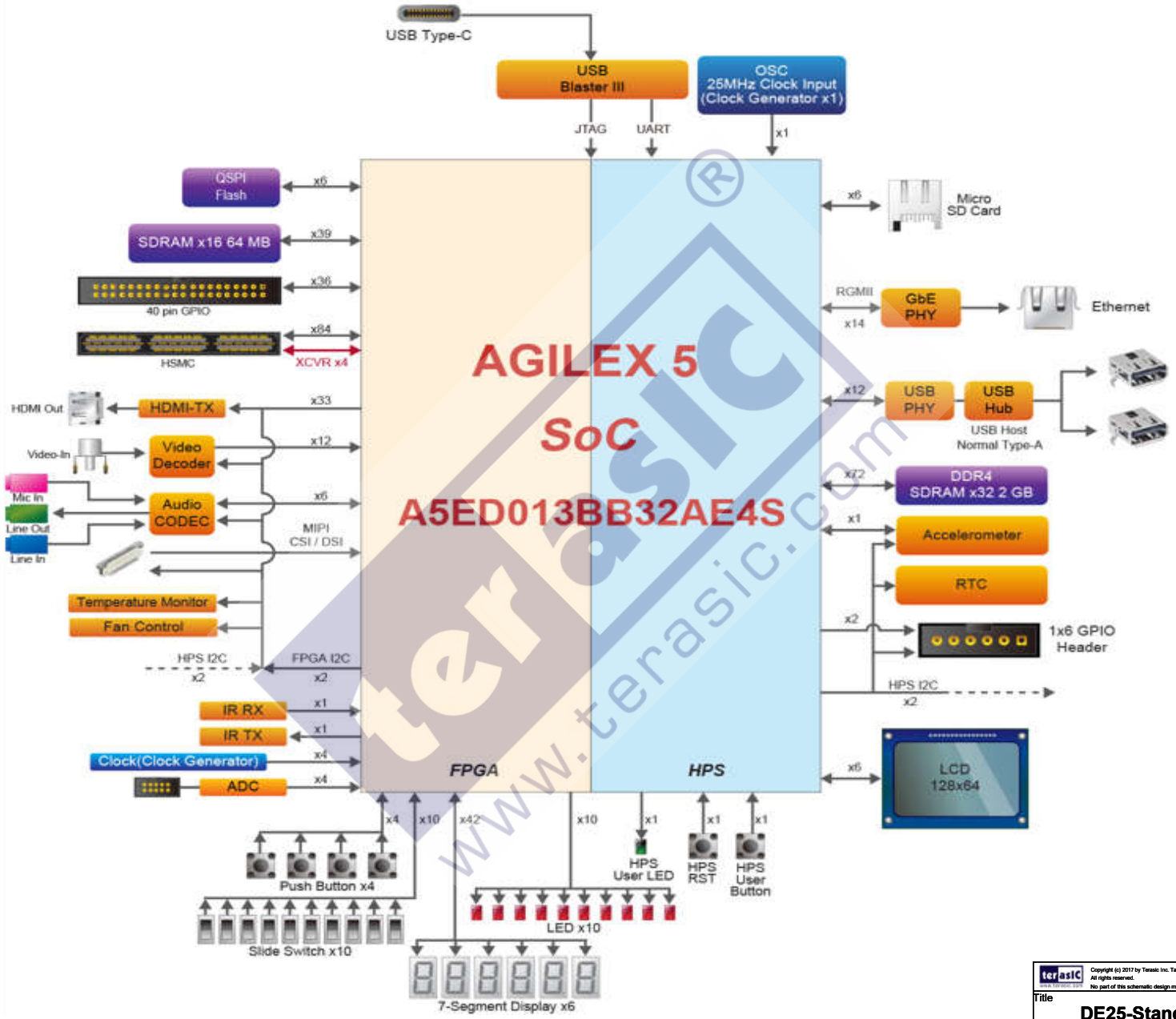
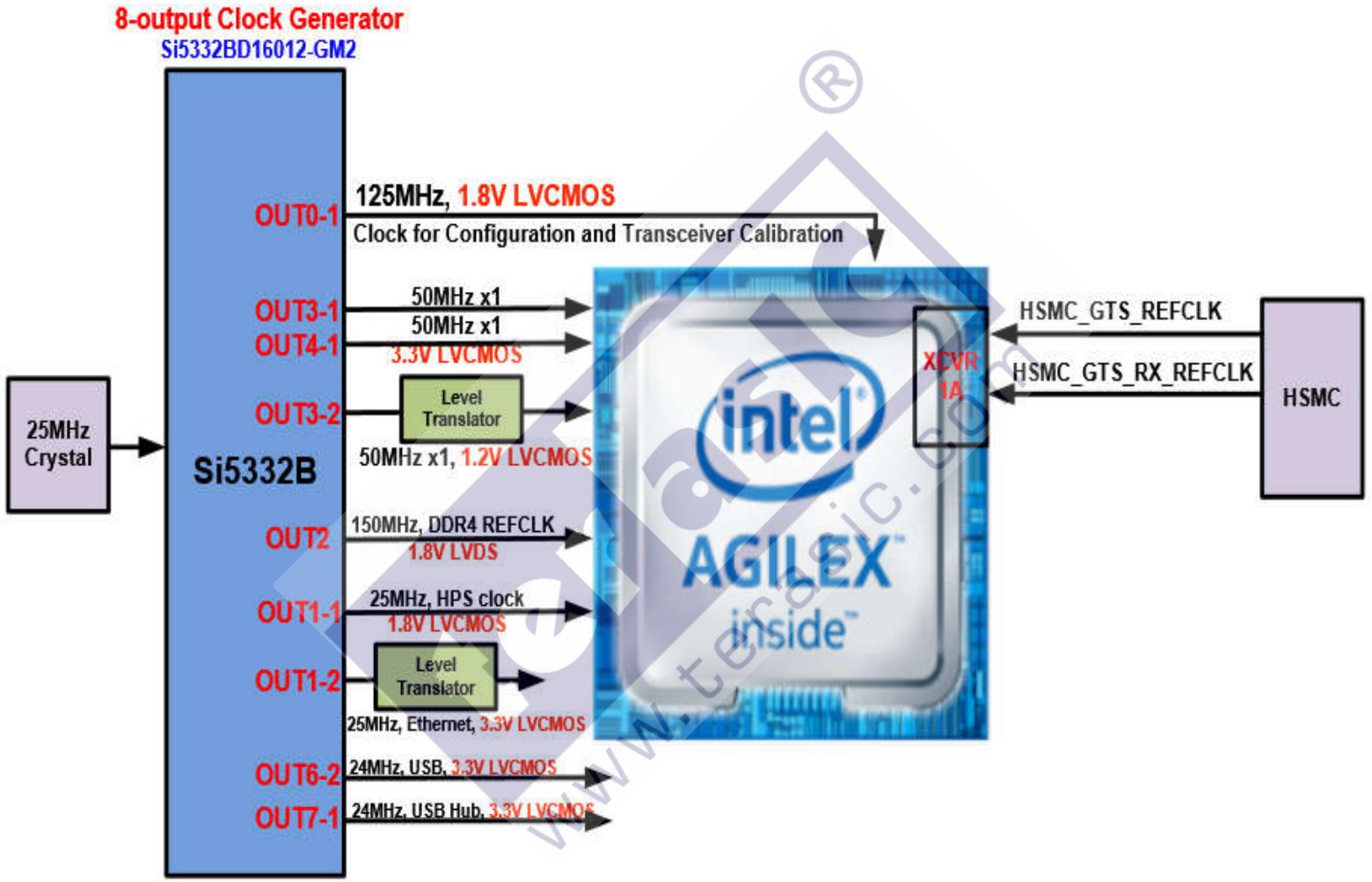
# Block Diagram






| | | |
|---|---|---|
| Title | DE25-Standard Board | |
| Size B | Document Number Block Diagram | Rev C |
| Date: Wednesday, April 23, 2025 | Sheet 2 of 49 | |

# Clock Tree



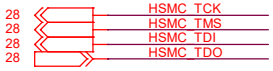


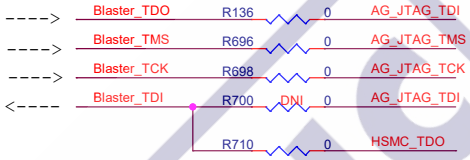

| | | |
|---|---|---|
| Title | DE25-Standard Board | |
| Size B | Document Number Clock Tree | Rev C |
| Date: Wednesday, April 23, 2025 | Sheet 3 of 49 | |

