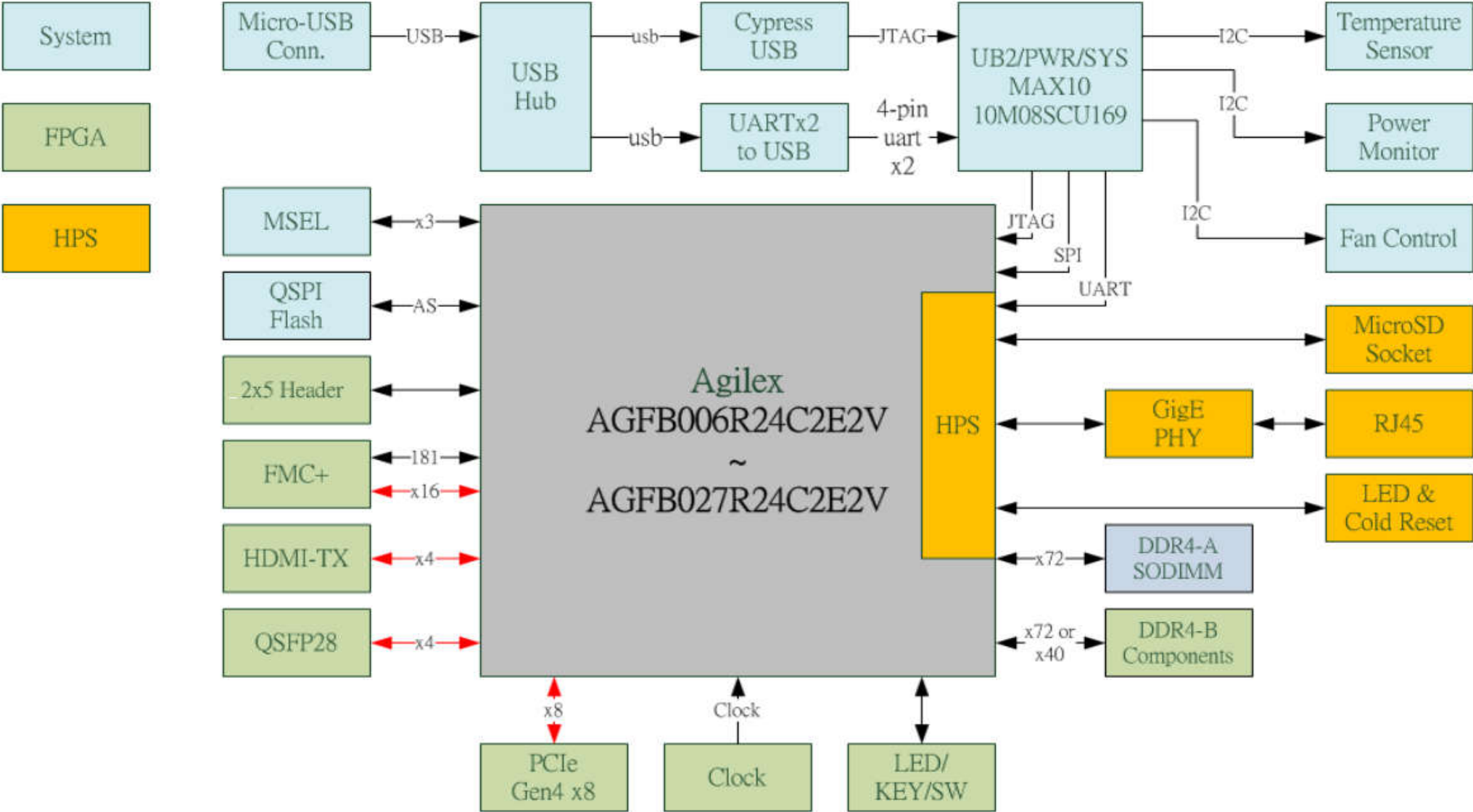
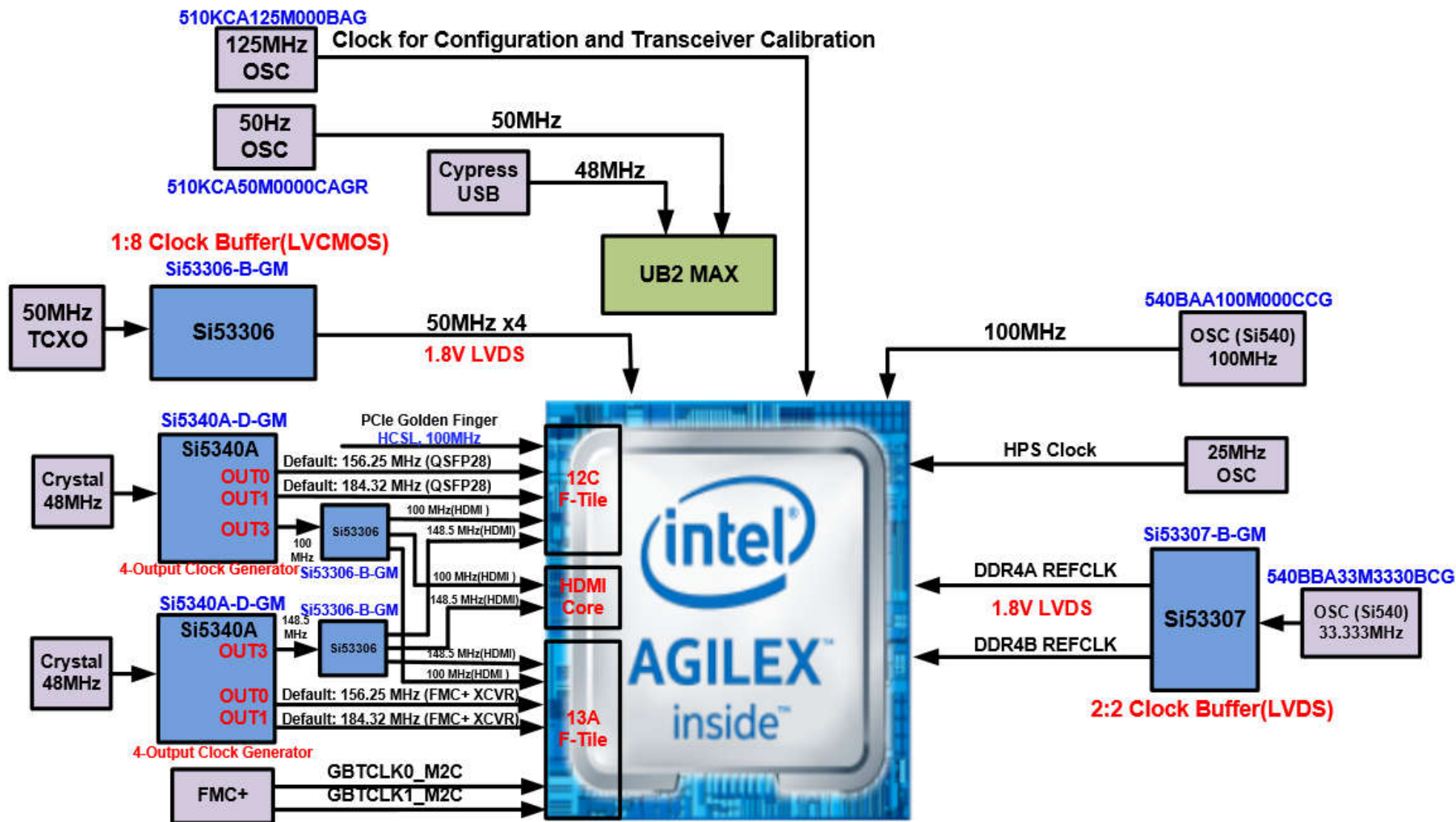


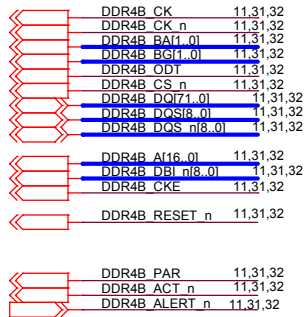
Block Diagram



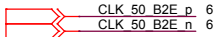
# Clock Tree



## DDR4 SO-DIMM B



RAS\_n is a multiplexed function with A16  
CAS\_n is a multiplexed function with A15  
WE\_n is a multiplexed function with A14



|              |      |
|--------------|------|
| DDR4B_DQ51   | DA55 |
| DDR4B_DQ53   | CY64 |
| DDR4B_DQ55   | DC55 |
| DDR4B_DQ49   | DD54 |
|              | DA53 |
| DDR4B_DBI_n6 | CY52 |
| DDR4B_DQS_n6 | DC53 |
| DDR4B_DQ56   | DD52 |
| DDR4B_DQ50   | DA51 |
| DDR4B_DQ54   | CY50 |
| DDR4B_DQ48   | DC51 |
| DDR4B_DQ52   | DD50 |
|              | DE53 |
| DDR4B_DQ63   | DE53 |
| DDR4B_DQ61   | DF52 |
| DDR4B_DQ59   | DE51 |
| DDR4B_DQ57   | DH50 |
|              | DE49 |
| DDR4B_DBI_n7 | DF48 |
| DDR4B_DQS_n7 | DJ49 |
| DDR4B_DQ57   | DH48 |
| DDR4B_DQ56   | DE47 |
| DDR4B_DQ60   | DF46 |
| DDR4B_DQ62   | DJ47 |
| DDR4B_DQ58   | DH46 |
|              | DA49 |
| DDR4B_DQ45   | DA49 |
| DDR4B_DQ47   | CY48 |
| DDR4B_DQ43   | DC49 |
| DDR4B_DQ41   | DD48 |
|              | DA47 |
| DDR4B_DBI_n5 | CY46 |
| DDR4B_DQS_n5 | DC47 |
| DDR4B_DQ55   | DD46 |
| DDR4B_DQ42   | DA45 |
| DDR4B_DQ44   | CY44 |
| DDR4B_DQ40   | DC45 |
| DDR4B_DQ46   | DD44 |
|              | DE45 |
| DDR4B_DQ69   | DE45 |
| DDR4B_DQ67   | DF44 |
| DDR4B_DQ65   | DJ45 |
| DDR4B_DQ71   | DH44 |
|              | DE43 |
| DDR4B_DBI_n8 | DF42 |
| DDR4B_DQS_n8 | DJ43 |
| DDR4B_DQ58   | DH42 |
| DDR4B_DQ66   | DE41 |
| DDR4B_DQ68   | DF40 |
| DDR4B_DQ64   | DJ41 |
| DDR4B_DQ70   | DH40 |

U35E

IO Bank 2E VCCIO = 1.2V

|   |
|---|
| IO_2E/DIFF_RX_2E1N/95/DQ24  |
| IO_2E/DIFF_RX_2E1P/94/DQ24  |
| IO_2E/DIFF_TX_2E1N/93/DQ24  |
| IO_2E/DIFF_TX_2E1P/92/DQ24  |
| IO_2E/DIFF_RX_2E2N/91/DQ24  |
| IO_2E/DIFF_RX_2E2P/90/DQ24  |
| IO_2E/DIFF_TX_2E2N/89/DQSN24/CQN24  |
| IO_2E/DIFF_TX_2E2P/88/DQSN24/CQ24   |
| IO_2E/DIFF_RX_2E3N/87/DQ24  |
| IO_2E/DIFF_RX_2E3P/86/DQ24  |
| IO_2E/DIFF_TX_2E3N/85/DQ24  |
| IO_2E/DIFF_TX_2E3P/84/DQ24  |
| IO_2E/DIFF_RX_2E4N/83/DQ25  |
| IO_2E/DIFF_RX_2E4P/82/DQ25  |
| IO_2E/DIFF_TX_2E4N/81/DQ25  |
| IO_2E/DIFF_TX_2E4P/80/DQ25  |
| IO_2E/DIFF_RX_2E5N/79/DQ25  |
| IO_2E/DIFF_RX_2E5P/78/DQ25  |
| IO_2E/PLL_2E_T_CLKOUT1N/DIFF_TX_2E5N/77/DQSN25/CQN25                              |
| IO_2E/PLL_2E_T_CLKOUT1P,PLL_2E_T_CLKOUT1,PLL_2E_T_FB1/DIFF_TX_2E5P/76/DQSN25/CQ25 |
| IO_2E/DIFF_RX_2E6N/75/DQ25  |
| IO_2E/RZQ_T_2E/DIFF_RX_2E6P/74/DQ25   |
| IO_2E/CLK_T_2E_1N/DIFF_TX_2E6N/73/DQ25  |
| IO_2E/CLK_T_2E_1P/DIFF_TX_2E6P/72/DQ25  |
| IO_2E/CLK_B_2E_0N/DIFF_RX_2E7N/71/DQ26  |
| IO_2E/CLK_T_2E_0P/DIFF_RX_2E7P/70/DQ26  |
| IO_2E/DIFF_TX_2E7N/69/DQ26  |
| IO_2E/DIFF_TX_2E7P/68/DQ26  |
| IO_2E/PLL_2E_T_CLKOUT0N/DIFF_RX_2E8N/67/DQ26                                      |
| IO_2E/PLL_2E_T_CLKOUT0P,PLL_2E_T_CLKOUT0,PLL_2E_T_FB0/DIFF_RX_2E8P/66/DQ26        |
| IO_2E/DIFF_TX_2E8N/65/DQSN26/CQN26  |
| IO_2E/DIFF_TX_2E8P/64/DQSN26/CQ26   |
| IO_2E/DIFF_RX_2E9N/63/DQ26  |
| IO_2E/DIFF_RX_2E9P/62/DQ26  |
| IO_2E/DIFF_TX_2E9N/61/DQ26  |
| IO_2E/DIFF_TX_2E9P/60/DQ26  |
| IO_2E/DIFF_RX_2E10N/59/DQ27   |
| IO_2E/DIFF_RX_2E10P/58/DQ27   |
| IO_2E/DIFF_TX_2E10N/57/DQ27   |
| IO_2E/DIFF_TX_2E10P/56/DQ27   |
| IO_2E/DIFF_RX_2E11N/55/DQ27   |
| IO_2E/DIFF_RX_2E11P/54/DQ27   |
| IO_2E/DIFF_TX_2E11N/53/DQSN27/CQN27   |
| IO_2E/DIFF_TX_2E11P/52/DQSN27/CQ27  |
| IO_2E/DIFF_RX_2E12N/51/DQ27   |
| IO_2E/DIFF_RX_2E12P/50/DQ27   |
| IO_2E/DIFF_TX_2E12N/49/DQ27   |
| IO_2E/DIFF_TX_2E12P/48/DQ27   |

