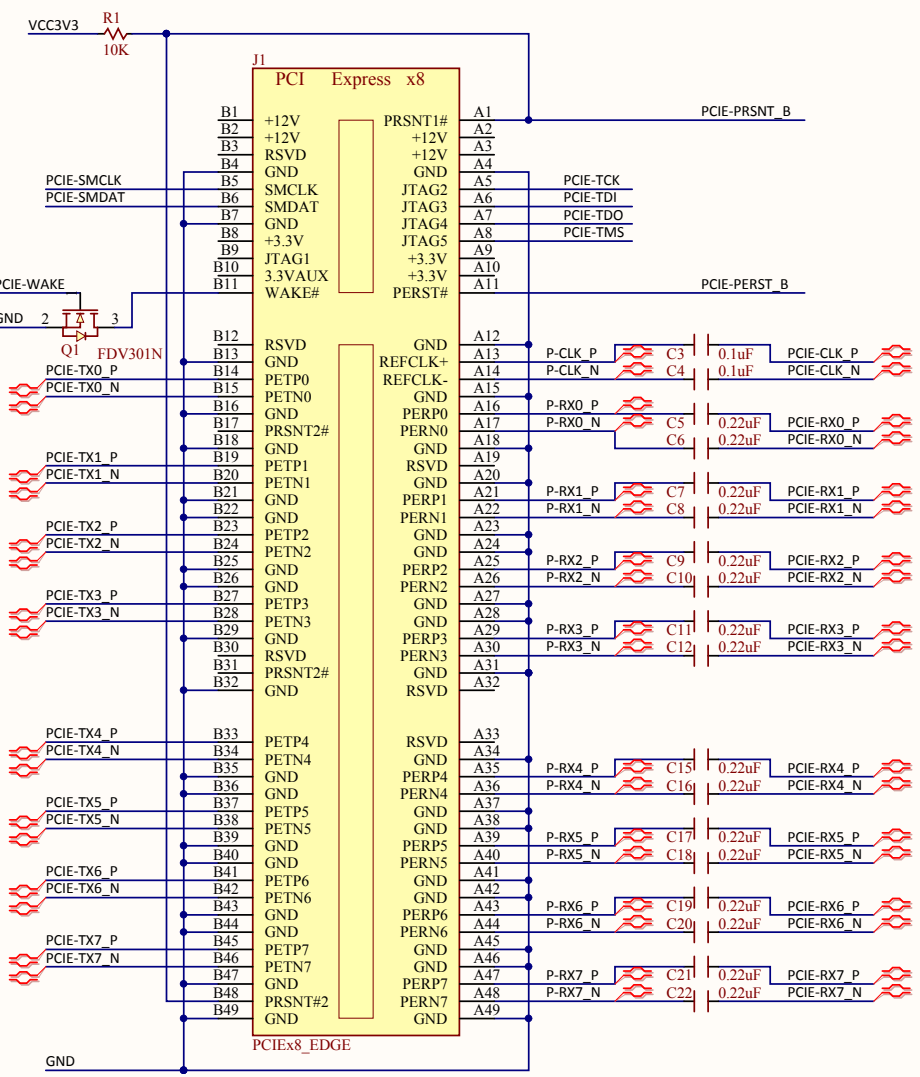
D

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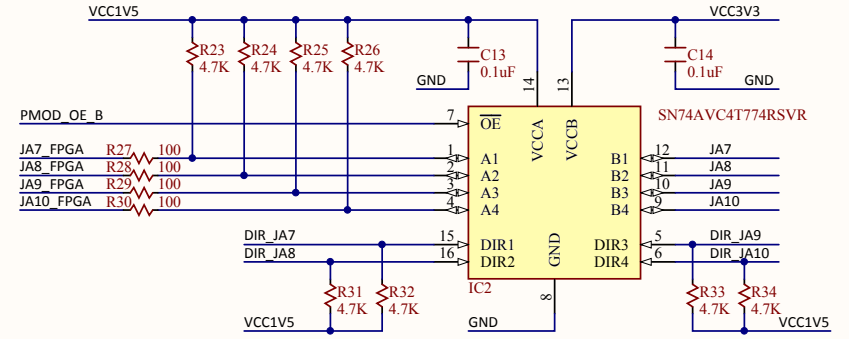
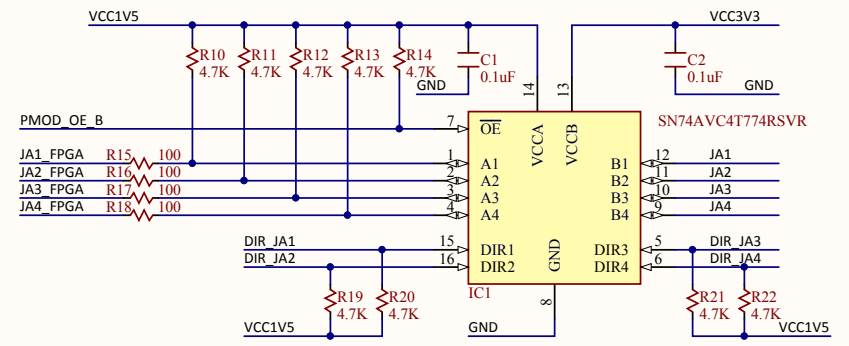
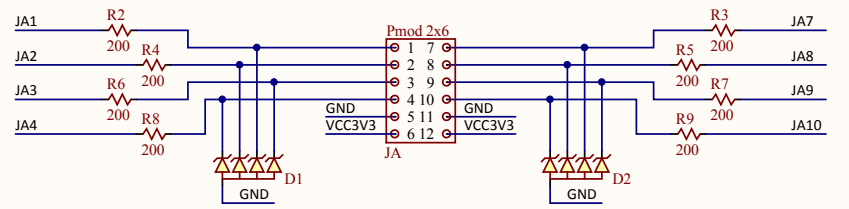
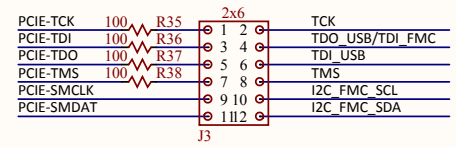
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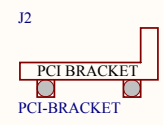
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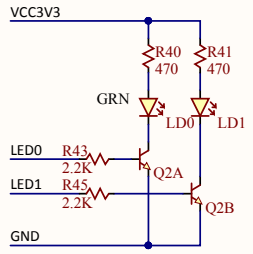
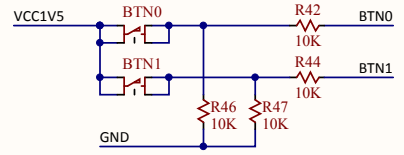
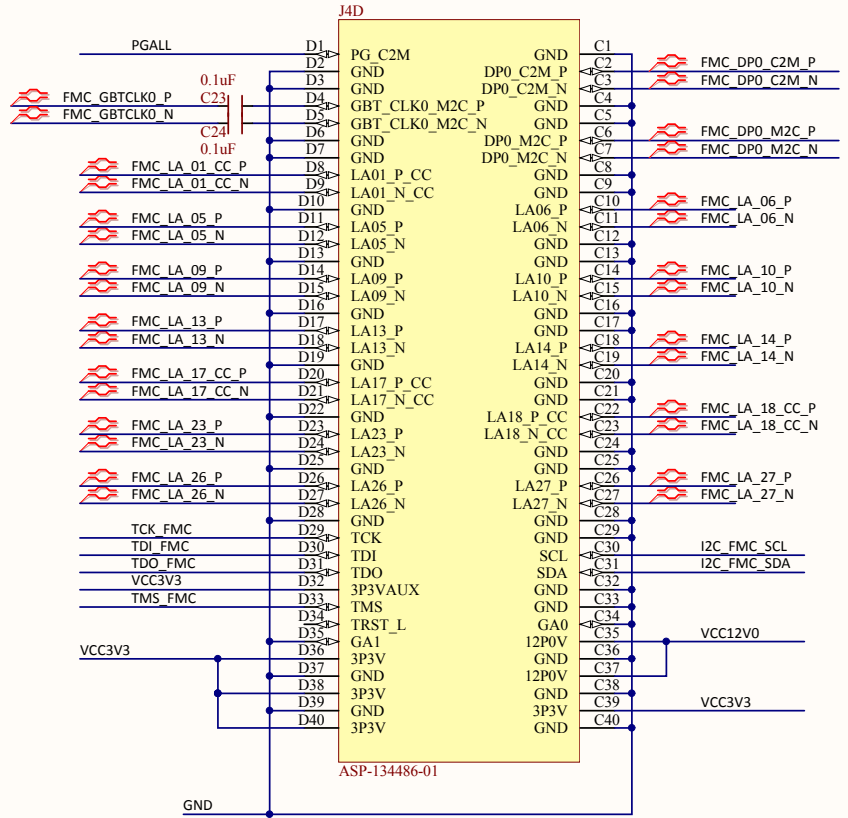
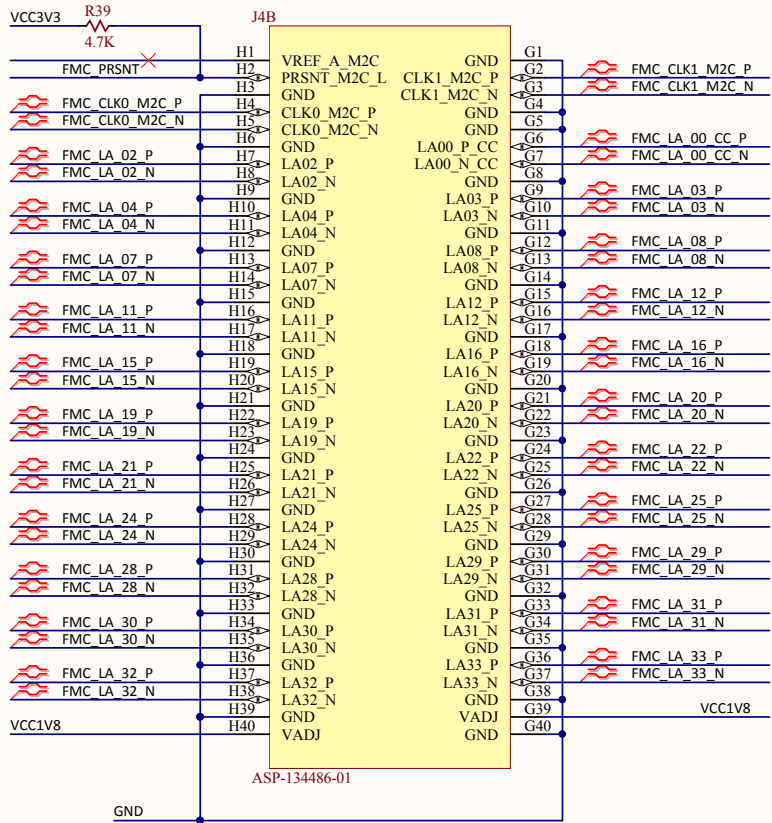
PCIe JTAG and I2C Jumper Block



- Stanford
- Cambridge
- Digilent Inc.
- CE
- ROHS
- Chinese ROHS
- Xilinx
- Linear Tech
- NSF
- EPSRC
- Micron
- Cypress
- NetFPGA



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| Title         |              | Rev            |  |
| NetFPGA-SUME  |              | C.0            |  |
| Circuit       |              | Copyright 2014 |  |
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| Doc#          | 500-301.     |                |  |
| Engineer      | MTA          |                |  |
| Author        | GMA          |                |  |
| Date          | 9/16/2014    |                |  |
| Sheet#        | 01 out of 29 |                |  |



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| Title               |              | Rev            |  |
| NetFPGA-SUME        |              | C.0            |  |
| Circuit             |              | Copyright 2014 |  |
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| Doc#                | 500-301.     |                |  |
| Engineer            | MTA          |                |  |
| Author              | GMA          |                |  |
| Date                | 9/16/2014    |                |  |
| Sheet#              | 02 out of 29 |                |  |

A

B

C

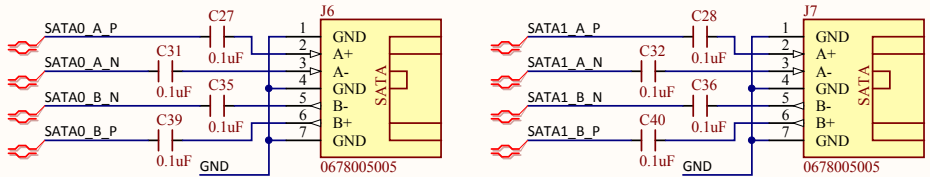
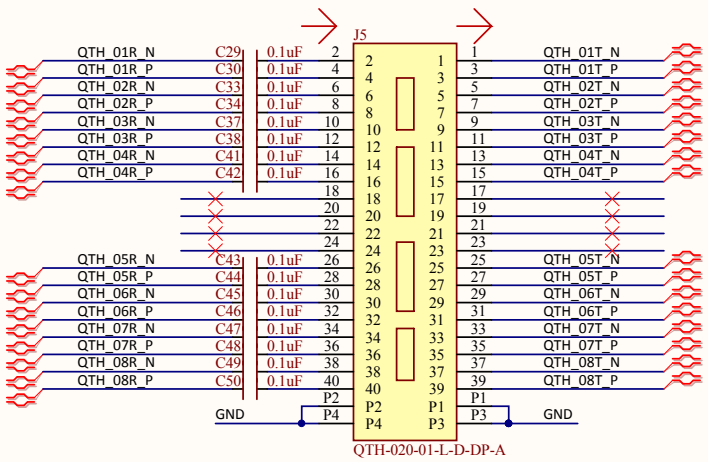
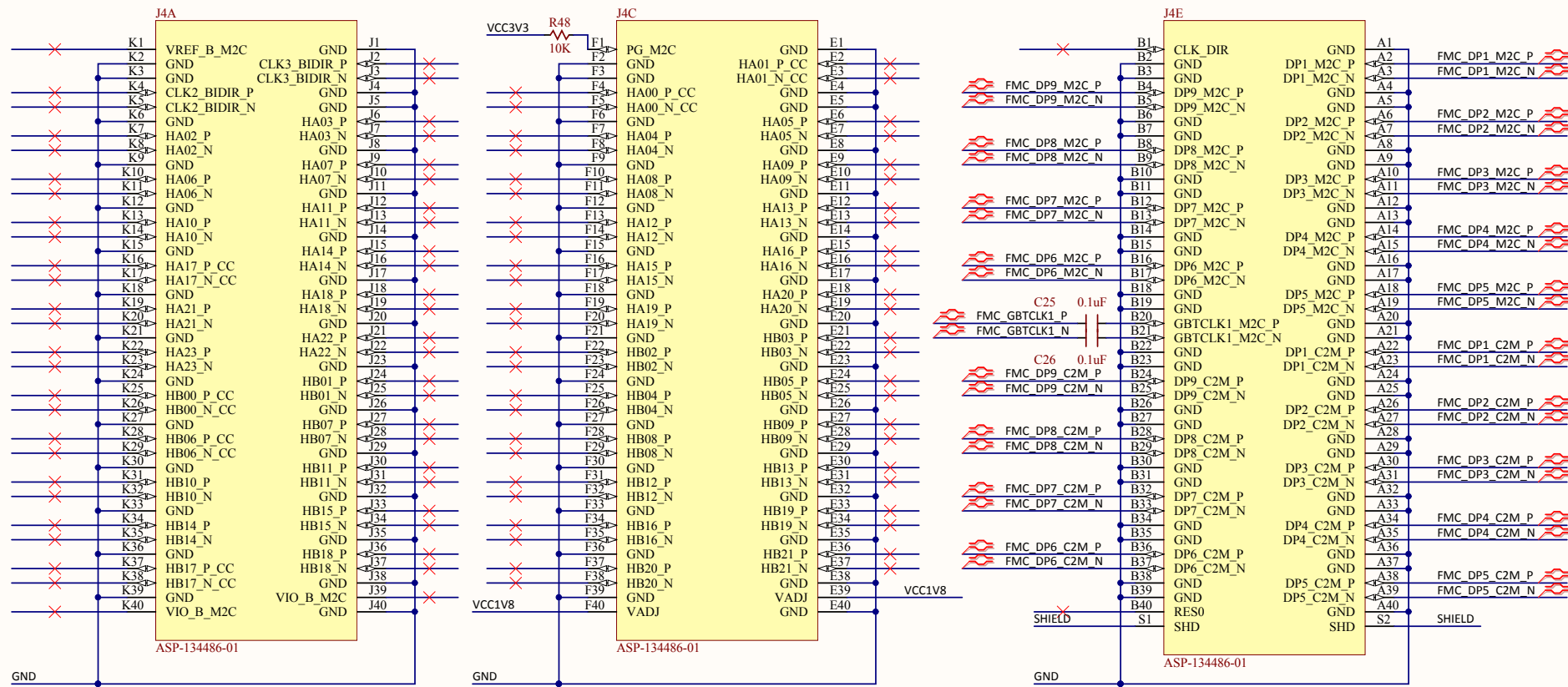
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A