**USB Blaster III**


**FPGA JTAG INTERFACE**

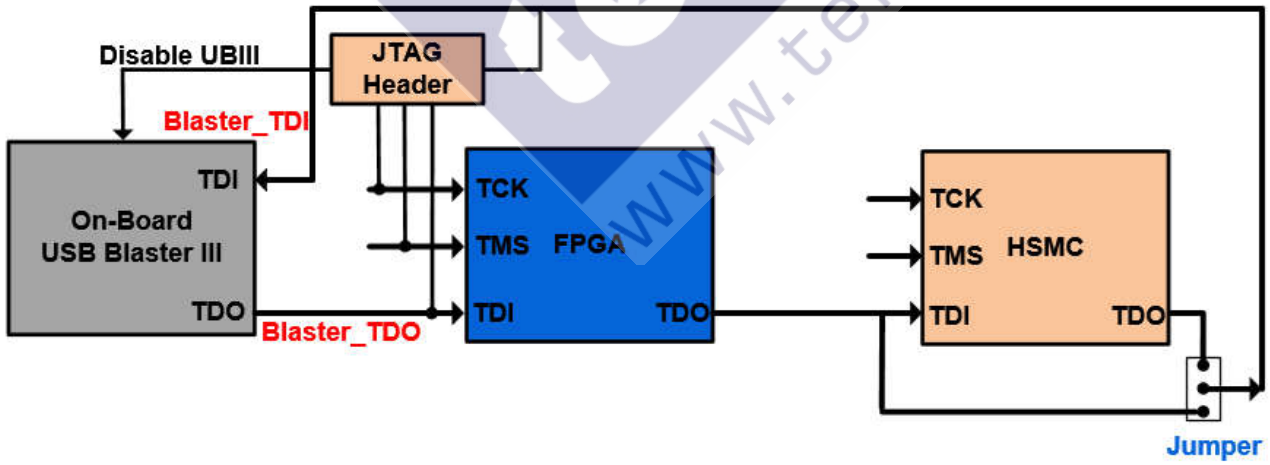

**HSMC JTAG INTERFACE**





# JTAG Chain

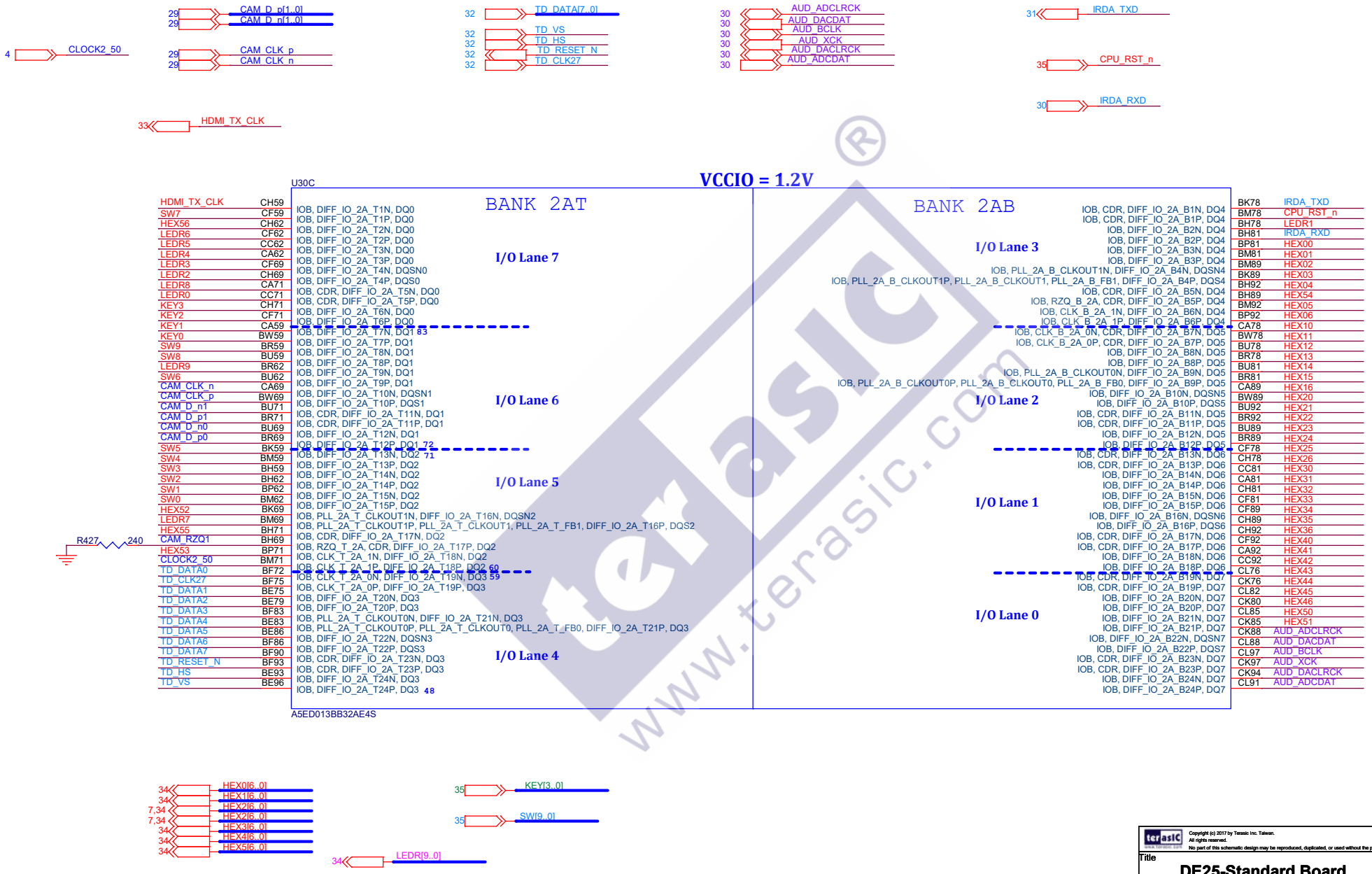





Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | JTAG Chain | C |

Date: Tuesday, April 22, 2025 Sheet 6 of 49






Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA Bank 2A | C |

Date: Tuesday, April 22, 2025 Sheet 7 of 49




Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA NC (2B) | C |

Date: Tuesday, April 22, 2025 Sheet 8 of 49

## DDR4

DDR4_CK
DDR4_CK_n
DDR4_BA[1..0]
DDR4_BG[1..0]
DDR4_ODT
DDR4_CS_n
DDR4_DQ[31..0]
DDR4_DQS[3..0]
DDR4_DQS_n[3..0]
DDR4_A[16..0]
DDR4_DBI_n[3..0]
DDR4_CKE
DDR4_RESET_n
DDR4_PAR
DDR4_ACT_n
DDR4_ALERT_n
DDR4_REFCLK_p
DDR4_REFCLK_n

RAS_n is a multiplexed function with A16
CAS_n is a multiplexed function with A15
WE_n is a multiplexed function with A14

**VCCIO = 1.2V**

U30E

### BANK 3AT

| | | |
|---|---|---|
| A91 | IOB, DIFF_IO_3A_T1N, DQ16 | |
| B88 | IOB, DIFF_IO_3A_T1P, DQ16 | |
| A94 | IOB, DIFF_IO_3A_T2N, DQ16 | |
| B91 | IOB, DIFF_IO_3A_T2P, DQ16 | |
| A97 | IOB, DIFF_IO_3A_T3N, DQ16 | |
| B97 | IOB, DIFF_IO_3A_T3P, DQ16, AVST_READY | I/O Lane 7 |
| B101 | IOB, DIFF_IO_3A_T4N, DQSN16 | |
| A101 | IOB, DIFF_IO_3A_T4P, DQS16 | |
| A110 | IOB, CDR, DIFF_IO_3A_T5N, DQ16 | |
| B106 | IOB, CDR, DIFF_IO_3A_T5P, DQ16 | |
| B103 | IOB, DIFF_IO_3A_T6N, DQ16 | |
| A106 | IOB, DIFF_IO_3A_T6P, DQ16 | |
| D84 | IOB, DIFF_IO_3A_T7N, DQ17, AVST_DATA10 | DDR4_DQ25 |
| F84 | IOB, DIFF_IO_3A_T7P, DQ17, AVST_DATA9 | DDR4_DQ29 |
| M87 | IOB, DIFF_IO_3A_T8N, DQ17, AVST_DATA8 | DDR4_DQ31 |
| K87 | IOB, DIFF_IO_3A_T8P, DQ17, AVST_VALID | DDR4_DQ27 |
| F87 | IOB, DIFF_IO_3A_T9N, DQ17, AVST_DATA7 | |
| H87 | IOB, DIFF_IO_3A_T9P, DQ17, AVST_DATA6 | DDR4_DBI_n3 |
| D95 | IOB, DIFF_IO_3A_T10N, DQSN17, AVST_DATA5 | DDR4_DQS_n3 |
| F95 | IOB, DIFF_IO_3A_T10P, DQS17, AVST_DATA4 | DDR4_DQS3 |
| K98 | IOB, CDR, DIFF_IO_3A_T11N, DQ17, AVST_DATA3 | DDR4_DQ26 |
| M98 | IOB, CDR, DIFF_IO_3A_T11P, DQ17, AVST_DATA2 | DDR4_DQ24 |
| F98 | IOB, DIFF_IO_3A_T12N, DQ17, AVST_DATA1 | DDR4_DQ28 |
| H98 | IOB, DIFF_IO_3A_T12P, DQ17, AVST_DATA0 | DDR4_DQ30 |
| P84 | IOB, DIFF_IO_3A_T13N, DQ18 | DDR4_DQ23 |
| T84 | IOB, DIFF_IO_3A_T13P, DQ18 | DDR4_DQ22 |
| M84 | IOB, DIFF_IO_3A_T14N, DQ18 | DDR4_DQ19 |
| K84 | IOB, DIFF_IO_3A_T14P, DQ18 | DDR4_DQ17 |
| T87 | IOB, DIFF_IO_3A_T15N, DQ18 | |
| V87 | IOB, DIFF_IO_3A_T15P, DQ18 | DDR4_DBI_n2 |
| M95 | IOB, PLL_3A_T_CLKOUT1N, DIFF_IO_3A_T16N, DQSN18 | DDR4_DQS_n2 |
| K95 | IOB, PLL_3A_T_CLKOUT1P, PLL_3A_T_CLKOUT1, PLL_3A_T_FB1, DIFF_IO_3A_T16P, DQS18 | DDR4_DQS2 |
| T95 | IOB, CDR, DIFF_IO_3A_T17N, DQ18 | DDR4_DQ16 |
| P95 | IOB, RZQ_T_3A, CDR, DIFF_IO_3A_T17P, DQ18 | DDR4_DQ18 |
| T98 | IOB, CLK_T_3A_1N, DIFF_IO_3A_T18N, DQ18 | DDR4_DQ20 |
| V98 | IOB, CLK_T_3A_1P, DIFF_IO_3A_T18P, DQ18 | DDR4_DQ21 |
| Y84 | IOB, CLK_T_3A_0N, DIFF_IO_3A_T19N, DQ19 | DDR4_DQ15 |
| Y87 | IOB, CLK_T_3A_0P, DIFF_IO_3A_T19P, DQ19 | DDR4_DQ13 |
| Y95 | IOB, DIFF_IO_3A_T20N, DQ19 | DDR4_DQ11 |
| Y98 | IOB, DIFF_IO_3A_T20P, DQ19 | DDR4_DQ9 |
| AC86 | IOB, PLL_3A_T_CLKOUT0N, DIFF_IO_3A_T21N, DQ19 | |
| AC90 | IOB, PLL_3A_T_CLKOUT0P, PLL_3A_T_CLKOUT0, PLL_3A_T_FB0, DIFF_IO_3A_T21P, DQ19 | DDR4_DBI_n1 |
| AG93 | IOB, DIFF_IO_3A_T22N, DQSN19, AVST_CLK | DDR4_DQS_n1 |
| AG90 | IOB, DIFF_IO_3A_T22P, DQS19, AVST_DATA15 | DDR4_DQS1 |
| AC96 | IOB, CDR, DIFF_IO_3A_T23N, DQ19, AVST_DATA14 | DDR4_DQ12 |
| AC100 | IOB, CDR, DIFF_IO_3A_T23P, DQ19, AVST_DATA13 | DDR4_DQ14 |
| AG104 | IOB, DIFF_IO_3A_T24N, DQ19, AVST_DATA12 | DDR4_DQ10 |
| AG100 | IOB, DIFF_IO_3A_T24P, DQ19, AVST_DATA11 | DDR4_DQ8 |