TOP BOT

AGFB027R24C2E2V



|   |
|---|
| IO_2E/CLK_B_2E_0N/DIFF_RX_2E19N/23/DQ30                                     |
| IO_2E/CLK_B_2E_0P/DIFF_RX_2E19P/22/DQ30                                     |
| IO_2E/DIFF_TX_2E19N/21/DQ30   |
| IO_2E/DIFF_TX_2E19P/20/DQ30   |
| IO_2E/PLL_2E_B_CLKOUT0N/DIFF_RX_2E20N/19/DQ30                               |
| IO_2E/PLL_2E_B_CLKOUT0P,PLL_2E_B_CLKOUT0,PLL_2E_B_FB0/DIFF_RX_2E20P/18/DQ30 |
| IO_2E/DIFF_TX_2E20N/17/DQSN30/CQN30   |
| IO_2E/DIFF_TX_2E20P/16/DQSN30/CQ30  |
| IO_2E/DIFF_RX_2E21N/15/DQ30   |
| IO_2E/DIFF_RX_2E21P/14/DQ30   |
| IO_2E/DIFF_TX_2E21N/13/DQ30   |
| IO_2E/DIFF_TX_2E21P/12/DQ30   |
| IO_2E/DIFF_RX_2E22N/11/DQ31   |
| IO_2E/DIFF_RX_2E22P/10/DQ31   |
| IO_2E/DIFF_TX_2E22N/9/DQ31  |
| IO_2E/DIFF_TX_2E22P/8/DQ31  |
| IO_2E/DIFF_RX_2E23N/7/DQ31  |
| IO_2E/DIFF_RX_2E23P/6/DQ31  |
| IO_2E/DIFF_TX_2E23N/5/DQSN31/CQN31  |
| IO_2E/DIFF_TX_2E23P/4/DQSN31/CQ31   |
| IO_2E/DIFF_RX_2E24N/3/DQ31  |
| IO_2E/DIFF_RX_2E24P/2/DQ31  |
| IO_2E/DIFF_TX_2E24N/1/DQ31  |
| IO_2E/DIFF_TX_2E24P/1/DQ31  |

|      |              |
|------|--------------|
| CN53 | CLK_50_B2E_n |
| CM52 | CLK_50_B2E_p |
| CR53 |              |
| CT52 |              |
| CL51 |              |
| CK50 |              |
| CN51 |              |
| CP50 |              |
| CL49 |              |
| CK48 |              |
| CN49 |              |
| CP48 |              |
|      | CW55         |
|      | CV54         |
|      | CW53         |
|      | CV52         |
|      | CR51         |
|      | CT50         |
|      | CW51         |
|      | CV50         |
|      | CR49         |
|      | CT48         |
|      | CW49         |
|      | CV48         |

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Title

A7SK

Size  
BDocument Number  
FPGA Bank 2ERev  
B

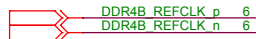
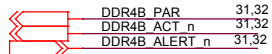
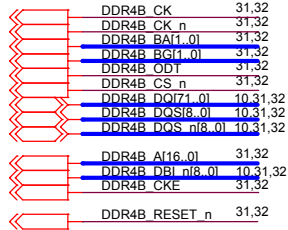
Date:

Friday, April 07, 2023

Sheet

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## DDR4 SO-DIMM B



RAS\_n is a multiplexed function with A16  
CAS\_n is a multiplexed function with A15  
WE\_n is a multiplexed function with A14



R510

|              |      |
|--------------|------|
| DDR4B_DQ0    | DE29 |
| DDR4B_DQ6    | DF28 |
| DDR4B_DQ2    | DJ29 |
| DDR4B_DQ4    | DI28 |
| DDR4B_DBI_n0 | DF30 |
| DDR4B_DQS_n0 | DJ31 |
| DDR4B_DQS0   | DH30 |
| DDR4B_DQ7    | DE33 |
| DDR4B_DQ3    | DF32 |
| DDR4B_DQ5    | DJ33 |
| DDR4B_DQ1    | DH32 |

|                |      |
|----------------|------|
| DDR4B_BG0      | DA33 |
| DDR4B_BA1      | CY32 |
| DDR4B_ALERT_n  | DD32 |
| DDR4B_A16      | DA35 |
| DDR4B_A15      | CY34 |
| DDR4B_A14      | DC35 |
| DDR4B_A13      | DD34 |
| DDR4B_A12      | DA37 |
| DDR4B_RZQ      | CY36 |
| DDR4B_REFCLK_n | DC37 |
| DDR4B_REFCLK_p | DD36 |

|           |      |
|-----------|------|
| DDR4B_A11 | DE35 |
| DDR4B_A10 | DF34 |
| DDR4B_A9  | DJ35 |
| DDR4B_A8  | DH34 |
| DDR4B_A7  | DE37 |
| DDR4B_A6  | DF36 |
| DDR4B_A5  | DJ37 |
| DDR4B_A4  | DH36 |
| DDR4B_A3  | DE39 |
| DDR4B_A2  | DF38 |
| DDR4B_A1  | DJ39 |
| DDR4B_A0  | DH38 |

|               |      |
|---------------|------|
| DDR4B_PAR     | DA39 |
| DDR4B_CK_n    | DC39 |
| DDR4B_CK      | DD38 |
| DDR4B_CKE     | DA41 |
| DDR4B_ODT     | DC41 |
| DDR4B_ACT_n   | DA43 |
| DDR4B_CS_n    | CY42 |
| DDR4B_RESET_n | DC43 |
| DDR4B_BG1     | DD42 |

U35D

|                                    |  |
|------------------------------------|--|
| IO_2F/DIFF_RX_2F1N/95/DQ16         |  |
| IO_2F/DIFF_RX_2F1P/94/DQ16         |  |
| IO_2F/DIFF_TX_2F1N/93/DQ16         |  |
| IO_2F/DIFF_TX_2F1P/92/DQ16         |  |
| IO_2F/DIFF_RX_2F2N/91/DQ16         |  |
| IO_2F/DIFF_RX_2F2P/90/DQ16         |  |
| IO_2F/DIFF_TX_2F2N/89/DQSN16/CQN16 |  |
| IO_2F/DIFF_TX_2F2P/88/DQSN16/CQ16  |  |
| IO_2F/DIFF_RX_2F3N/87/DQ16         |  |
| IO_2F/DIFF_RX_2F3P/86/DQ16         |  |
| IO_2F/DIFF_TX_2F3N/85/DQ16         |  |
| IO_2F/DIFF_TX_2F3P/84/DQ16         |  |

|                                    |  |
|------------------------------------|--|
| IO_2F/DIFF_RX_2F4N/83/DQ17         |  |
| IO_2F/DIFF_RX_2F4P/82/DQ17         |  |
| IO_2F/DIFF_TX_2F4N/81/DQ17         |  |
| IO_2F/DIFF_TX_2F4P/80/DQ17         |  |
| IO_2F/DIFF_RX_2F5N/79/DQ17         |  |
| IO_2F/DIFF_RX_2F5P/78/DQ17         |  |
| IO_2F/DIFF_TX_2F5N/77/DQSN17/CQN17 |  |
| IO_2F/DIFF_TX_2F5P/76/DQSN17/CQ17  |  |
| IO_2F/DIFF_RX_2F6N/75/DQ17         |  |
| IO_2F/DIFF_RX_2F6P/74/DQ17         |  |
| IO_2F/DIFF_TX_2F6N/73/DQ17         |  |
| IO_2F/DIFF_TX_2F6P/72/DQ17         |  |

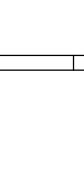
|  |  |
|--|--|
| IO_2F/CLK_T_2F_0N/DIFF_RX_2F7N/71/DQ18 |  |
| IO_2F/CLK_T_2F_0P/DIFF_RX_2F7P/70/DQ18 |  |
| IO_2F/DIFF_TX_2F7N/69/DQ18             |  |
| IO_2F/DIFF_TX_2F7P/68/DQ18             |  |
| IO_2F/DIFF_RX_2F8N/67/DQ18             |  |
| IO_2F/DIFF_RX_2F8P/66/DQ18             |  |
| IO_2F/DIFF_TX_2F8N/65/DQSN18/CQN18     |  |
| IO_2F/DIFF_TX_2F8P/64/DQSN18/CQ18      |  |
| IO_2F/DIFF_RX_2F9N/63/DQ18             |  |
| IO_2F/DIFF_RX_2F9P/62/DQ18             |  |
| IO_2F/DIFF_TX_2F9N/61/DQ18             |  |
| IO_2F/DIFF_TX_2F9P/60/DQ18             |  |

|                                     |  |
|-------------------------------------|--|
| IO_2F/DIFF_RX_2F10N/59/DQ19         |  |
| IO_2F/DIFF_RX_2F10P/58/DQ19         |  |
| IO_2F/DIFF_TX_2F10N/57/DQ19         |  |
| IO_2F/DIFF_TX_2F10P/56/DQ19         |  |
| IO_2F/DIFF_RX_2F11N/55/DQ19         |  |
| IO_2F/DIFF_RX_2F11P/54/DQ19         |  |
| IO_2F/DIFF_TX_2F11N/53/DQSN19/CQN19 |  |
| IO_2F/DIFF_TX_2F11P/52/DQSN19/CQ19  |  |
| IO_2F/DIFF_RX_2F12N/51/DQ19         |  |
| IO_2F/DIFF_RX_2F12P/50/DQ19         |  |
| IO_2F/DIFF_TX_2F12N/49/DQ19         |  |
| IO_2F/DIFF_TX_2F12P/48/DQ19         |  |

AGFB027R24C2E2V

## IO Bank 2F

TOP BOT



|   |  |
|---|--|
| IO_2F/DIFF_RX_2F13N/47/DQ20             |  |
| IO_2F/DIFF_RX_2F13P/46/DQ20             |  |
| IO_2F/DIFF_TX_2F13N/45/DQ20             |  |
| IO_2F/DIFF_TX_2F13P/44/DQ20             |  |
| IO_2F/DIFF_RX_2F14N/43/DQ20             |  |
| IO_2F/DIFF_RX_2F14P/42/DQ20             |  |
| IO_2F/DIFF_TX_2F14N/41/DQSN20/CQN20     |  |
| IO_2F/DIFF_TX_2F14P/40/DQSN20/CQ20      |  |
| IO_2F/DIFF_RX_2F15N/39/DQ20             |  |
| IO_2F/DIFF_RX_2F15P/38/DQ20             |  |
| IO_2F/DIFF_TX_2F15N/37/DQ20             |  |
| IO_2F/DIFF_TX_2F15P/36/DQ20             |  |
| IO_2F/DIFF_RX_2F16N/35/DQ21             |  |
| IO_2F/DIFF_RX_2F16P/34/DQ21             |  |
| IO_2F/DIFF_TX_2F16N/33/DQ21             |  |
| IO_2F/DIFF_TX_2F16P/32/DQ21             |  |
| IO_2F/DIFF_RX_2F17N/31/DQ21             |  |
| IO_2F/DIFF_RX_2F17P/30/DQ21             |  |
| IO_2F/DIFF_TX_2F17N/29/DQSN21/CQN21     |  |
| IO_2F/DIFF_TX_2F17P/28/DQSN21/CQ21      |  |
| IO_2F/DIFF_RX_2F18N/27/DQ21             |  |
| IO_2F/DIFF_RX_2F18P/26/DQ21             |  |
| IO_2F/DIFF_TX_2F18N/25/DQ21             |  |
| IO_2F/DIFF_TX_2F18P/24/DQ21             |  |
| IO_2F/CLK_B_2F_0N/DIFF_RX_2F19N/23/DQ22 |  |
| IO_2F/CLK_B_2F_0P/DIFF_RX_2F19P/22/DQ22 |  |
| IO_2F/DIFF_TX_2F19N/21/DQ22             |  |
| IO_2F/DIFF_TX_2F19P/20/DQ22             |  |
| IO_2F/DIFF_RX_2F20N/19/DQ22             |  |
| IO_2F/DIFF_RX_2F20P/18/DQ22             |  |
| IO_2F/DIFF_TX_2F20N/17/DQSN22/CQN22     |  |
| IO_2F/DIFF_TX_2F20P/16/DQSN22/CQ22      |  |
| IO_2F/DIFF_RX_2F21N/15/DQ22             |  |
| IO_2F/DIFF_RX_2F21P/14/DQ22             |  |
| IO_2F/DIFF_TX_2F21N/13/DQ22             |  |
| IO_2F/DIFF_TX_2F21P/12/DQ22             |  |
| IO_2F/DIFF_RX_2F22N/11/DQ23             |  |
| IO_2F/DIFF_RX_2F22P/10/DQ23             |  |
| IO_2F/DIFF_TX_2F22N/9/DQ23              |  |
| IO_2F/DIFF_TX_2F22P/8/DQ23              |  |
| IO_2F/DIFF_RX_2F23N/7/DQ23              |  |
| IO_2F/DIFF_RX_2F23P/6/DQ23              |  |
| IO_2F/DIFF_TX_2F23N/5/DQSN23/CQN23      |  |
| IO_2F/DIFF_TX_2F23P/4/DQSN23/CQ23       |  |
| IO_2F/DIFF_RX_2F24N/3/DQ23              |  |
| IO_2F/DIFF_RX_2F24P/2/DQ23              |  |
| IO_2F/DIFF_TX_2F24N/1/DQ23              |  |
| IO_2F/DIFF_TX_2F24P/DQ23                |  |

|      |              |
|------|--------------|
| CR37 | DDR4B_DQ12   |
| CT36 | DDR4B_DQ10   |
| CW37 | DDR4B_DQ14   |
| CV38 | DDR4B_DQ8    |
| CR39 |              |
| CT38 | DDR4B_DBI_n1 |
| CW39 | DDR4B_DQS_n1 |
| CV38 | DDR4B_DQS1   |
| CR41 | DDR4B_DQ15   |
| CT40 | DDR4B_DQ9    |
| CW41 | DDR4B_DQ13   |
| CV40 | DDR4B_DQ11   |

|      |              |
|------|--------------|
| CL37 | DDR4B_DQ34   |
| CK36 | DDR4B_DQ38   |
| CN37 | DDR4B_DQ32   |
| CP38 | DDR4B_DQ36   |
| CL39 |              |
| CK38 | DDR4B_DBI_n4 |
| CN39 | DDR4B_DQS_n4 |
| CP38 | DDR4B_DQS4   |
| CL41 | DDR4B_DQ35   |
| CK40 | DDR4B_DQ37   |
| CN41 | DDR4B_DQ39   |
| CP40 | DDR4B_DQ33   |

|      |              |
|------|--------------|
| CR43 | DDR4B_DQ23   |
| CT42 | DDR4B_DQ20   |
| CW43 | DDR4B_DQ18   |
| CV42 | DDR4B_DQ16   |
| CR45 |              |
| CT44 | DDR4B_DBI_n2 |
| CW45 | DDR4B_DQS_n2 |
| CV44 | DDR4B_DQS2   |
| CR47 | DDR4B_DQ21   |
| CT46 | DDR4B_DQ22   |
| CW47 | DDR4B_DQ19   |
| CV46 | DDR4B_DQ17   |

|      |              |
|------|--------------|
| CL43 | DDR4B_DQ30   |
| CK42 | DDR4B_DQ31   |
| CN43 | DDR4B_DQ24   |
| CP42 | DDR4B_DQ28   |
| CL45 |              |
| CK44 | DDR4B_DBI_n3 |
| CN45 | DDR4B_DQS_n3 |
| CP44 | DDR4B_DQS3   |
| CL47 | DDR4B_DQ27   |
| CK46 | DDR4B_DQ29   |
| CN47 | DDR4B_DQ25   |
| CP46 | DDR4B_DQ26   |

|         |                        |  |  |    |       |
|---------|------------------------|--|--|----|-------|
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| Title   |                        |  |  |    |       |
| A7SK    |                        |  |  |    |       |
| Size    | Document Number        |  |  |    | Rev   |
| B       | FPGA Bank 2F           |  |  |    | B     |
| Date:   | Friday, April 07, 2023 |  | Sheet  | 11 | of 52 |

FMCP\_CLK\_M2C\_n1\_0 13,34  
FMCP\_CLK\_M2C\_n1\_0 13,34  
FMCP\_HA\_p23\_0 33  
FMCP\_HA\_n23\_0 33  
FMCP\_HB\_p21\_0 33  
FMCP\_HB\_n21\_0 33