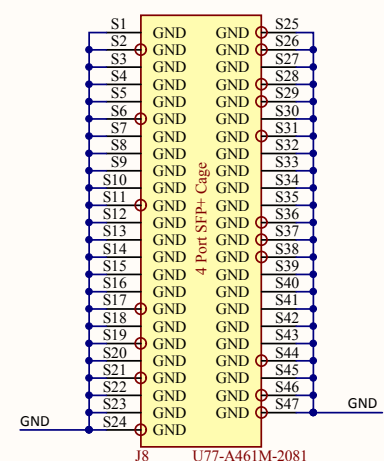
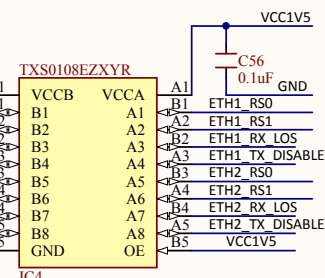
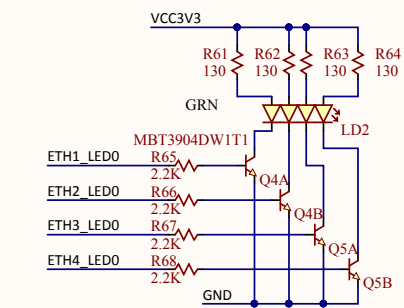
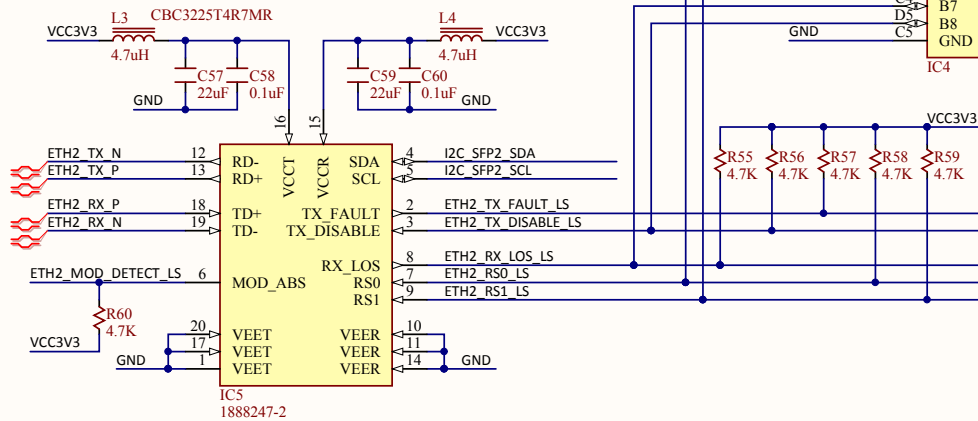
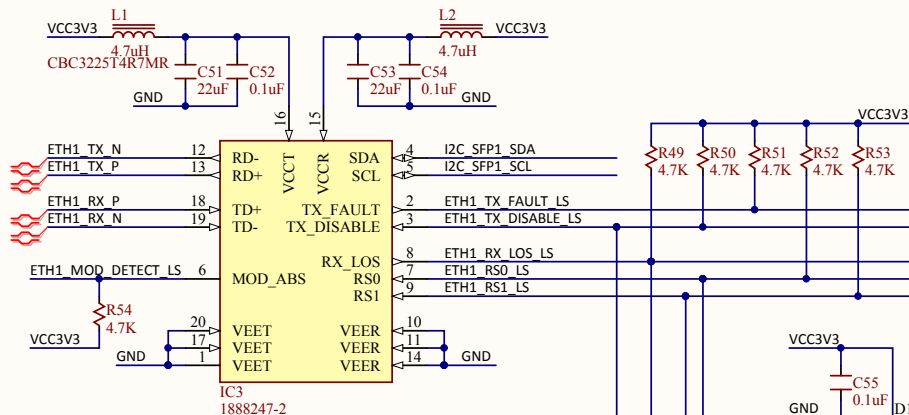
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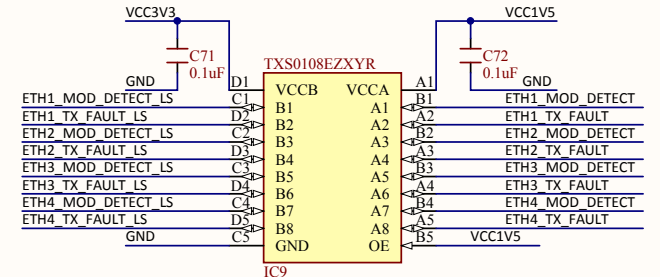
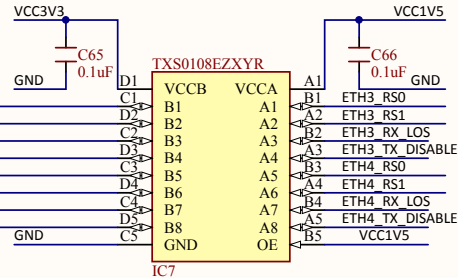
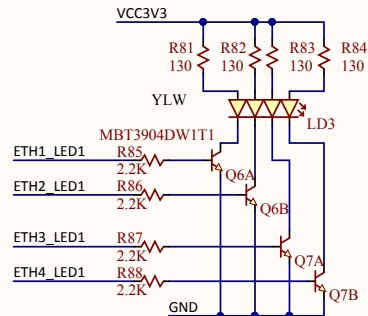
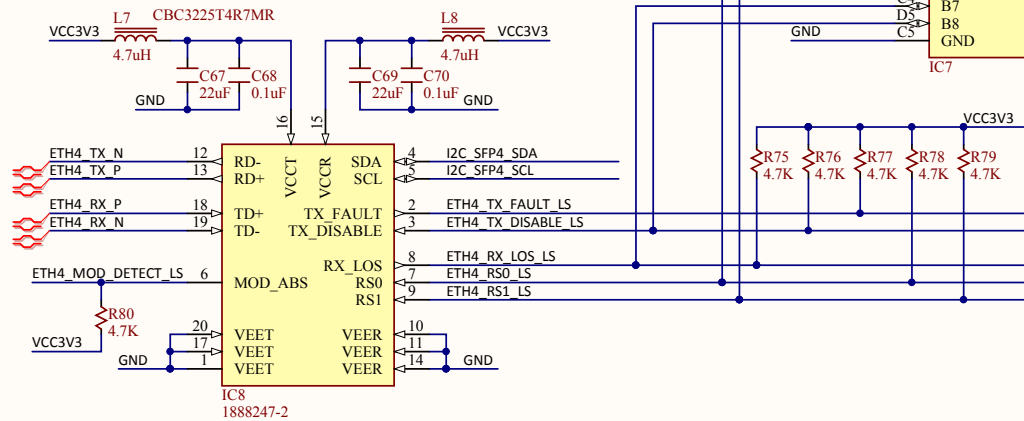
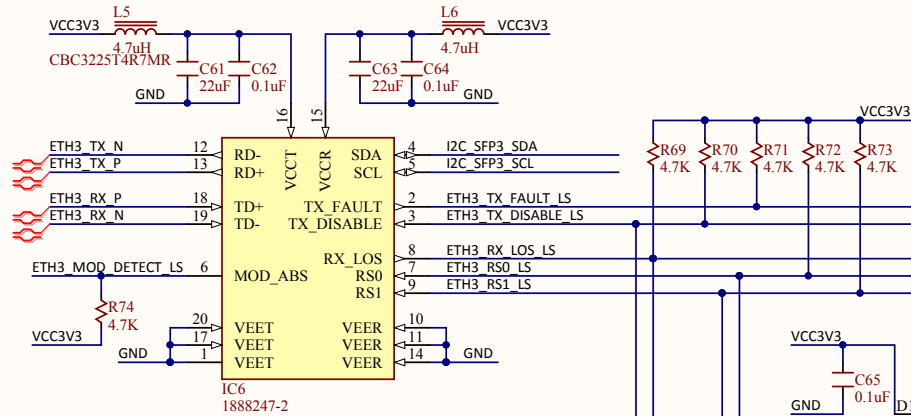
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| Title                   |              | Rev            |  |
| NetFPGA-SUME            |              | C.0            |  |
| Circuit                 |              | Copyright 2014 |  |
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| Doc#                    | 500-301.     |                |  |
| Engineer                | MTA          |                |  |
| Author                  | GMA          |                |  |
| Date                    | 9/16/2014    |                |  |
| Sheet#                  | 03 out of 29 |                |  |




|                         |              |                |
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| <h1>NetFPGA-SUME</h1>   |              | <h1>C.0</h1>   |
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| Ethernet/SFP Connectors |              |                |
| Doc#                    | 500-301.     |                |
| Engineer                | MTA          |                |
| Author                  | GMA          |                |
| Date                    | 9/16/2014    |                |
| Sheet#                  | 04 out of 29 |                |



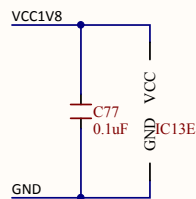
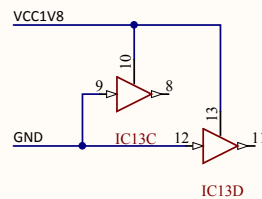
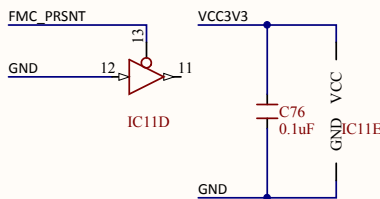
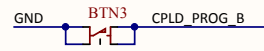
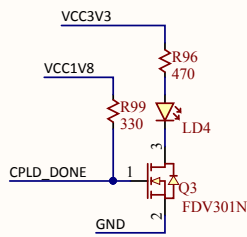
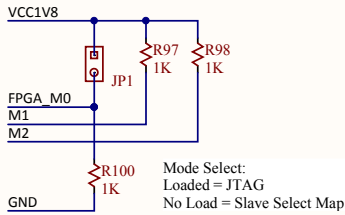
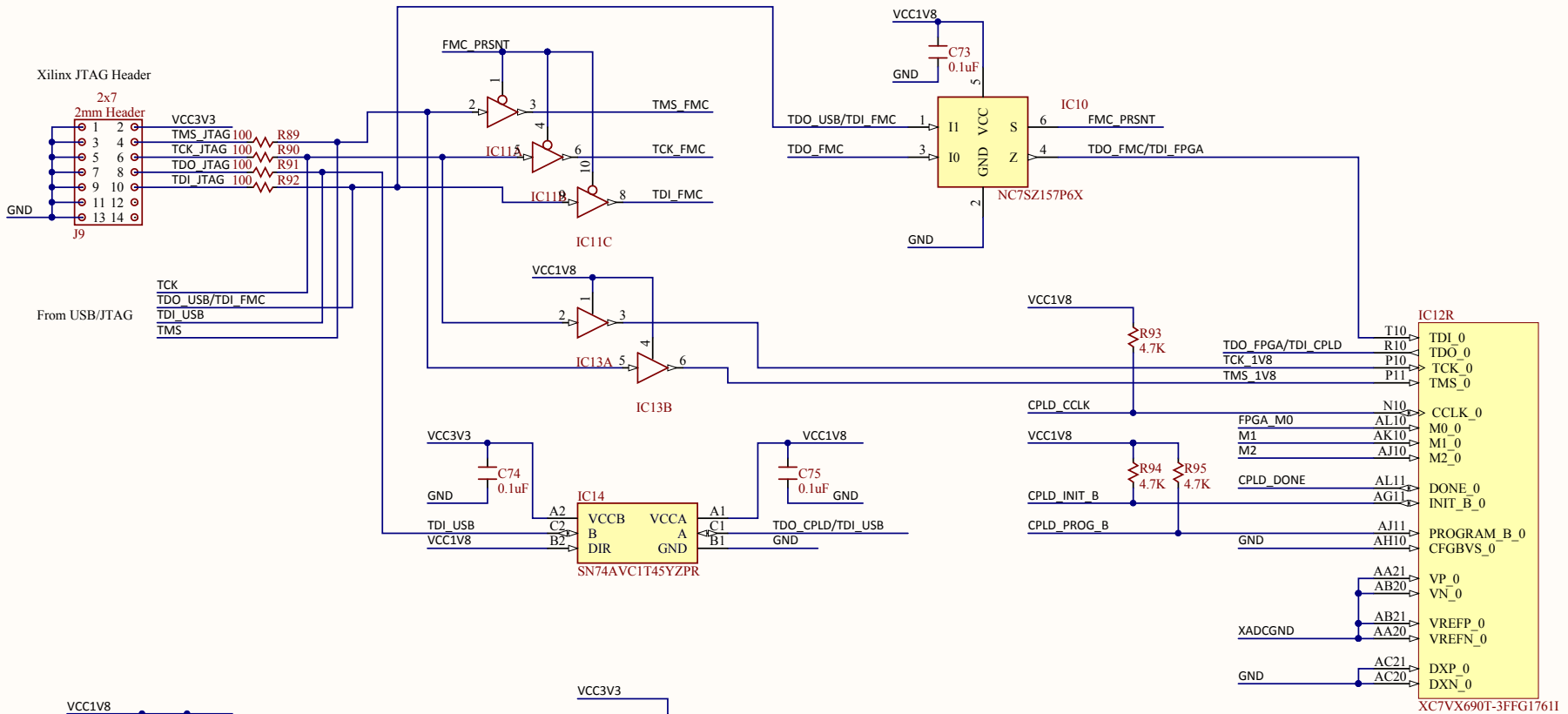
**DIGILENT**  
BEYOND THEORY



|                         |              |                |
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| Ethernet/SFP Connectors |              |                |
| Doc#                    | 500-301.     |                |
| Engineer                | MTA          |                |
| Author                  | GMA          |                |
| Date                    | 9/16/2014    |                |
| Sheet#                  | 05 out of 29 |                |



**DIGILENT**  
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|---------------------|--|----------------|
| Title               |  | Rev            |
| NetFPGA-SUME        |  | C.0            |
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| Circuit             |  |                |
| FPGA Configuration  |  |                |
| Doc# 500-301.       |  |                |
| Engineer MTA        |  |                |
| Author GMA          |  |                |
| Date 9/16/2014      |  |                |
| Sheet# 06 out of 29 |  |                |





| IC12A              |                    | 100 R107 1%, 1/10W |                | VCC1V8 |  |
|--------------------|--------------------|--------------------|----------------|--------|--|
| BANK 12            | IO_0_VRN_12        | AN29               | FMC_LA_07_P    |        |  |
|                    | IO_L1P_T0_12       | AY27               | FMC_LA_07_N    |        |  |
|                    | IO_L1N_T0_12       | AY28               | FMC_LA_07_N    |        |  |
|                    | IO_L2P_T0_12       | AU29               | FMC_LA_12_P    |        |  |
|                    | IO_L2N_T0_12       | AV29               | FMC_LA_12_N    |        |  |
|                    | IO_L3P_T0_DQS_12   | BA26               | FMC_LA_06_P    |        |  |
|                    | IO_L3N_T0_DQS_12   | BA27               | FMC_LA_06_N    |        |  |
|                    | IO_L4P_T0_12       | BB28               | FMC_LA_04_P    |        |  |
|                    | IO_L4N_T0_12       | BB29               | FMC_LA_04_N    |        |  |
|                    | IO_L5P_T0_12       | BB26               | FMC_LA_03_P    |        |  |
|                    | IO_L5N_T0_12       | BB27               | FMC_LA_03_N    |        |  |
|                    | IO_L6P_T0_12       | AY29               | SD_D0          |        |  |
|                    | IO_L6N_T0_VREF_12  | BA29               | SFP_CLK_RST    |        |  |
|                    | IO_L7P_T1_12       | AW25               | FMC_LA_10_P    |        |  |
|                    | IO_L7N_T1_12       | AW26               | FMC_LA_10_N    |        |  |
|                    | IO_L8P_T1_12       | AR29               | FMC_LA_02_P    |        |  |
|                    | IO_L8N_T1_12       | AT29               | FMC_LA_02_N    |        |  |
|                    | IO_L9P_T1_DQS_12   | AV25               | FMC_LA_05_P    |        |  |
|                    | IO_L9N_T1_DQS_12   | AV26               | FMC_LA_05_N    |        |  |
|                    | IO_L10P_T1_12      | AW27               | FMC_LA_13_P    |        |  |
|                    | IO_L10N_T1_12      | AW28               | FMC_LA_13_N    |        |  |
|                    | IO_L11P_T1_SRCC_12 | AU28               | FMC_LA_00_CC_P |        |  |
|                    | IO_L11N_T1_SRCC_12 | AV28               | FMC_LA_00_CC_N |        |  |
|                    | IO_L12P_T1_MRCC_12 | AU26               | USERCLK_P      |        |  |
|                    | IO_L12N_T1_MRCC_12 | AU27               | USERCLK_N      |        |  |
| IO_L13P_T2_MRCC_12 | AR27               | FMC_CLK0_M2C_P     |                |        |  |
| IO_L13N_T2_MRCC_12 | AT27               | FMC_CLK0_M2C_N     |                |        |  |
| IO_L14P_T2_SRCC_12 | AP27               | FMC_LA_01_CC_P     |                |        |  |
| IO_L14N_T2_SRCC_12 | AR28               | FMC_LA_01_CC_N     |                |        |  |
| IO_L15P_T2_DQS_12  | AN28               | FMC_LA_08_P        |                |        |  |
| IO_L15N_T2_DQS_12  | AP28               | FMC_LA_08_N        |                |        |  |
| IO_L16P_T2_12      | AT25               | FMC_LA_11_P        |                |        |  |
| IO_L16N_T2_12      | AT26               | FMC_LA_11_N        |                |        |  |
| IO_L17P_T2_12      | AP25               | FMC_LA_09_P        |                |        |  |
| IO_L17N_T2_12      | AR25               | FMC_LA_09_N        |                |        |  |
| IO_L18P_T2_12      | AN25               | FMC_LA_14_P        |                |        |  |
| IO_L18N_T2_12      | AN26               | FMC_LA_14_N        |                |        |  |
| IO_L19P_T3_12      | AM28               | SD_D1              |                |        |  |
| IO_L19N_T3_VREF_12 | AM29               | SFP_CLK_ALARM_B    |                |        |  |
| IO_L20P_T3_12      | AK27               | FMC_LA_16_P        |                |        |  |
| IO_L20N_T3_12      | AL27               | FMC_LA_16_N        |                |        |  |
| IO_L21P_T3_DQS_12  | AM26               | FMC_LA_15_P        |                |        |  |
| IO_L21N_T3_DQS_12  | AM27               | FMC_LA_15_N        |                |        |  |
| IO_L22P_T3_12      | AK24               | I2C_FPGA_SCL       |                |        |  |
| IO_L22N_T3_12      | AK25               | I2C_FPGA_SDA       |                |        |  |
| IO_L23P_T3_12      | AL25               | SD_D2              |                |        |  |
| IO_L23N_T3_12      | AL26               | SD_D3              |                |        |  |
| IO_L24P_T3_12      | AL25               | SD_CCLK            |                |        |  |
| IO_L24N_T3_12      | AL26               | SD_CMD             |                |        |  |
| IO_25_VRP_12       | AP26               |                    |                |        |  |

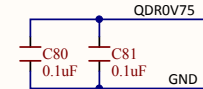
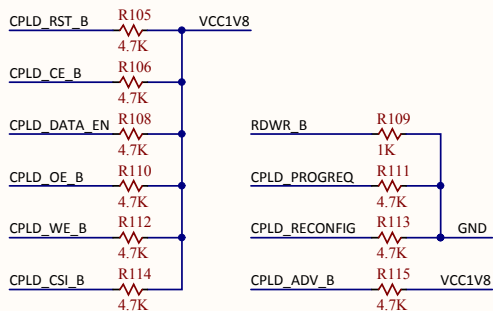
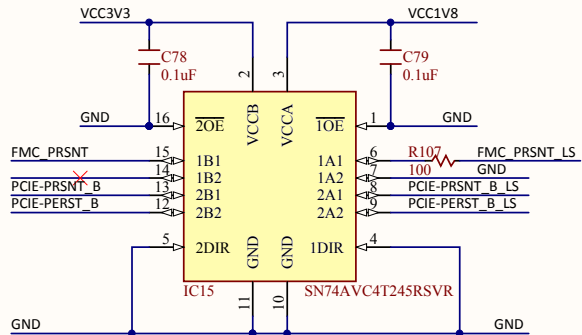
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|--------------------|--------------------|--------------------|-----------------|--------|--|
| BANK 13            | IO_0_VRN_13        | AR35               | PCIE-PRST_B_LS  |        |  |
|                    | IO_L1P_T0_13       | AY34               | FMC_LA_30_P     |        |  |
|                    | IO_L1N_T0_13       | BA35               | FMC_LA_30_N     |        |  |
|                    | IO_L2P_T0_13       | AV36               | FMC_LA_32_P     |        |  |
|                    | IO_L2N_T0_13       | AW36               | FMC_LA_32_N     |        |  |
|                    | IO_L3P_T0_DQS_13   | BA34               | FMC_LA_23_P     |        |  |
|                    | IO_L3N_T0_DQS_13   | BB34               | FMC_LA_23_N     |        |  |
|                    | IO_L4P_T0_13       | BA36               | FMC_LA_29_P     |        |  |
|                    | IO_L4N_T0_13       | BB36               | FMC_LA_29_N     |        |  |
|                    | IO_L5P_T0_13       | BB32               | FMC_LA_26_P     |        |  |
|                    | IO_L5N_T0_13       | BB33               | FMC_LA_26_N     |        |  |
|                    | IO_L6P_T0_13       | AW35               | SD_CD           |        |  |
|                    | IO_L6N_T0_VREF_13  | AY35               | PCIE-PERST_B_LS |        |  |
|                    | IO_L7P_T1_13       | AT34               | FMC_LA_24_P     |        |  |
|                    | IO_L7N_T1_13       | AU34               | FMC_LA_24_N     |        |  |
|                    | IO_L8P_T1_13       | AT36               | FMC_LA_33_P     |        |  |
|                    | IO_L8N_T1_13       | AU36               | FMC_LA_33_N     |        |  |
|                    | IO_L9P_T1_DQS_13   | AT32               | FMC_LA_25_P     |        |  |
|                    | IO_L9N_T1_DQS_13   | AU33               | FMC_LA_25_N     |        |  |
|                    | IO_L10P_T1_13      | AR34               | FMC_LA_28_P     |        |  |
|                    | IO_L10N_T1_13      | AT35               | FMC_LA_28_N     |        |  |
|                    | IO_L11P_T1_SRCC_13 | AU32               | FMC_LA_18_CC_P  |        |  |
|                    | IO_L11N_T1_SRCC_13 | AV33               | FMC_LA_18_CC_N  |        |  |
|                    | IO_L12P_T1_MRCC_13 | AV32               | SFP_REC_CLK_P   |        |  |
|                    | IO_L12N_T1_MRCC_13 | AW33               | SFP_REC_CLK_N   |        |  |
| IO_L13P_T2_MRCC_13 | AV34               | FMC_CLK1_M2C_P     |                 |        |  |
| IO_L13N_T2_MRCC_13 | AV35               | FMC_CLK1_M2C_N     |                 |        |  |
| IO_L14P_T2_SRCC_13 | AY32               | FMC_LA_17_CC_P     |                 |        |  |
| IO_L14N_T2_SRCC_13 | AY33               | FMC_LA_17_CC_N     |                 |        |  |
| IO_L15P_T2_DQS_13  | BA31               | FMC_LA_22_P        |                 |        |  |
| IO_L15N_T2_DQS_13  | BA32               | FMC_LA_22_N        |                 |        |  |
| IO_L16P_T2_13      | AW30               | FMC_LA_20_P        |                 |        |  |
| IO_L16N_T2_13      | AY30               | FMC_LA_20_N        |                 |        |  |
| IO_L17P_T2_13      | BA30               | FMC_LA_21_P        |                 |        |  |
| IO_L17N_T2_13      | BB31               | FMC_LA_21_N        |                 |        |  |
| IO_L18P_T2_13      | AV30               | FMC_LA_19_P        |                 |        |  |
| IO_L18N_T2_13      | AW31               | FMC_LA_19_N        |                 |        |  |
| IO_L19P_T3_13      | AR30               | FMC_PRST_LS        |                 |        |  |
| IO_L19N_T3_VREF_13 | AT30               | CPLD_WE_B          |                 |        |  |
| IO_L20P_T3_13      | AU31               | FMC_LA_27_P        |                 |        |  |
| IO_L20N_T3_13      | AV31               | FMC_LA_27_N        |                 |        |  |
| IO_L21P_T3_DQS_13  | AN30               | FMC_LA_31_P        |                 |        |  |
| IO_L21N_T3_DQS_13  | AP30               | FMC_LA_31_N        |                 |        |  |
| IO_L22P_T3_13      | AP32               | FAN_TACH           |                 |        |  |
| IO_L22N_T3_13      | AR32               | CPLD_RST_B         |                 |        |  |
| IO_L23P_T3_13      | AN31               | CPLD_PROGREQ       |                 |        |  |
| IO_L23N_T3_13      | AP31               | CPLD_IMGSEL0       |                 |        |  |
| IO_L24P_T3_13      | AP33               | CPLD_IMGSEL1       |                 |        |  |
| IO_L24N_T3_13      | AR33               | CPLD_IMGSEL2       |                 |        |  |
| IO_25_VRP_13       | AT31               | PCIE-WAKE          |                 |        |  |