I/O Lane 6
I/O Lane 5
I/O Lane 4

A5ED013BB32AE4S

### BANK 3AB

| | | |
|---|---|---|
| | IOB, CDR, DIFF_IO_3A_B1N, DQ20 | |
| | IOB, CDR, DIFF_IO_3A_B1P, DQ20 | |
| | IOB, DIFF_IO_3A_B2N, DQ20 | |
| | IOB, DIFF_IO_3A_B2P, DQ20 | I/O Lane 3 |
| | IOB, DIFF_IO_3A_B3N, DQ20 | |
| | IOB, DIFF_IO_3A_B3P, DQ20 | |
| | IOB, PLL_3A_B_CLKOUT1N, DIFF_IO_3A_B4N, DQSN20 | |
| | IOB, PLL_3A_B_CLKOUT1P, PLL_3A_B_CLKOUT1, PLL_3A_B_FB1, DIFF_IO_3A_B4P, DQS20 | |
| | IOB, CDR, DIFF_IO_3A_B5N, DQ20 | |
| | IOB, RZQ_B_3A, CDR, DIFF_IO_3A_B5P, DQ20 | |
| | IOB, CLK_B_3A_1N, DIFF_IO_3A_B6N, DQ20 | |
| | IOB, CLK_B_3A_1P, DIFF_IO_3A_B6P, DQ20 | |
| K105 | IOB, CLK_B_3A_0N, CDR, DIFF_IO_3A_B7N, DQ21 | DDR4_A11 |
| M105 | IOB, CLK_B_3A_0P, CDR, DIFF_IO_3A_B7P, DQ21 | DDR4_A10 |
| P105 | IOB, DIFF_IO_3A_B8N, DQ21 | DDR4_A9 |
| T105 | IOB, DIFF_IO_3A_B8P, DQ21 | DDR4_A8 |
| T108 | IOB, PLL_3A_B_CLKOUT0N, DIFF_IO_3A_B9N, DQ21 | DDR4_A7 |
| V108 | IOB, PLL_3A_B_CLKOUT0P, PLL_3A_B_CLKOUT0, PLL_3A_B_FB0, DIFF_IO_3A_B9P, DQ21 | DDR4_A6 |
| K114 | IOB, DIFF_IO_3A_B10N, DQSN21 | DDR4_A5 |
| M114 | IOB, DIFF_IO_3A_B10P, DQS21 | DDR4_A4 |
| T117 | IOB, CDR, DIFF_IO_3A_B11N, DQ21 | DDR4_A3 |
| V117 | IOB, CDR, DIFF_IO_3A_B11P, DQ21 | DDR4_A2 |
| P114 | IOB, DIFF_IO_3A_B12N, DQ21 | DDR4_A1 |
| T114 | IOB, DIFF_IO_3A_B12P, DQ21 | DDR4_A0 |
| K108 | IOB, CDR, DIFF_IO_3A_B13N, DQ22 | DDR4_PAR |
| M108 | IOB, CDR, DIFF_IO_3A_B13P, DQ22 | |
| F108 | IOB, DIFF_IO_3A_B14N, DQ22 | DDR4_CK_n |
| H108 | IOB, DIFF_IO_3A_B14P, DQ22 | DDR4_CK |
| D105 | IOB, DIFF_IO_3A_B15N, DQ22 | |
| F105 | IOB, DIFF_IO_3A_B15P, DQ22 | DDR4_CKE |
| D114 | IOB, DIFF_IO_3A_B16N, DQSN22 | |
| F114 | IOB, DIFF_IO_3A_B16P, DQS22 | DDR4_ODT |
| M117 | IOB, CDR, DIFF_IO_3A_B17N, DQ22 | DDR4_ACT_n |
| K117 | IOB, CDR, DIFF_IO_3A_B17P, DQ22 | DDR4_CS_n |
| H117 | IOB, DIFF_IO_3A_B18N, DQ22 | DDR4_RESET_n |
| F117 | IOB, DIFF_IO_3A_B18P, DQ22 | DDR4_BG1 |
| A113 | IOB, CDR, DIFF_IO_3A_B19N, DQ23 | DDR4_DQ7 |
| B113 | IOB, CDR, DIFF_IO_3A_B19P, DQ23 | DDR4_DQ5 |
| A116 | IOB, DIFF_IO_3A_B20N, DQ23 | DDR4_DQ1 |
| B116 | IOB, DIFF_IO_3A_B20P, DQ23 | DDR4_DQ3 |
| A122 | IOB, DIFF_IO_3A_B21N, DQ23 | |
| B119 | IOB, DIFF_IO_3A_B21P, DQ23 | DDR4_DBI_n0 |
| A125 | IOB, DIFF_IO_3A_B22N, DQSN23 | DDR4_DQS_n0 |
| B122 | IOB, DIFF_IO_3A_B22P, DQS23 | DDR4_DQS0 |
| A130 | IOB, CDR, DIFF_IO_3A_B23N, DQ23 | DDR4_DQ6 |
| B130 | IOB, CDR, DIFF_IO_3A_B23P, DQ23 | DDR4_DQ4 |
| A128 | IOB, DIFF_IO_3A_B24N, DQ23 | DDR4_DQ2 |
| B128 | IOB, DIFF_IO_3A_B24P, DQ23 | DDR4_DQ0 |

I/O Lane 2
I/O Lane 1
I/O Lane 0

AB105 DDR4_BG0
Y105 DDR4_BA1
AB108 DDR4_BA0
Y108 DDR4_ALERT_n
AK104 DDR4_A16
AK107 DDR4_A15
AB114 DDR4_A14
Y114 DDR4_A13
AG111 DDR4_A12
AK111 RZQ_B_3A — R418 240
Y117 DDR4_REFCLK_n
AB117 DDR4_REFCLK_p — R405 100 DNI



Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA Bank 3A | C |

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Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA NC (3B) | C |

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## HDMI TX

33 HDMI_TX_D[23..0]

33 HDMI_TX_HS
33 HDMI_TX_VS
33 HDMI_TX_DE
33 HDMI_TX_INT

## FPGA I2C Interface

FPGA_I2C_SDA 29,30,32,33,40,43
FPGA_I2C_SCL 29,30,32,33,40,43

## HDMI Audio Interface

33 HDMI_I2S0
33 HDMI_MCLK
33 HDMI_LRCLK
33 HDMI_SCLK

29 CAM_GPIO

4 CLOCK0_50

## HSMC I2C Interface

HSMC_I2C_SDA 28
HSMC_I2C_SCL 28

7,11,34 LEDR[9..0]

28 HSMC_B5B_D0_E
28 HSMC_B5B_D1_E

7,11,34 LEDR[9..0]

U30G

**VCCIO = 3.3V**

| | | | |
|---|---|---|---|
| HDMI_TX_D0 | CD134 | HVIO_5A_1, SYSPLLREFCLK_L1A_0, TXCLK1, DATA_CTRL1 | HVIO_5B_1, SYSPLLREFCLK_L1A_2, TXCLK1, DATA_CTRL1 | BF111 | HDMI_TX_D19 | |
| HDMI_TX_D1 | CD135 | HVIO_5A_2, SYSPLLREFCLK_L1A_1, TXCLK2, DATA_CTRL2 | HVIO_5B_2, SYSPLLREFCLK_L1A_3, TXCLK2, DATA_CTRL2 | BH109 | HDMI_TX_D20 | |
| HDMI_TX_D2 | CG134 | HVIO_5A_3, SYSPLLREFCLK_L1B_0, TXCLK3, DATA_CTRL3 | HVIO_5B_3, SYSPLLREFCLK_L1B_2, TXCLK3, DATA_CTRL3 | BE115 | HDMI_TX_D21 | |
| HDMI_TX_D3 | CG135 | HVIO_5A_4, SYSPLLREFCLK_L1B_1, TXCLK4, DATA_CTRL4 | HVIO_5B_4, SYSPLLREFCLK_L1B_3, TXCLK4, DATA_CTRL4 | BF115 | HDMI_TX_D22 | |
| HDMI_TX_D4 | CH132 | HVIO_5A_5, PIN_PERST_N_CVP_L1A_0, TXCLK5, DATA_CTRL5 | HVIO_5B_5, PIN_PERST_N_CVP_L1A_1, TXCLK5, DATA_CTRL5 | BF107 | HSMC_B5B_D0_E | (Reset input in PCIe) |
| HDMI_TX_D5 | CF132 | HVIO_5A_6, PIN_PERST_N_CVP_L1B_0, TXCLK6, DATA_CTRL6 | HVIO_5B_6, PIN_PERST_N_CVP_L1B_1, TXCLK6, DATA_CTRL6 | BU109 | HDMI_TX_D23 | |
| HDMI_TX_D6 | CF128 | HVIO_5A_7, PIN_PERST_N_CVP_L1C_0, TXCLK7, DATA_CTRL7 | HVIO_5B_7, PIN_PERST_N_CVP_L1C_1, TXCLK7, DATA_CTRL7 | BF104 | HSMC_B5B_D1_E | |
| HDMI_TX_D7 | CK134 | HVIO_5A_8, TXCLK8, DATA_CTRL8 | HVIO_5B_8, TXCLK8, DATA_CTRL8 | BR109 | HDMI_TX_HS | |
| CLOCK0_50 | CH128 | HVIO_5A_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | HVIO_5B_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | BE107 | HDMI_TX_VS | |
| HDMI_TX_D8 | CL125 | HVIO_5A_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | HVIO_5B_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | BK109 | HDMI_TX_DE | |
| HDMI_TX_D9 | CF121 | HVIO_5A_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | HVIO_5B_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | BE111 | HDMI_TX_INT | |
| HDMI_TX_D10 | CF118 | HVIO_5A_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | HVIO_5B_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | BM109 | HSMC_I2C_SDA | |
| HDMI_TX_D11 | BU118 | HVIO_5A_13, TXCLK13, DATA_CTRL13 | HVIO_5B_13, TXCLK13, DATA_CTRL13 | BR112 | HSMC_I2C_SCL | |
| HDMI_TX_D12 | BR118 | HVIO_5A_14, TXCLK14, DATA_CTRL14 | HVIO_5B_14, TXCLK14, DATA_CTRL14 | BK118 | HDMI_I2S0 | |
| HDMI_TX_D13 | CA118 | HVIO_5A_15, TXCLK15, DATA_CTRL15 | HVIO_5B_15, TXCLK15, DATA_CTRL15 | BM118 | HDMI_MCLK | |
| HDMI_TX_D14 | BW118 | HVIO_5A_16, TXCLK16, DATA_CTRL16 | HVIO_5B_16, TXCLK16, DATA_CTRL16 | BP112 | HDMI_LRCLK | |
| HDMI_TX_D15 | CL128 | HVIO_5A_17, TXCLK17, DATA_CTRL17 | HVIO_5B_17, TXCLK17, DATA_CTRL17 | BM112 | HDMI_SCLK | |
| HDMI_TX_D16 | CL130 | HVIO_5A_18, TXCLK18, DATA_CTRL18 | HVIO_5B_18, TXCLK18, DATA_CTRL18 | BK112 | CAM_GPIO | |
| HDMI_TX_D17 | CK125 | HVIO_5A_19, SYSPLLREFCLK_L1C_0, TXCLK19, DATA_CTRL19 | HVIO_5B_19, SYSPLLREFCLK_L1C_1, TXCLK19, DATA_CTRL19 | BH118 | FPGA_I2C_SDA | |
| HDMI_TX_D18 | CK128 | HVIO_5A_20, TXCLK20, DATA_CTRL20 | HVIO_5B_20, TXCLK20, DATA_CTRL20 | BF120 | FPGA_I2C_SCL | |