U35C

IO Bank 2C VCCIO = VCCIO\_FMCP\_HAB (1.2 or 1.5V)

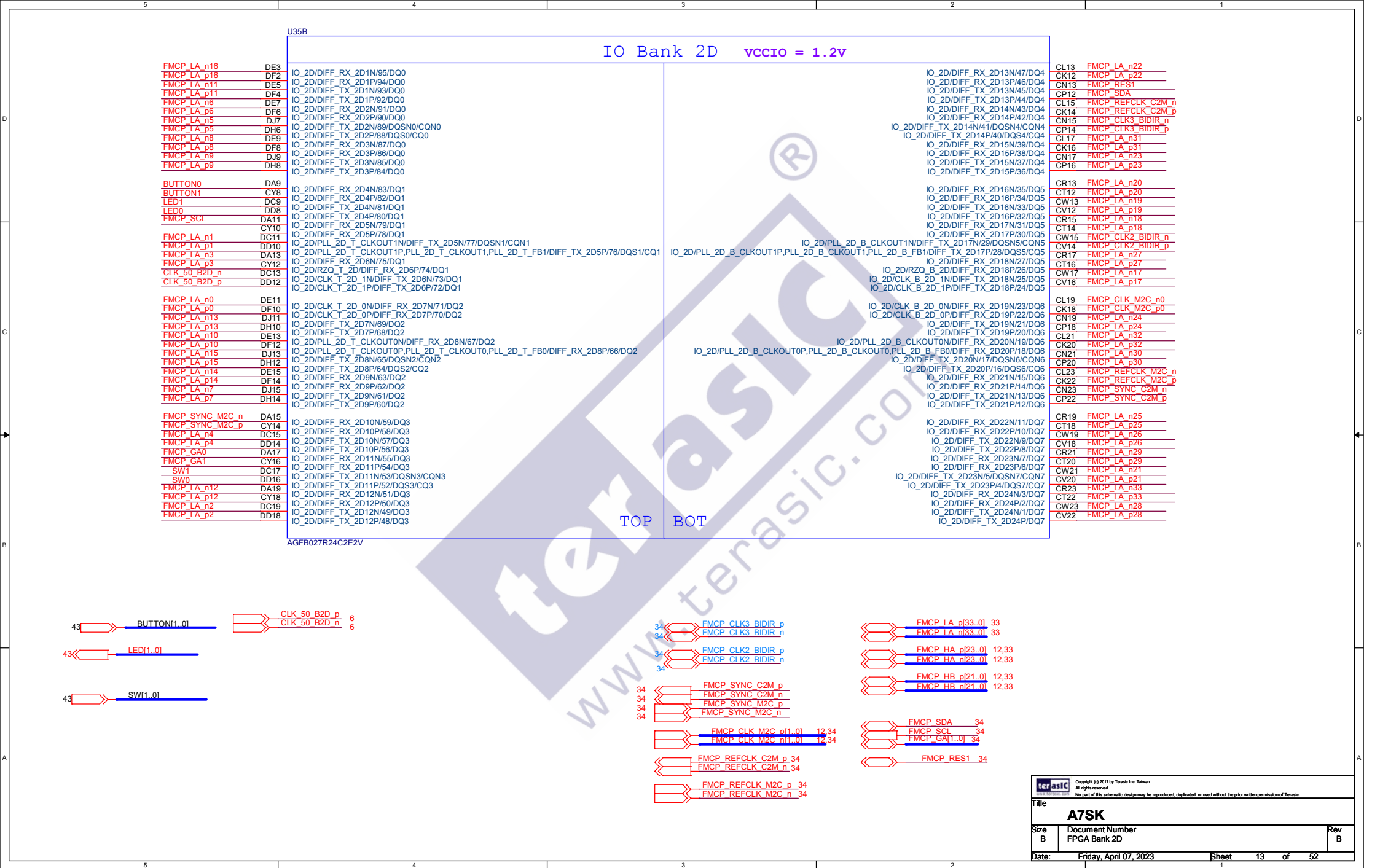
|             |      |  |   |      |                 |
|-------------|------|--|---|------|-----------------|
| FMCP_HA_n7  | DE17 | IO_2C/DIFF_RX_2C1N/95/DQ8  | IO_2C/DIFF_RX_2C13N/47/DQ12   | CL25 | FMCP_HB_n15     |
| FMCP_HA_p7  | DF16 | IO_2C/DIFF_RX_2C1P/94/DQ8  | IO_2C/DIFF_RX_2C13P/46/DQ12   | CK24 | FMCP_HB_p15     |
| FMCP_HA_n4  | DJ17 | IO_2C/DIFF_TX_2C1N/93/DQ8  | IO_2C/DIFF_TX_2C13N/45/DQ12   | CN25 | FMCP_HB_n4      |
| FMCP_HA_p4  | DH16 | IO_2C/DIFF_TX_2C1P/92/DQ8  | IO_2C/DIFF_TX_2C13P/44/DQ12   | CP24 | FMCP_HB_p4      |
| FMCP_HA_n9  | DE19 | IO_2C/DIFF_RX_2C2N/91/DQ8  | IO_2C/DIFF_RX_2C14N/43/DQ12   | CL27 | FMCP_HB_n11     |
| FMCP_HA_p9  | DF18 | IO_2C/DIFF_RX_2C2P/90/DQ8  | IO_2C/DIFF_RX_2C14P/42/DQ12   | CK26 | FMCP_HB_p11     |
| FMCP_HA_n8  | DJ19 | IO_2C/DIFF_TX_2C2N/89/DQS8/CQN8  | IO_2C/DIFF_TX_2C14N/41/DQS8N12/CQN12  | CN27 | FMCP_HB_n2      |
| FMCP_HA_p8  | DH18 | IO_2C/DIFF_TX_2C2P/88/DQS8/CQ8   | IO_2C/DIFF_TX_2C14P/40/DQS12/CQ12   | CP26 | FMCP_HB_p2      |
| FMCP_HA_n13 | DE21 | IO_2C/DIFF_RX_2C3N/87/DQ8  | IO_2C/DIFF_RX_2C15N/39/DQ12   | CL29 | FMCP_HB_n3      |
| FMCP_HA_p13 | DF20 | IO_2C/DIFF_RX_2C3P/86/DQ8  | IO_2C/DIFF_RX_2C15P/38/DQ12   | CK28 | FMCP_HB_p3      |
| FMCP_HA_n6  | DJ21 | IO_2C/DIFF_TX_2C3N/85/DQ8  | IO_2C/DIFF_TX_2C15N/37/DQ12   | CN29 | FMCP_HB_n5      |
| FMCP_HA_p6  | DH20 | IO_2C/DIFF_TX_2C3P/84/DQ8  | IO_2C/DIFF_TX_2C15P/36/DQ12   | CP28 | FMCP_HB_p6      |
| FMCP_HA_n5  | DA21 | IO_2C/DIFF_RX_2C4N/83/DQ9  | IO_2C/DIFF_RX_2C16N/35/DQ13   | CR25 | FMCP_HB_n7      |
| FMCP_HA_p5  | CY20 | IO_2C/DIFF_RX_2C4P/82/DQ9  | IO_2C/DIFF_RX_2C16P/34/DQ13   | CT24 | FMCP_HB_p7      |
| FMCP_HA_n2  | DC21 | IO_2C/DIFF_TX_2C4N/81/DQ9  | IO_2C/DIFF_TX_2C16N/33/DQ13   | CW25 | FMCP_HB_n8      |
| FMCP_HA_p2  | DD20 | IO_2C/DIFF_TX_2C4P/80/DQ9  | IO_2C/DIFF_TX_2C16P/32/DQ13   | CV24 | FMCP_HB_p8      |
| FMCP_HA_n3  | DA23 | IO_2C/DIFF_RX_2C5N/79/DQ9  | IO_2C/DIFF_RX_2C17N/31/DQ13   | CR27 |                 |
| FMCP_HA_p3  | CY22 | IO_2C/DIFF_RX_2C5P/78/DQ9  | IO_2C/DIFF_RX_2C17P/30/DQ13   | CT26 |                 |
| FMCP_HA_n0  | DC23 | IO_2C/PLL_2C_T_CLKOUT1N/DIFF_TX_2C5N/77/DQSN9/CQN9                               | IO_2C/PLL_2C_B_CLKOUT1N/DIFF_TX_2C17N/29/DQSN13/CQN13                               | CW27 | FMCP_HB_n0      |
| FMCP_HA_p0  | DD22 | IO_2C/PLL_2C_T_CLKOUT1P,PLL_2C_T_CLKOUT1,PLL_2C_T_FB1/DIFF_TX_2C5P/76/DQSN9/CQN9 | IO_2C/PLL_2C_B_CLKOUT1P,PLL_2C_B_CLKOUT1,PLL_2C_B_FB1/DIFF_TX_2C17P/28/DQSN13/CQN13 | CV26 | FMCP_HB_p0      |
| FMCP_HA_n22 | DA25 | IO_2C/DIFF_RX_2C6N/75/DQ9  | IO_2C/DIFF_RX_2C18N/27/DQ13   | CR29 | FMCP_HB_n5      |
| FMCP_HA_p22 | CY24 | IO_2C/RZQ_2C_2C/DIFF_RX_2C6P/74/DQ9  | IO_2C/RZQ_2C_2C/DIFF_RX_2C18P/26/DQ13   | CT28 | FMCP_HB_p5      |
| FMCP_HA_n17 | DC25 | IO_2C/CLK_T_2C_1N/DIFF_TX_2C6N/73/DQ9  | IO_2C/CLK_B_2C_1N/DIFF_TX_2C18N/25/DQ13   | CW29 | FMCP_CLK_M2C_n1 |
| FMCP_HA_p17 | DD24 | IO_2C/CLK_T_2C_1P/DIFF_TX_2C6P/72/DQ9  | IO_2C/CLK_B_2C_1P/DIFF_TX_2C18P/24/DQ13   | CV28 | FMCP_CLK_M2C_p1 |
| FMCP_HA_n1  | DE23 | IO_2C/CLK_T_2C_0N/DIFF_RX_2C7N/71/DQ10   | IO_2C/CLK_B_2C_0N/DIFF_RX_2C19N/23/DQ14   | CR31 | FMCP_HB_n1      |
| FMCP_HA_p1  | DF22 | IO_2C/CLK_T_2C_0P/DIFF_RX_2C7P/70/DQ10   | IO_2C/CLK_B_2C_0P/DIFF_RX_2C19P/22/DQ14   | CT30 | FMCP_HB_p1      |
| FMCP_HA_n10 | DJ23 | IO_2C/DIFF_TX_2C7N/69/DQ10   | IO_2C/DIFF_TX_2C19N/21/DQ14   | CW31 | FMCP_HB_n10     |
| FMCP_HA_p10 | DH22 | IO_2C/DIFF_TX_2C7P/68/DQ10   | IO_2C/DIFF_TX_2C19P/20/DQ14   | CV30 | FMCP_HB_p10     |
| FMCP_HA_n16 | DE25 | IO_2C/PLL_2C_T_CLKOUT0N/DIFF_RX_2C8N/67/DQ10                                     | IO_2C/PLL_2C_B_CLKOUT0N/DIFF_RX_2C20N/19/DQ14                                       | CR33 | FMCP_HB_n13     |
| FMCP_HA_p16 | DF24 | IO_2C/PLL_2C_T_CLKOUT0P,PLL_2C_T_CLKOUT0,PLL_2C_T_FB0/DIFF_RX_2C8P/66/DQ10       | IO_2C/PLL_2C_B_CLKOUT0P,PLL_2C_B_CLKOUT0,PLL_2C_B_FB0/DIFF_RX_2C20P/18/DQ14         | CT32 | FMCP_HB_p13     |
| FMCP_HA_n12 | DJ25 | IO_2C/DIFF_TX_2C8N/65/DQSN10/CQN10   | IO_2C/DIFF_TX_2C20N/17/DQSN14/CQN14   | CW33 | FMCP_HB_n14     |
| FMCP_HA_p12 | DH24 | IO_2C/DIFF_TX_2C8P/64/DQS10/CQ10   | IO_2C/DIFF_TX_2C20P/16/DQS14/CQ14   | CV32 | FMCP_HB_p14     |
| FMCP_HA_n14 | DE27 | IO_2C/DIFF_RX_2C9N/63/DQ10   | IO_2C/DIFF_RX_2C21N/15/DQ14   | CR35 | FMCP_HB_n21     |
| FMCP_HA_p14 | DF26 | IO_2C/DIFF_RX_2C9P/62/DQ10   | IO_2C/DIFF_RX_2C21P/14/DQ14   | CT34 | FMCP_HB_p21     |
| FMCP_HA_n15 | DJ27 | IO_2C/DIFF_TX_2C9N/61/DQ10   | IO_2C/DIFF_TX_2C21N/13/DQ14   | CW35 | FMCP_HB_n17     |
| FMCP_HA_p15 | DH26 | IO_2C/DIFF_TX_2C9P/60/DQ10   | IO_2C/DIFF_TX_2C21P/12/DQ14   | CV34 | FMCP_HB_p17     |
| FMCP_HA_n11 | DA27 | IO_2C/DIFF_RX_2C10N/59/DQ11  | IO_2C/DIFF_RX_2C22N/11/DQ15   | CL31 | FMCP_HB_n9      |
| FMCP_HA_p11 | CY26 | IO_2C/DIFF_RX_2C10P/58/DQ11  | IO_2C/DIFF_RX_2C22P/10/DQ15   | CK30 | FMCP_HB_p9      |
| FMCP_HA_n19 | DC27 | IO_2C/DIFF_TX_2C10N/57/DQ11  | IO_2C/DIFF_TX_2C22N/9/DQ15  | CN31 | FMCP_HB_n12     |
| FMCP_HA_p19 | DD26 | IO_2C/DIFF_TX_2C10P/56/DQ11  | IO_2C/DIFF_TX_2C22P/8/DQ15  | CP30 | FMCP_HB_p12     |
| FMCP_HA_n20 | DA29 | IO_2C/DIFF_RX_2C11N/55/DQ11  | IO_2C/DIFF_RX_2C23N/7/DQ15  | CL33 | FMCP_HB_n19     |
| FMCP_HA_p20 | CY28 | IO_2C/DIFF_RX_2C11P/54/DQ11  | IO_2C/DIFF_RX_2C23P/6/DQ15  | CK32 | FMCP_HB_p19     |
| FMCP_HA_n21 | DC29 | IO_2C/DIFF_TX_2C11N/53/DQSN11/CQN11  | IO_2C/DIFF_TX_2C23N/5/DQSN15/CQN15  | CN33 | FMCP_HB_n16     |
| FMCP_HA_p21 | DD28 | IO_2C/DIFF_TX_2C11P/52/DQS11/CQ11  | IO_2C/DIFF_TX_2C23P/4/DQS15/CQ15  | CP32 | FMCP_HB_p16     |
| FMCP_HA_n18 | DA31 | IO_2C/DIFF_RX_2C12N/51/DQ11  | IO_2C/DIFF_RX_2C24N/3/DQ15  | CL35 | FMCP_HB_n18     |
| FMCP_HA_p18 | CY30 | IO_2C/DIFF_RX_2C12P/50/DQ11  | IO_2C/DIFF_RX_2C24P/2/DQ15  | CK34 | FMCP_HB_p18     |
| FMCP_HA_n23 | DC31 | IO_2C/DIFF_TX_2C12N/49/DQ11  | IO_2C/DIFF_TX_2C24N/1/DQ15  | CN35 | FMCP_HB_n20     |
| FMCP_HA_p23 | DD30 | IO_2C/DIFF_TX_2C12P/48/DQ11  | IO_2C/DIFF_TX_2C24P/DQ15  | CP34 | FMCP_HB_p20     |