| IC12C                        |                         | 100 R104 1%, 1/10W |             | VCC1V5 |  |
|------------------------------|-------------------------|--------------------|-------------|--------|--|
| BANK 14                      | IO_0_VRN_14             | AH35               | CPLD_CE_B   |        |  |
|                              | IO_L1P_T0_D00_MOSI_14   | AM36               | CPLD_A_DQ0  |        |  |
|                              | IO_L1N_T0_D01_DIN_14    | AN36               | CPLD_A_DQ1  |        |  |
|                              | IO_L2P_T0_D02_14        | AJ36               | CPLD_A_DQ2  |        |  |
|                              | IO_L2N_T0_D03_14        | AJ37               | CPLD_A_DQ3  |        |  |
|                              | IO_L3P_T0_DQS_PUDC_B_14 | AP36               | CPLD_ADV_B  |        |  |
|                              | IO_L3N_T0_DQS_EMCCLK_14 | AP37               | CPLD_A16    |        |  |
|                              | IO_L4P_T0_D04_14        | AK37               | CPLD_A_DQ4  |        |  |
|                              | IO_L4N_T0_D05_14        | AL37               | CPLD_A_DQ5  |        |  |
|                              | IO_L5P_T0_D06_14        | AN35               | CPLD_A_DQ6  |        |  |
|                              | IO_L5N_T0_D07_14        | AP35               | CPLD_A_DQ7  |        |  |
|                              | IO_L6P_T0_FCS_B_14      | AL36               | CPLD_A17    |        |  |
|                              | IO_L6N_T0_D08_VREF_14   | AM37               | CPLD_A_DQ8  |        |  |
|                              | IO_L7P_T1_D09_14        | AG33               | CPLD_A_DQ9  |        |  |
|                              | IO_L7N_T1_D10_14        | AH33               | CPLD_A_DQ10 |        |  |
|                              | IO_L8P_T1_D11_14        | AK35               | CPLD_A_DQ11 |        |  |
|                              | IO_L8N_T1_D12_14        | AL35               | CPLD_A_DQ12 |        |  |
|                              | IO_L9P_T1_DQS_14        | AH31               | CPLD_A18    |        |  |
|                              | IO_L9N_T1_DQS_D13_14    | AJ31               | CPLD_A_DQ13 |        |  |
|                              | IO_L10P_T1_D14_14       | AH34               | CPLD_A_DQ14 |        |  |
|                              | IO_L10N_T1_D15_14       | AJ35               | CPLD_A_DQ15 |        |  |
|                              | IO_L11P_T1_SRCC_14      | AJ33               | CPLD_A19    |        |  |
|                              | IO_L11N_T1_SRCC_14      | AK33               | CPLD_A20    |        |  |
|                              | IO_L12P_T1_MRCC_14      | AK34               | CPLD_A21    |        |  |
|                              | IO_L12N_T1_MRCC_14      | AL34               | CPLD_A22    |        |  |
| IO_L13P_T2_MRCC_14           | AJ32                    | CPLD_DATA_EN       |             |        |  |
| IO_L13N_T2_MRCC_14           | AK32                    | CPLD_RECONFIG      |             |        |  |
| IO_L14P_T2_SRCC_14           | AL31                    | CPLD_A23           |             |        |  |
| IO_L14N_T2_SRCC_14           | AL32                    | CPLD_A24           |             |        |  |
| IO_L15P_T2_DQS_RDWR_B_14     | AM34                    | RDWR_B             |             |        |  |
| IO_L15N_T2_DQS_DOUT_CSO_B_14 | AN34                    | FAN_PWM            |             |        |  |
| IO_L16P_T2_CSI_B_14          | AM31                    | CPLD_CSI_B         |             |        |  |
| IO_L16N_T2_A15_D31_14        | AM32                    | CPLD_B_DQ15        |             |        |  |
| IO_L17P_T2_A14_D30_14        | AM33                    | CPLD_B_DQ14        |             |        |  |
| IO_L17N_T2_A13_D29_14        | AN33                    | CPLD_B_DQ13        |             |        |  |
| IO_L18P_T2_A12_D28_14        | AL29                    | CPLD_B_DQ12        |             |        |  |
| IO_L18N_T2_A11_D27_14        | AL30                    | CPLD_B_DQ11        |             |        |  |
| IO_L19P_T3_A10_D26_14        | AH29                    | CPLD_B_DQ10        |             |        |  |
| IO_L19N_T3_A09_D25_VREF_14   | AH30                    | CPLD_B_DQ9         |             |        |  |
| IO_L20P_T3_A08_D24_14        | AJ30                    | CPLD_B_DQ8         |             |        |  |
| IO_L20N_T3_A07_D23_14        | AK30                    | CPLD_B_DQ7         |             |        |  |
| IO_L21P_T3_DQS_14            | AF29                    | CPLD_A25           |             |        |  |
| IO_L21N_T3_DQS_A06_D22_14    | AG29                    | CPLD_B_DQ6         |             |        |  |
| IO_L22P_T3_A05_D21_14        | AK28                    | CPLD_B_DQ5         |             |        |  |
| IO_L22N_T3_A04_D20_14        | AK29                    | CPLD_B_DQ4         |             |        |  |
| IO_L23P_T3_A03_D19_14        | AF30                    | CPLD_B_DQ3         |             |        |  |
| IO_L23N_T3_A02_D18_14        | AG31                    | CPLD_B_DQ2         |             |        |  |
| IO_L24P_T3_A01_D17_14        | AH28                    | CPLD_B_DQ1         |             |        |  |
| IO_L24N_T3_A00_D16_14        | AJ28                    | CPLD_B_DQ0         |             |        |  |
| IO_25_VRP_14                 | AG32                    | CPLD_OE_B          |             |        |  |

| IC12D                   |                       | 100 R102 1%, 1/10W |                  | VCC1V5 |  |
|-------------------------|-----------------------|--------------------|------------------|--------|--|
| BANK 15                 | IO_0_VRN_15           | AM38               | QDRIIA_Q6        |        |  |
|                         | IO_L1P_T0_AD0P_15     | AN38               | QDRIIA_Q3        |        |  |
|                         | IO_L1N_T0_AD0N_15     | AP38               | QDRIIA_Q8        |        |  |
|                         | IO_L2P_T0_AD0P_15     | AM41               | QDRIIA_Q7        |        |  |
|                         | IO_L2N_T0_AD0N_15     | AM42               | QDRIIA_Q0        |        |  |
|                         | IO_L3P_T0_DQS_AD1P_15 | AR38               | QDRIIA_Q1        |        |  |
|                         | IO_L3N_T0_DQS_AD1N_15 | AR39               | QDRIIA_Q0        |        |  |
|                         | IO_L4P_T0_15          | AN40               | QDRIIA_Q5        |        |  |
|                         | IO_L4N_T0_15          | AN41               | QDRIIA_Q4        |        |  |
|                         | IO_L5P_T0_AD9P_15     | AR37               | QDRIIA_Q2        |        |  |
|                         | IO_L5N_T0_AD9N_15     | AT37               | QDRIIA_DLL_OFF_B |        |  |
|                         | IO_L6P_T0_15          | AM39               | I2C_MUX_RESET    |        |  |
|                         | IO_L6N_T0_VREF_15     | AN39               | QDROV75          |        |  |
|                         | IO_L7P_T1_AD2P_15     | AP40               | QDRIIA_Q16       |        |  |
|                         | IO_L7N_T1_AD2N_15     | AR40               | QDRIIA_Q15       |        |  |
|                         | IO_L8P_T1_AD10P_15    | AP41               | QDRIIA_Q13       |        |  |
|                         | IO_L8N_T1_AD10N_15    | AP42               | QDRIIA_Q14       |        |  |
|                         | IO_L9P_T1_DQS_AD3P_15 | AT39               | QDRIIA_Q12       |        |  |
|                         | IO_L9N_T1_DQS_AD3N_15 | AT40               | QDRIIA_Q10       |        |  |
|                         | IO_L10P_T1_AD11P_15   | AR42               | QDRIIA_Q11       |        |  |
|                         | IO_L10N_T1_AD11N_15   | AT42               | QDRIIA_Q9        |        |  |
|                         | IO_L11P_T1_SRCC_15    | AU39               | QDRIIA_Q17       |        |  |
|                         | IO_L11N_T1_SRCC_15    | AV39               |                  |        |  |
|                         | IO_L12P_T1_MRCC_15    | AU38               | QDRIIA_CQ        |        |  |
|                         | IO_L12N_T1_MRCC_15    | AV38               |                  |        |  |
| IO_L13P_T2_MRCC_15      | AV40                  | QDRIIA_CQ#         |                  |        |  |
| IO_L13N_T2_MRCC_15      | AW40                  |                    |                  |        |  |
| IO_L14P_T2_SRCC_15      | AY39                  |                    |                  |        |  |
| IO_L14N_T2_SRCC_15      | AY40                  | QDRIIA_Q22         |                  |        |  |
| IO_L15P_T2_DQS_15       | AW37                  | QDRIIA_Q19         |                  |        |  |
| IO_L15N_T2_DQS_ADV_B_15 | AY37                  | QDRIIA_Q20         |                  |        |  |
| IO_L16P_T2_A28_15       | BA37                  | QDRIIA_Q23         |                  |        |  |
| IO_L16N_T2_A27_15       | BB37                  | QDRIIA_Q24         |                  |        |  |
| IO_L17P_T2_A26_15       | AW38                  | QDRIIA_Q21         |                  |        |  |
| IO_L17N_T2_A25_15       | AY38                  | QDRIIA_Q18         |                  |        |  |
| IO_L18P_T2_A24_15       | BB38                  | QDRIIA_Q26         |                  |        |  |
| IO_L18N_T2_A23_15       | BB39                  | QDRIIA_Q25         |                  |        |  |
| IO_L19P_T3_A22_15       | BA39                  | QDRIIA_Q31         |                  |        |  |
| IO_L19N_T3_A21_VREF_15  | BA40                  | QDROV75            |                  |        |  |
| IO_L20P_T3_A20_15       | AT41                  | QDRIIA_Q28         |                  |        |  |
| IO_L20N_T3_A19_15       | AU42                  | QDRIIA_Q27         |                  |        |  |
| IO_L21P_T3_DQS_15       | AY42                  | QDRIIA_Q32         |                  |        |  |
| IO_L21N_T3_DQS_A18_15   | BA42                  | QDRIIA_Q34         |                  |        |  |
| IO_L22P_T3_A17_15       | AU41                  | QDRIIA_Q29         |                  |        |  |
| IO_L22N_T3_A16_15       | AV41                  | QDRIIA_Q3AL        |                  |        |  |
| IO_L23P_T3_FOE_B_15     | BA41                  | QDRIIA_Q33         |                  |        |  |
| IO_L23N_T3_FWE_B_15     | BB41                  | QDRIIA_Q35         |                  |        |  |
| IO_L24P_T3_RS1_15       | AW41                  | QDRIIA_Q30         |                  |        |  |
| IO_L24N_T3_RS0_15       | AW42                  | PWR_SNS1           |                  |        |  |
| IO_25_VRP_15            | AU37                  |                    |                  |        |  |

Note: SD\_CD must be internally pulled high

Note: PWR\_SNS1 must be internally pulled high



| Title          |           | Rev    |              |
|----------------|-----------|--------|--------------|
| NetFPGA-SUME   |           | C.0    |              |
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| Circuit        | FPGA      | Doc#   | 500-301.     |
| Engineer       | MTA       | Author | GMA          |
| Date           | 9/16/2014 | Sheet# | 07 out of 29 |



**IC12E** **BANK 16**

|                    |      |                |
|--------------------|------|----------------|
| IO_0_VRN_16        | Y34  | VCC1V5         |
| IO_L1P_T0_16       | AF35 | R118 1%, 1/10W |
| IO_L1N_T0_16       | AF36 | QDRIIA_D30     |
| IO_L2P_T0_16       | AE37 | QDRIIA_D28     |
| IO_L2N_T0_16       | AF37 | QDRIIA_D33     |
| IO_L3P_T0_DQS_16   | AF34 | QDRIIA_D29     |
| IO_L3N_T0_DQS_16   | AG34 | QDRIIA_D32     |
| IO_L4P_T0_16       | AD36 | QDRIIA_D27     |
| IO_L4N_T0_16       | AD37 | QDRIIA_BW3_B   |
| IO_L5P_T0_16       | AC35 | QDRIIA_D34     |
| IO_L5N_T0_16       | AC36 | QDRIIA_D35     |
| IO_L6P_T0_16       | AG36 | QDRIIA_D31     |
| IO_L6N_T0_VREF_16  | AH36 | QDROV75        |
| IO_L7P_T1_16       | Y37  | QDRIIA_D9      |
| IO_L7N_T1_16       | AA37 | QDRIIA_D10     |
| IO_L8P_T1_16       | Y35  | QDRIIA_D13     |
| IO_L8N_T1_16       | AA36 | QDRIIA_D11     |
| IO_L9P_T1_DQS_16   | AB36 | QDRIIA_D14     |
| IO_L9N_T1_DQS_16   | AB37 | QDRIIA_D12     |
| IO_L10P_T1_16      | AA34 | QDRIIA_D16     |
| IO_L10N_T1_16      | AA35 | QDRIIA_D15     |
| IO_L11P_T1_SRCC_16 | AB31 | QDRIIA_BW0_B   |
| IO_L11N_T1_SRCC_16 | AB32 | QDRIIA_BW1_B   |
| IO_L12P_T1_MRCC_16 | AB33 | QDRIIA_D17     |
| IO_L12N_T1_MRCC_16 | AC33 | QDRIIA_D17     |
| IO_L13P_T2_MRCC_16 | AD32 | QDRII_SYSCLK_P |
| IO_L13N_T2_MRCC_16 | AD33 | QDRII_SYSCLK_N |
| IO_L14P_T2_MRCC_16 | AC34 | QDRIIA_D26     |
| IO_L14N_T2_MRCC_16 | AD35 | QDRIIA_D25     |
| IO_L15P_T2_DQS_16  | AE32 | QDRIIA_BW2_B   |
| IO_L15N_T2_DQS_16  | AE33 | QDRIIA_D22     |
| IO_L16P_T2_16      | AF31 | QDRIIA_D20     |
| IO_L16N_T2_16      | AF32 | QDRIIA_D21     |
| IO_L17P_T2_16      | AE34 | QDRIIA_D23     |
| IO_L17N_T2_16      | AE35 | QDRIIA_D24     |
| IO_L18P_T2_16      | AE29 | QDRIIA_D18     |
| IO_L18N_T2_16      | AE30 | QDRIIA_D19     |
| IO_L19P_T3_16      | Y32  | QDRIIA_D0      |
| IO_L19N_T3_VREF_16 | Y33  | QDROV75        |
| IO_L20P_T3_16      | AC31 | QDRIIA_D4      |
| IO_L20N_T3_16      | AD31 | QDRIIA_D6      |
| IO_L21P_T3_DQS_16  | AA31 | QDRIIA_K_P     |
| IO_L21N_T3_DQS_16  | AA32 | QDRIIA_K_N     |
| IO_L22P_T3_16      | AC30 | QDRIIA_D5      |
| IO_L22N_T3_16      | AD30 | QDRIIA_D7      |
| IO_L23P_T3_16      | AA29 | QDRIIA_D2      |
| IO_L23N_T3_16      | AA30 | QDRIIA_D1      |
| IO_L24P_T3_16      | AB29 | QDRIIA_D3      |
| IO_L24N_T3_16      | AC29 | QDRIIA_D8      |
| IO_25_VRP_16       | AB34 | GND            |

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**IC12F** **BANK 17**

|                    |      |                |
|--------------------|------|----------------|
| IO_0_VRN_17        | Y38  | VCC1V5         |
| IO_L1P_T0_17       | AB41 | R117 1%, 1/10W |
| IO_L1N_T0_17       | AB42 | QDRIIB_SA11    |
| IO_L2P_T0_17       | W40  | QDRIIB_SA20    |
| IO_L2N_T0_17       | Y40  | QDRIIB_W_B     |
| IO_L3P_T0_DQS_17   | Y39  | QDRIIB_SA9     |
| IO_L3N_T0_DQS_17   | AA39 | QDRIIB_SA2     |
| IO_L4P_T0_17       | Y42  | QDRIIB_SA1     |
| IO_L4N_T0_17       | AA42 | QDRIIB_SA16    |
| IO_L5P_T0_17       | AB38 | QDRIIB_SA4     |
| IO_L5N_T0_17       | AB39 | QDRIIB_SA7     |
| IO_L6P_T0_17       | AA40 | QDRIIB_R_B     |
| IO_L6N_T0_VREF_17  | AA41 | QDROV75        |
| IO_L7P_T1_17       | AC38 | QDRIIB_SA10    |
| IO_L7N_T1_17       | AC39 | QDRIIB_SA8     |
| IO_L8P_T1_17       | AD42 | QDRIIB_SA9     |
| IO_L8N_T1_17       | AE42 | QDRIIB_SA15    |
| IO_L9P_T1_DQS_17   | AD38 | QDRIIB_SA5     |
| IO_L9N_T1_DQS_17   | AE38 | QDRIIB_SA14    |
| IO_L10P_T1_17      | AC40 | QDRIIB_SA6     |
| IO_L10N_T1_17      | AC41 | QDRIIB_SA0     |
| IO_L11P_T1_SRCC_17 | AE39 | QDRIIB_SA18    |
| IO_L11N_T1_SRCC_17 | AE40 | QDRIIB_SA17    |
| IO_L12P_T1_MRCC_17 | AD40 | QDRIIB_SA12    |
| IO_L12N_T1_MRCC_17 | AD41 | QDRIIB_SA13    |
| IO_L13P_T2_MRCC_17 | AE39 | QDRIIA_W_B     |
| IO_L13N_T2_MRCC_17 | AF40 | QDRIIA_SA2     |
| IO_L14P_T2_MRCC_17 | AF41 | QDRIIA_SA4     |
| IO_L14N_T2_MRCC_17 | AG41 | QDRIIA_SA11    |
| IO_L15P_T2_DQS_17  | AG39 | QDRIIA_SA0     |
| IO_L15N_T2_DQS_17  | AH39 | QDRIIA_SA10    |
| IO_L16P_T2_17      | AF42 | QDRIIA_SA19    |
| IO_L16N_T2_17      | AG42 | QDRIIA_SA1     |
| IO_L17P_T2_17      | AG38 | QDRIIA_SA20    |
| IO_L17N_T2_17      | AH38 | QDRIIA_SA12    |
| IO_L18P_T2_17      | AJ38 | QDRIIA_SA17    |
| IO_L18N_T2_17      | AK38 | QDRIIA_SA13    |
| IO_L19P_T3_17      | AK40 | QDRIIA_SA16    |
| IO_L19N_T3_VREF_17 | AL40 | QDROV75        |
| IO_L20P_T3_17      | AH40 | QDRIIA_SA8     |
| IO_L20N_T3_17      | AH41 | QDRIIA_SA7     |
| IO_L21P_T3_DQS_17  | AL41 | QDRIIA_SA14    |
| IO_L21N_T3_DQS_17  | AL42 | QDRIIA_SA5     |
| IO_L22P_T3_17      | AJ40 | QDRIIA_SA6     |
| IO_L22N_T3_17      | AJ41 | QDRIIA_SA18    |
| IO_L23P_T3_17      | AK39 | QDRIIA_SA15    |
| IO_L23N_T3_17      | AL39 | QDRIIA_SA9     |
| IO_L24P_T3_17      | AJ42 | QDRIIA_R_B     |
| IO_L24N_T3_17      | AK42 | QDRIIA_SA3     |
| IO_25_VRP_17       | AG37 | GND            |