BANK 5A

BANK 5B

A5ED013BB32AE4S



Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA Bank 5A、5B | C |

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GPIO

27 GPIO_D[35..0]

ADC

31 ADC_CS_n

31 ADC_SCK

31 ADC_SDO

31 ADC_SDI

VCCIO = 3.3V

U30H

| | | | | | |
|---|---|---|---|---|---|
| GPIO_D9 | BU28 | HVIO_6A_1, SYSPLLREFCLK_R4A_0, TXCLK1, DATA_CTRL1 | | HVIO_6B_1, SYSPLLREFCLK_R4A_2, TXCLK1, DATA_CTRL1 | BF21 | GPIO_D33 |
| GPIO_D7 | BP31 | HVIO_6A_2, SYSPLLREFCLK_R4A_1, TXCLK2, DATA_CTRL2 | | HVIO_6B_2, SYSPLLREFCLK_R4A_3, TXCLK2, DATA_CTRL2 | BE21 | GPIO_D35 |
| GPIO_D17 | BR28 | HVIO_6A_3, SYSPLLREFCLK_R4B_0, TXCLK3, DATA_CTRL3 | | HVIO_6B_3, SYSPLLREFCLK_R4B_2, TXCLK3, DATA_CTRL3 | BE43 | GPIO_D1 |
| GPIO_D8 | BR31 | HVIO_6A_4, SYSPLLREFCLK_R4B_1, TXCLK4, DATA_CTRL4 | | HVIO_6B_4, SYSPLLREFCLK_R4B_3, TXCLK4, DATA_CTRL4 | BF40 | GPIO_D3 |
| GPIO_D10 | BU31 | HVIO_6A_5, PIN_PERST_N_R4A_0, TXCLK5, DATA_CTRL5 | | HVIO_6B_5, PIN_PERST_N_R4A_1, TXCLK5, DATA_CTRL5 | BE29 | GPIO_D19 |
| GPIO_D6 | BM28 | HVIO_6A_6, PIN_PERST_N_R4B_0, TXCLK6, DATA_CTRL6 | | HVIO_6B_6, PIN_PERST_N_R4B_1, TXCLK6, DATA_CTRL6 | BE25 | GPIO_D32 |
| GPIO_D11 | BW28 | HVIO_6A_7, PIN_PERST_N_R4C_0, TXCLK7, DATA_CTRL7 | | HVIO_6B_7, PIN_PERST_N_R4C_1, TXCLK7, DATA_CTRL7 | BF32 | ADC_SDI |
| GPIO_D5 | BM31 | HVIO_6A_8, TXCLK8, DATA_CTRL8 | | HVIO_6B_8, TXCLK8, DATA_CTRL8 | BF36 | GPIO_D18 |
| GPIO_D0 | BK31 | HVIO_6A_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | | HVIO_6B_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | BF29 | GPIO_D2 |
| ADC_CS_n | BP22 | HVIO_6A_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | | HVIO_6B_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | BF25 | GPIO_D26 |
| GPIO_D4 | BK28 | HVIO_6A_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | | HVIO_6B_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | BF16 | GPIO_D34 |
| GPIO_D12 | BR22 | HVIO_6A_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | | HVIO_6B_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | BH19 | GPIO_D25 |
| GPIO_D28 | CH12 | HVIO_6A_13, TXCLK13, DATA_CTRL13 | | HVIO_6B_13, TXCLK13, DATA_CTRL13 | BK22 | GPIO_D21 |
| GPIO_D14 | BU22 | HVIO_6A_14, TXCLK14, DATA_CTRL14 | | HVIO_6B_14, TXCLK14, DATA_CTRL14 | BM19 | GPIO_D23 |
| GPIO_D15 | BW19 | HVIO_6A_15, TXCLK15, DATA_CTRL15 | | HVIO_6B_15, TXCLK15, DATA_CTRL15 | BU19 | GPIO_D13 |
| GPIO_D16 | BH28 | HVIO_6A_16, TXCLK16, DATA_CTRL16 | BANK 6A | HVIO_6B_16, TXCLK16, DATA_CTRL16 | BR19 | GPIO_D22 |
| GPIO_D20 | BM22 | HVIO_6A_17, TXCLK17, DATA_CTRL17 | | HVIO_6B_17, TXCLK17, DATA_CTRL17 | CK2 | GPIO_D30 |
| GPIO_D29 | CF12 | HVIO_6A_18, TXCLK18, DATA_CTRL18 | | HVIO_6B_18, TXCLK18, DATA_CTRL18 | CJ2 | GPIO_D31 |
| GPIO_D24 | BK19 | HVIO_6A_19, SYSPLLREFCLK_R4C_0, TXCLK19, DATA_CTRL19 | BANK 6B | HVIO_6B_19, SYSPLLREFCLK_R4C_1, TXCLK19, DATA_CTRL19 | CK4 | ADC_SDO |
| GPIO_D27 | CF9 | HVIO_6A_20, TXCLK20, DATA_CTRL20 | | HVIO_6B_20, TXCLK20, DATA_CTRL20 | CH4 | ADC_SCK |

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# SDRAM

4 CLOCK1_50

26 DRAM_ADDR[12..0]
26 DRAM_DQ[15..0]
26 DRAM_CLK
26 DRAM_CKE
26 DRAM_LDQM
26 DRAM_UDQM
26 DRAM_WE_N
26 DRAM_CAS_N
26 DRAM_RAS_N
26 DRAM_CS_N
26 DRAM_BA0
26 DRAM_BA1

**VCCIO = 1.8V**

U30I

| | | | | | |
|---|---|---|---|---|---|
| DRAM_ADDR0 | F27 | HVIO_6C_1, TXCLK1, DATA_CTRL1 | | HVIO_6D_1, TXCLK1, DATA_CTRL1 | A8 | DRAM_DQ5 |
| DRAM_ADDR1 | F24 | HVIO_6C_2, TXCLK2, DATA_CTRL2 | | HVIO_6D_2, TXCLK2, DATA_CTRL2 | B4 | DRAM_DQ7 |
| DRAM_ADDR2 | H27 | HVIO_6C_3, TXCLK3, DATA_CTRL3 | | HVIO_6D_3, TXCLK3, DATA_CTRL3 | A11 | DRAM_DQ1 |
| DRAM_ADDR3 | D24 | HVIO_6C_4, TXCLK4, DATA_CTRL4 | | HVIO_6D_4, TXCLK4, DATA_CTRL4 | B11 | DRAM_DQ3 |
| DRAM_ADDR4 | H18 | HVIO_6C_5, TXCLK5, DATA_CTRL5 | | HVIO_6D_5, TXCLK5, DATA_CTRL5 | B14 | DRAM_DQ2 |
| DRAM_ADDR5 | D15 | HVIO_6C_6, TXCLK6, DATA_CTRL6 | | HVIO_6D_6, TXCLK6, DATA_CTRL6 | A14 | DRAM_DQ0 |
| DRAM_ADDR6 | F18 | HVIO_6C_7, TXCLK7, DATA_CTRL7 | | HVIO_6D_7, TXCLK7, DATA_CTRL7 | A20 | DRAM_DQ4 |
| DRAM_ADDR7 | F15 | HVIO_6C_8, TXCLK8, DATA_CTRL8 | | HVIO_6D_8, TXCLK8, DATA_CTRL8 | A17 | DRAM_ADDR11 |
| CLOCK1_50 | D8 | HVIO_6C_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | | HVIO_6D_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | A23 | DRAM_DQ6 |
| DRAM_ADDR8 | K8 | HVIO_6C_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | | HVIO_6D_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | B20 | DRAM_DQ8 |
| DRAM_ADDR9 | F8 | HVIO_6C_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | | HVIO_6D_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | B23 | DRAM_DQ9 |
| DRAM_CS_N | H8 | HVIO_6C_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | | HVIO_6D_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | B26 | DRAM_DQ10 |
| DRAM_ADDR10 | C2 | HVIO_6C_13, TXCLK13, DATA_CTRL13 | | HVIO_6D_13, TXCLK13, DATA_CTRL13 | B30 | DRAM_DQ11 |
| DRAM_ADDR12 | D4 | HVIO_6C_14, TXCLK14, DATA_CTRL14 | | HVIO_6D_14, TXCLK14, DATA_CTRL14 | A30 | DRAM_DQ13 |
| DRAM_BA1 | F4 | HVIO_6C_15, TXCLK15, DATA_CTRL15 | | HVIO_6D_15, TXCLK15, DATA_CTRL15 | A35 | DRAM_DQ14 |
| DRAM_LDQM | K4 | HVIO_6C_16, TXCLK16, DATA_CTRL16 | BANK 6C | HVIO_6D_16, TXCLK16, DATA_CTRL16 | A33 | DRAM_DQ15 |
| DRAM_UDQM | G2 | HVIO_6C_17, TXCLK17, DATA_CTRL17 | | BANK 6D HVIO_6D_17, TXCLK17, DATA_CTRL17 | A39 | DRAM_DQ12 |
| DRAM_WE_N | J2 | HVIO_6C_18, TXCLK18, DATA_CTRL18 | | HVIO_6D_18, TXCLK18, DATA_CTRL18 | B35 | DRAM_CKE |
| DRAM_CAS_N | J1 | HVIO_6C_19, TXCLK19, DATA_CTRL19 | | HVIO_6D_19, TXCLK19, DATA_CTRL19 | D34 | DRAM_BA0 |
| DRAM_RAS_N | G1 | HVIO_6C_20, TXCLK20, DATA_CTRL20 | | HVIO_6D_20, TXCLK20, DATA_CTRL20 | B39 | DRAM_CLK |

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15,28 HSMC_D[76..0]

15,28 HSMC_CLKIN[2..0]