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TOP BOT

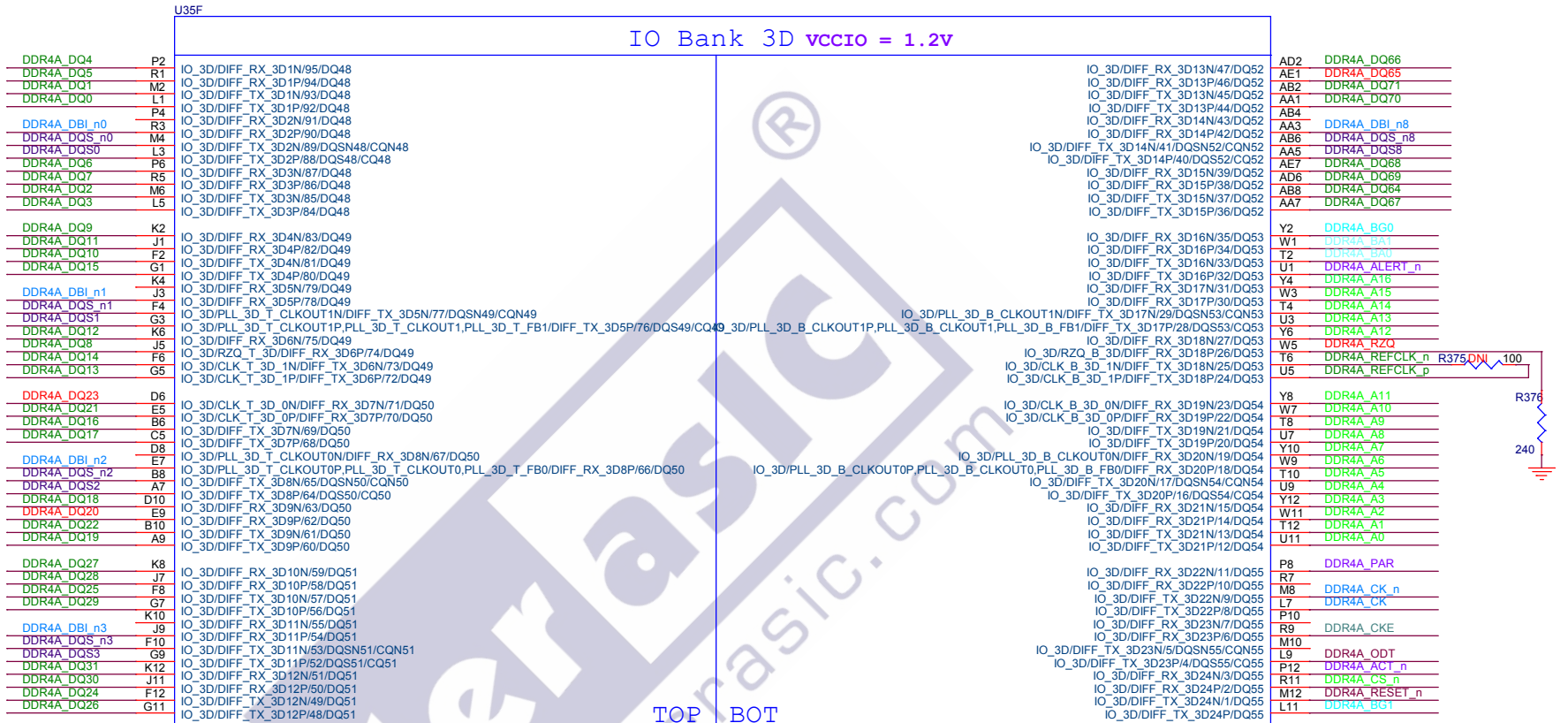
|  |                        |                |
|--|------------------------|----------------|
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| Title  |                        |                |
| A7SK   |                        |                |
| Size   | Document Number        | Rev            |
| B  | FPGA Bank 2C           | B              |
| Date:  | Friday, April 07, 2023 | Sheet 12 of 52 |





|                   |       |
|-------------------|-------|
| DDR4A CK          | 30    |
| DDR4A CK n        | 30    |
| DDR4A BA[1..0]    | 30    |
| DDR4A BG[1..0]    | 30    |
| DDR4A ODT         | 30    |
| DDR4A CS          | 30    |
| DDR4A DQ[71..0]   | 15 30 |
| DDR4A DQS[8..0]   | 15 30 |
| DDR4A DQS n[8..0] | 15 30 |
| DDR4A A[16..0]    | 30    |
| DDR4A DBI n[8..0] | 15 30 |
| DDR4A CKE         | 30    |
| DDR4A RESET n     | 30    |
| DDR4A PAR         | 30    |
| DDR4A ACT n       | 30    |
| DDR4A ALERT n     | 30    |

|                |   |
|----------------|---|
| DDR4A_REFCLK_p | 6 |
| DDR4A_REFCLK_n | 6 |



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## DDR4 SO-DIMM A

|                  |       |
|------------------|-------|
| DDR4A CK         | 14.30 |
| DDR4A CK_n       | 14.30 |
| DDR4A BA[1:0]    | 14.30 |
| DDR4A BG[1:0]    | 14.30 |
| DDR4A OD[1]      | 14.30 |
| DDR4A CS_n       | 14.30 |
| DDR4A DQ[71:0]   | 14.30 |
| DDR4A DQS[8:0]   | 14.30 |
| DDR4A DQS_n[8:0] | 14.30 |
| DDR4A DBI[6:0]   | 14.30 |
| DDR4A DBI_n[8:0] | 14.30 |
| DDR4A CKE        | 14.30 |
| DDR4A RESET_n    | 14.30 |

|               |       |
|---------------|-------|
| DDR4A PAR     | 14.30 |
| DDR4A ACT_n   | 14.30 |
| DDR4A ALERT_n | 14.30 |

|               |      |
|---------------|------|
| DDR4A EVENT_n | 7.17 |
| DDR4A SDA     | 7.17 |
| DDR4A SCL     | 7.17 |

RAS\_n is a multiplexed function with A16  
CAS\_n is a multiplexed function with A15  
WE\_n is a multiplexed function with A14

CLK\_50\_B3C\_n  
CLK\_50\_B3C\_p

CLK\_50\_B3C\_p 6  
CLK\_50\_B3C\_n 6


U35G

IO Bank 3C vccio = 1.2V

|     |   |  |     |              |
|-----|---|--|-----|--------------|
| D12 | IO_3C/DIFF_RX_3C1N/95/DQ56  | IO_3C/DIFF_RX_3C13N/47/DQ60  | Y14 | DDR4A_DQ58   |
| E11 | IO_3C/DIFF_RX_3C1P/94/DQ56  | IO_3C/DIFF_RX_3C13P/46/DQ60  | W13 | DDR4A_DQ63   |
| B12 | IO_3C/DIFF_TX_3C1N/93/DQ56  | IO_3C/DIFF_TX_3C13N/45/DQ60  | T14 | DDR4A_DQ60   |
| A11 | IO_3C/DIFF_TX_3C1P/92/DQ56  | IO_3C/DIFF_TX_3C13P/44/DQ60  | U13 | DDR4A_DQ57   |
| D14 | IO_3C/DIFF_RX_3C2N/91/DQ56  | IO_3C/DIFF_RX_3C14N/43/DQ60  | Y16 |              |
| E13 | IO_3C/DIFF_RX_3C2P/90/DQ56  | IO_3C/DIFF_RX_3C14P/42/DQ60  | W15 | DDR4A_DBI_n7 |
| B14 | IO_3C/DIFF_TX_3C2N/89/DQ56/CQN56  | IO_3C/DIFF_TX_3C14N/41/DQ56/CQN56  | T15 | DDR4A_DQS_n7 |
| A13 | IO_3C/DIFF_TX_3C2P/88/DQ56/CQ56   | IO_3C/DIFF_TX_3C14P/40/DQ56/CQ60   | U15 | DDR4A_DQ57   |
| D16 | IO_3C/DIFF_RX_3C3N/87/DQ56  | IO_3C/DIFF_RX_3C15N/39/DQ60  | Y18 | DDR4A_DQ59   |
| E15 | IO_3C/DIFF_RX_3C3P/86/DQ56  | IO_3C/DIFF_RX_3C15P/38/DQ60  | W17 | DDR4A_DQ62   |
| B16 | IO_3C/DIFF_TX_3C3N/85/DQ56  | IO_3C/DIFF_TX_3C15N/37/DQ60  | T18 | DDR4A_DQ61   |
| A15 | IO_3C/DIFF_TX_3C3P/84/DQ56  | IO_3C/DIFF_TX_3C15P/36/DQ60  | U17 | DDR4A_DQ56   |
| K14 | IO_3C/DIFF_RX_3C4N/83/DQ57  | IO_3C/DIFF_RX_3C16N/35/DQ61  | P14 | DDR4A_DQ37   |
| J13 | IO_3C/DIFF_RX_3C4P/82/DQ57  | IO_3C/DIFF_RX_3C16P/34/DQ61  | R13 | DDR4A_DQ39   |
| F14 | IO_3C/DIFF_TX_3C4N/81/DQ57  | IO_3C/DIFF_TX_3C16N/33/DQ61  | M14 | DDR4A_DQ32   |
| G13 | IO_3C/DIFF_TX_3C4P/80/DQ57  | IO_3C/DIFF_TX_3C16P/32/DQ61  | L13 | DDR4A_DQ36   |
| K16 | IO_3C/DIFF_RX_3C5N/79/DQ57  | IO_3C/DIFF_RX_3C17N/31/DQ61  | P16 | DDR4A_DBI_n4 |
| J15 | IO_3C/DIFF_RX_3C5P/78/DQ57  | IO_3C/DIFF_RX_3C17P/30/DQ61  | R15 | DDR4A_DQS_n4 |
| F16 | IO_3C/PLL_3C_T_CLKOUT1N/DIFF_TX_3C5N/77/DQ57/CQN57                              | IO_3C/PLL_3C_B_CLKOUT1N/DIFF_TX_3C17N/29/DQ56/CQN61                              | M16 | DDR4A_DQ34   |
| G15 | IO_3C/PLL_3C_T_CLKOUT1P,PLL_3C_T_CLKOUT1,PLL_3C_T_FB1/DIFF_TX_3C5P/76/DQ57/CQ57 | IO_3C/PLL_3C_B_CLKOUT1P,PLL_3C_B_CLKOUT1,PLL_3C_B_FB1/DIFF_TX_3C17P/28/DQ56/CQ61 | L15 | DDR4A_DQ54   |
| K18 | IO_3C/DIFF_RX_3C6N/75/DQ57  | IO_3C/DIFF_RX_3C18N/27/DQ61  | P18 | DDR4A_DQ34   |
| J17 | IO_3C/RZQ_T_3C/DIFF_RX_3C6P/74/DQ57   | IO_3C/RZQ_B_3C/DIFF_RX_3C18P/26/DQ61   | R17 | DDR4A_DQ35   |
| F18 | IO_3C/CLK_T_3C_1N/DIFF_TX_3C6N/73/DQ57  | IO_3C/CLK_B_3C_1N/DIFF_TX_3C18N/25/DQ61  | M18 | DDR4A_DQ38   |
| G17 | IO_3C/CLK_T_3C_1P/DIFF_TX_3C6P/72/DQ57  | IO_3C/CLK_B_3C_1P/DIFF_TX_3C18P/24/DQ61  | L17 | DDR4A_DQ33   |
| D18 | IO_3C/CLK_T_3C_0N/DIFF_RX_3C7N/71/DQ58  | IO_3C/CLK_B_3C_0N/DIFF_RX_3C19N/23/DQ62  | P20 | DDR4A_DQ54   |
| E17 | IO_3C/CLK_T_3C_0P/DIFF_RX_3C7P/70/DQ58  | IO_3C/CLK_B_3C_0P/DIFF_RX_3C19P/22/DQ62  | R19 | DDR4A_DQ53   |
| B18 | IO_3C/DIFF_TX_3C7N/69/DQ58  | IO_3C/DIFF_TX_3C19N/21/DQ62  | M20 | DDR4A_DQ52   |
| A17 | IO_3C/DIFF_TX_3C7P/68/DQ58  | IO_3C/DIFF_TX_3C19P/20/DQ62  | L19 | DDR4A_DQ48   |
| D20 | IO_3C/PLL_3C_T_CLKOUT0N/DIFF_RX_3C8N/67/DQ58                                    | IO_3C/PLL_3C_B_CLKOUT0N/DIFF_RX_3C20N/19/DQ62                                    | P22 | DDR4A_DBI_n6 |
| E19 | IO_3C/PLL_3C_T_CLKOUT0P,PLL_3C_T_CLKOUT0,PLL_3C_T_FB0/DIFF_RX_3C8P/66/DQ58      | IO_3C/PLL_3C_B_CLKOUT0P,PLL_3C_B_CLKOUT0,PLL_3C_B_FB0/DIFF_RX_3C20P/18/DQ62      | R21 | DDR4A_DQS_n6 |
| B20 | IO_3C/DIFF_TX_3C8N/65/DQ58/CQN58  | IO_3C/DIFF_TX_3C20N/17/DQ56/CQN62  | M22 | DDR4A_DQ56   |
| A19 | IO_3C/DIFF_TX_3C8P/64/DQ58/CQ58   | IO_3C/DIFF_TX_3C20P/16/DQ56/CQ62   | L21 | DDR4A_DQ56   |
| D22 | IO_3C/DIFF_RX_3C9N/63/DQ58  | IO_3C/DIFF_RX_3C21N/15/DQ62  | P24 | DDR4A_DQ51   |
| E21 | IO_3C/DIFF_RX_3C9P/62/DQ58  | IO_3C/DIFF_RX_3C21P/14/DQ62  | R23 | DDR4A_DQ50   |
| B22 | IO_3C/DIFF_TX_3C9N/61/DQ58  | IO_3C/DIFF_TX_3C21N/13/DQ62  | M24 | DDR4A_DQ55   |
| A21 | IO_3C/DIFF_TX_3C9P/60/DQ58  | IO_3C/DIFF_TX_3C21P/12/DQ62  | L23 | DDR4A_DQ49   |
| K20 | IO_3C/DIFF_RX_3C10N/59/DQ59   | IO_3C/DIFF_RX_3C22N/11/DQ63  | Y20 | DDR4A_DQ43   |
| J19 | IO_3C/DIFF_RX_3C10P/58/DQ59   | IO_3C/DIFF_RX_3C22P/10/DQ63  | W19 | DDR4A_DQ45   |
| F20 | IO_3C/DIFF_TX_3C10N/57/DQ59   | IO_3C/DIFF_TX_3C22N/9/DQ63   | T20 | DDR4A_DQ47   |
| G19 | IO_3C/DIFF_TX_3C10P/56/DQ59   | IO_3C/DIFF_TX_3C22P/8/DQ63   | U19 | DDR4A_DQ41   |
| K22 | IO_3C/DIFF_RX_3C11N/55/DQ59   | IO_3C/DIFF_RX_3C23N/7/DQ63   | Y22 |              |
| J21 | IO_3C/DIFF_RX_3C11P/54/DQ59   | IO_3C/DIFF_RX_3C23P/6/DQ63   | W21 | DDR4A_DBI_n5 |
| F22 | IO_3C/DIFF_TX_3C11N/53/DQ59/CQN59   | IO_3C/DIFF_TX_3C23N/5/DQ56/CQN63   | T22 | DDR4A_DQS_n5 |
| G21 | IO_3C/DIFF_TX_3C11P/52/DQ59/CQ59  | IO_3C/DIFF_TX_3C23P/4/DQ56/CQ63  | U21 | DDR4A_DQ55   |
| K24 | IO_3C/DIFF_RX_3C12N/51/DQ59   | IO_3C/DIFF_RX_3C24N/3/DQ63   | Y24 | DDR4A_DQ42   |
| J23 | IO_3C/DIFF_RX_3C12P/50/DQ59   | IO_3C/DIFF_RX_3C24P/2/DQ63   | W23 | DDR4A_DQ46   |
| F24 | IO_3C/DIFF_TX_3C12N/49/DQ59   | IO_3C/DIFF_TX_3C24N/1/DQ63   | T24 | DDR4A_DQ44   |
| G23 | IO_3C/DIFF_TX_3C12P/48/DQ59   | IO_3C/DIFF_TX_3C24P/DQ63   | U23 | DDR4A_DQ40   |