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**IC12G** **BANK 18**

|                    |     |                |
|--------------------|-----|----------------|
| IO_0_VRN_18        | N35 | VCC1V5         |
| IO_L1P_T0_18       | N34 | R118 1%, 1/10W |
| IO_L1N_T0_18       | R35 | QDRIIB_D4      |
| IO_L2P_T0_18       | N33 | QDRIIB_D5      |
| IO_L2N_T0_18       | N34 | QDRIIB_D1      |
| IO_L3P_T0_DQS_18   | R33 | QDRIIB_D2      |
| IO_L3N_T0_DQS_18   | R34 | QDRIIB_K_P     |
| IO_L4P_T0_18       | P35 | QDRIIB_K_N     |
| IO_L4N_T0_18       | P36 | QDRIIB_D7      |
| IO_L5P_T0_18       | R32 | QDRIIB_D6      |
| IO_L5N_T0_18       | R32 | QDRIIB_D3      |
| IO_L6P_T0_18       | P32 | QDRIIB_D8      |
| IO_L6N_T0_VREF_18  | P33 | QDRIIB_D0      |
| IO_L7P_T1_18       | R36 | QDROV75        |
| IO_L7N_T1_18       | R37 | QDRIIB_BW0_B   |
| IO_L8P_T1_18       | R37 | QDRIIB_BW1_B   |
| IO_L8N_T1_18       | R38 | QDRIIB_D9      |
| IO_L9P_T1_DQS_18   | R38 | QDRIIB_D10     |
| IO_L9N_T1_DQS_18   | R35 | QDRIIB_D17     |
| IO_L10P_T1_18      | R39 | QDRIIB_D16     |
| IO_L10N_T1_18      | R39 | QDRIIB_D15     |
| IO_L11P_T1_SRCC_18 | R37 | QDRIIB_D14     |
| IO_L11N_T1_SRCC_18 | R37 | QDRIIB_D13     |
| IO_L12P_T1_MRCC_18 | R39 | QDRIIB_D12     |
| IO_L12N_T1_MRCC_18 | R39 | QDRIIB_D11     |
| IO_L13P_T2_MRCC_18 | R36 | QDRIIB_D24     |
| IO_L13N_T2_MRCC_18 | R37 | QDRIIB_D21     |
| IO_L14P_T2_MRCC_18 | R35 | QDRIIB_D22     |
| IO_L14N_T2_MRCC_18 | R36 | QDRIIB_D21     |
| IO_L15P_T2_DQS_18  | R33 | QDRIIB_BW2_B   |
| IO_L15N_T2_DQS_18  | V34 | QDRIIB_D20     |
| IO_L16P_T2_18      | W36 | QDRIIB_D23     |
| IO_L16N_T2_18      | W37 | QDRIIB_D22     |
| IO_L17P_T2_18      | U32 | QDRIIB_D18     |
| IO_L17N_T2_18      | U33 | QDRIIB_D19     |
| IO_L18P_T2_18      | W32 | QDRIIB_D26     |
| IO_L18N_T2_18      | W33 | QDRIIB_D25     |
| IO_L19P_T3_18      | V39 | QDRIIB_BW3_B   |
| IO_L19N_T3_VREF_18 | V40 | QDROV75        |
| IO_L20P_T3_18      | T40 | QDRIIB_D27     |
| IO_L20N_T3_18      | T41 | QDRIIB_D29     |
| IO_L21P_T3_DQS_18  | W41 | QDRIIB_D34     |
| IO_L21N_T3_DQS_18  | W42 | QDRIIB_D33     |
| IO_L22P_T3_18      | T41 | QDRIIB_D30     |
| IO_L22N_T3_18      | T42 | QDRIIB_D28     |
| IO_L23P_T3_18      | W38 | QDRIIB_D35     |
| IO_L23N_T3_18      | V38 | QDRIIB_D31     |
| IO_L24P_T3_18      | V41 | QDRIIB_D32     |
| IO_L24N_T3_18      | T42 | QDRIIB_D32     |
| IO_25_VRP_18       | W35 | GND            |

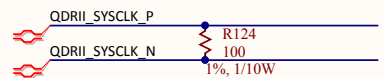
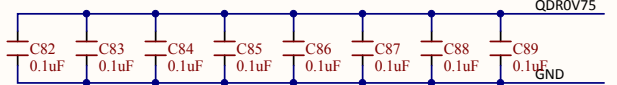
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**IC12H** **BANK 19**

|                    |     |                  |
|--------------------|-----|------------------|
| IO_0_VRN_19        | L36 | VCC1V5           |
| IO_L1P_T0_19       | L40 | R119 1%, 1/10W   |
| IO_L1N_T0_19       | L40 | QDRIIB_Q7        |
| IO_L2P_T0_19       | L40 | QDRIIB_Q4        |
| IO_L2N_T0_19       | L40 | QDRIIB_Q1        |
| IO_L3P_T0_DQS_19   | A41 | QDRIIB_Q0        |
| IO_L3N_T0_DQS_19   | D41 | QDRIIB_Q5        |
| IO_L4P_T0_19       | D42 | QDRIIB_Q6        |
| IO_L4N_T0_19       | B41 | QDRIIB_Q3        |
| IO_L5P_T0_19       | B42 | QDRIIB_Q2        |
| IO_L5N_T0_19       | E42 | QDRIIB_Q8        |
| IO_L6P_T0_19       | E42 | QDRIIB_DLL_OFF_B |
| IO_L6N_T0_VREF_19  | C40 | PMOD_OE_B        |
| IO_L7P_T1_19       | C41 | QDROV75          |
| IO_L7N_T1_19       | H40 | QDRIIB_Q15       |
| IO_L8P_T1_19       | H41 | QDRIIB_Q16       |
| IO_L8N_T1_19       | T39 | QDRIIB_Q12       |
| IO_L9P_T1_DQS_19   | G39 | QDRIIB_Q9        |
| IO_L9N_T1_DQS_19   | G41 | QDRIIB_Q13       |
| IO_L10P_T1_19      | G42 | QDRIIB_Q14       |
| IO_L10N_T1_19      | F40 | QDRIIB_Q10       |
| IO_L11P_T1_SRCC_19 | F41 | QDRIIB_Q11       |
| IO_L11N_T1_SRCC_19 | F40 | QDRIIB_Q17       |
| IO_L12P_T1_MRCC_19 | J41 | PCON_ALERT_B     |
| IO_L12N_T1_MRCC_19 | K39 | QDRIIB_CQ        |
| IO_L13P_T2_MRCC_19 | L40 | QDRIIB_CQ#       |
| IO_L13N_T2_MRCC_19 | L40 | QDRIIB_CQ#       |
| IO_L14P_T2_MRCC_19 | V41 | PCON_AUXFAULT_B  |
| IO_L14N_T2_MRCC_19 | V41 | QDRIIB_Q21       |
| IO_L15P_T2_DQS_19  | K42 | QDRIIB_Q24       |
| IO_L15N_T2_DQS_19  | J42 | QDRIIB_Q26       |
| IO_L16P_T2_19      | M42 | QDRIIB_Q19       |
| IO_L16N_T2_19      | L42 | QDRIIB_Q22       |
| IO_L17P_T2_19      | K37 | QDRIIB_Q23       |
| IO_L17N_T2_19      | K38 | QDRIIB_Q25       |
| IO_L18P_T2_19      | M36 | QDRIIB_Q18       |
| IO_L18N_T2_19      | L37 | QDRIIB_Q20       |
| IO_L19P_T3_19      | P41 | QDRIIB_Q27       |
| IO_L19N_T3_VREF_19 | V41 | QDROV75          |
| IO_L20P_T3_19      | M37 | QDRIIB_Q32       |
| IO_L20N_T3_19      | M38 | QDRIIB_Q35       |
| IO_L21P_T3_DQS_19  | R42 | QDRIIB_Q28       |
| IO_L21N_T3_DQS_19  | P42 | QDRIIB_Q30       |
| IO_L22P_T3_19      | N38 | QDRIIB_Q33       |
| IO_L22N_T3_19      | M39 | QDRIIB_Q34       |
| IO_L23P_T3_19      | R40 | QDRIIB_Q29       |
| IO_L23N_T3_19      | P40 | QDRIIB_Q31       |
| IO_L24P_T3_19      | N39 | QDRIIB_QVAL      |
| IO_L24N_T3_19      | N40 | PCON_FAULT1      |
| IO_25_VRP_19       | L36 | GND              |

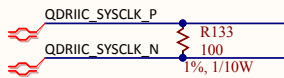
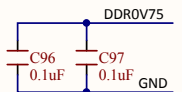
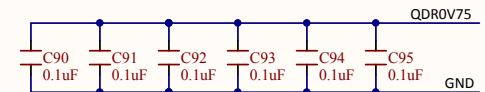
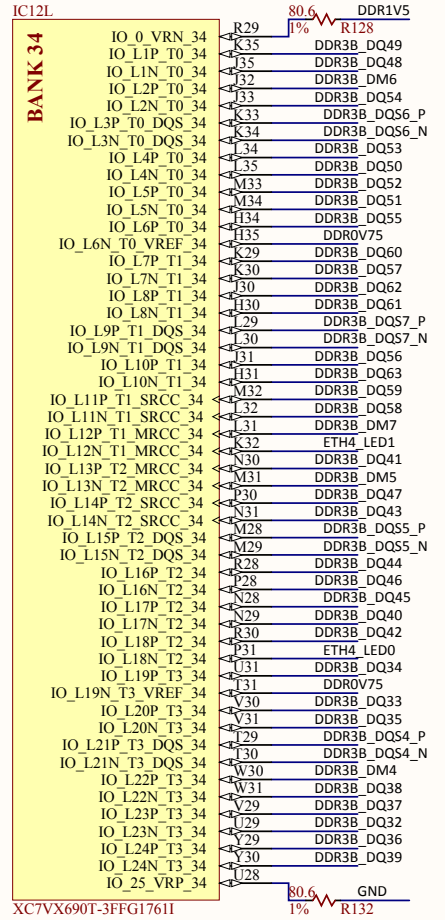
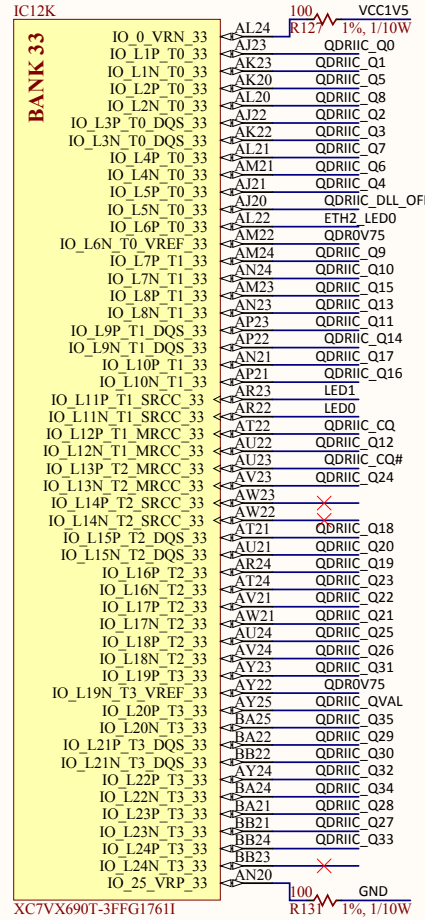
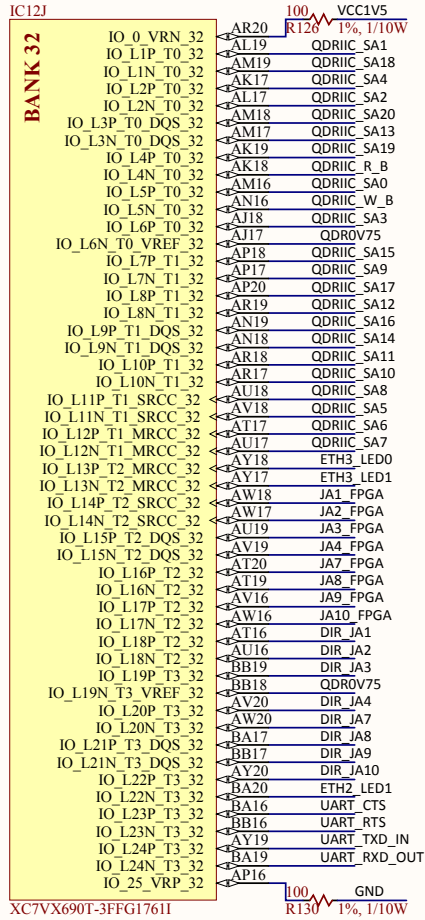
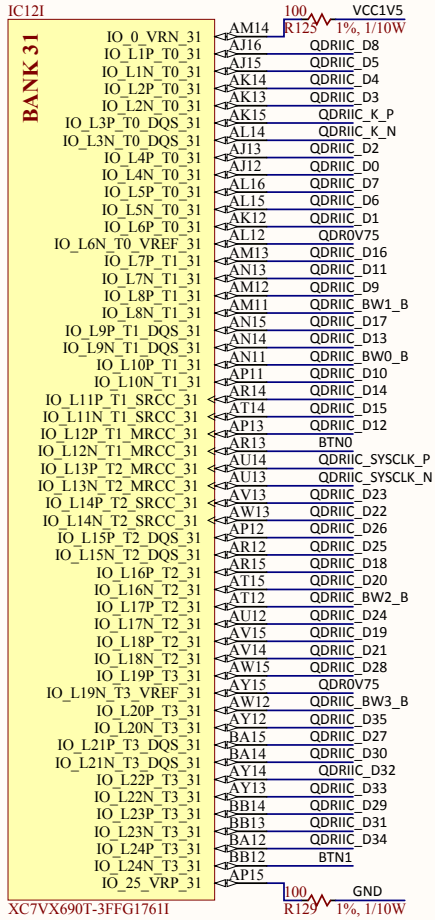
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Note: PCON\_AUXFAULT\_B, PCON\_FAULT1 and PCON\_ALERT\_B must be internally pulled high




|                     |              |                |
|---------------------|--------------|----------------|
| Title               |              | Rev            |
| <b>NetFPGA-SUME</b> |              | <b>C.0</b>     |
| Circuit             |              | Copyright 2014 |
| Doc#                | FPGA         |                |
| Author              | 500-301.     |                |
| Engineer            | MTA          |                |
| Date                | GMA          |                |
| Sheet#              | 9/16/2014    |                |
|                     | 08 out of 29 |                |

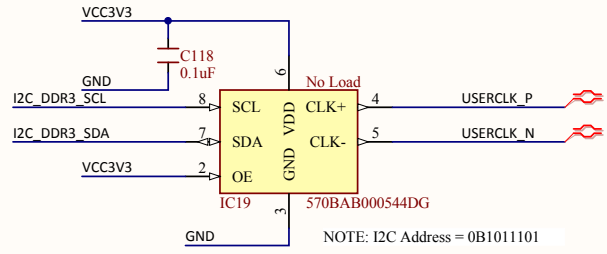
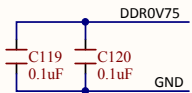
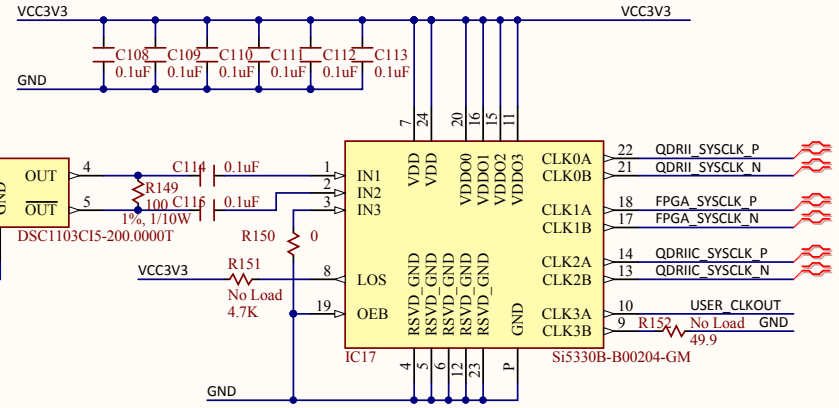
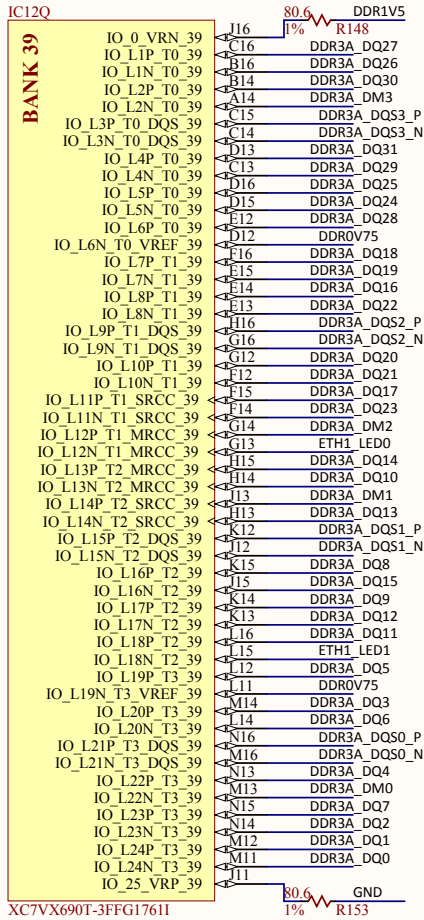





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| Title          |              | Rev |  |
| NetFPGA-SUME   |              | C.0 |  |
| Copyright 2014 |              |     |  |
| Circuit        | FPGA         |     |  |
| Doc#           | 500-301.     |     |  |
| Engineer       | MTA          |     |  |
| Author         | GMA          |     |  |
| Date           | 9/16/2014    |     |  |
| Sheet#         | 09 out of 29 |     |  |