**VCCIO = HSMC_VCCIO**

U30Y

| | | | | | |
|---|---|---|---|---|---|
| HSMC_D41 | AB18 | HVIO_6E_1, TXCLK1, DATA_CTRL1 | | HVIO_6F_1, TXCLK1, DATA_CTRL1 | AD1 | HSMC_D25 |
| HSMC_D52 | AB15 | HVIO_6E_2, TXCLK2, DATA_CTRL2 | | HVIO_6F_2, TXCLK2, DATA_CTRL2 | AJ1 | HSMC_D15 |
| HSMC_D54 | Y18 | HVIO_6E_3, TXCLK3, DATA_CTRL3 | | HVIO_6F_3, TXCLK3, DATA_CTRL3 | AA1 | HSMC_D33 |
| HSMC_D22 | AG13 | HVIO_6E_4, TXCLK4, DATA_CTRL4 | | HVIO_6F_4, TXCLK4, DATA_CTRL4 | AJ2 | HSMC_D50 |
| HSMC_D53 | P15 | HVIO_6E_5, TXCLK5, DATA_CTRL5 | | HVIO_6F_5, TXCLK5, DATA_CTRL5 | AD2 | HSMC_D27 |
| HSMC_D30 | T15 | HVIO_6E_6, TXCLK6, DATA_CTRL6 | | HVIO_6F_6, TXCLK6, DATA_CTRL6 | AF2 | HSMC_D21 |
| HSMC_D24 | AH8 | HVIO_6E_7, TXCLK7, DATA_CTRL7 | | HVIO_6F_7, TXCLK7, DATA_CTRL7 | AB4 | HSMC_D23 |
| HSMC_D47 | T18 | HVIO_6E_8, TXCLK8, DATA_CTRL8 | | HVIO_6F_8, TXCLK8, DATA_CTRL8 | AE4 | HSMC_D28 |
| HSMC_CLKIN0 | V18 | HVIO_6E_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | | HVIO_6F_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | Y4 | HSMC_D31 |
| HSMC_D67 | M18 | HVIO_6E_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | | HVIO_6F_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | W2 | HSMC_CLKIN1 |
| HSMC_D7 | Y15 | HVIO_6E_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | | HVIO_6F_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | W1 | HSMC_D58 |
| HSMC_D71 | K18 | HVIO_6E_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | | HVIO_6F_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | U1 | HSMC_D45 |
| HSMC_D26 | AH4 | HVIO_6E_13, TXCLK13, DATA_CTRL13 | | HVIO_6F_13, TXCLK13, DATA_CTRL13 | R2 | HSMC_D51 |
| HSMC_D19 | Y8 | HVIO_6E_14, TXCLK14, DATA_CTRL14 | | HVIO_6F_14, TXCLK14, DATA_CTRL14 | U2 | HSMC_D62 |
| HSMC_D17 | AB8 | HVIO_6E_15, TXCLK15, DATA_CTRL15 | | HVIO_6F_15, TXCLK15, DATA_CTRL15 | N2 | HSMC_D57 |
| HSMC_D63 | M8 | HVIO_6E_16, TXCLK16, DATA_CTRL16 | | HVIO_6F_16, TXCLK16, DATA_CTRL16 | T4 | HSMC_D49 |
| HSMC_D43 | T8 | HVIO_6E_17, TXCLK17, DATA_CTRL17 | | HVIO_6F_17, TXCLK17, DATA_CTRL17 | L1 | HSMC_D59 |
| HSMC_D29 | V8 | HVIO_6E_18, TXCLK18, DATA_CTRL18 | | HVIO_6F_18, TXCLK18, DATA_CTRL18 | N1 | HSMC_D68 |
| HSMC_D65 | M15 | HVIO_6E_19, TXCLK19, DATA_CTRL19 | | HVIO_6F_19, TXCLK19, DATA_CTRL19 | M4 | HSMC_D61 |
| HSMC_D69 | K15 | HVIO_6E_20, TXCLK20, DATA_CTRL20 | | HVIO_6F_20, TXCLK20, DATA_CTRL20 | P4 | HSMC_D55 |

BANK 6E

BANK 6F

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14,28 HSMC_D[76..0]

14,28 HSMC_CLKIN[2..0]

**VCCIO = HSMC_VCCIO**

U30Z

| | | | | | |
|---|---|---|---|---|---|
| HSMC_D8 | AK32 | HVIO_6G_1, TXCLK1, DATA_CTRL1 | | HVIO_6H_1, TXCLK1, DATA_CTRL1 | AL16 | HSMC_D13 |
| HSMC_D35 | AC43 | HVIO_6G_2, TXCLK2, DATA_CTRL2 | | HVIO_6H_2, TXCLK2, DATA_CTRL2 | AK16 | HSMC_D20 |
| HSMC_D38 | AG36 | HVIO_6G_3, TXCLK3, DATA_CTRL3 | | HVIO_6H_3, TXCLK3, DATA_CTRL3 | K24 | HSMC_D76 |
| HSMC_D75 | AG40 | HVIO_6G_4, TXCLK4, DATA_CTRL4 | | HVIO_6H_4, TXCLK4, DATA_CTRL4 | M24 | HSMC_D66 |
| HSMC_D10 | AL32 | HVIO_6G_5, TXCLK5, DATA_CTRL5 | | HVIO_6H_5, TXCLK5, DATA_CTRL5 | M27 | HSMC_D64 |
| HSMC_D34 | T37 | HVIO_6G_6, TXCLK6, DATA_CTRL6 | | HVIO_6H_6, TXCLK6, DATA_CTRL6 | K27 | HSMC_D70 |
| HSMC_D74 | AC46 | HVIO_6G_7, TXCLK7, DATA_CTRL7 | | HVIO_6H_7, TXCLK7, DATA_CTRL7 | T24 | HSMC_D56 |
| HSMC_D32 | T34 | HVIO_6G_8, TXCLK8, DATA_CTRL8 | | HVIO_6H_8, TXCLK8, DATA_CTRL8 | P24 | HSMC_D60 |
| HSMC_CLKIN2 | V37 | HVIO_6G_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | | HVIO_6H_9, PLLREFCLK1, TXCLK9, RXCLK1, DATA_CTRL9 | V27 | HSMC_D44 |
| HSMC_D36 | AC36 | HVIO_6G_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | | HVIO_6H_10, PLLREFCLK2, TXCLK10, RXCLK2, DATA_CTRL10 | T27 | HSMC_D48 |
| HSMC_D6 | Y34 | HVIO_6G_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | | HVIO_6H_11, SOURCE_SYNC_CLK1, TXCLK11, RXCLK3, DATA_CTRL11 | Y24 | HSMC_D39 |
| HSMC_D73 | Y37 | HVIO_6G_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | | HVIO_6H_12, SOURCE_SYNC_CLK2, TXCLK12, RXCLK4, DATA_CTRL12 | AB24 | HSMC_D42 |
| HSMC_D5 | M37 | HVIO_6G_13, TXCLK13, DATA_CTRL13 | | HVIO_6H_13, TXCLK13, DATA_CTRL13 | AB27 | HSMC_D40 |
| HSMC_D9 | M34 | HVIO_6G_14, TXCLK14, DATA_CTRL14 | | HVIO_6H_14, TXCLK14, DATA_CTRL14 | Y27 | HSMC_D37 |
| HSMC_D2 | K37 | HVIO_6G_15, TXCLK15, DATA_CTRL15 | | HVIO_6H_15, TXCLK15, DATA_CTRL15 | AL25 | HSMC_D16 |
| HSMC_D4 | P34 | HVIO_6G_16, TXCLK16, DATA_CTRL16 | | HVIO_6H_16, TXCLK16, DATA_CTRL16 | AK25 | HSMC_D18 |
| HSMC_D0 | K34 | HVIO_6G_17, TXCLK17, DATA_CTRL17 | | HVIO_6H_17, TXCLK17, DATA_CTRL17 | AG21 | HSMC_D46 |
| HSMC_D3 | H37 | HVIO_6G_18, TXCLK18, DATA_CTRL18 | | HVIO_6H_18, TXCLK18, DATA_CTRL18 | AK21 | HSMC_D11 |
| HSMC_D1 | F34 | HVIO_6G_19, TXCLK19, DATA_CTRL19 | | HVIO_6H_19, TXCLK19, DATA_CTRL19 | AL29 | HSMC_D14 |
| HSMC_D72 | F37 | HVIO_6G_20, TXCLK20, DATA_CTRL20 | | HVIO_6H_20, TXCLK20, DATA_CTRL20 | AG29 | HSMC_D12 |

BANK 6G

BANK 6H

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## Ethernet PHY Interface (RGMII)

38 HPS_ENET_TX_DATA[3..0]
38 HPS_ENET_TX_CLK
38 HPS_ENET_TX_CTL

38 HPS_ENET_RX_DATA[3..0]
38 HPS_ENET_RX_CLK
38 HPS_ENET_RX_CTL
38 HPS_ENET_MDC
38 HPS_ENET_MDIO

## UBS PHY Interface (ULPI)

37 HPS_USB_DATA[7..0]
37 HPS_USB_CLK
37 HPS_USB_NXT
37 HPS_USB_DIR
37 HPS_USB_STP

## SD Card

42 HPS_SD_DATA[3..0]
42 HPS_SD_CLK
42 HPS_SD_CMD

## HPS 25MHz Clock

4 HPS_CLK_25

## HPS GPIO

29 HPS_GPIO[1..0]

## HPS I2C Interface

29 HPS_I2C_SDA
29 HPS_I2C_SCL

## HPS User Button

36 HPS_KEY

## HPS User LED

36 HPS_LED

## UART Interface

39 HPS_UART_RX
39 HPS_UART_TX

## HPS LCD

41 HPS_LCM_RST_n
41 HPS_LCM_SPIM_SS
41 HPS_LCM_BK
41 HPS_LCM_SPIM_CLK
41 HPS_LCM_SPIM_MOSI
41 HPS_LCM_D_C

41 HPS_GSENSOR_INT

U30B

| | |
|---|---|
| HPS_USB_CLK | W135 |
| HPS_USB_STP | U135 |
| HPS_USB_DIR | W134 |
| HPS_USB_DATA0 | AK115 |
| HPS_USB_DATA1 | U134 |
| HPS_USB_NXT | AL120 |
| HPS_USB_DATA2 | R134 |
| HPS_USB_DATA3 | AG115 |
| HPS_USB_DATA4 | N135 |
| HPS_USB_DATA5 | AK120 |
| HPS_USB_DATA6 | N134 |
| HPS_USB_DATA7 | T132 |
| HPS_ENET_TX_CLK | P132 |
| HPS_ENET_TX_CTL | L135 |
| HPS_ENET_RX_CLK | J135 |
| HPS_ENET_RX_CTL | AD135 |
| HPS_ENET_TX_DATA0 | M132 |
| HPS_ENET_TX_DATA1 | AD134 |
| HPS_ENET_RX_DATA0 | K132 |
| HPS_ENET_RX_DATA1 | AG129 |
| HPS_ENET_TX_DATA2 | J134 |
| HPS_ENET_TX_DATA3 | AG120 |
| HPS_ENET_RX_DATA2 | G134 |
| HPS_ENET_RX_DATA3 | G135 |
| HPS_SD_DATA0 | E135 |
| HPS_SD_DATA1 | F132 |
| HPS_SD_CLK | D132 |
| HPS_CLK_25 | AG123 |
| HPS_GSENSOR_INT | B134 |
| HPS_SD_DATA2 | AA135 |
| HPS_SD_DATA3 | V127 |
| HPS_SD_CMD | AB132 |
| HPS_GPIO0 | T127 |
| HPS_GPIO1 | Y132 |
| HPS_LCM_RST_n | T124 |
| HPS_LCM_D_C | P124 |
| HPS_I2C_SDA | M127 |
| HPS_I2C_SCL | K127 |
| HPS_UART_TX | M124 |
| HPS_UART_RX | AB127 |
| HPS_KEY | K124 |
| HPS_LED | Y127 |
| HPS_LCM_BK | H127 |
| HPS_LCM_SPIM_SS | AB124 |
| HPS_LCM_SPIM_CLK | F127 |
| HPS_LCM_SPIM_MOSI | Y124 |
| HPS_ENET_MDIO | F124 |
| HPS_ENET_MDC | D124 |