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|  |                        |                |
|--|------------------------|----------------|
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| Title  |                        |                |
| A7SK   |                        |                |
| Size   | Document Number        | Rev            |
| B  | FPGA Bank 3C           | B              |
| Date:  | Friday, April 07, 2023 | Sheet 15 of 52 |




U35H

IO Bank 3B vccio = 1.2V

|     |   |  |     |
|-----|---|--|-----|
| K36 | IO_3B/DIFF_RX_3B1N/95/DQ80  | IO_3B/DIFF_RX_3B13N/47/DQ84  | P36 |
| J35 | IO_3B/DIFF_RX_3B1P/94/DQ80  | IO_3B/DIFF_RX_3B13P/46/DQ84  | R35 |
| F36 | IO_3B/DIFF_TX_3B1N/93/DQ80  | IO_3B/DIFF_TX_3B13N/45/DQ84  | M36 |
| G35 | IO_3B/DIFF_TX_3B1P/92/DQ80  | IO_3B/DIFF_TX_3B13P/44/DQ84  | L35 |
| K34 | IO_3B/DIFF_RX_3B2N/91/DQ80  | IO_3B/DIFF_RX_3B14N/43/DQ84  | P34 |
| J33 | IO_3B/DIFF_RX_3B2P/90/DQ80  | IO_3B/DIFF_RX_3B14P/42/DQ84  | R33 |
| F34 | IO_3B/DIFF_TX_3B2N/89/DQSN80/CQN80  | IO_3B/DIFF_TX_3B14N/41/DQSN84/CQN84  | M34 |
| G33 | IO_3B/DIFF_TX_3B2P/88/DQSN80/CQ80   | IO_3B/DIFF_TX_3B14P/40/DQSN84/CQ84   | L33 |
| K32 | IO_3B/DIFF_RX_3B3N/87/DQ80  | IO_3B/DIFF_RX_3B15N/39/DQ84  | P32 |
| J31 | IO_3B/DIFF_RX_3B3P/86/DQ80  | IO_3B/DIFF_RX_3B15P/38/DQ84  | R31 |
| F32 | IO_3B/DIFF_TX_3B3N/85/DQ80  | IO_3B/DIFF_TX_3B15N/37/DQ84  | M32 |
| G31 | IO_3B/DIFF_TX_3B3P/84/DQ80  | IO_3B/DIFF_TX_3B15P/36/DQ84  | L31 |
| D34 | IO_3B/DIFF_RX_3B4N/83/DQ81  | IO_3B/DIFF_RX_3B16N/35/DQ85  | Y36 |
| E33 | IO_3B/DIFF_RX_3B4P/82/DQ81  | IO_3B/DIFF_RX_3B16P/34/DQ85  | W35 |
| B34 | IO_3B/DIFF_TX_3B4N/81/DQ81  | IO_3B/DIFF_TX_3B16N/33/DQ85  | T36 |
| A33 | IO_3B/DIFF_TX_3B4P/80/DQ81  | IO_3B/DIFF_TX_3B16P/32/DQ85  | U35 |
| D32 | IO_3B/DIFF_RX_3B5N/79/DQ81  | IO_3B/DIFF_RX_3B17N/31/DQ85  | Y34 |
| E31 | IO_3B/DIFF_RX_3B5P/78/DQ81  | IO_3B/DIFF_RX_3B17P/30/DQ85  | W33 |
| B32 | IO_3B/PLL_3B_T_CLKOUT1N/DIFF_TX_3B5N/77/DQSN81/CQN81                              | IO_3B/PLL_3B_B_CLKOUT1N/DIFF_TX_3B17N/29/DQSN85/CQN85                              | T34 |
| A31 | IO_3B/PLL_3B_T_CLKOUT1P,PLL_3B_T_CLKOUT1,PLL_3B_T_FB1/DIFF_TX_3B5P/76/DQSN81/CQ81 | IO_3B/PLL_3B_B_CLKOUT1P,PLL_3B_B_CLKOUT1,PLL_3B_B_FB1/DIFF_TX_3B17P/28/DQSN85/CQ85 | U33 |
| D30 | IO_3B/DIFF_RX_3B6N/75/DQ81  | IO_3B/DIFF_RX_3B18N/27/DQ85  | Y32 |
| E29 | IO_3B/RZQ_T_3B/DIFF_RX_3B6P/74/DQ81   | IO_3B/RZQ_B_3B/DIFF_RX_3B18P/26/DQ85   | W31 |
| B30 | IO_3B/CLK_T_3B_1N/DIFF_TX_3B6N/73/DQ81  | IO_3B/CLK_B_3B_1N/DIFF_TX_3B18N/25/DQ85  | T32 |
| A29 | IO_3B/CLK_T_3B_1P/DIFF_TX_3B6P/72/DQ81  | IO_3B/CLK_B_3B_1P/DIFF_TX_3B18P/24/DQ85  | U31 |
| K30 | IO_3B/CLK_T_3B_0N/DIFF_RX_3B7N/71/DQ82  | IO_3B/CLK_B_3B_0N/DIFF_RX_3B19N/23/DQ86  | P30 |
| J29 | IO_3B/CLK_T_3B_0P/DIFF_RX_3B7P/70/DQ82  | IO_3B/CLK_B_3B_0P/DIFF_RX_3B19P/22/DQ86  | R29 |
| F30 | IO_3B/DIFF_TX_3B7N/69/DQ82  | IO_3B/DIFF_TX_3B19N/21/DQ86  | M30 |
| G29 | IO_3B/DIFF_TX_3B7P/68/DQ82  | IO_3B/DIFF_TX_3B19P/20/DQ86  | L29 |
| K28 | IO_3B/PLL_3B_T_CLKOUT0N/DIFF_RX_3B8N/67/DQ82                                      | IO_3B/PLL_3B_B_CLKOUT0N/DIFF_RX_3B20N/19/DQ86                                      | P28 |
| J27 | IO_3B/PLL_3B_T_CLKOUT0P,PLL_3B_T_CLKOUT0,PLL_3B_T_FB0/DIFF_RX_3B8P/66/DQ82        | IO_3B/PLL_3B_B_CLKOUT0P,PLL_3B_B_CLKOUT0,PLL_3B_B_FB0/DIFF_RX_3B20P/18/DQ86        | R27 |
| F28 | IO_3B/DIFF_TX_3B8N/65/DQSN82/CQN82  | IO_3B/DIFF_TX_3B20N/17/DQSN86/CQN86  | M28 |
| G27 | IO_3B/DIFF_TX_3B8P/64/DQSN82/CQ82   | IO_3B/DIFF_TX_3B20P/16/DQSN86/CQ86   | L27 |
| K26 | IO_3B/DIFF_RX_3B9N/63/DQ82  | IO_3B/DIFF_RX_3B21N/15/DQ86  | P26 |
| J25 | IO_3B/DIFF_RX_3B9P/62/DQ82  | IO_3B/DIFF_RX_3B21P/14/DQ86  | R25 |
| F26 | IO_3B/DIFF_TX_3B9N/61/DQ82  | IO_3B/DIFF_TX_3B21N/13/DQ86  | M26 |
| G25 | IO_3B/DIFF_TX_3B9P/60/DQ82  | IO_3B/DIFF_TX_3B21P/12/DQ86  | L25 |
| D28 | IO_3B/DIFF_RX_3B10N/59/DQ83   | IO_3B/DIFF_RX_3B22N/11/DQ87  | Y30 |
| E27 | IO_3B/DIFF_RX_3B10P/58/DQ83   | IO_3B/DIFF_RX_3B22P/10/DQ87  | W29 |
| B28 | IO_3B/DIFF_TX_3B10N/57/DQ83   | IO_3B/DIFF_TX_3B22N/9/DQ87   | T30 |
| A27 | IO_3B/DIFF_TX_3B10P/56/DQ83   | IO_3B/DIFF_TX_3B22P/8/DQ87   | U29 |
| D26 | IO_3B/DIFF_RX_3B11N/55/DQ83   | IO_3B/DIFF_RX_3B23N/7/DQ87   | Y28 |
| E25 | IO_3B/DIFF_RX_3B11P/54/DQ83   | IO_3B/DIFF_RX_3B23P/6/DQ87   | W27 |
| B26 | IO_3B/DIFF_TX_3B11N/53/DQSN83/CQN83   | IO_3B/DIFF_TX_3B23N/5/DQSN87/CQN87   | T26 |
| A25 | IO_3B/DIFF_TX_3B11P/52/DQSN83/CQ83  | IO_3B/DIFF_TX_3B23P/4/DQSN87/CQ87  | U27 |
| D24 | IO_3B/DIFF_RX_3B12N/51/DQ83   | IO_3B/DIFF_RX_3B24N/3/DQ87   | Y26 |
| E23 | IO_3B/DIFF_RX_3B12P/50/DQ83   | IO_3B/DIFF_RX_3B24P/2/DQ87   | W25 |
| B24 | IO_3B/DIFF_TX_3B12N/49/DQ83   | IO_3B/DIFF_TX_3B24N/1/DQ87   | T26 |
| A23 | IO_3B/DIFF_TX_3B12P/48/DQ83   | IO_3B/DIFF_TX_3B24P/DQ87   | U25 |

AGFB027R24C2E2V

TOP BOT

|  |                        |                |
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| Title  |                        |                |
| A7SK   |                        |                |
| Size   | Document Number        | Rev            |
| B  | FPGA Bank 3B           | B              |
| Date:  | Friday, April 07, 2023 | Sheet 16 of 52 |

CLK 50 B3A p 6  
CLK 50 B3A n 6

CLK 100 B3A p 6  
CLK 100 B3A n 6

DDR4A EVENT n 7  
DDR4A SDA 7  
DDR4A SCL 7

EXP EN 45

#### PCIe control signals

PCIE\_WAKE n 41  
PCIE\_SMBDAT 41  
PCIE\_SMBCLK 41

PCIE\_CLKREQ n 41

CPU\_RESET n 8,43

#### 2x5 Timing Header

GPIO\_P13\_01  
GPIO\_CLK0  
GPIO\_CLK1

#### HDMI Clocks

CLK\_100 p 4  
CLK\_100 n 4  
CLK\_148M5 p 5  
CLK\_148M5 n 5

|                    |     |  |
|--------------------|-----|--|
| INFO_SPI_SCLK      | D54 | IO_3A/DIFF_RX_3A1N/95/DQ88   |
| INFO_SPI_MOSI      | E53 | IO_3A/DIFF_RX_3A1P/94/DQ88   |
| DVI_TX_SDA         | D52 | IO_3A/DIFF_TX_3A1N/83/DQ88   |
| INFO_SPI_MISO      | E51 | IO_3A/DIFF_TX_3A1P/92/DQ88   |
| GPIO_P13           | D50 | IO_3A/DIFF_RX_3A2N/91/DQ88   |
| INFO_SPI_CS_n      | E49 | IO_3A/AVST_READY/DIFF_RX_3A2P/90/DQ88  |
| DVI_TX_SCL         | B50 | IO_3A/AVST_DATA31/DIFF_TX_3A2P/88/DQ88   |
| CPU_RESET_n        | A49 | IO_3A/AVST_DATA30/DIFF_TX_3A2P/88/DQ88   |
| DVI_TX_CEC_IN_n    | D48 | IO_3A/AVST_DATA29/DIFF_RX_3A3N/87/DQ88   |
| QSFP28_LP_MODE     | E47 | IO_3A/AVST_DATA28/DIFF_RX_3A3P/86/DQ88   |
| DVI_TX_HPD_n       | B48 | IO_3A/AVST_DATA27/DIFF_TX_3A3N/85/DQ88   |
| HDMI_TX_SCL        | A47 | IO_3A/AVST_DATA26/DIFF_TX_3A3P/84/DQ88   |
| HDMI_TX_SDA        | F50 | IO_3A/AVST_DATA25/DIFF_RX_3A4N/83/DQ89   |
| GPIO_CLK1          | G49 | IO_3A/AVST_DATA24/DIFF_RX_3A4P/82/DQ89   |
| EXP_EN             | F48 | IO_3A/AVST_DATA23/DIFF_TX_3A4N/81/DQ89   |
| DDR4A_EVENT_n      | G47 | IO_3A/AVST_DATA22/DIFF_TX_3A4P/80/DQ89   |
| GPIO_P1            | K46 | IO_3A/AVST_DATA21/DIFF_RX_3A5N/79/DQ89   |
| GPIO_CLK0          | J45 | IO_3A/AVST_DATA20/DIFF_RX_3A5P/78/DQ89   |
| Si5340A0_I2C_SCL   | F46 | IO_3A/PLL_3A_T_CLKOUT0N/DIFF_RX_3A5N/77/DQ89   |
| GPIO_P2            | G45 | IO_3A/PLL_3A_T_CLKOUT1P/PLL_3A_T_CLKOUT1,PLL_3A_T_FB1/AVST_DATA18/DIFF_TX_3A5P/76/DQ89 |
| Si5340A0_I2C_SDA   | K44 | IO_3A/PLL_3A_T_CLKOUT0N/DIFF_RX_3A8N/67/DQ90   |
| GPIO_P0            | J43 | IO_3A/PLL_3A_T_CLKOUT0P,PLL_3A_T_CLKOUT0,PLL_3A_T_FB0/DIFF_RX_3A8P/66/DQ90             |
| CLK_148M5_n        | F44 | IO_3A/RZQ_T_3A/AVST_DATA16/DIFF_RX_3A6P/74/DQ89  |
| CLK_148M5_p        | G43 | IO_3A/CLK_T_3A_1N/DIFF_TX_3A6N/73/DQ89   |
| CLK_100_n          | D46 | IO_3A/CLK_T_3A_1P/DIFF_TX_3A6P/72/DQ89   |
| CLK_100_p          | E45 | IO_3A/CLK_T_3A_0N/DIFF_RX_3A7N/71/DQ90   |
| Si5340A0_I2C_SDA   | B46 | IO_3A/CLK_T_3A_0P/DIFF_RX_3A7P/70/DQ90   |
| QSFP28_INTERRUPT_n | A45 | IO_3A/DIFF_TX_3A7N/69/DQ90   |
| Si5340A0_I2C_SCL   | D44 | IO_3A/DIFF_TX_3A7P/68/DQ90   |
| Si5340A1_I2C_SCL   | E43 | IO_3A/PLL_3A_T_CLKOUT0N/DIFF_RX_3A8N/67/DQ90   |
| Si5340A1_I2C_SDA   | B44 | IO_3A/PLL_3A_T_CLKOUT0P,PLL_3A_T_CLKOUT0,PLL_3A_T_FB0/DIFF_RX_3A8P/66/DQ90             |
| DVI_TX_5V          | A43 | IO_3A/AVST_CLK/DIFF_TX_3A8N/65/DQ89  |
| QSFP28_SCL         | D42 | IO_3A/AVST_DATA15/DIFF_TX_3A8P/64/DQ90   |
| DVI_TX_CEC_OUT_n   | E41 | IO_3A/AVST_DATA14/DIFF_RX_3A9N/63/DQ90   |
| Si5340A0_OE_n      | D40 | IO_3A/AVST_DATA13/DIFF_RX_3A9P/62/DQ90   |
| QSFP28_SDA         | E39 | IO_3A/AVST_DATA12/DIFF_TX_3A9N/61/DQ90   |
| Si5340A0_RST_n     | B40 | IO_3A/AVST_DATA11/DIFF_TX_3A9P/60/DQ90   |
| QSFP28_MOD_PRS_n   | A39 | IO_3A/AVST_DATA10/DIFF_RX_3A10N/59/DQ91  |
| PCIE_SMBDAT        | D38 | IO_3A/AVST_DATA9/DIFF_RX_3A10P/58/DQ91   |
| DDR4A_SDA          | E37 | IO_3A/AVST_DATA8/DIFF_TX_3A10N/57/DQ91   |
| QSFP28_RST_n       | B38 | IO_3A/AVST_VALID/DIFF_TX_3A10P/56/DQ91   |
| PCIE_CLKREQ_n      | A37 | IO_3A/AVST_DATA7/DIFF_RX_3A11N/55/DQ91   |
| PCIE_WAKE_n        | D36 | IO_3A/AVST_DATA6/DIFF_RX_3A11P/54/DQ91   |
| DDR4A_SCL          | E35 | IO_3A/AVST_DATA5/DIFF_TX_3A11N/53/DQ91   |
| QSFP28_MOD_SEL_n   | B36 | IO_3A/AVST_DATA4/DIFF_TX_3A11P/52/DQ91   |
| PCIE_SMBCLK        | A35 | IO_3A/AVST_DATA3/DIFF_RX_3A12N/51/DQ91   |
|                    |     | IO_3A/AVST_DATA2/DIFF_RX_3A12P/50/DQ91   |
|                    |     | IO_3A/AVST_DATA1/DIFF_TX_3A12N/49/DQ91   |
|                    |     | IO_3A/AVST_DATA0/DIFF_TX_3A12P/48/DQ91   |