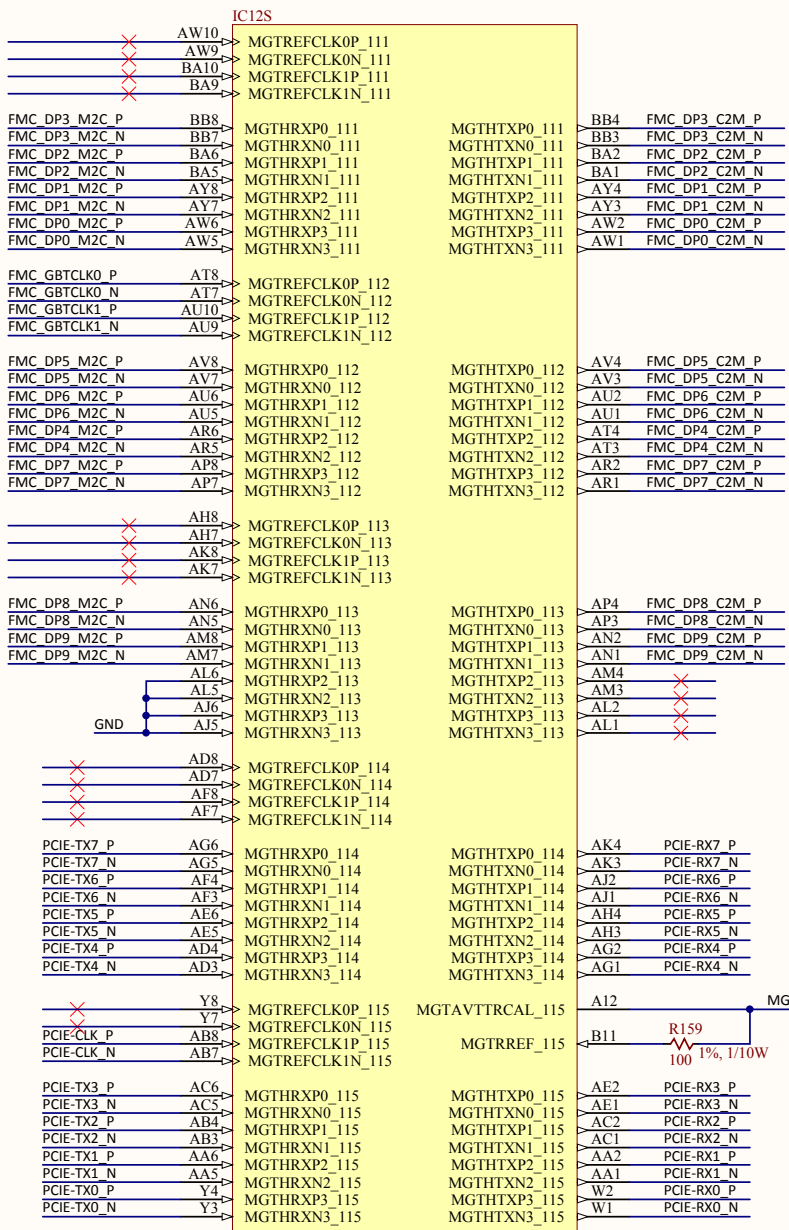




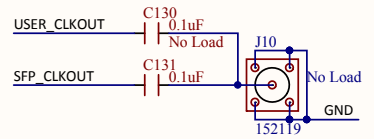
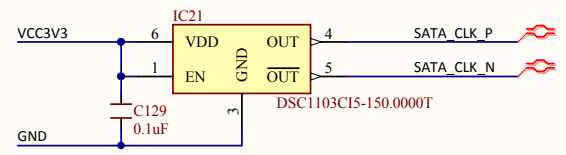
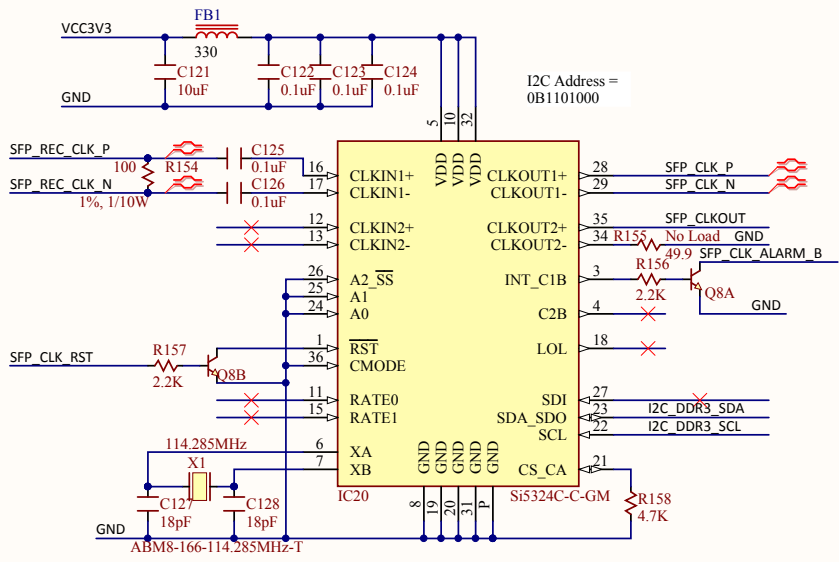


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|------------------------|--------------|----------------|--|
| Title                  |              | Rev            |  |
| <b>NetFPGA-SUME</b>    |              | <b>C.0</b>     |  |
| Circuit                |              | Copyright 2014 |  |
| FPGA and System Clocks |              |                |  |
| Doc#                   | 500-301.     |                |  |
| Engineer               | MTA          |                |  |
| Author                 | GMA          |                |  |
| Date                   | 9/16/2014    |                |  |
| Sheet#                 | 11 out of 29 |                |  |





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|                        |              |                |  |
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| Title                  |              | Rev            |  |
| NetFPGA-SUME           |              | C.0            |  |
| Circuit                |              | Copyright 2014 |  |
| FPGA and System Clocks |              |                |  |
| Doc#                   | 500-301.     |                |  |
| Engineer               | MTA          |                |  |
| Author                 | GMA          |                |  |
| Date                   | 9/16/2014    |                |  |
| Sheet#                 | 12 out of 29 |                |  |

A

B

C

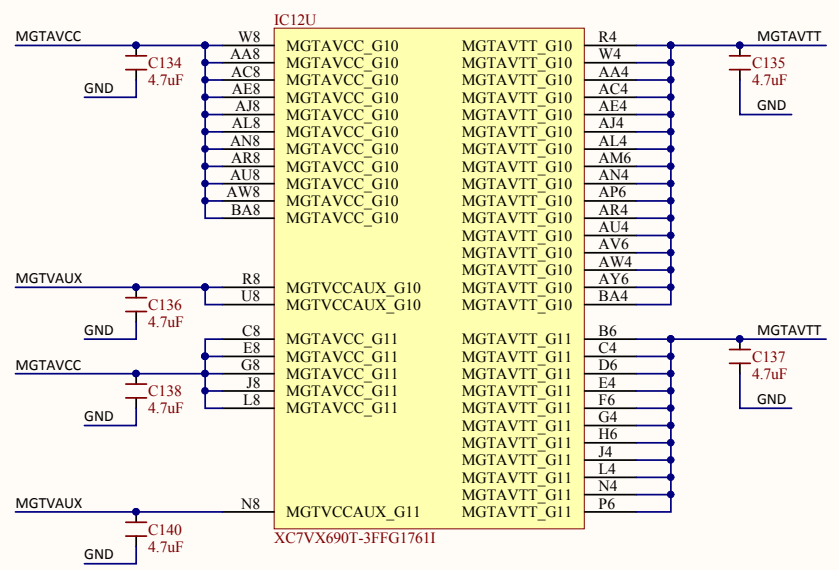
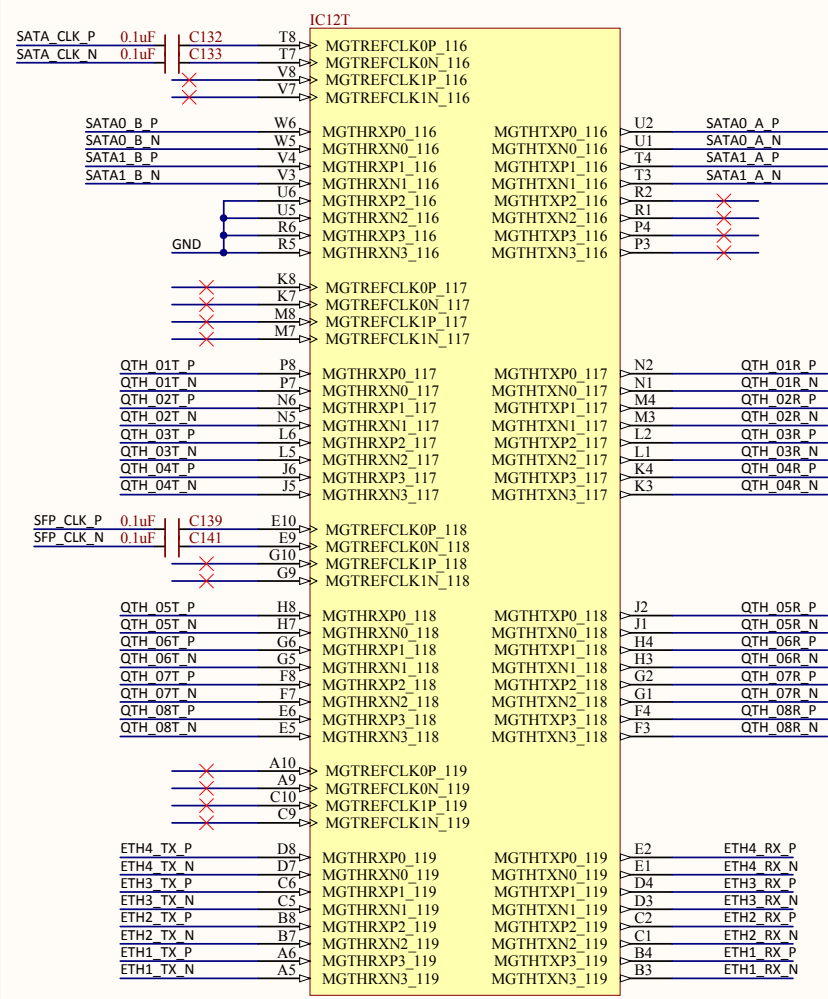
D

A

B

C

D

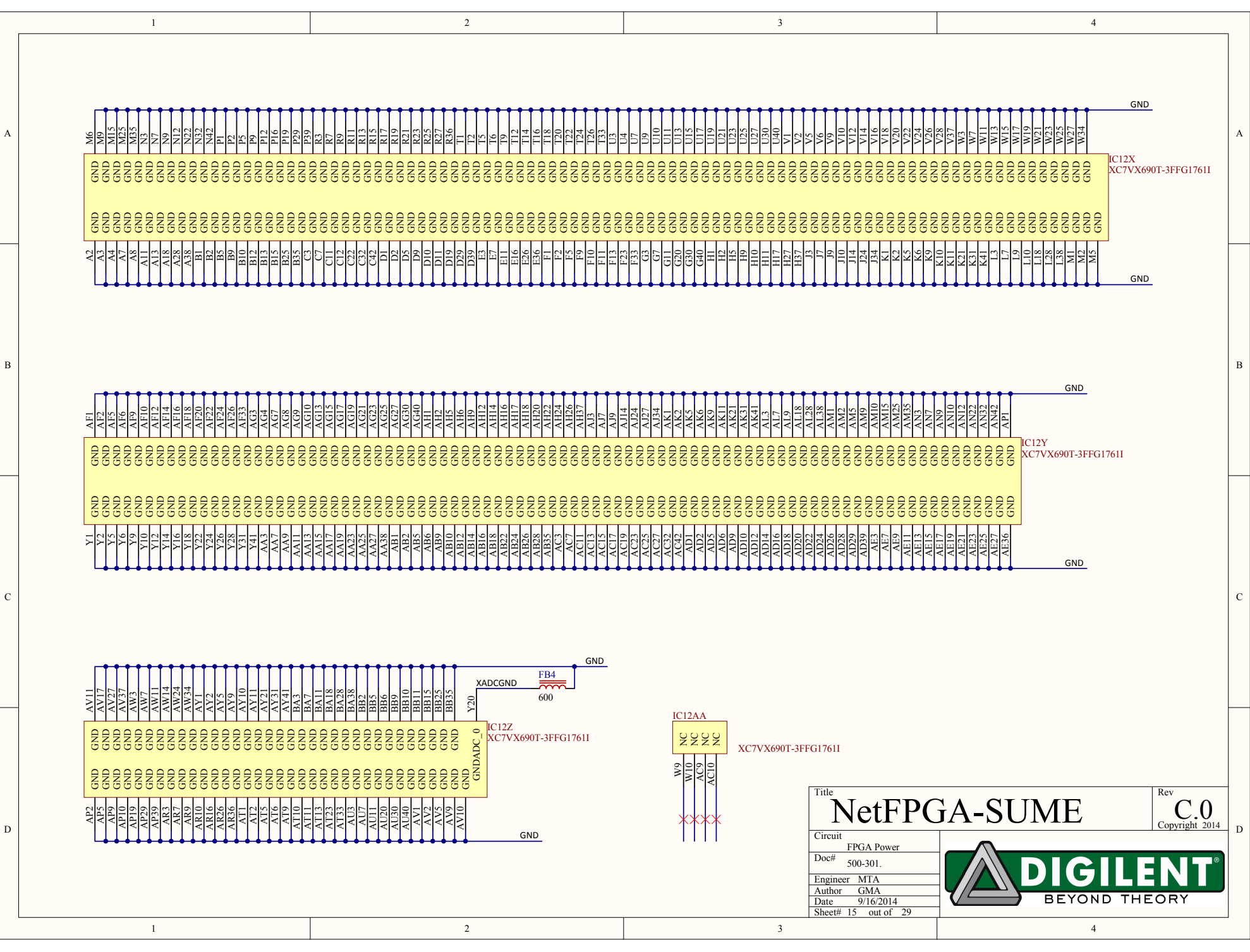


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| Title          |              | Rev            |  |
| NetFPGA-SUME   |              | C.0            |  |
| Circuit        |              | Copyright 2014 |  |
| FPGA MGT Banks |              |                |  |
| Doc#           | 500-301.     |                |  |
| Engineer       | MTA          |                |  |
| Author         | GMA          |                |  |
| Date           | 9/16/2014    |                |  |
| Sheet#         | 13 out of 29 |                |  |



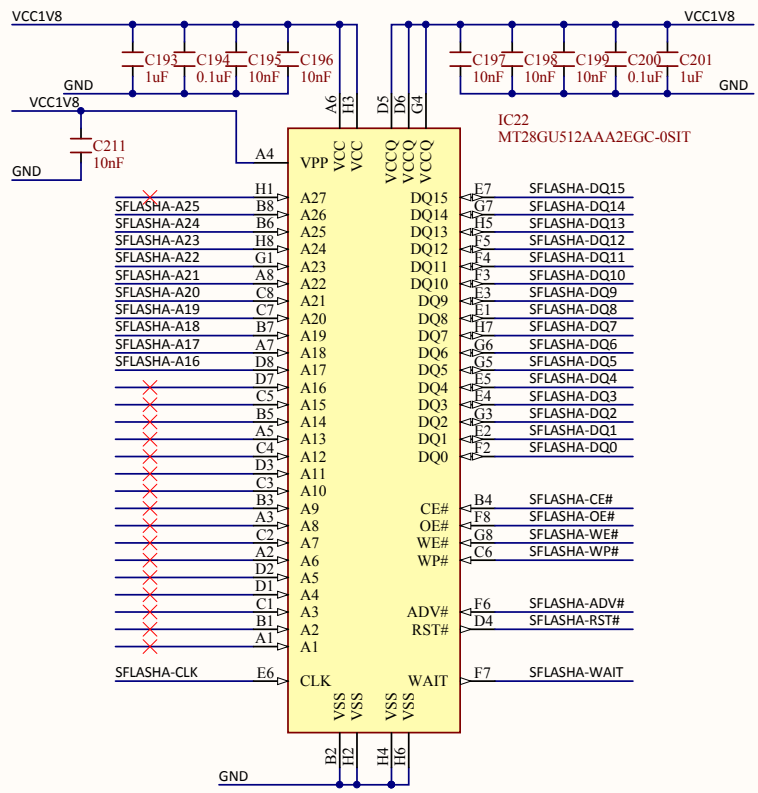




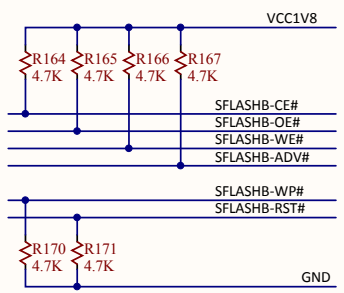
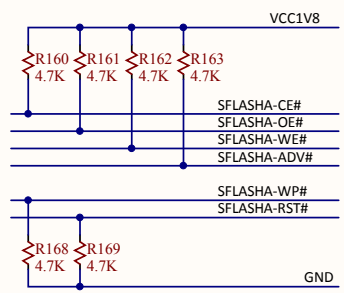
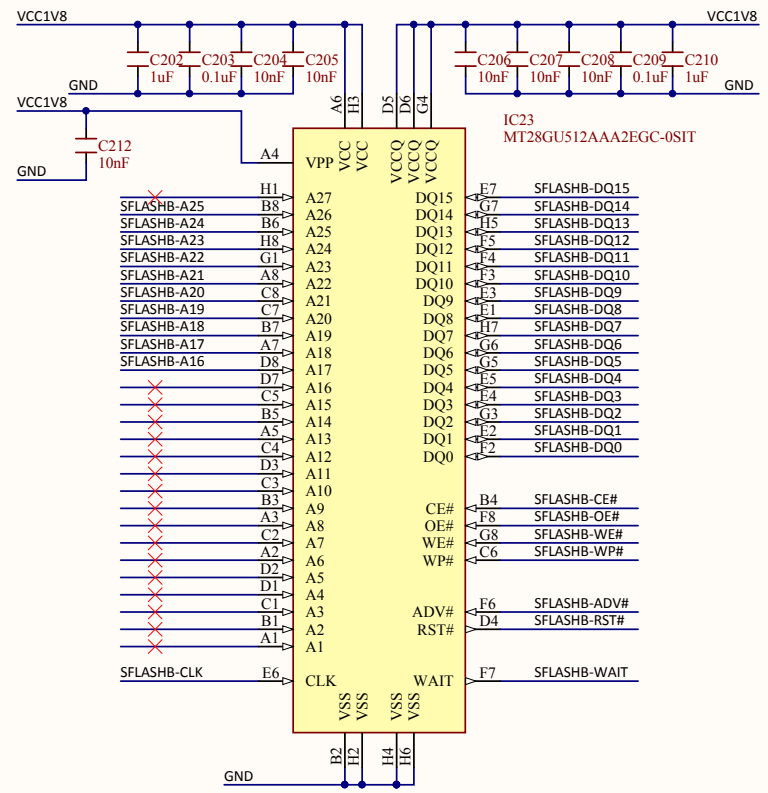


|          |           |              |    |                |     |
|----------|-----------|--------------|----|----------------|-----|
| Title    |           | NetFPGA-SUME |    | Rev            | C.0 |
| Circuit  |           | FPGA Power   |    | Copyright 2014 |     |
| Doc#     | 500-301.  |              |    |                |     |
| Engineer | MTA       |              |    |                |     |
| Author   | GMA       |              |    |                |     |
| Date     | 9/16/2014 |              |    |                |     |
| Sheet#   | 15        | out of       | 29 |                |     |