HPS_IOA_1, GPIO0_IO0, SPIM0_SS1_N, SPIS0_CLK, UART0_CTS_N, NAND_ADQ0, SDMMC_DATA0, USB0_CLK, EMAC0_PPS0, TRACE_D10
HPS_IOA_2, GPIO0_IO1, SPIM1_SS1_N, SPIS0_MOSI, UART0_RTS_N, NAND_ADQ1, SDMMC_DATA1, USB0_STP, EMAC0_PPSTRIG0, TRACE_D9
HPS_IOA_3, GPIO0_IO2, SPIS0_SS0_N, UART0_TX, I2C1_SDA, NAND_WE_N, SDMMC_CLK, USB0_DIR, EMAC1_PPS1, TRACE_D8
HPS_IOA_4, GPIO0_IO3, SPIS0_MISO, UART0_RX, I2C1_SCL, NAND_RE_N, USB0_DATA0, EMAC1_PPSTRIG1, TRACE_D7
HPS_IOA_5, GPIO0_IO4, SPIM0_CLK, UART1_CTS_N, I2C0_SDA, NAND_WP_N, SDMMC_WRITE_PROTECT, USB0_DATA1, EMAC2_PPS2, TRACE_D6
HPS_IOA_6, GPIO0_IO5, SPIM0_MOSI, UART1_RTS_N, I2C0_SCL, NAND_ADQ2, SDMMC_DATA2, USB0_NXT, EMAC2_PPSTRIG2, TRACE_D5
HPS_IOA_7, GPIO0_IO6, SPIM0_MISO, MDIO2_MDIO, UART1_TX, I2C_EMAC2_SDA, NAND_ADQ3, SDMMC_DATA3, USB0_DATA2, TRACE_D4
HPS_IOA_8, GPIO0_IO7, SPIM0_SS0_N, MDIO2_MDC, UART1_RX, I2C_EMAC2_SCL, NAND_CLE, SDMMC_CMD, USB0_DATA3, TRACE_D15
HPS_IOA_9, GPIO0_IO8, SPIM1_CLK, SPIS1_CLK, MDIO1_MDIO, I2C_EMAC1_SDA, NAND_ADQ4, SDMMC_DATA4, USB0_DATA4, I3C1_SDA, TRACE_D14
HPS_IOA_10, GPIO0_IO9, SPIM1_MOSI, SPIS1_MOSI, MDIO1_MDC, I2C_EMAC1_SCL, NAND_ADQ5, SDMMC_DATA5, USB0_DATA5, I3C1_SCL, TRACE_D13
HPS_IOA_11, GPIO0_IO10, SPIM1_MISO, SPIS1_SS0_N, MDIO0_MDIO, I2C_EMAC0_SDA, NAND_ADQ6, SDMMC_DATA6, USB0_DATA6, I3C0_SDA, TRACE_D12
HPS_IOA_12, GPIO0_IO11, SPIM1_SS0_N, SPIS1_MISO, MDIO0_MDC, I2C_EMAC0_SCL, NAND_ADQ7, SDMMC_DATA7, USB0_DATA7, I3C0_SCL, TRACE_D11
HPS_IOA_13, GPIO0_IO12, NAND_ALE, SDMMC_PU_PD_DATA2, USB1_CLK, EMAC0_TX_CLK, TRACE_D10
HPS_IOA_14, GPIO0_IO13, NAND_RB_N, SDMMC_BUS_PWR, USB1_STP, EMAC0_TX_CTL, TRACE_D9
HPS_IOA_15, GPIO0_IO14, NAND_CE_N, USB1_DIR, EMAC0_RX_CLK, TRACE_D8
HPS_IOA_16, GPIO0_IO15, NAND_DQS, SDMMC_DATA_STROBE, USB1_DATA0, EMAC0_RX_CTL, TRACE_D7
HPS_IOA_17, GPIO0_IO16, I3C1_SDA, NAND_ADQ8, USB1_DATA1, EMAC0_TXD0, TRACE_D6
HPS_IOA_18, GPIO0_IO17, I3C1_SCL, NAND_ADQ9, USB1_NXT, EMAC0_TXD1, TRACE_D5
HPS_IOA_19, GPIO0_IO18, I3C0_SDA, NAND_ADQ10, USB1_DATA2, EMAC0_RXD0, TRACE_D4
HPS_IOA_20, GPIO0_IO19, SPIM1_SS1_N, I3C0_SCL, NAND_ADQ11, USB1_DATA3, EMAC0_RXD1, TRACE_CLK
HPS_IOA_21, GPIO0_IO20, SPIM1_CLK, SPIS0_CLK, UART0_CTS_N, I2C1_SDA, NAND_ADQ12, USB1_DATA4, EMAC0_TXD2, TRACE_D0
HPS_IOA_22, GPIO0_IO21, SPIM1_MOSI, SPIS0_MOSI, UART0_RTS_N, I2C1_SCL, NAND_ADQ13, USB1_DATA5, EMAC0_TXD3, TRACE_D1
HPS_IOA_23, GPIO0_IO22, SPIM1_MISO, SPIS0_SS0_N, UART0_TX, I2C0_SDA, NAND_ADQ14, USB1_DATA6, EMAC0_RXD2, TRACE_D2
HPS_IOA_24, GPIO0_IO23, SPIM1_SS0_N, SPIS0_MISO, UART0_RX, I2C0_SCL, NAND_ADQ15, USB1_DATA7, EMAC0_RXD3, TRACE_D3

HPS_IOB_1, GPIO1_IO0, SPIM1_CLK, CM_PLL_CLK0, UART0_CTS_N, EMAC0_PPS0, NAND_ADQ0, SDMMC_DATA0, EMAC1_TX_CLK, TRACE_D10
HPS_IOB_2, GPIO1_IO1, SPIM1_MOSI, CM_PLL_CLK1, UART0_RTS_N, EMAC0_PPSTRIG0, NAND_ADQ1, SDMMC_DATA1, EMAC1_TX_CTL, TRACE_D9
HPS_IOB_3, GPIO1_IO2, SPIM1_MISO, CM_PLL_CLK2, UART0_TX, I2C0_SDA, NAND_WE_N, SDMMC_CLK, EMAC1_RX_CLK, TRACE_D8
HPS_IOB_4, GPIO1_IO3, SPIM1_SS0_N, CM_PLL_CLK3, UART0_RX, I2C0_SCL, NAND_RE_N, EMAC1_RX_CTL, TRACE_D7
HPS_IOB_5, GPIO1_IO4, SPIM1_SS1_N, SPIS1_CLK, UART1_CTS_N, EMAC2_PPS2, NAND_WP_N, SDMMC_WRITE_PROTECT, I3C1_SDA, EMAC1_TXD0, TRACE_D6
HPS_IOB_6, GPIO1_IO5, SPIS1_MOSI, UART1_RTS_N, EMAC2_PPSTRIG2, NAND_ADQ2, SDMMC_DATA2, I3C1_SCL, EMAC1_TXD1, TRACE_D5
HPS_IOB_7, GPIO1_IO6, SPIS1_SS0_N, UART1_TX, I2C1_SDA, NAND_ADQ3, SDMMC_DATA3, I3C0_SDA, EMAC1_RXD0, TRACE_D4
HPS_IOB_8, GPIO1_IO7, SPIS1_MISO, UART1_RX, I2C1_SCL, NAND_CLE, SDMMC_CMD, I3C0_SCL, EMAC1_RXD1, TRACE_D15
HPS_IOB_9, GPIO1_IO8, JTAG_TCK, SPIS0_CLK, MDIO2_MDIO, I2C_EMAC2_SDA, NAND_ADQ4, SDMMC_DATA4, EMAC1_TXD2, TRACE_D14
HPS_IOB_10, GPIO1_IO9, JTAG_TMS, SPIS0_MOSI, MDIO2_MDC, I2C_EMAC2_SCL, NAND_ADQ5, SDMMC_DATA5, EMAC1_TXD3, TRACE_D13
HPS_IOB_11, GPIO1_IO10, JTAG_TDO, SPIS0_SS0_N, MDIO0_MDIO, I2C_EMAC0_SDA, NAND_ADQ6, SDMMC_DATA6, EMAC1_RXD2, TRACE_D12
HPS_IOB_12, GPIO1_IO11, JTAG_TDI, SPIS0_MISO, MDIO0_MDC, I2C_EMAC0_SCL, NAND_ADQ7, SDMMC_DATA7, EMAC1_RXD3, TRACE_D11
HPS_IOB_13, GPIO1_IO12, I2C1_SDA, NAND_ALE, SDMMC_PU_PD_DATA2, EMAC2_TX_CLK, TRACE_D10
HPS_IOB_14, GPIO1_IO13, I2C1_SCL, NAND_RB_N, SDMMC_BUS_PWR, EMAC2_TX_CTL, TRACE_D9
HPS_IOB_15, GPIO1_IO14, UART1_TX, NAND_CE_N, I3C1_SDA, EMAC2_RX_CLK, TRACE_D8
HPS_IOB_16, GPIO1_IO15, UART1_RX, NAND_DQS, SDMMC_DATA_STROBE, I3C1_SCL, EMAC2_RX_CTL, TRACE_D7
HPS_IOB_17, GPIO1_IO16, UART1_CTS_N, NAND_ADQ8, I3C0_SDA, EMAC2_TXD0, TRACE_D6
HPS_IOB_18, GPIO1_IO17, SPIM0_SS1_N, UART1_RTS_N, NAND_ADQ9, I3C0_SCL, EMAC2_TXD1, TRACE_D5
HPS_IOB_19, GPIO1_IO18, SPIM0_MISO, MDIO1_MDIO, I2C_EMAC1_SDA, NAND_ADQ10, EMAC2_RXD0, TRACE_D4
HPS_IOB_20, GPIO1_IO19, SPIM0_SS0_N, MDIO1_MDC, I2C_EMAC1_SCL, NAND_ADQ11, EMAC2_RXD1, TRACE_CLK
HPS_IOB_21, GPIO1_IO20, SPIM0_CLK, SPIS1_CLK, I2C_EMAC2_SDA, NAND_ADQ12, EMAC2_TXD2, TRACE_D0
HPS_IOB_22, GPIO1_IO21, SPIM0_MOSI, SPIS1_MOSI, I2C_EMAC2_SCL, NAND_ADQ13, EMAC2_TXD3, TRACE_D1
HPS_IOB_23, GPIO1_IO22, SPIM0_MISO, SPIS1_SS0_N, MDIO0_MDIO, I2C_EMAC0_SDA, NAND_ADQ14, EMAC2_RXD2, TRACE_D2
HPS_IOB_24, GPIO1_IO23, SPIM0_SS0_N, SPIS1_MISO, MDIO0_MDC, I2C_EMAC0_SCL, NAND_ADQ15, EMAC2_RXD3, TRACE_D3