AGF027R24C2E2V

IO Bank 3A vccio = 1.2v

TOP BOT

|   |     |
|---|-----|
| IO_3A/DIFF_RX_3A13N/47/DQ92   | Y42 |
| IO_3A/DIFF_RX_3A13P/46/DQ92   | W41 |
| IO_3A/DIFF_TX_3A13N/45/DQ92   | T42 |
| IO_3A/DIFF_TX_3A13P/44/DQ92   | U41 |
| IO_3A/DIFF_RX_3A14N/43/DQ92   | Y40 |
| IO_3A/DIFF_RX_3A14P/42/DQ92   | W39 |
| IO_3A/DIFF_TX_3A14N/41/DQ92   | T40 |
| IO_3A/DIFF_TX_3A14P/40/DQ92   | U39 |
| IO_3A/DIFF_RX_3A15N/39/DQ92   | Y38 |
| IO_3A/DIFF_RX_3A15P/38/DQ92   | W37 |
| IO_3A/DIFF_TX_3A15N/37/DQ92   | T38 |
| IO_3A/DIFF_TX_3A15P/36/DQ92   | U37 |
| IO_3A/DIFF_RX_3A16N/35/DQ93   | M48 |
| IO_3A/DIFF_RX_3A16P/34/DQ93   | L47 |
| IO_3A/DIFF_TX_3A16N/33/DQ93   | K48 |
| IO_3A/DIFF_TX_3A16P/32/DQ93   | J47 |
| IO_3A/DIFF_RX_3A17N/31/DQ93   | P46 |
| IO_3A/DIFF_RX_3A17P/30/DQ93   | R45 |
| IO_3A/DIFF_TX_3A17N/29/DQ93   | M46 |
| IO_3A/DIFF_TX_3A17P/28/DQ93   | L45 |
| IO_3A/DIFF_RX_3A18N/27/DQ93   | P44 |
| IO_3A/RZQ_B_3A/DIFF_RX_3A18P/26/DQ93  | R43 |
| IO_3A/CLK_B_3A_1N/DIFF_TX_3A18N/25/DQ93                                     | M44 |
| IO_3A/CLK_B_3A_1P/DIFF_TX_3A18P/24/DQ93                                     | L43 |
| IO_3A/CLK_B_3A_0N/DIFF_RX_3A19N/23/DQ94                                     | P42 |
| IO_3A/CLK_B_3A_0P/DIFF_RX_3A19P/22/DQ94                                     | R41 |
| IO_3A/DIFF_TX_3A19N/21/DQ94   | M42 |
| IO_3A/DIFF_TX_3A19P/20/DQ94   | L41 |
| IO_3A/PLL_3A_B_CLKOUT0N/DIFF_RX_3A20N/19/DQ94                               | P40 |
| IO_3A/PLL_3A_B_CLKOUT0P,PLL_3A_B_CLKOUT0,PLL_3A_B_FB0/DIFF_RX_3A20P/18/DQ94 | R39 |
| IO_3A/DIFF_TX_3A20N/17/DQ94   | M40 |
| IO_3A/DIFF_TX_3A20P/16/DQ94   | L39 |
| IO_3A/DIFF_RX_3A21N/15/DQ94   | P38 |
| IO_3A/DIFF_RX_3A21P/14/DQ94   | R37 |
| IO_3A/DIFF_TX_3A21N/13/DQ94   | M38 |
| IO_3A/DIFF_TX_3A21P/12/DQ94   | L37 |
| IO_3A/DIFF_RX_3A22N/11/DQ95   | K42 |
| IO_3A/DIFF_RX_3A22P/10/DQ95   | J41 |
| IO_3A/DIFF_TX_3A22N/9/DQ95  | F42 |
| IO_3A/DIFF_TX_3A22P/8/DQ95  | G41 |
| IO_3A/DIFF_RX_3A23N/7/DQ95  | K40 |
| IO_3A/DIFF_RX_3A23P/6/DQ95  | J39 |
| IO_3A/DIFF_TX_3A23N/5/DQ95  | F40 |
| IO_3A/DIFF_TX_3A23P/4/DQ95  | G39 |
| IO_3A/DIFF_RX_3A24N/3/DQ95  | K38 |
| IO_3A/DIFF_RX_3A24P/2/DQ95  | J37 |
| IO_3A/DIFF_TX_3A24N/1/DQ95  | F38 |
| IO_3A/DIFF_TX_3A24P/1/DQ95  | G37 |

#### FPGA/System MAX SPI

INFO\_SPI\_SCLK 8  
INFO\_SPI\_CS\_n 8  
INFO\_SPI\_MOSI 8  
INFO\_SPI\_MISO 8

#### Si5340A0 Interface

Si5340A0\_I2C\_SDA 4  
Si5340A0\_I2C\_SCL 4  
Si5340A0\_RST\_n 4  
Si5340A0\_OE\_n 4

#### QSFP28 Control Interface

QSFP28\_MOD\_SEL\_n 40  
QSFP28\_RST\_n 40  
QSFP28\_SCL 40  
QSFP28\_SDA 40  
QSFP28\_LP\_MODE 40  
QSFP28\_INTERRUPT\_n 40  
QSFP28\_MOD\_PRS\_n 40

#### Si5340A1 Interface

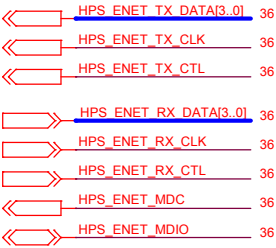
Si5340A1\_I2C\_SDA 5  
Si5340A1\_I2C\_SCL 5  
Si5340A1\_RST\_n 5  
Si5340A1\_OE\_n 5

#### HDMI control signals

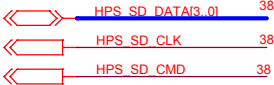
HDMI\_TX\_SDA  
HDMI\_TX\_SCL  
DVI\_TX\_SCL  
DVI\_TX\_SDA  
DVI\_TX\_HPD\_n  
DVI\_TX\_CEC\_OUT\_n  
DVI\_TX\_5V  
DVI\_TX\_CEC\_IN\_n

|        |                                 |                |
|--------|---------------------------------|----------------|
| Title  |                                 |                |
| A7SK   |                                 |                |
| Size B | Document Number<br>FPGA Bank 3A | Rev B          |
| Date:  | Friday, April 07, 2023          | Sheet 17 of 52 |

Ethernet PHY Interface (RGMII)



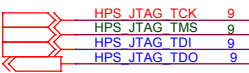
SD Card Interface



HPS 25MHz Clock



HPS JTAG Interface



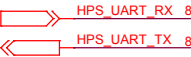
HPS User Button



HPS User LED



UART Interface




U35.J

FPGA Bank - HPS

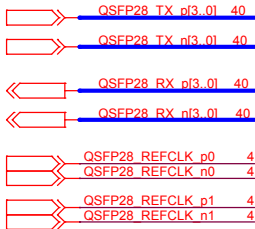
HPS Bank vccio = 1.8v

|      |   |
|------|---|
| AC15 | HPS_IOA_1/GPIO0_IO0,SPIM0_SS1_N,SPIS0_CLK,UART0_CTS_N,NAND_ADO0,USB0_CLK,SDMMC_CCLK                 |
| AL15 | HPS_IOA_2/GPIO0_IO1,SPIM1_SS1_N,SPIS0_MOSI,UART0_RTS_N,NAND_ADO1,USB0_STP,SDMMC_CMD                 |
| AJ11 | HPS_IOA_3/GPIO0_IO2,SPIS0_SS0_N,UART0_TX,I2C1_SDA,NAND_WE_N,USB0_DIR,SDMMC_DATA0                    |
| AM16 | HPS_IOA_4/GPIO0_IO3,SPIS0_MISO,UART0_RX,I2C1_SCL,NAND_RE_N,USB0_DATA0,SDMMC_DATA1                   |
| AH12 | HPS_IOA_5/GPIO0_IO4,SPIM0_CLK,UART1_CTS_N,I2C0_SDA,NAND_WP_N,USB0_DATA1,SDMMC_DATA2                 |
| AN15 | HPS_IOA_6/GPIO0_IO5,SPIM0_MOSI,UART1_RTS_N,I2C0_SCL,NAND_ADO2,USB0_NXT,SDMMC_DATA3                  |
| AG13 | HPS_IOA_7/GPIO0_IO6,SPIM0_MISO,MDIO2_MDIO,UART1_TX,I2C_EMAC2_SDA,NAND_ADO3,USB0_DATA2,SDMMC_DATA4   |
| AP16 | HPS_IOA_8/GPIO0_IO7,SPIM0_SS0_N,MDIO2_MDC,UART1_RX,I2C_EMAC2_SCL,NAND_CLE,USB0_DATA3,SDMMC_DATA5    |
| AF14 | HPS_IOA_9/GPIO0_IO8,SPIM1_CLK,SPIS1_CLK,MDIO1_MDIO,I2C_EMAC1_SDA,NAND_ADO4,USB0_DATA4,SDMMC_DATA6   |
| AT16 | HPS_IOA_10/GPIO0_IO9,SPIM1_MOSI,SPIS1_MOSI,MDIO1_MDC,I2C_EMAC1_SCL,NAND_ADO5,USB0_DATA5,SDMMC_DATA7 |
| AH10 | HPS_IOA_11/GPIO0_IO10,SPIM1_MISO,SPIS1_SS0_N,MDIO0_MDIO,I2C_EMAC0_SDA,NAND_ADO6,USB0_DATA6          |
| AU15 | HPS_IOA_12/GPIO0_IO11,SPIM1_SS0_N,SPIS1_MISO,MDIO0_MDC,I2C_EMAC0_SCL,NAND_ADO7,USB0_DATA7           |
| AJ7  | HPS_IOA_13/GPIO0_IO12,NAND_ALE,USB1_CLK,EMAC0_TX_CLK  |
| AL13 | HPS_IOA_14/GPIO0_IO13,NAND_RB,USB1_STP,EMAC0_TX_CTL   |
| AH8  | HPS_IOA_15/GPIO0_IO14,NAND_CE_N,USB1_DIR,EMAC0_RX_CLK   |
| AM14 | HPS_IOA_16/GPIO0_IO15,USB1_DATA0,EMAC0_RX_CTL   |
| AD14 | HPS_IOA_17/GPIO0_IO16,NAND_ADO8,USB1_DATA1,EMAC0_TXD0   |
| AN13 | HPS_IOA_18/GPIO0_IO17,NAND_ADO9,USB1_NXT,EMAC0_TXD1   |
| AG11 | HPS_IOA_19/GPIO0_IO18,NAND_ADO10,USB1_DATA2,EMAC0_RXD0  |
| AP14 | HPS_IOA_20/GPIO0_IO19,SPIM1_SS1_N,NAND_ADO11,USB1_DATA3,EMAC0_RXD1                                  |
| AG9  | HPS_IOA_21/GPIO0_IO20,SPIM1_CLK,SPIS0_CLK,UART0_CTS_N,I2C1_SDA,NAND_ADO12,USB1_DATA4,EMAC0_TXD2     |
| AF12 | HPS_IOA_22/GPIO0_IO21,SPIM1_MOSI,SPIS0_MOSI,UART0_RTS_N,I2C1_SCL,NAND_ADO13,USB1_DATA5,EMAC0_TXD3   |
| AU13 | HPS_IOA_23/GPIO0_IO22,SPIM1_MISO,SPIS0_SS0_N,UART0_TX,I2C0_SDA,NAND_ADO14,USB1_DATA6,EMAC0_RXD2     |
| AF10 | HPS_IOA_24/GPIO0_IO23,SPIM1_SS0_N,SPIS0_MISO,UART0_RX,I2C0_SCL,NAND_ADO15,USB1_DATA7,EMAC0_RXD3     |
| AU11 | HPS_IOB_1/GPIO1_IO0,SPIM1_CLK,UART0_CTS_N,NAND_ADO0,EMAC1_TX_CLK                                    |
| AF8  | HPS_IOB_2/GPIO1_IO1,SPIM1_MOSI,UART0_RTS_N,NAND_ADO1,EMAC1_TX_CTL                                   |
| AT12 | HPS_IOB_3/GPIO1_IO2,SPIM1_MISO,UART0_TX,I2C0_SDA,NAND_WE_N,EMAC1_RX_CLK                             |
| AG7  | HPS_IOB_4/GPIO1_IO3,SPIM1_SS0_N,UART0_RX,I2C0_SCL,NAND_RE_N,EMAC1_RX_CTL                            |
| AP12 | HPS_IOB_5/GPIO1_IO4,SPIM1_SS1_N,SPIS1_CLK,UART1_CTS_N,NAND_WP_N,EMAC1_TXD0                          |
| AC13 | HPS_IOB_6/GPIO1_IO5,SPIS1_MOSI,UART1_RTS_N,NAND_ADO2,EMAC1_TXD1                                     |
| AN11 | HPS_IOB_7/GPIO1_IO6,SPIS1_SS0_N,UART1_TX,I2C1_SDA,NAND_ADO3,EMAC1_RXD0                              |
| AD12 | HPS_IOB_8/GPIO1_IO7,SPIS1_MISO,UART1_RX,I2C1_SCL,NAND_CLE,EMAC1_RXD1                                |
| AM12 | HPS_IOB_9/GPIO1_IO8,JTAG_TCK,SPIS0_CLK,MDIO2_MDIO,I2C_EMAC2_SDA,NAND_ADO4,EMAC1_TXD2                |
| AD10 | HPS_IOB_10/GPIO1_IO9,JTAG_TMS,SPIS0_MOSI,MDIO2_MDC,I2C_EMAC2_SCL,NAND_ADO5,EMAC1_TXD3               |
| AL11 | HPS_IOB_11/GPIO1_IO10,JTAG_TDO,SPIS0_SS0_N,MDIO0_MDIO,I2C_EMAC0_SDA,NAND_ADO6,EMAC1_RXD2            |
| AC11 | HPS_IOB_12/GPIO1_IO11,JTAG_TDI,SPIS0_MISO,MDIO0_MDC,I2C_EMAC0_SCL,NAND_ADO7,EMAC1_RXD3              |
| AT10 | HPS_IOB_13/GPIO1_IO12,I2C1_SDA,NAND_ALE,SDMMC_DATA0,EMAC2_TX_CLK                                    |
| AD8  | HPS_IOB_14/GPIO1_IO13,I2C1_SCL,NAND_RB,SDMMC_CMD,EMAC2_TX_CTL                                       |
| AP10 | HPS_IOB_15/GPIO1_IO14,UART1_TX,NAND_CE_N,SDMMC_CCLK,EMAC2_RX_CLK                                    |
| AC9  | HPS_IOB_16/GPIO1_IO15,UART1_RX,SDMMC_DATA1,EMAC2_RX_CTL   |
| AM10 | HPS_IOB_17/GPIO1_IO16,UART1_CTS_N,NAND_ADO8,SDMMC_DATA2,EMAC2_TXD0                                  |
| AB10 | HPS_IOB_18/GPIO1_IO17,SPIM0_SS1_N,UART1_RTS_N,NAND_ADO9,SDMMC_DATA3,EMAC2_TXD1                      |
| AJ13 | HPS_IOB_19/GPIO1_IO18,SPIM0_MISO,MDIO1_MDIO,I2C_EMAC1_SDA,NAND_ADO10,SDMMC_DATA4,EMAC2_RXD0         |
| AB14 | HPS_IOB_20/GPIO1_IO19,SPIM0_SS0_N,MDIO1_MDC,I2C_EMAC1_SCL,NAND_ADO11,SDMMC_DATA5,EMAC2_RXD1         |
| AH14 | HPS_IOB_21/GPIO1_IO20,SPIM0_CLK,SPIS1_CLK,I2C_EMAC2_SDA,NAND_ADO12,SDMMC_DATA6,EMAC2_TXD2           |
| AB12 | HPS_IOB_22/GPIO1_IO21,SPIM0_MOSI,SPIS1_MOSI,I2C_EMAC2_SCL,NAND_ADO13,SDMMC_DATA7,EMAC2_TXD3         |
| AJ9  | HPS_IOB_23/GPIO1_IO22,SPIM0_MISO,SPIS1_SS0_N,MDIO0_MDIO,I2C_EMAC0_SDA,NAND_ADO14,EMAC2_RXD2         |
| CH50 | HPS_IOB_24/GPIO1_IO23,SPIM0_SS0_N,SPIS1_MISO,MDIO0_MDC,I2C_EMAC0_SCL,NAND_ADO15,EMAC2_RXD3          |
| CF50 |   |