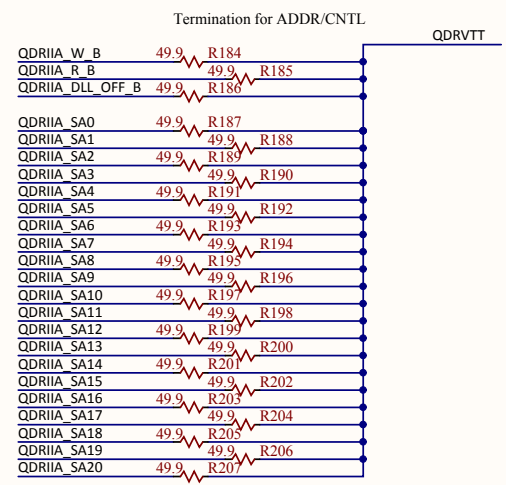
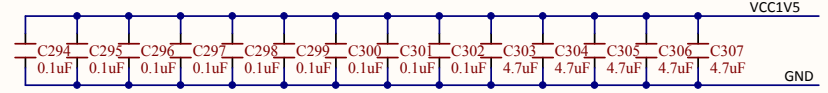
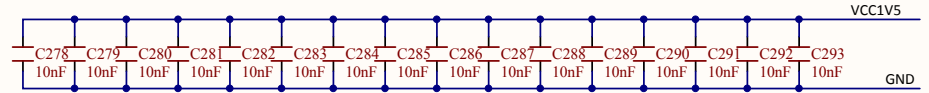
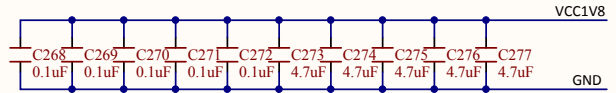
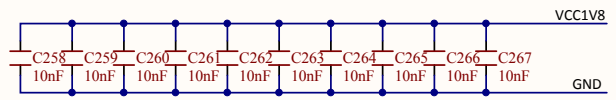
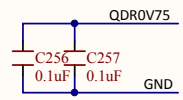
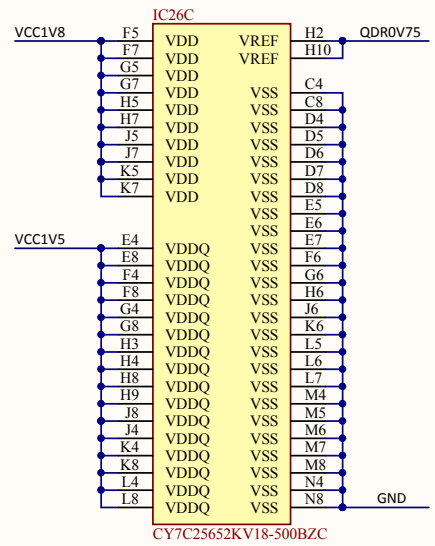
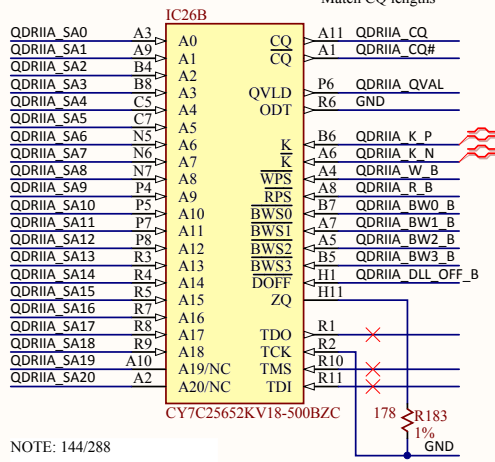
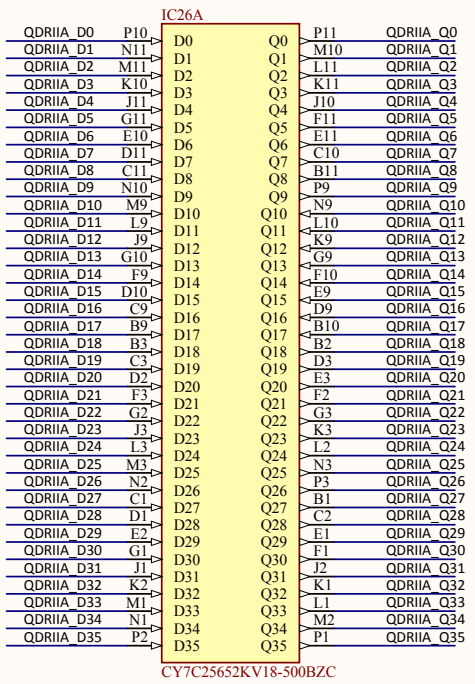
Strataflash



|              |                    |                |  |
|--------------|--------------------|----------------|--|
| Title        |                    | Rev            |  |
| NetFPGA-SUME |                    | C.0            |  |
|              |                    | Copyright 2014 |  |
| Circuit      | StrataFlash Memory |                |  |
| Doc#         | 500-301.           |                |  |
| Engineer     | MTA                |                |  |
| Author       | GMA                |                |  |
| Date         | 9/16/2014          |                |  |
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**DIGILENT**  
BEYOND THEORY





|                     |              |                |  |
|---------------------|--------------|----------------|--|
| Title               |              | Rev            |  |
| <b>NetFPGA-SUME</b> |              | <b>C.0</b>     |  |
| Circuit             |              | Copyright 2014 |  |
| QDR2 Memory         |              |                |  |
| Doc#                | 500-301.     |                |  |
| Engineer            | MTA          |                |  |
| Author              | GMA          |                |  |
| Date                | 9/16/2014    |                |  |
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| IC29A      |     |     |     |
|------------|-----|-----|-----|
| QDRIIB_D0  | P10 | D0  | Q0  |
| QDRIIB_D1  | N11 | D1  | Q1  |
| QDRIIB_D2  | M11 | D2  | Q2  |
| QDRIIB_D3  | K10 | D3  | Q3  |
| QDRIIB_D4  | J11 | D4  | Q4  |
| QDRIIB_D5  | G11 | D5  | Q5  |
| QDRIIB_D6  | E10 | D6  | Q6  |
| QDRIIB_D7  | D11 | D7  | Q7  |
| QDRIIB_D8  | C11 | D8  | Q8  |
| QDRIIB_D9  | N10 | D9  | Q9  |
| QDRIIB_D10 | M9  | D10 | Q10 |
| QDRIIB_D11 | L9  | D11 | Q11 |
| QDRIIB_D12 | J9  | D12 | Q12 |
| QDRIIB_D13 | G10 | D13 | Q13 |
| QDRIIB_D14 | F9  | D14 | Q14 |
| QDRIIB_D15 | D10 | D15 | Q15 |
| QDRIIB_D16 | C9  | D16 | Q16 |
| QDRIIB_D17 | B9  | D17 | Q17 |
| QDRIIB_D18 | B3  | D18 | Q18 |
| QDRIIB_D19 | C3  | D19 | Q19 |
| QDRIIB_D20 | D2  | D20 | Q20 |
| QDRIIB_D21 | F3  | D21 | Q21 |
| QDRIIB_D22 | G2  | D22 | Q22 |
| QDRIIB_D23 | J3  | D23 | Q23 |
| QDRIIB_D24 | L3  | D24 | Q24 |
| QDRIIB_D25 | M3  | D25 | Q25 |
| QDRIIB_D26 | N2  | D26 | Q26 |
| QDRIIB_D27 | C1  | D27 | Q27 |
| QDRIIB_D28 | D1  | D28 | Q28 |
| QDRIIB_D29 | E2  | D29 | Q29 |
| QDRIIB_D30 | G1  | D30 | Q30 |
| QDRIIB_D31 | J1  | D31 | Q31 |
| QDRIIB_D32 | K2  | D32 | Q32 |
| QDRIIB_D33 | M1  | D33 | Q33 |
| QDRIIB_D34 | N1  | D34 | Q34 |
| QDRIIB_D35 | P2  | D35 | Q35 |

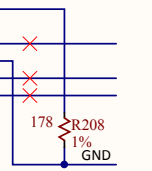
CY7C25652KV18-500BZC

Match CQ lengths

| IC29B       |     |        |      |
|-------------|-----|--------|------|
| QDRIIB_SA0  | A3  | A0     | CQ   |
| QDRIIB_SA1  | A9  | A1     | CQ   |
| QDRIIB_SA2  | B4  | A2     |      |
| QDRIIB_SA3  | B8  | A3     | QVLD |
| QDRIIB_SA4  | C5  | A4     | ODT  |
| QDRIIB_SA5  | C7  | A5     |      |
| QDRIIB_SA6  | N5  | A6     | K    |
| QDRIIB_SA7  | N6  | A7     | K    |
| QDRIIB_SA8  | N7  | A8     | K    |
| QDRIIB_SA9  | P4  | A9     | WPS  |
| QDRIIB_SA10 | P5  | A10    | RPS  |
| QDRIIB_SA11 | P7  | A11    | BWS0 |
| QDRIIB_SA12 | P8  | A12    | BWS1 |
| QDRIIB_SA13 | R3  | A13    | BWS2 |
| QDRIIB_SA14 | R4  | A14    | BWS3 |
| QDRIIB_SA15 | R5  | A15    | DOFF |
| QDRIIB_SA16 | R7  | A16    | ZQ   |
| QDRIIB_SA17 | R8  | A17    | TDO  |
| QDRIIB_SA18 | R9  | A18    | TCK  |
| QDRIIB_SA19 | A10 | A19/NC | TMS  |
| QDRIIB_SA20 | A2  | A20/NC | TDI  |

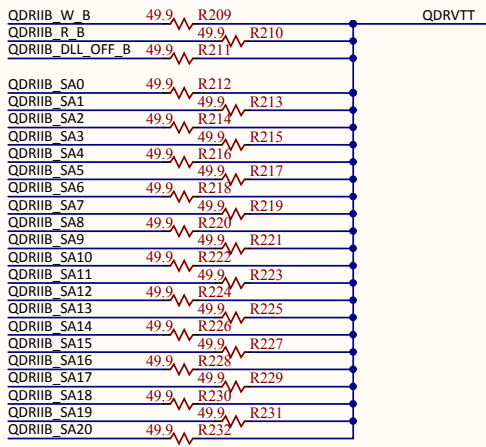
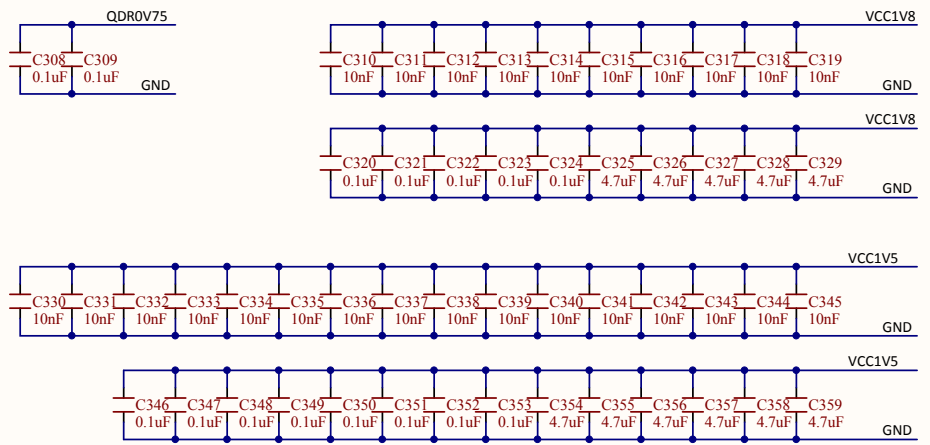
NOTE: 144/288


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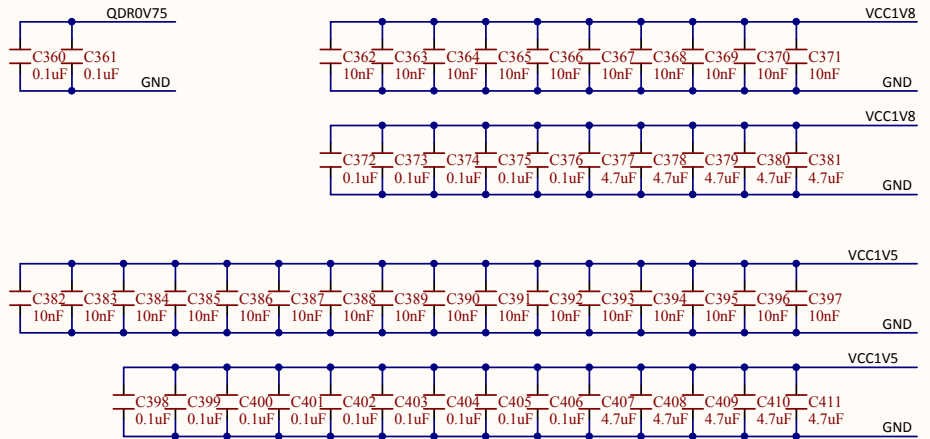
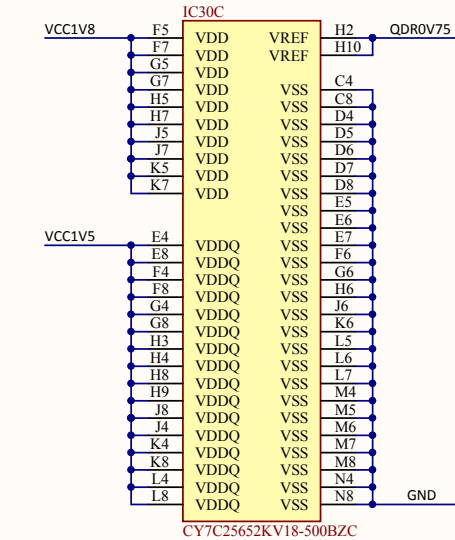
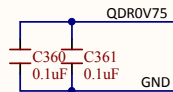
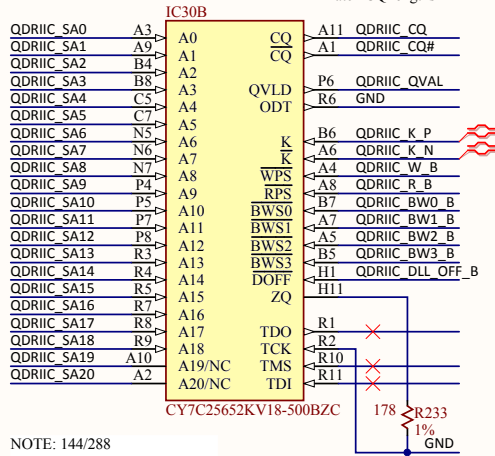
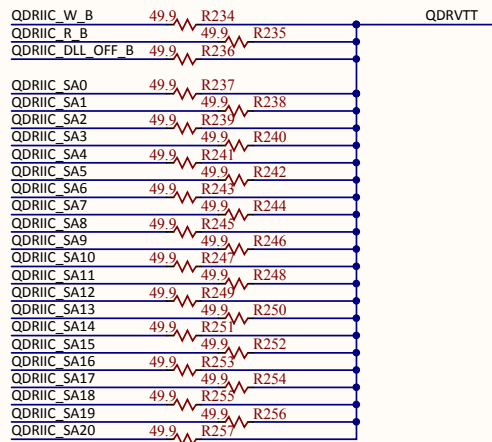
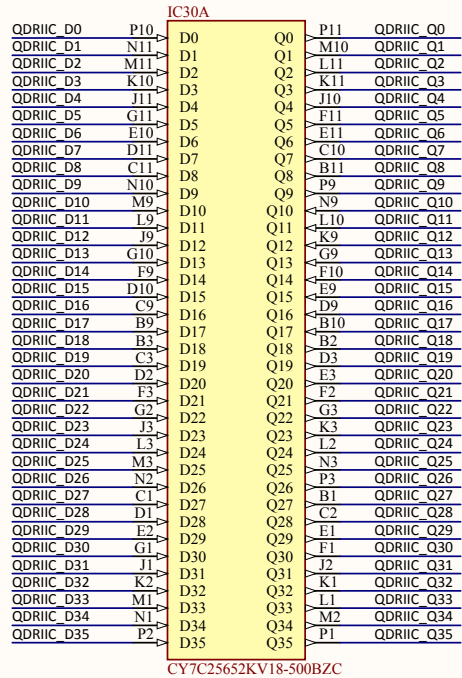


| IC29C  |    |         |      |
|--------|----|---------|------|
| VCC1V8 | F5 | VDD     | VREF |
|        | F7 | VDD     | VREF |
|        | G5 | VDD     | VREF |
|        | G7 | VDD     | VSS  |
|        | H5 | VDD     | VSS  |
|        | H7 | VDD     | VSS  |
|        | J5 | VDD     | VSS  |
|        | J7 | VDD     | VSS  |
|        | K5 | VDD     | VSS  |
|        | K7 | VDD     | VSS  |
| VCC1V5 | E4 | VDDQ    | VSS  |
|        | E8 | VDDQ    | VSS  |
|        | F4 | VDDQ    | VSS  |
|        | F8 | VDDQ    | VSS  |
|        | G4 | VDDQ    | VSS  |
|        | G8 | VDDQ    | VSS  |
|        | H3 | VDDQ    | VSS  |
|        | H4 | VDDQ    | VSS  |
|        | H8 | VDDQ    | VSS  |
|        | H9 | VDDQ    | VSS  |
|        | J8 | VDDQ    | VSS  |
|        | J4 | VDDQ    | VSS  |
|        | K4 | VDDQ    | VSS  |
|        | K8 | VDDQ    | VSS  |
|        | L4 | VDDQ    | VSS  |
|        | L8 | VDDQ    | VSS  |
|        | H2 | QDR0V75 | H10  |
|        | C4 |         | C8   |
|        | D4 |         | D8   |
|        | D5 |         | D6   |
|        | D7 |         | D7   |
|        | D8 |         | D8   |
|        | E5 |         | E5   |
|        | E6 |         | E6   |
|        | E7 |         | E7   |
|        | F6 |         | F6   |
|        | G6 |         | G6   |
|        | H6 |         | H6   |
|        | J6 |         | J6   |
|        | K6 |         | K6   |
|        | L5 |         | L5   |
|        | L6 |         | L6   |
|        | L7 |         | L7   |
|        | M4 |         | M4   |
|        | M5 |         | M5   |
|        | M6 |         | M6   |
|        | M7 |         | M7   |
|        | M8 |         | M8   |
|        | N4 |         | N4   |
|        | N8 |         | N8   |
|        |    |         | GND  |


CY7C25652KV18-500BZC



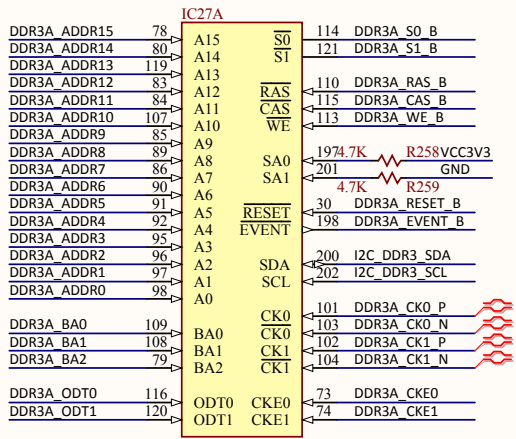
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| Title<br><b>NetFPGA-SUME</b> |  | Rev<br><b>C.0</b><br>Copyright 2014   |
| Circuit<br>QDR2 Memory       |  |  |
| Doc#<br>500-301.             |  |   |
| Engineer<br>MTA              |  |   |
| Author<br>GMA                |  |   |
| Date<br>9/16/2014            |  |   |
| Sheet# 19 out of 29          |  |   |



|              |           |                |    |
|--------------|-----------|----------------|----|
| Title        |           | Rev            |    |
| NetFPGA-SUME |           | C.0            |    |
|              |           | Copyright 2014 |    |
| Circuit      |           | QDR2 Memory    |    |
| Doc#         | 500-301.  |                |    |
| Engineer     | MTA       |                |    |
| Author       | GMA       |                |    |
| Date         | 9/16/2014 |                |    |
| Sheet#       | 20        | out of         | 29 |

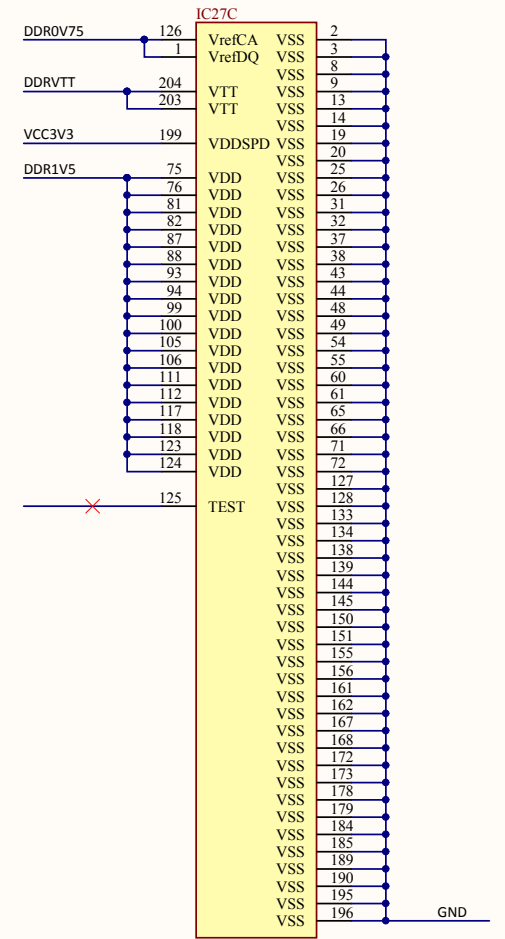
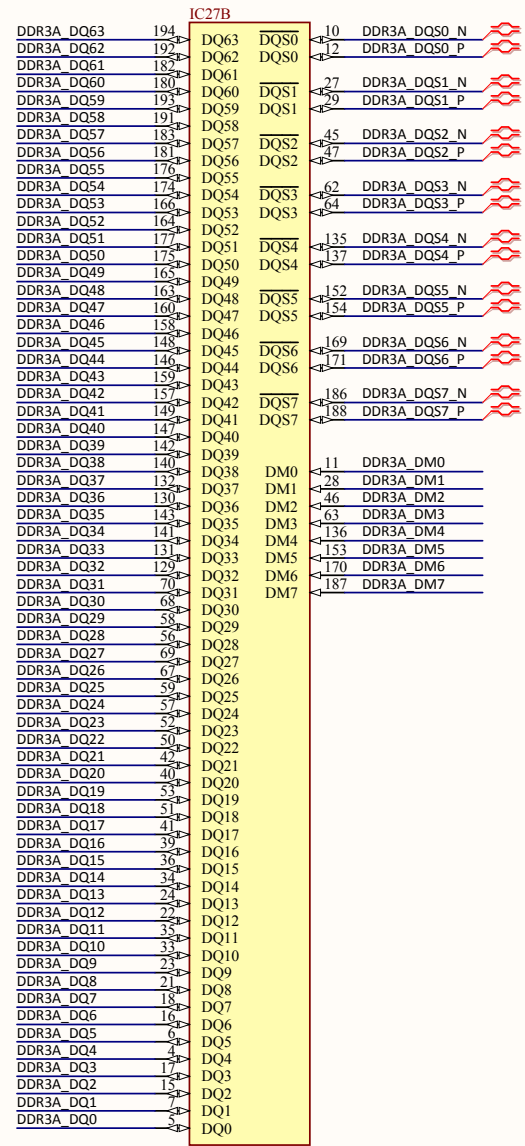
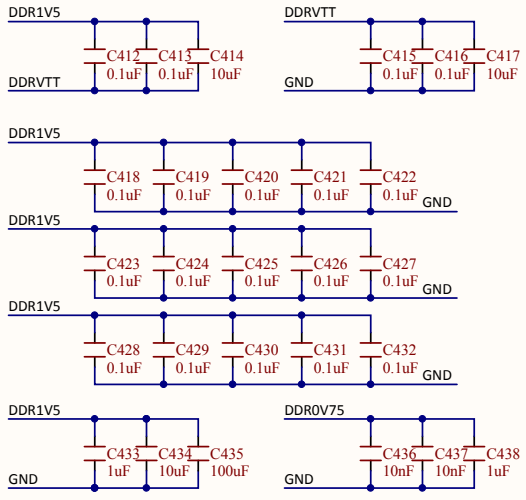
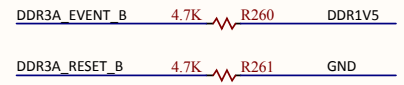