HPS

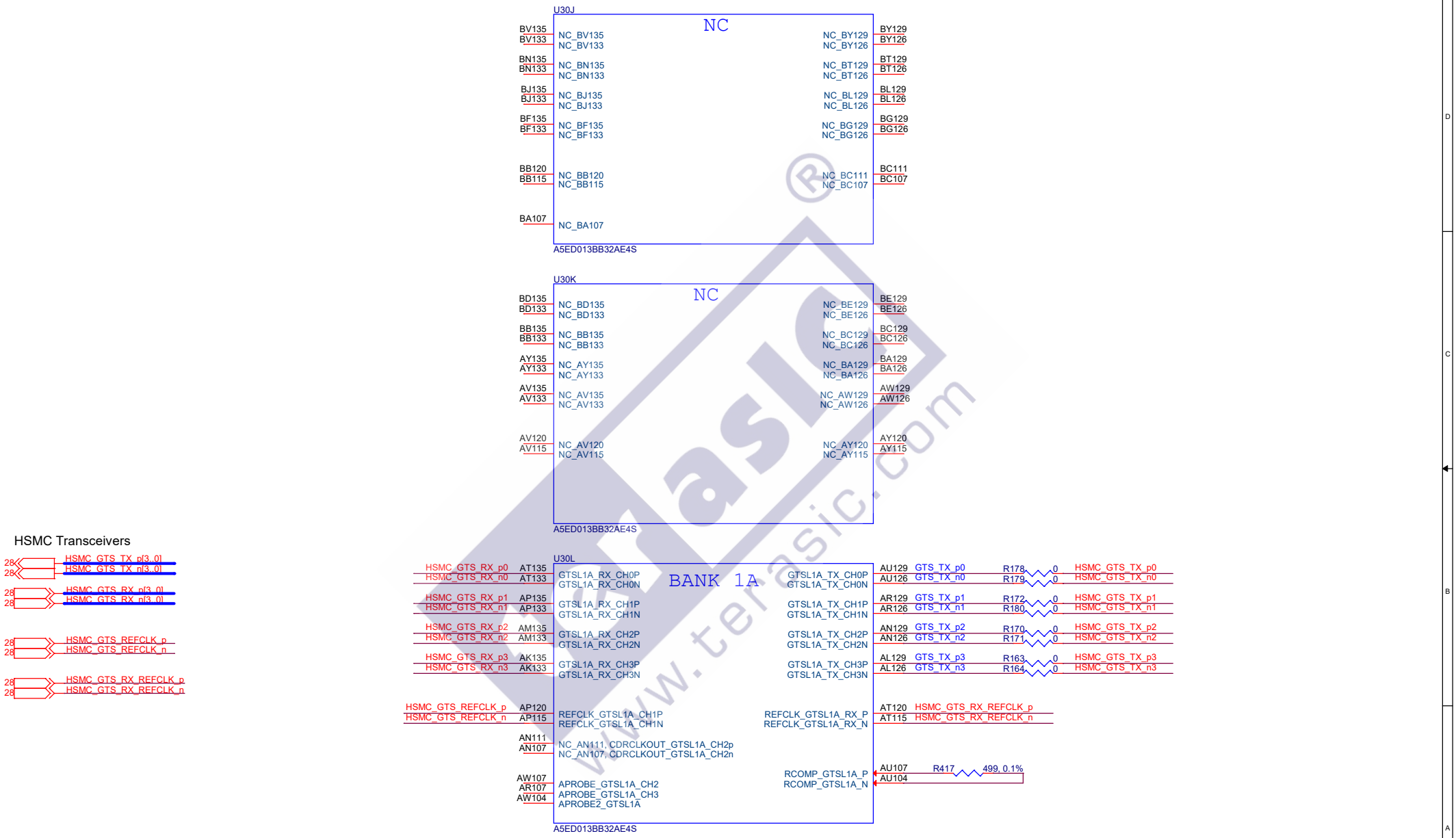
A5ED013BB32AE4S



Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA Bank HPS | C |

Date: Tuesday, April 22, 2025 Sheet 16 of 49






Title
**DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA XCVR Bank 1A, NC (1B1C) | C |

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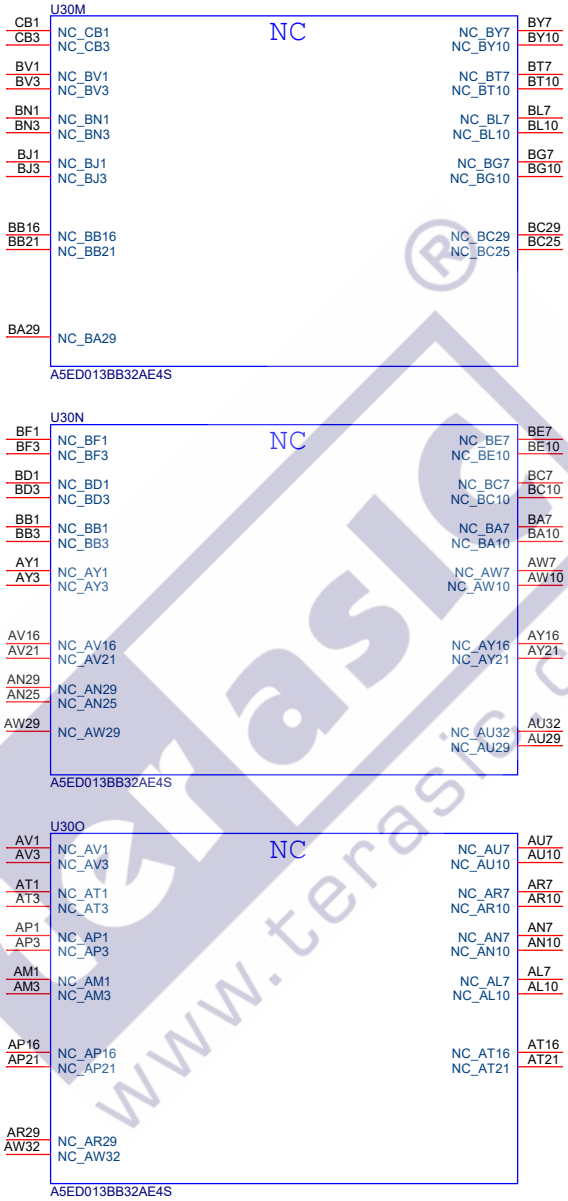




Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA NC (4A4B4C) | C |

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## Agilex JTAG Interface

6 AG_JTAG_TCK
6 AG_JTAG_TMS
6 AG_JTAG_TDI
6 AG_JTAG_TDO

4 OSC_CLK_1

SYS_HPS_RST_n 36,37,38,42

26 FPGA_AS_RST_n

## FPGA Temperature diode

43 TEMPDIODE_FPGA_p
43 TEMPDIODE_FPGA_n

## FPGA AS Configuration

26 FPGA_AS_CLK
26 FPGA_AS_DATA0
26 FPGA_AS_DATA1
26 FPGA_AS_DATA2
26 FPGA_AS_DATA3

26 FPGA_nCSO

VCC1P8

R415 1K AG_JTAG_TDO BW109
R414 1K AG_JTAG_TMS CA112
R404 1K AG_JTAG_TCK CA109
AG_JTAG_TDI BW112

R425 10K FPGA_nCONFIG BU99
VCC1P8 R424 10K FPGA_nSTATUS BW99

OSC_CLK_1 BR102

FPGA_AS_DATA1 BK102
FPGA_AS_CLK BK99
FPGA_AS_DATA2 CH99
FPGA_AS_DATA0 BH99
FPGA_nCSO MSEL0 CF112
FPGA_AS_DATA3 CF102
MSEL1 BM99
CC102
MSEL2 BM102
CH109
(AS mode HPS Reset) SYS_HPS_RST_n CF99
BR99
VCC1P8 R713 10K INIT_DONE BW102
CF109
FPGA_AS_RST_n CA102
R426 DNI 100K FPGA_CONF_DONE BP102

VCC1P8 R416 10K TEMPDIODE_FPGA_n BF100
TEMPDIODE_FPGA_p BE100

2K R413 CL103

CL116 CK116
CK119 CL119 CK113 CL113

U30A

SDM

TDO
TMS
TCK
TDI
NCONFIG
NSTATUS
OSC_CLK_1
SDM_IO0, PWRMGT_SCL, PWRMGT_ALERT
SDM_IO1, AVSTX8_DATA2, AS_DATA1
SDM_IO2, AVSTX8_DATA0, AS_CLK
SDM_IO3, AVSTX8_DATA3, AS_DATA2
SDM_IO4, AVSTX8_DATA1, AS_DATA0
SDM_IO5, AS_NCSO0, MSEL0
SDM_IO6, AVSTX8_DATA4, AS_DATA3
SDM_IO7, AS_NCSO2, MSEL1
SDM_IO8, AVSTX8_READY, AS_NCSO3
SDM_IO9, AS_NCSO1, MSEL2, PWRMGT_ALERT
SDM_IO10, AVSTX8_DATA7
SDM_IO11, AVSTX8_VALID, PWRMGT_SDA
SDM_IO12, PWRMGT_SDA, PWRMGT_ALERT
SDM_IO13, AVSTX8_DATA5
SDM_IO14, AVSTX8_CLK, PWRMGT_SCL
SDM_IO15, AVSTX8_DATA6, AS_NRST
SDM_IO16, PWRMGT_SDA
TEMPDIODE0AN
TEMPDIODE0AP
RREF_SDM
VREFP_ADC
VREFN_ADC
VSIGP_0
VSIGN_0
VSIGP_1
VSIGN_1