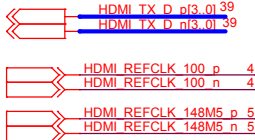
AGFB027R24C2E2V

|  |                        |                |
|--|------------------------|----------------|
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| Title  |                        |                |
| A7SK   |                        |                |
| Size   | Document Number        | Rev            |
| B  | FPGA Bank HPS          | B              |
| Date:  | Friday, April 07, 2023 | Sheet 18 of 52 |

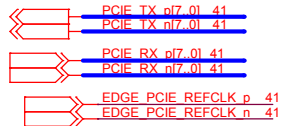
# QSFP28 Transceivers



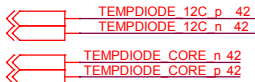
# HDMI TX Transceivers



# PCIe Transceiver



# FPGA Temperature diode



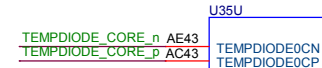
# 12C F-Tile

# Core



U35K

# F-TILE Bank 12C

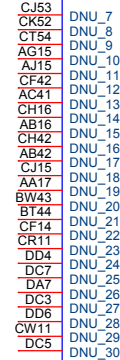


U35U

TEMPDIODE0CN  
 TEMPDIODE0CP

NC\_1  
 NC\_2  
 NC\_3

M54  
 L55  
 J55



AGFB027R24C2E2V

### FMC+ Transceiver

FMCP\_DP\_C2M\_n[15..0]\_34  
FMCP\_DP\_C2M\_n[15..0]\_34

FMCP\_DP\_M2C\_n[15..0]\_34  
FMCP\_DP\_M2C\_n[15..0]\_34

FMCP\_REFCLK0\_p\_5  
FMCP\_REFCLK0\_n\_5  
Default: 184.32MHz LVDS

FMCP\_REFCLK1\_p\_5  
FMCP\_REFCLK1\_n\_5  
Default: 156.25MHz LVDS

FMCP\_REFCLK2\_p\_4  
FMCP\_REFCLK2\_n\_4  
Default: 100MHz LVDS

FMCP\_REFCLK3\_p\_5  
FMCP\_REFCLK3\_n\_5  
Default: 148.5MHz LVDS

FMCP\_GBCLK\_M2C\_p[1..0]\_34  
FMCP\_GBCLK\_M2C\_n[1..0]\_34

FMCP\_RES0\_34

### FPGA Temperature diode

### 13A F-Tile

TEMPDIODE\_13A\_p\_42  
TEMPDIODE\_13A\_n\_42

U35L

## F-TILE Bank 13A

FMCP\_DP\_M2C\_n0 AG5  
FMCP\_DP\_M2C\_p0 AF4  
FMCP\_DP\_M2C\_n1 AH2  
FMCP\_DP\_M2C\_p1 AJ1  
FMCP\_DP\_M2C\_n2 AM2  
FMCP\_DP\_M2C\_p2 AN1  
FMCP\_DP\_M2C\_n3 AT2  
FMCP\_DP\_M2C\_p3 AU1

FMCP\_DP\_M2C\_n4 AY2  
FMCP\_DP\_M2C\_p4 BA1  
FMCP\_DP\_M2C\_n5 BD2  
FMCP\_DP\_M2C\_p5 BE1  
FMCP\_DP\_M2C\_n6 BH2  
FMCP\_DP\_M2C\_p6 BJ1  
FMCP\_DP\_M2C\_n7 BM2  
FMCP\_DP\_M2C\_p7 BN1

FMCP\_DP\_M2C\_n8 BT2  
FMCP\_DP\_M2C\_p8 BU1  
FMCP\_DP\_M2C\_n9 BY2  
FMCP\_DP\_M2C\_p9 CA1  
FMCP\_DP\_M2C\_n10 CD2  
FMCP\_DP\_M2C\_p10 CE1  
FMCP\_DP\_M2C\_n11 CH2  
FMCP\_DP\_M2C\_p11 CJ1

FMCP\_DP\_M2C\_n12 CM2  
FMCP\_DP\_M2C\_p12 CN1  
FMCP\_DP\_M2C\_n13 CR5  
FMCP\_DP\_M2C\_p13 CP4  
FMCP\_DP\_M2C\_n14 CT2  
FMCP\_DP\_M2C\_p14 CU1  
FMCP\_DP\_M2C\_n15 CW5  
FMCP\_DP\_M2C\_p15 CV4

FMCP\_REFCLK3\_n BJ7  
FMCP\_REFCLK3\_p BH8

FMCP\_REFCLK0\_n BU7  
FMCP\_REFCLK0\_p BR7  
FMCP\_REFCLK1\_n BN7  
FMCP\_REFCLK1\_p BP8  
FMCP\_REFCLK2\_n BV8  
FMCP\_REFCLK2\_p BW7  
FMCP\_GBCLK\_M2C\_n0 CC7  
FMCP\_GBCLK\_M2C\_p0 CD8  
FMCP\_GBCLK\_M2C\_n1 CH8  
FMCP\_GBCLK\_M2C\_p1 CJ7

CD10  
CF10  
CG7  
CE7  
CG11  
CH10

CV10  
CN11

FGTR13A\_RX\_Q0\_CH0N  
FGTR13A\_RX\_Q0\_CH0P  
FGTR13A\_RX\_Q0\_CH1N  
FGTR13A\_RX\_Q0\_CH1P  
FGTR13A\_RX\_Q0\_CH2N  
FGTR13A\_RX\_Q0\_CH2P  
FGTR13A\_RX\_Q0\_CH3N  
FGTR13A\_RX\_Q0\_CH3P

FGTR13A\_RX\_Q1\_CH0N  
FGTR13A\_RX\_Q1\_CH0P  
FGTR13A\_RX\_Q1\_CH1N  
FGTR13A\_RX\_Q1\_CH1P  
FGTR13A\_RX\_Q1\_CH2N  
FGTR13A\_RX\_Q1\_CH2P  
FGTR13A\_RX\_Q1\_CH3N  
FGTR13A\_RX\_Q1\_CH3P

FGTR13A\_RX\_Q2\_CH0N  
FGTR13A\_RX\_Q2\_CH0P  
FGTR13A\_RX\_Q2\_CH1N  
FGTR13A\_RX\_Q2\_CH1P  
FGTR13A\_RX\_Q2\_CH2N  
FGTR13A\_RX\_Q2\_CH2P  
FGTR13A\_RX\_Q2\_CH3N  
FGTR13A\_RX\_Q2\_CH3P

FGTR13A\_RX\_Q3\_CH0N  
FGTR13A\_RX\_Q3\_CH0P  
FGTR13A\_RX\_Q3\_CH1N  
FGTR13A\_RX\_Q3\_CH1P  
FGTR13A\_RX\_Q3\_CH2N  
FGTR13A\_RX\_Q3\_CH2P  
FGTR13A\_RX\_Q3\_CH3N  
FGTR13A\_RX\_Q3\_CH3P

REFCLK\_FGTR13A\_Q0\_RX\_CH0N  
REFCLK\_FGTR13A\_Q0\_RX\_CH0P  
REFCLK\_FGTR13A\_Q0\_RX\_CH1N  
REFCLK\_FGTR13A\_Q0\_RX\_CH1P  
REFCLK\_FGTR13A\_Q1\_RX\_CH2N  
REFCLK\_FGTR13A\_Q1\_RX\_CH2P  
REFCLK\_FGTR13A\_Q1\_RX\_CH3N  
REFCLK\_FGTR13A\_Q1\_RX\_CH3P  
REFCLK\_FGTR13A\_Q2\_RX\_CH4N  
REFCLK\_FGTR13A\_Q2\_RX\_CH4P  
REFCLK\_FGTR13A\_Q2\_RX\_CH5N  
REFCLK\_FGTR13A\_Q2\_RX\_CH5P  
REFCLK\_FGTR13A\_Q3\_RX\_CH6N  
REFCLK\_FGTR13A\_Q3\_RX\_CH6P  
REFCLK\_FGTR13A\_Q3\_RX\_CH7N  
REFCLK\_FGTR13A\_Q3\_RX\_CH7P  
REFCLK\_FGTR13A\_Q2\_CH8N  
REFCLK\_FGTR13A\_Q2\_CH8P  
REFCLK\_FGTR13A\_Q3\_CH9N  
REFCLK\_FGTR13A\_Q3\_CH9P

ENB\_GXF\_FHT13A  
IO\_PLL\_REFCLK\_13A\_GXF

FGTR13A\_TX\_Q0\_CH0N  
FGTR13A\_TX\_Q0\_CH0P  
FGTR13A\_TX\_Q0\_CH1N  
FGTR13A\_TX\_Q0\_CH1P  
FGTR13A\_TX\_Q0\_CH2N  
FGTR13A\_TX\_Q0\_CH2P  
FGTR13A\_TX\_Q0\_CH3N  
FGTR13A\_TX\_Q0\_CH3P

FGTR13A\_TX\_Q1\_CH0N  
FGTR13A\_TX\_Q1\_CH0P  
FGTR13A\_TX\_Q1\_CH1N  
FGTR13A\_TX\_Q1\_CH1P  
FGTR13A\_TX\_Q1\_CH2N  
FGTR13A\_TX\_Q1\_CH2P  
FGTR13A\_TX\_Q1\_CH3N  
FGTR13A\_TX\_Q1\_CH3P

FGTR13A\_TX\_Q2\_CH0N  
FGTR13A\_TX\_Q2\_CH0P  
FGTR13A\_TX\_Q2\_CH1N  
FGTR13A\_TX\_Q2\_CH1P  
FGTR13A\_TX\_Q2\_CH2N  
FGTR13A\_TX\_Q2\_CH2P  
FGTR13A\_TX\_Q2\_CH3N  
FGTR13A\_TX\_Q2\_CH3P

FGTR13A\_TX\_Q3\_CH0N  
FGTR13A\_TX\_Q3\_CH0P  
FGTR13A\_TX\_Q3\_CH1N  
FGTR13A\_TX\_Q3\_CH1P  
FGTR13A\_TX\_Q3\_CH2N  
FGTR13A\_TX\_Q3\_CH2P  
FGTR13A\_TX\_Q3\_CH3N  
FGTR13A\_TX\_Q3\_CH3P

RCOMP\_N\_Q2\_CH1\_FGT\_13A\_GXF  
RCOMP\_P\_Q2\_CH1\_FGT\_13A\_GXF

I\_PIN\_PERST\_N\_13A\_GXF

TEMPDIODE4P  
TEMPDIODE4N

APROBE\_GXF\_FGT13A\_Q0\_CH3  
APROBE\_GXF\_FGT13A\_Q2\_CH3  
APROBE\_GXF\_FGT13A\_Q3\_CH3  
APROBE2\_GXF\_FGT13A\_Q3\_CH3

AL5 FMCP\_DP\_C2M\_n0  
AK4 FMCP\_DP\_C2M\_p0  
AM8 FMCP\_DP\_C2M\_n1  
AN7 FMCP\_DP\_C2M\_p1  
AR5 FMCP\_DP\_C2M\_n2  
AP4 FMCP\_DP\_C2M\_p2  
AT8 FMCP\_DP\_C2M\_n3  
AU7 FMCP\_DP\_C2M\_p3

AW5 FMCP\_DP\_C2M\_n4  
AV4 FMCP\_DP\_C2M\_p4  
AY8 FMCP\_DP\_C2M\_n5  
BA7 FMCP\_DP\_C2M\_p5  
BC5 FMCP\_DP\_C2M\_n6  
BB4 FMCP\_DP\_C2M\_p6  
BG5 FMCP\_DP\_C2M\_n7  
BF4 FMCP\_DP\_C2M\_p7

BL5 FMCP\_DP\_C2M\_n8  
BK4 FMCP\_DP\_C2M\_p8  
BR5 FMCP\_DP\_C2M\_n9  
BP4 FMCP\_DP\_C2M\_p9  
BW5 FMCP\_DP\_C2M\_n10  
BV4 FMCP\_DP\_C2M\_p10  
CC5 FMCP\_DP\_C2M\_n11  
CB4 FMCP\_DP\_C2M\_p11