TE Connectivity 2013310-1 with Micron MT8KTF51264HZ-1G9 loaded

I2C Addresses =  
1010001, 0011001



|                               |  |                   |
|-------------------------------|--|-------------------|
| Title<br><b>NetFPGA-SUME</b>  |  | Rev<br><b>C.0</b> |
| Circuit<br>SODIMM DDR3 Memory |  | Copyright 2014    |
| Doc#<br>500-301.              |  |                   |
| Engineer<br>MTA               |  |                   |
| Author<br>GMA                 |  |                   |
| Date<br>9/16/2014             |  |                   |
| Sheet# 21 out of 29           |  |                   |

A

B

C

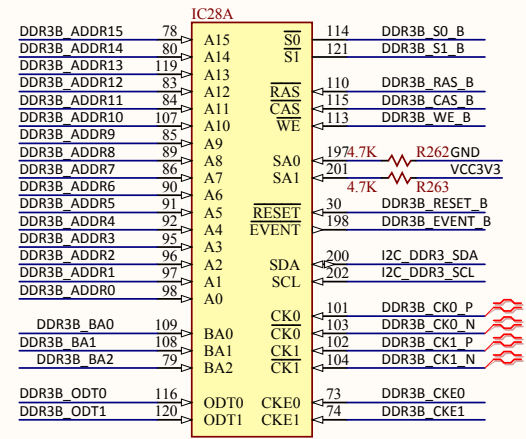
D

A

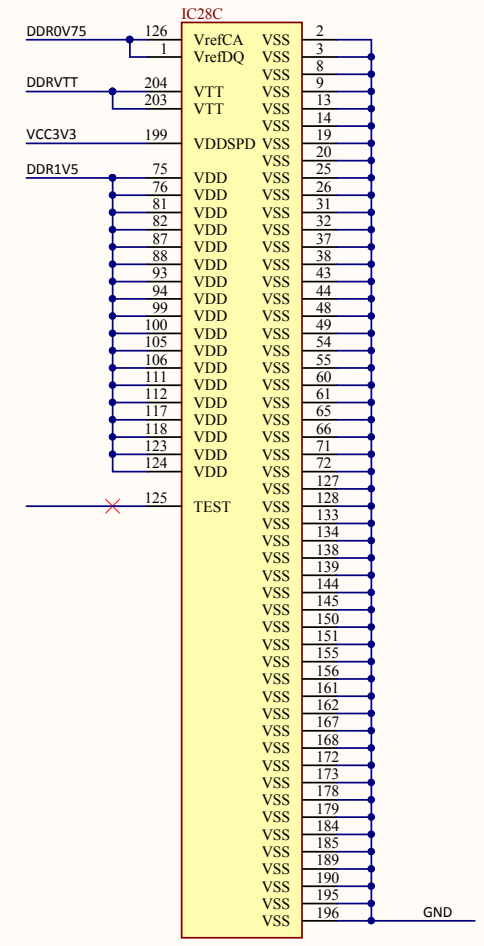
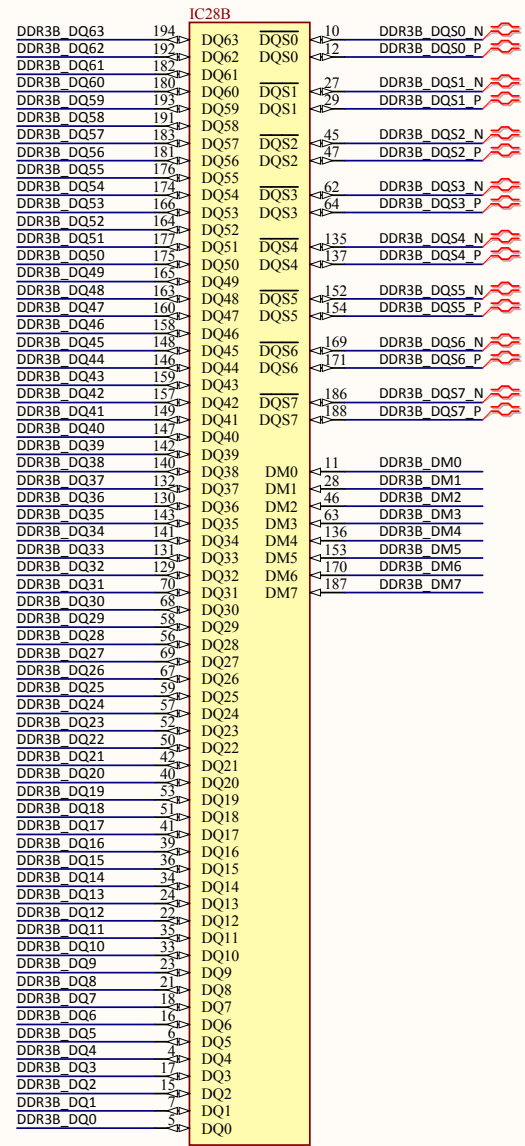
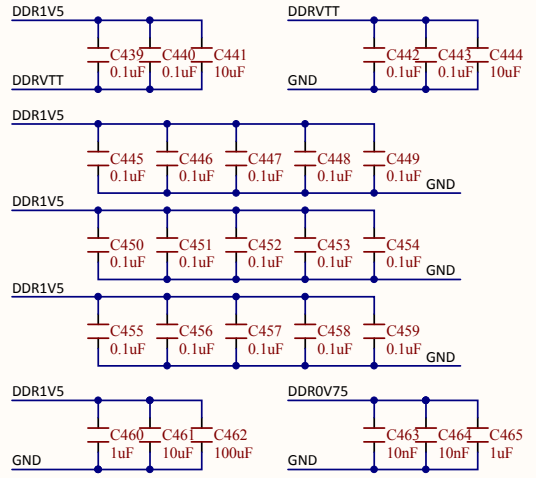
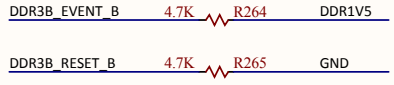
B

C

D

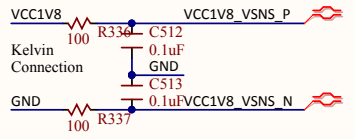
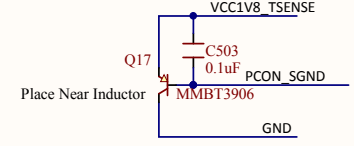
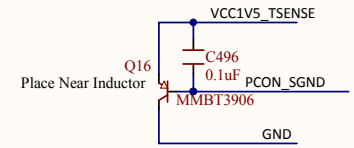
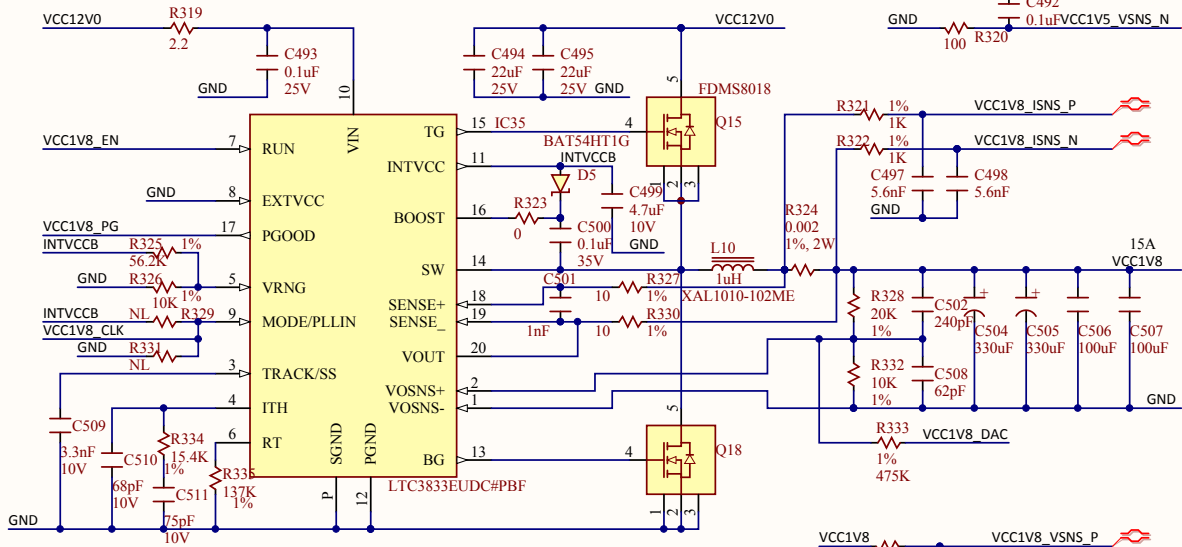
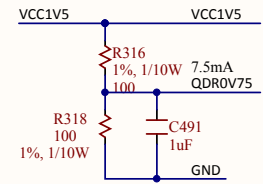
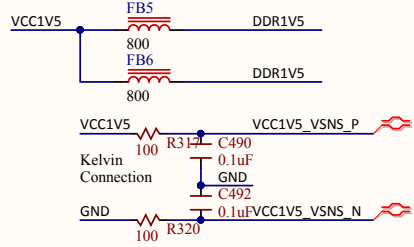
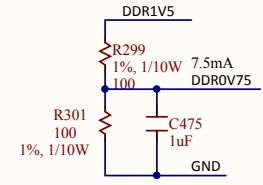
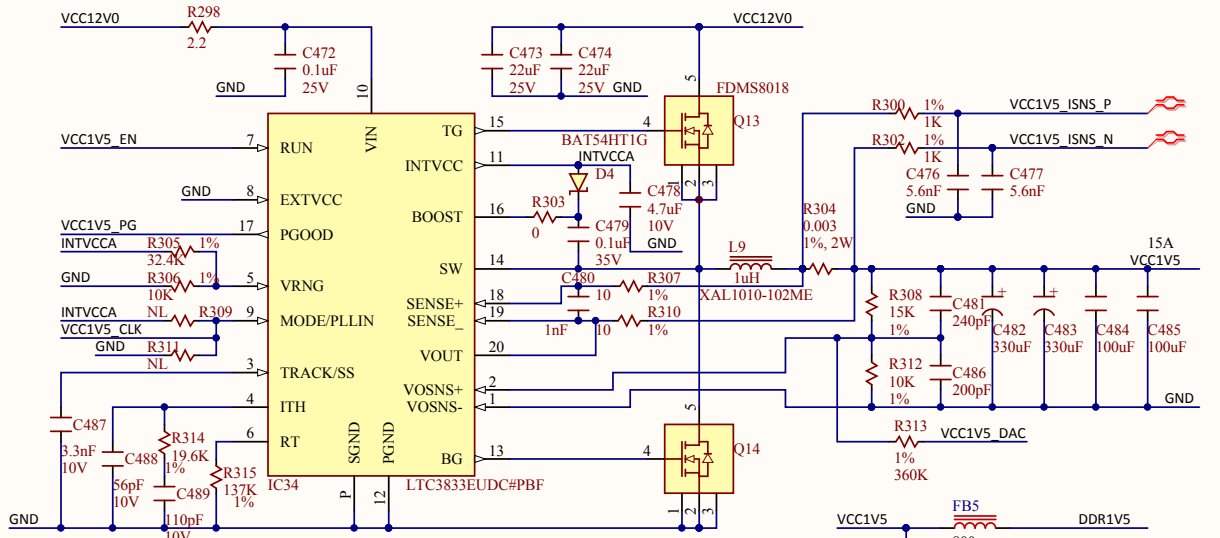


TE CoTe Connectivity 2013289-1 with Micron MT8KTF51264HZ-IG9 loaded  
 I2C Addresses =  
 1010010, 0011010



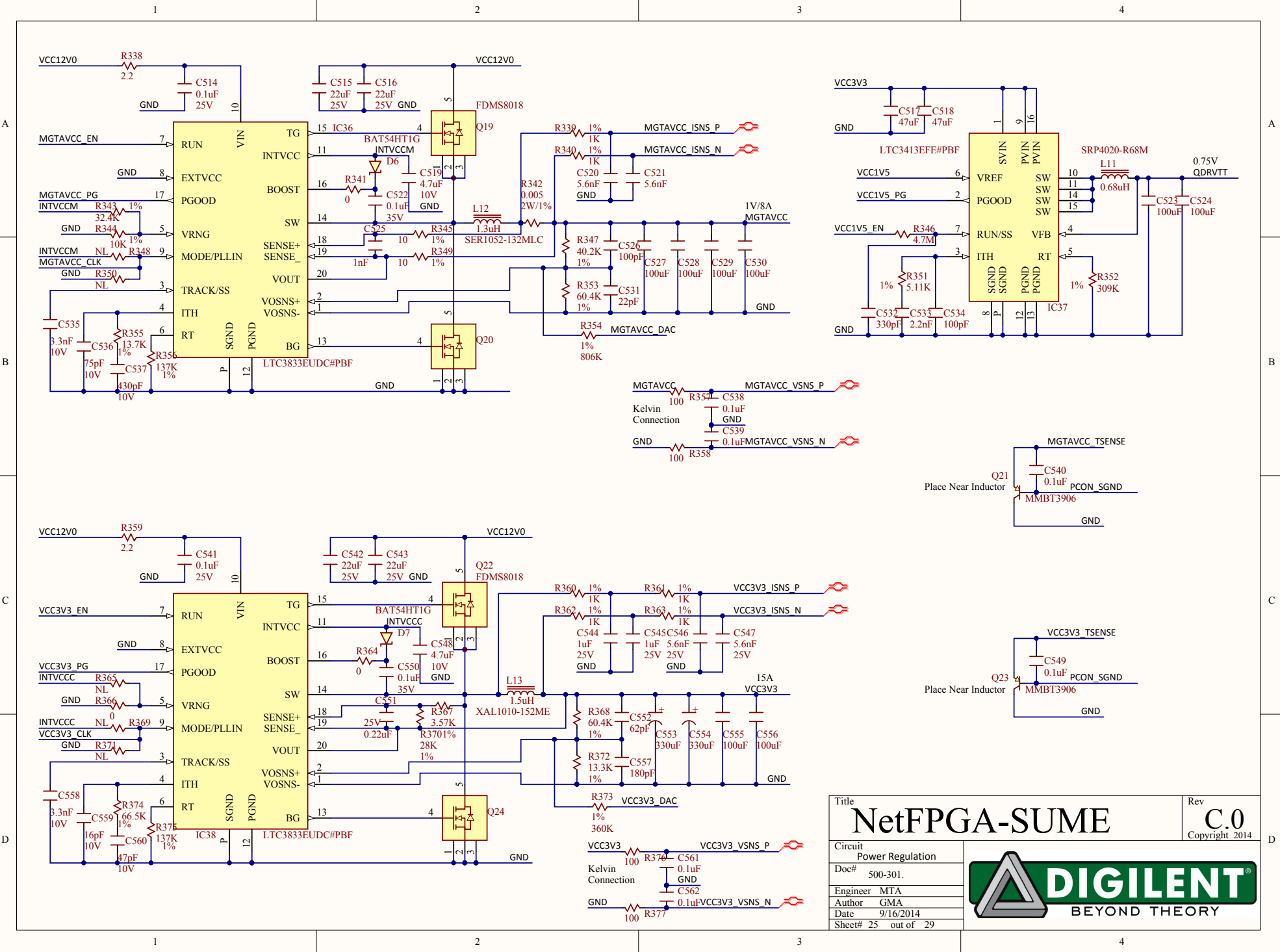
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|-------------------------------|--------------|-------------------|
| Title<br><b>NetFPGA-SUME</b>  |              | Rev<br><b>C.0</b> |
| Circuit<br>SODIMM DDR3 Memory |              | Copyright 2014    |
| Doc#                          | 500-301.     |                   |
| Engineer                      | MTA          |                   |
| Author                        | GMA          |                   |
| Date                          | 9/16/2014    |                   |
| Sheet#                        | 22 out of 29 |                   |





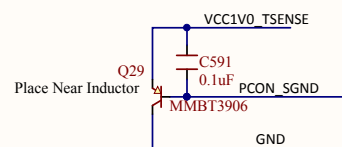
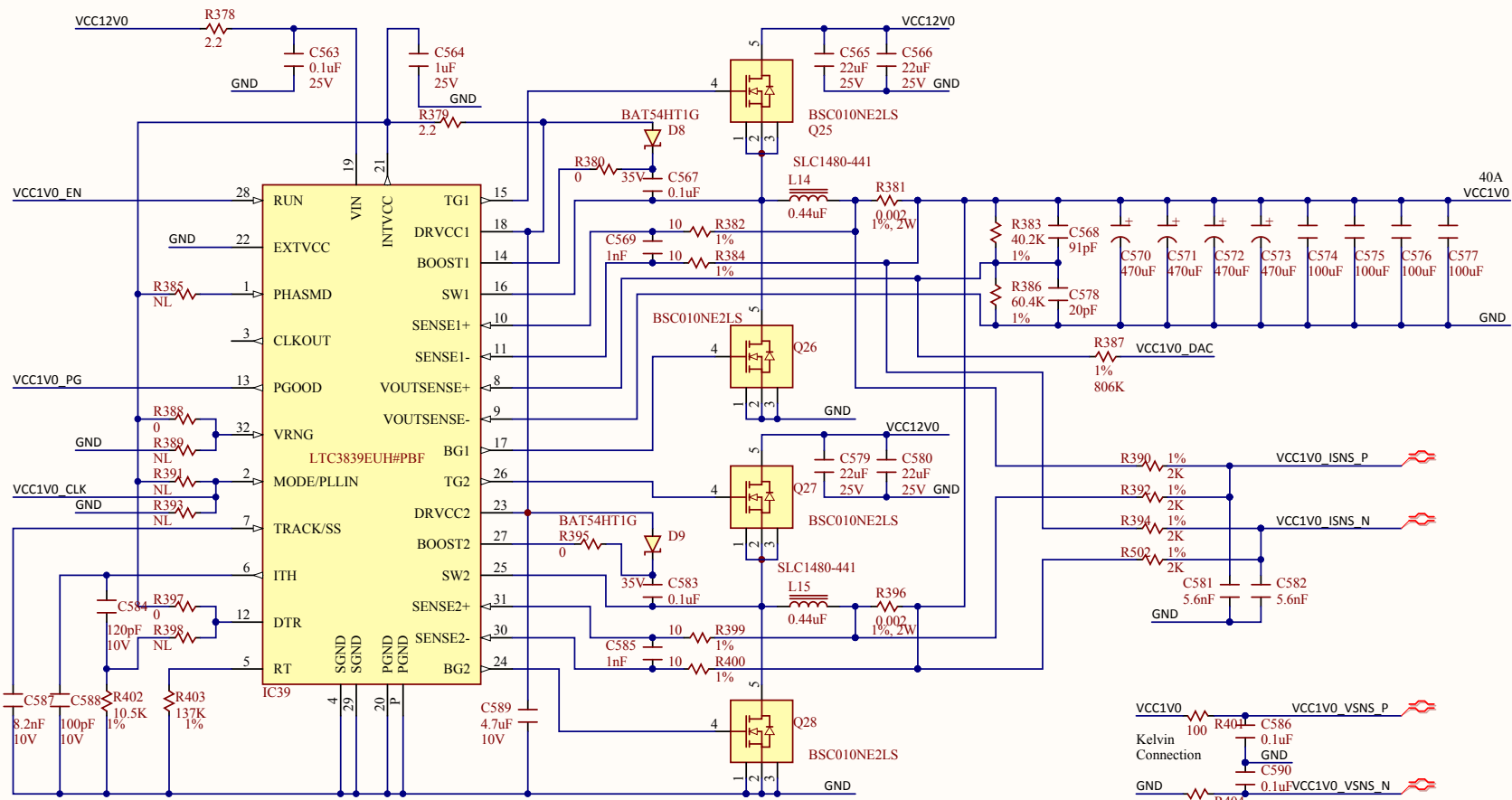
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| Title                    |  | Rev |  |
| NetFPGA-SUME             |  | C.0 |  |
| Copyright 2014           |  |     |  |
| Circuit Power Regulation |  |     |  |
| Doc# 500-301.            |  |     |  |
| Engineer MTA             |  |     |  |
| Author GMA               |  |     |  |
| Date 9/16/2014           |  |     |  |
| Sheet# 24 out of 29      |  |     |  |





|                  |              |                |  |
|------------------|--------------|----------------|--|
| Title            |              | Rev            |  |
| NetFPGA-SUME     |              | C.0            |  |
| Circuit          |              | Copyright 2014 |  |
| Power Regulation |              |                |  |
| Doc#             | 500-301.     |                |  |
| Engineer         | MTA          |                |  |
| Author           | GMA          |                |  |
| Date             | 9/16/2014    |                |  |
| Sheet#           | 25 out of 29 |                |  |