CG5 FMCP\_DP\_C2M\_n12  
CF4 FMCP\_DP\_C2M\_p12  
CL5 FMCP\_DP\_C2M\_n13  
CK4 FMCP\_DP\_C2M\_p13  
CM8 FMCP\_DP\_C2M\_n14  
CN7 FMCP\_DP\_C2M\_p14  
CT8 FMCP\_DP\_C2M\_n15  
CU7 FMCP\_DP\_C2M\_p15

Layout Note: place the resistor under BGA ball

CA7 R402 499 (+/- 0.1%)  
BY8

CG13 FMCP\_RES0

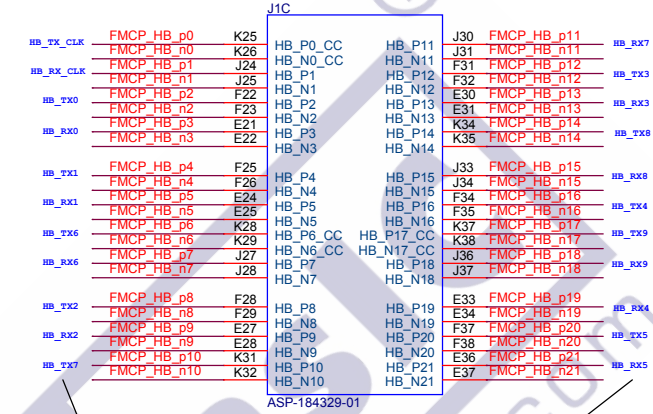
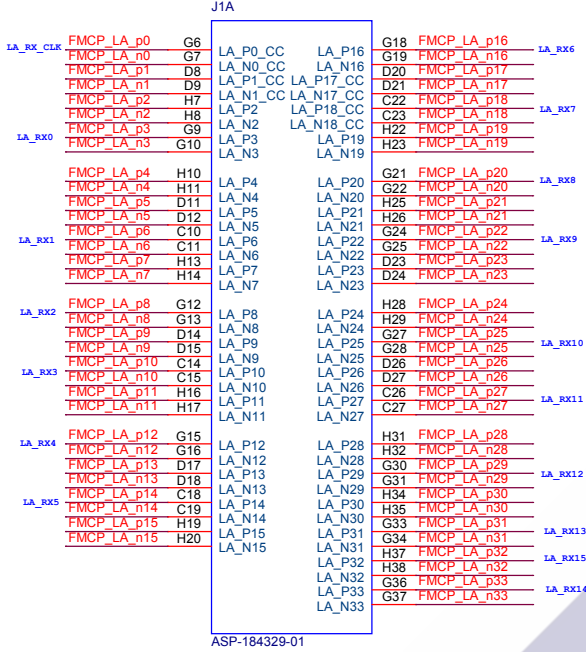
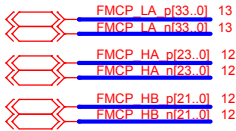
CB12 TEMPDIODE\_13A\_p  
CA11 TEMPDIODE\_13A\_n

BL7  
CB8  
CK10  
CJ9

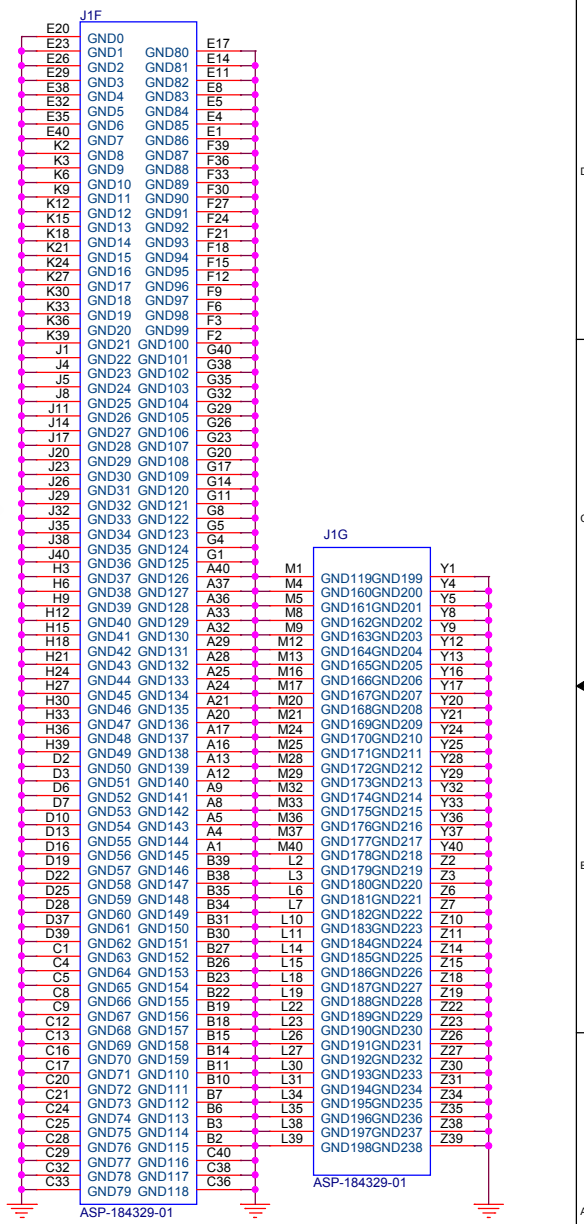
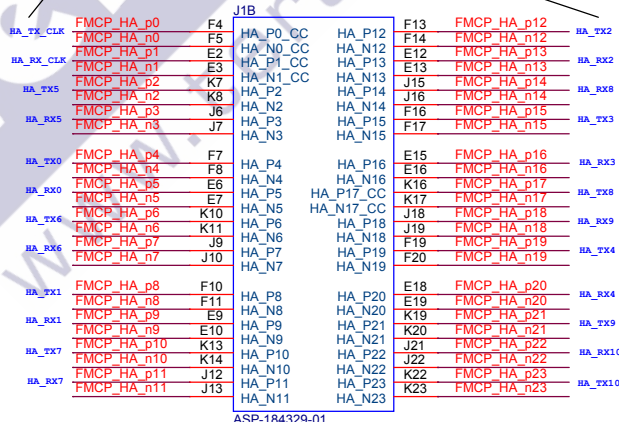


FMC+ PORT INTERFACE(HPC)

FMC+ 1



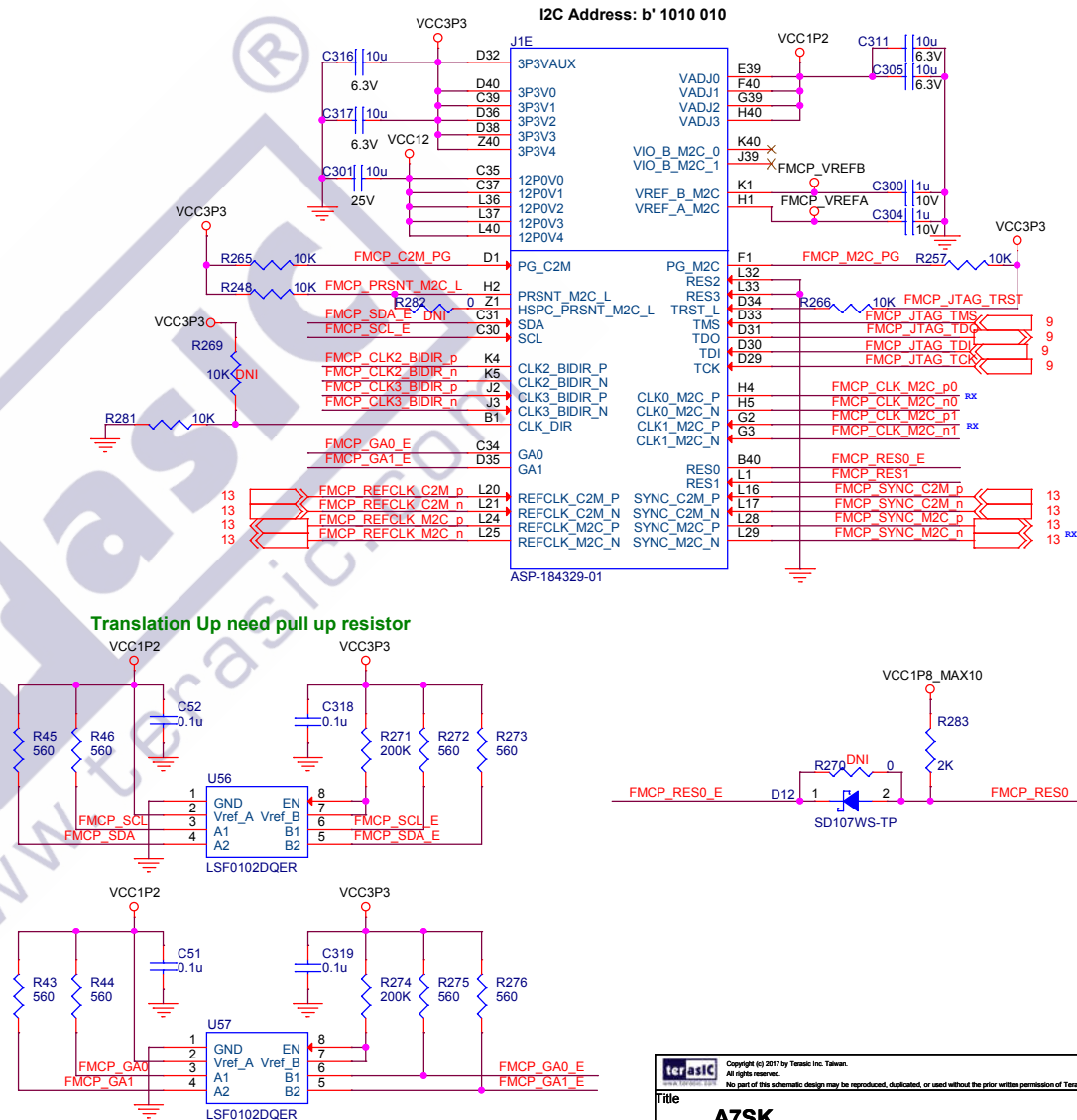
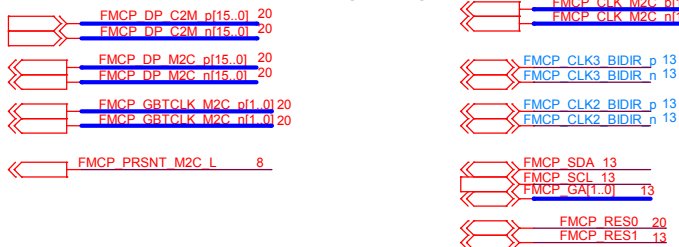
The blue RX and TX affixtures are applied only for True Differential Signaling signals. If you do not use True Differential Signaling signals, you can configure each differential I/O buffer as RX or TX



# FMC+ 2

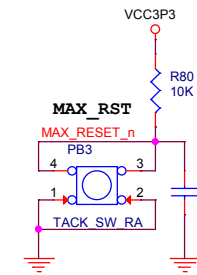
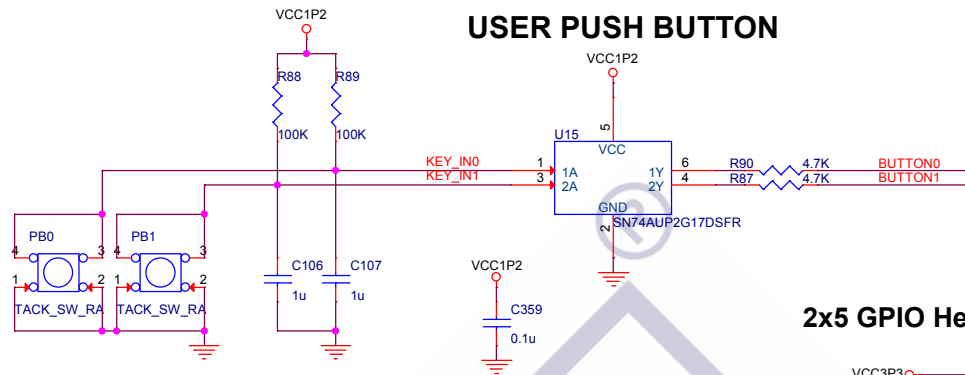


## FMC+ PORT INTERFACE(HPC)

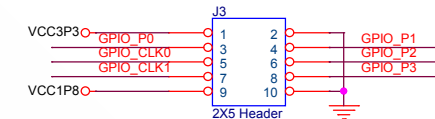


|   |                        |                |
|---|------------------------|----------------|
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| Title   |                        |                |
| A7SK  |                        |                |
| Size  | Document Number        | Rev            |
| B   | FMC+ 2                 | B              |
| Date:   | Friday, April 07, 2023 | Sheet 34 of 52 |

8 <<< MAX\_RESET\_n  
8,17 <<< CPU\_RESET\_n  
13 <<< BUTTON1.01

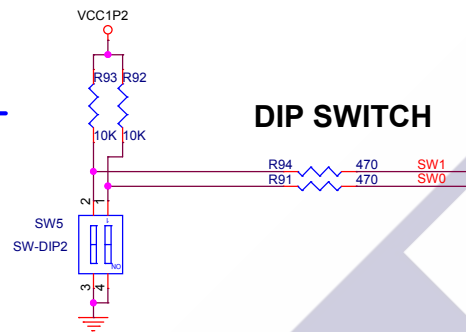


## 2x5 GPIO Header (Timing Expansion Header)



17 <<< GPIO\_P3\_01  
17 <<< GPIO\_CLK0  
17 <<< GPIO\_CLK1

## DIP SWITCH

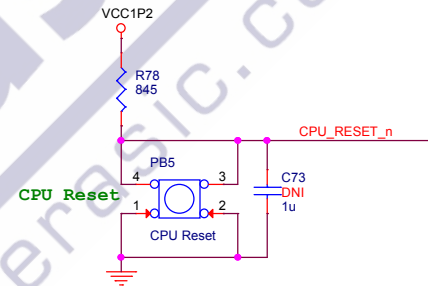
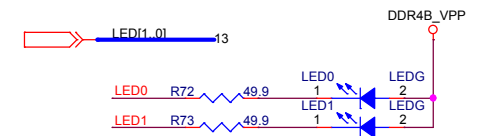


13 <<< SW1.01

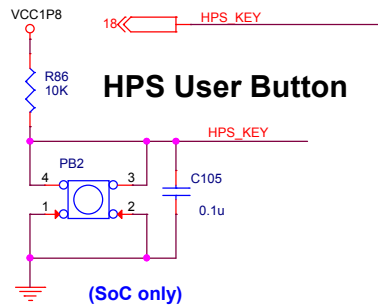
## HPS User LED



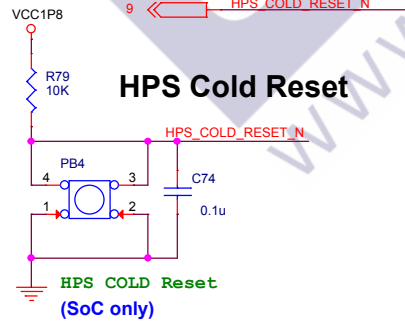
## USER LEDS



## HPS User Button



## HPS Cold Reset



|   |                                |                |
|---|--------------------------------|----------------|
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| Title   |                                |                |
| <b>A7SK</b>   |                                |                |
| Size  | Document Number                | Rev            |
| B   | GPIO, Button, Switch, User LED | B              |
| Date:   | Friday, April 07, 2023         | Sheet 43 of 52 |