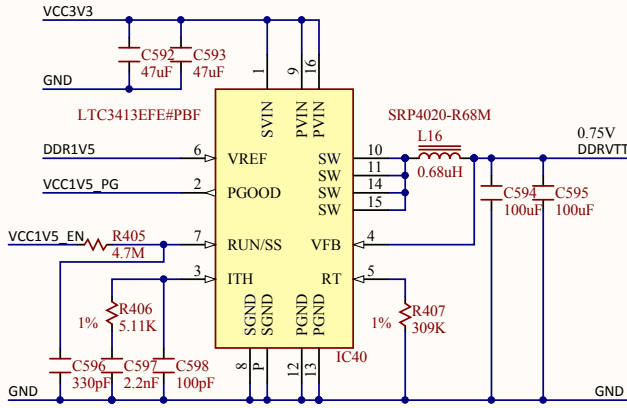


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|------------------|--------------|----------------|
| Title            |              | Rev            |
| NetFPGA-SUME     |              | C.0            |
|                  |              | Copyright 2014 |
| Circuit          |              |                |
| Power Regulation |              |                |
| Doc#             | 500-301.     |                |
| Engineer         | MTA          |                |
| Author           | GMA          |                |
| Date             | 9/16/2014    |                |
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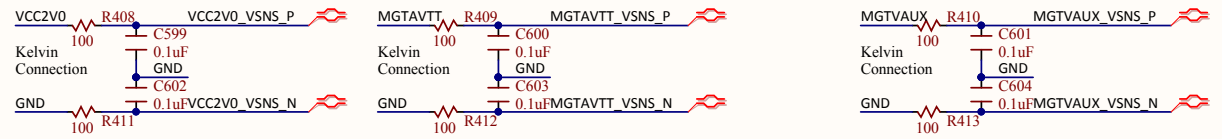




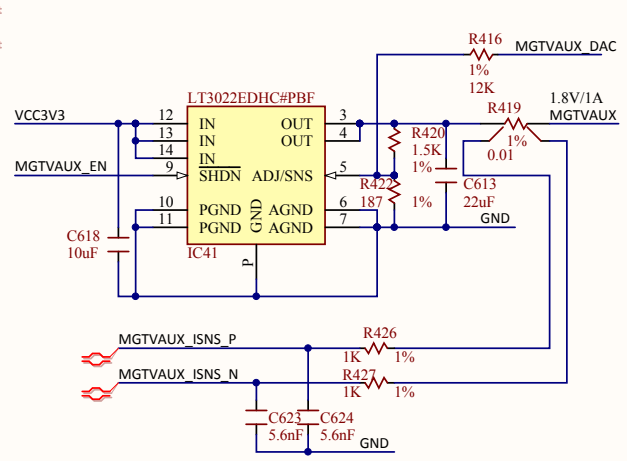
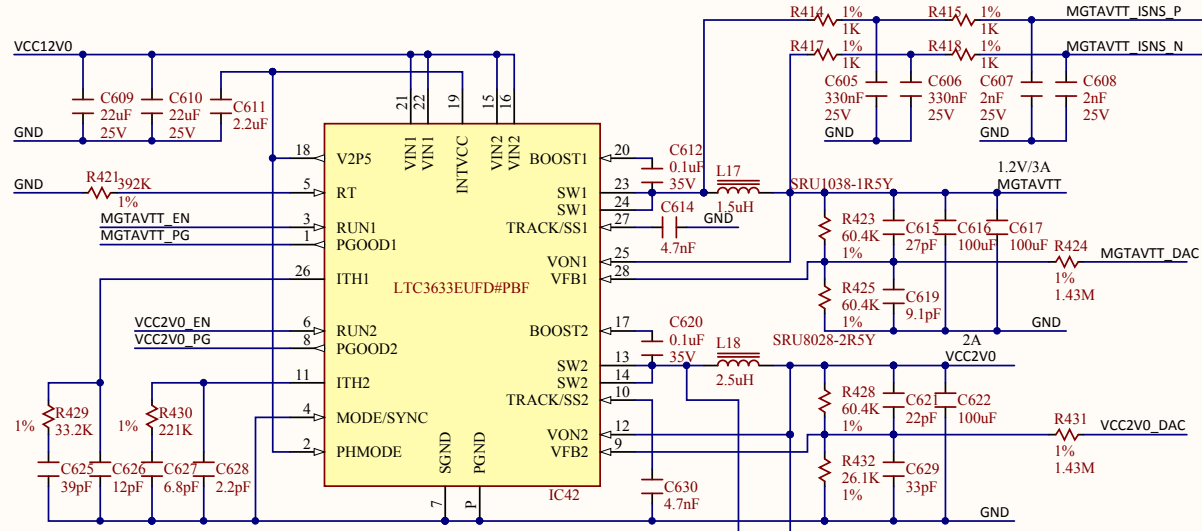
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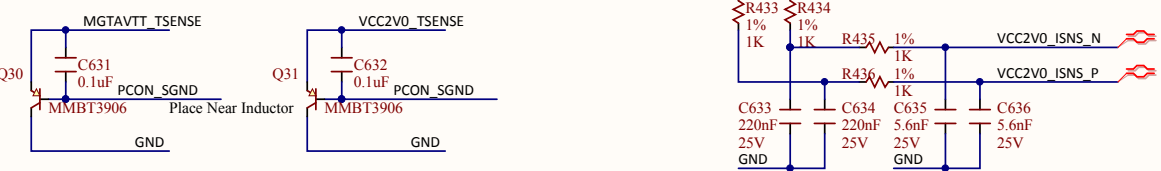
B




C



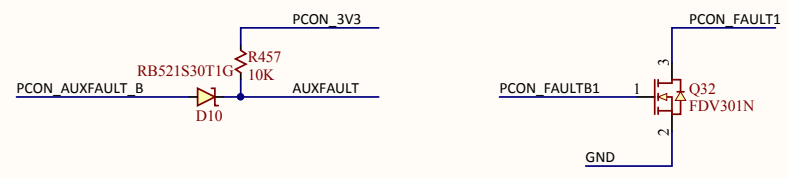
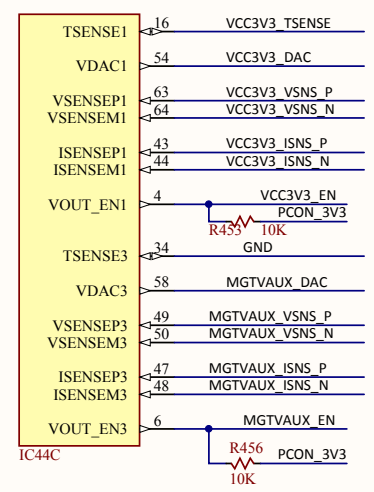
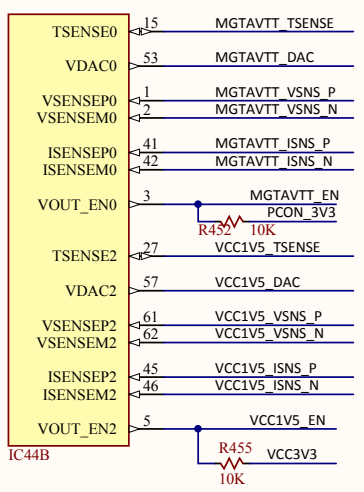
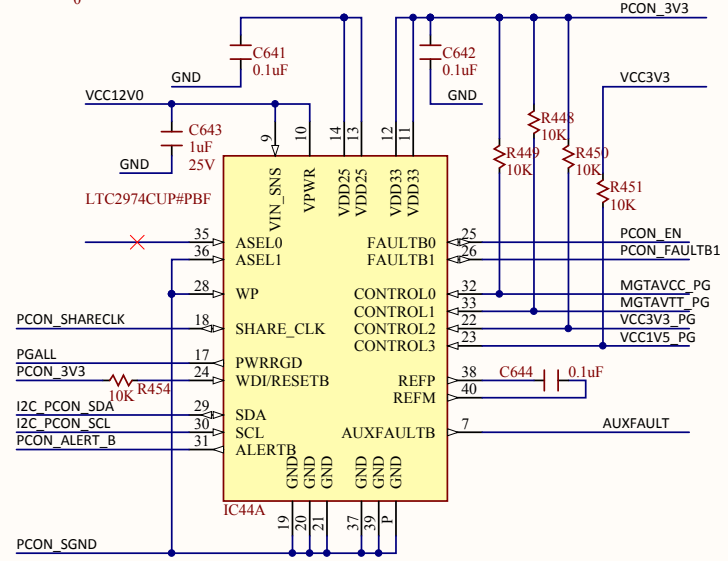
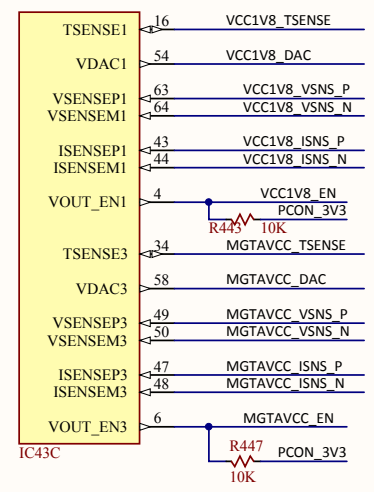
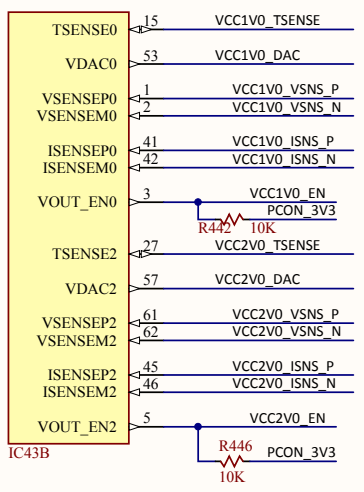
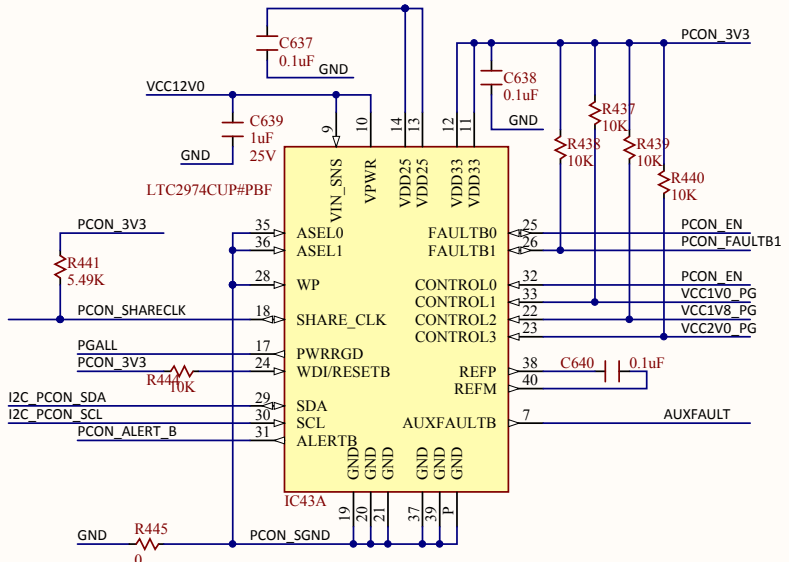
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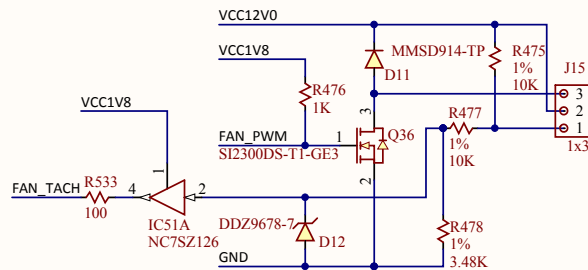
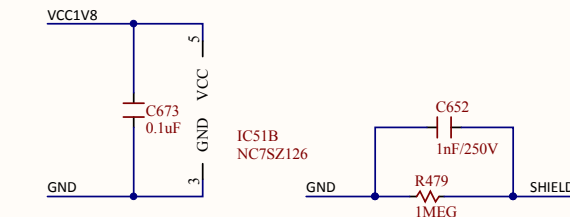
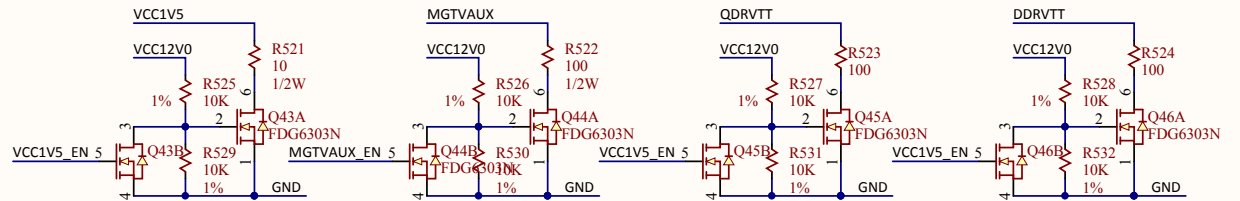
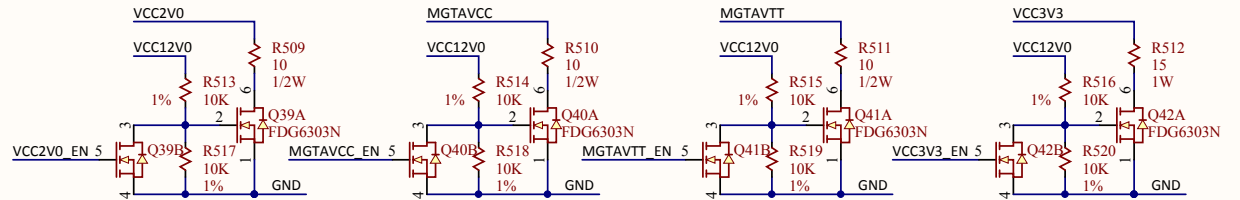
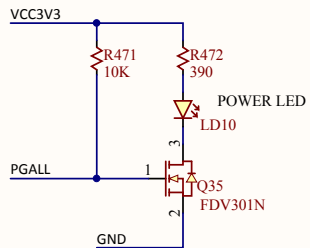
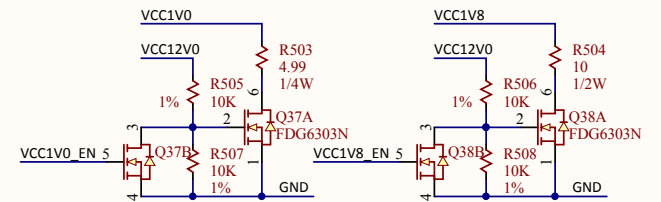
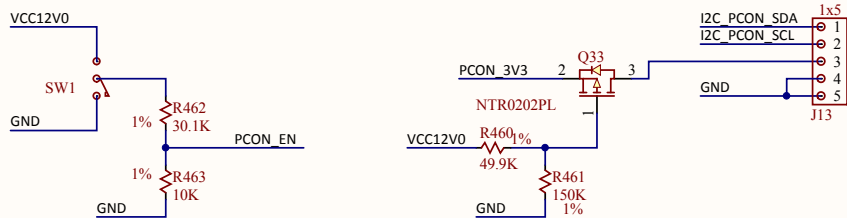
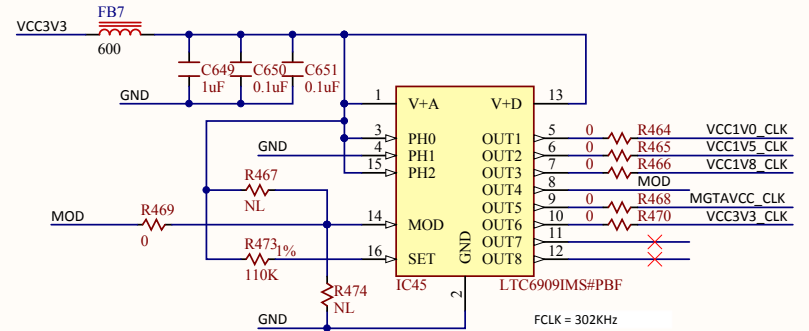
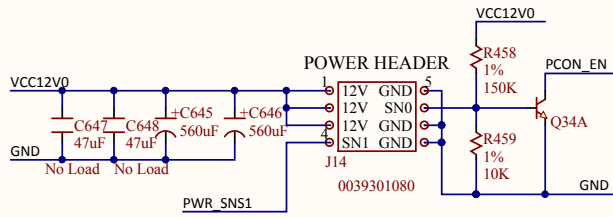
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| Title                    |  | Rev            |  |
| <h1>NetFPGA-SUME</h1>    |  | <h1>C.0</h1>   |  |
|                          |  | Copyright 2014 |  |
| Circuit Power Regulation |  |                |  |
| Doc# 500-301.            |  |                |  |
| Engineer MTA             |  |                |  |
| Author GMA               |  |                |  |
| Date 9/16/2014           |  |                |  |
| Sheet# 27 out of 29      |  |                |  |



**DIGILENT**  
BEYOND THEORY



|                              |  |                   |
|------------------------------|--|-------------------|
| Title<br><b>NetFPGA-SUME</b> |  | Rev<br><b>C.0</b> |
| Circuit<br>Power Monitor     |  | Copyright 2014    |
| Doc#<br>500-301.             |  |                   |
| Engineer<br>MTA              |  |                   |
| Author<br>GMA                |  |                   |
| Date<br>9/16/2014            |  |                   |
| Sheet# 28 out of 29          |  |                   |



|                  |              |     |
|------------------|--------------|-----|
| Title            |              | Rev |
| NetFPGA-SUME     |              | C.0 |
| Copyright 2014   |              |     |
| Circuit          |              |     |
| Power Connectors |              |     |
| Doc#             | 500-301.     |     |
| Engineer         | MTA          |     |
| Author           | GMA          |     |
| Date             | 9/16/2014    |     |
| Sheet#           | 29 out of 29 |     |