A5ED013BB32AE4S

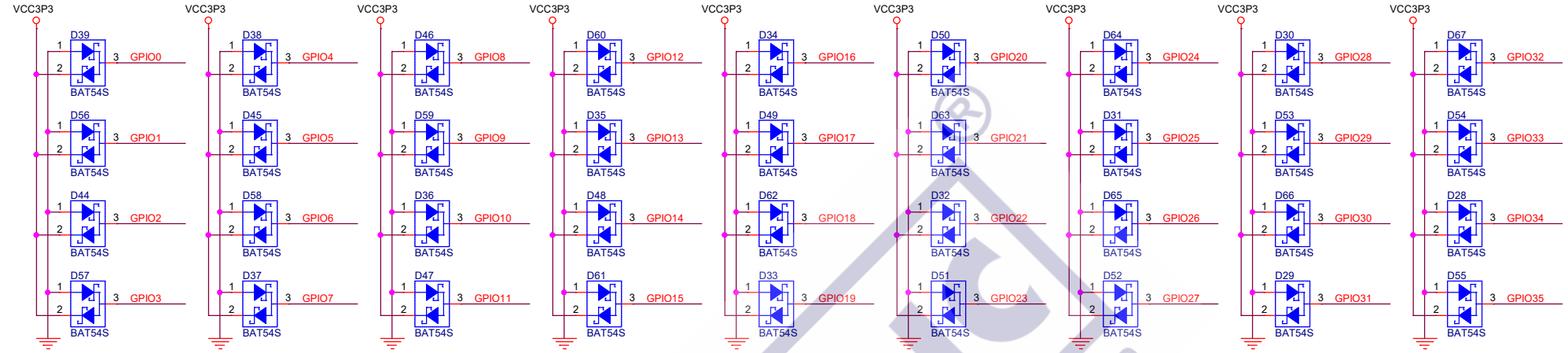
VCC3P3
R711 560
LEDY LED10
FPGA_CONF_DONE R712 1K Q17 MMBT3904LT1G

| MSEL[2:0] | Configuration Mode |
|---|---|
| 001 | AS - Fast (Default Setting) |
| 111 | JTAG |

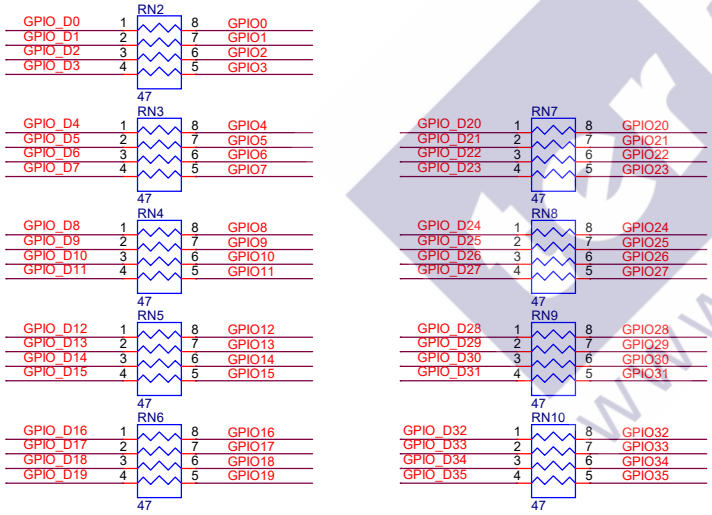
VCC1P8
MSEL[2..0]
R518 R519 R520
4.7K 4.7K 4.7K
SW10
1 2 3 4 8 7 6 5
MSEL0 MSEL1 MSEL2
DIP_Switch-4Pos



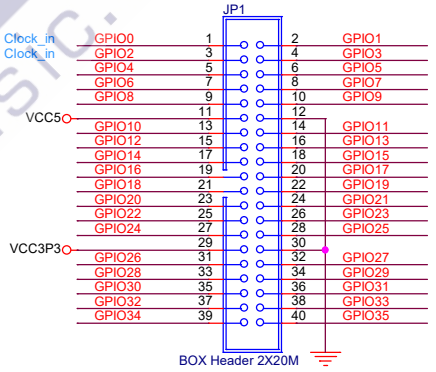
Title: DE25-Standard Board
Size: B
Document Number: FPGA Configuration
Rev: C
Date: Tuesday, April 22, 2025
Sheet 19 of 49




## GPIO

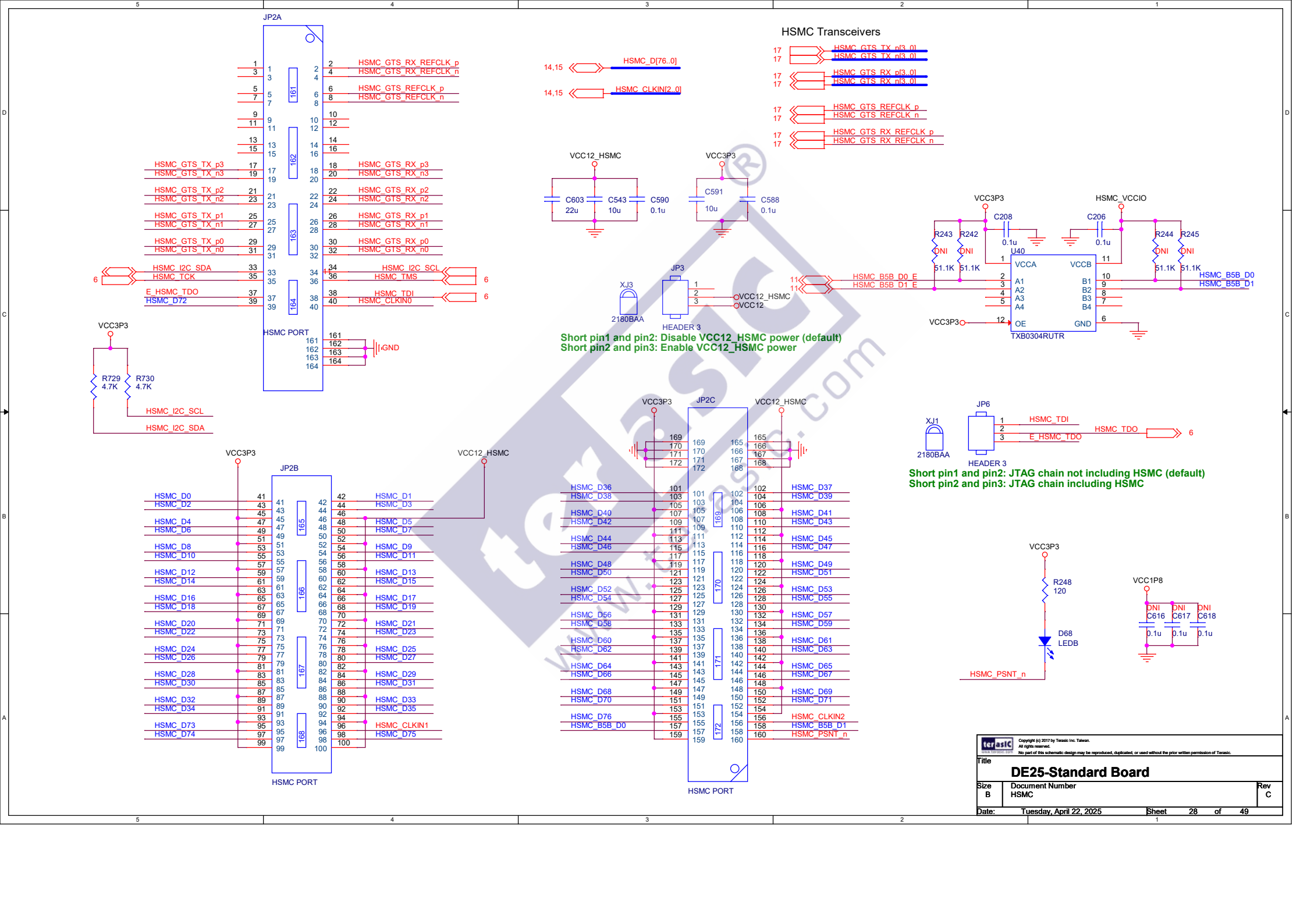




## DE-GPIO






| | | |
|---|---|---|
| Title | DE25-Standard Board | |
| Size B | Document Number GPIO (2x20) | Rev C |
| Date: Tuesday, April 22, 2025 | Sheet 27 of 49 | |


JP2A
HSMC PORT
HSMC_GTS_RX_REFCLK_p
HSMC_GTS_RX_REFCLK_n
HSMC_GTS_REFCLK_p
HSMC_GTS_REFCLK_n
HSMC_GTS_TX_p3
HSMC_GTS_TX_n3
HSMC_GTS_RX_p3
HSMC_GTS_RX_n3
HSMC_GTS_TX_p2
HSMC_GTS_TX_n2
HSMC_GTS_RX_p2
HSMC_GTS_RX_n2
HSMC_GTS_TX_p1
HSMC_GTS_TX_n1
HSMC_GTS_RX_p1
HSMC_GTS_RX_n1
HSMC_GTS_TX_p0
HSMC_GTS_TX_n0
HSMC_GTS_RX_p0
HSMC_GTS_RX_n0
HSMC_I2C_SDA
HSMC_TCK
HSMC_I2C_SCL
HSMC_TMS
E_HSMC_TDO
HSMC_D72
HSMC_TDI
HSMC_CLKIN0
VCC3P3
R729 4.7K
R730 4.7K
HSMC_I2C_SCL
HSMC_I2C_SDA
HSMC Transceivers
HSMC_D[76..0]
HSMC_CLKIN[2..0]
HSMC_GTS_TX_p[3..0]
HSMC_GTS_RX_p[3..0]
HSMC_GTS_REFCLK_p
HSMC_GTS_REFCLK_n
HSMC_GTS_RX_REFCLK_p
HSMC_GTS_RX_REFCLK_n
VCC12_HSMC
C603 22u
C543 10u
C590 0.1u
VCC3P3
C591 10u
C588 0.1u
XJ3
2180BAA
JP3
HEADER 3
VCC12_HSMC
VCC12
Short pin1 and pin2: Disable VCC12_HSMC power (default)
Short pin2 and pin3: Enable VCC12_HSMC power
VCC3P3
C208 0.1u
HSMC_VCCIO
C206 0.1u
R243 DNI 51.1K
R242 DNI 51.1K
R244 DNI 51.1K
R245 DNI 51.1K
U40
VCCA
VCCB
OE
GND
TXB0304RUTR
HSMC_B5B_D0_E
HSMC_B5B_D1_E
HSMC_B5B_D0
HSMC_B5B_D1
JP2B
VCC3P3
VCC12_HSMC
HSMC PORT
JP2C
VCC3P3
VCC12_HSMC
HSMC PORT
XJ1
2180BAA
JP6
HEADER 3
HSMC_TDI
E_HSMC_TDO
HSMC_TDO
Short pin1 and pin2: JTAG chain not including HSMC (default)
Short pin2 and pin3: JTAG chain including HSMC
VCC3P3
R248 120
D68 LEDB
HSMC_PSNT_n
VCC1P8
C616 DNI 0.1u
C617 DNI 0.1u
C618 DNI 0.1u
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Title
DE25-Standard Board
Size B
Document Number HSMC
Rev C
Date: Tuesday, April 22, 2025
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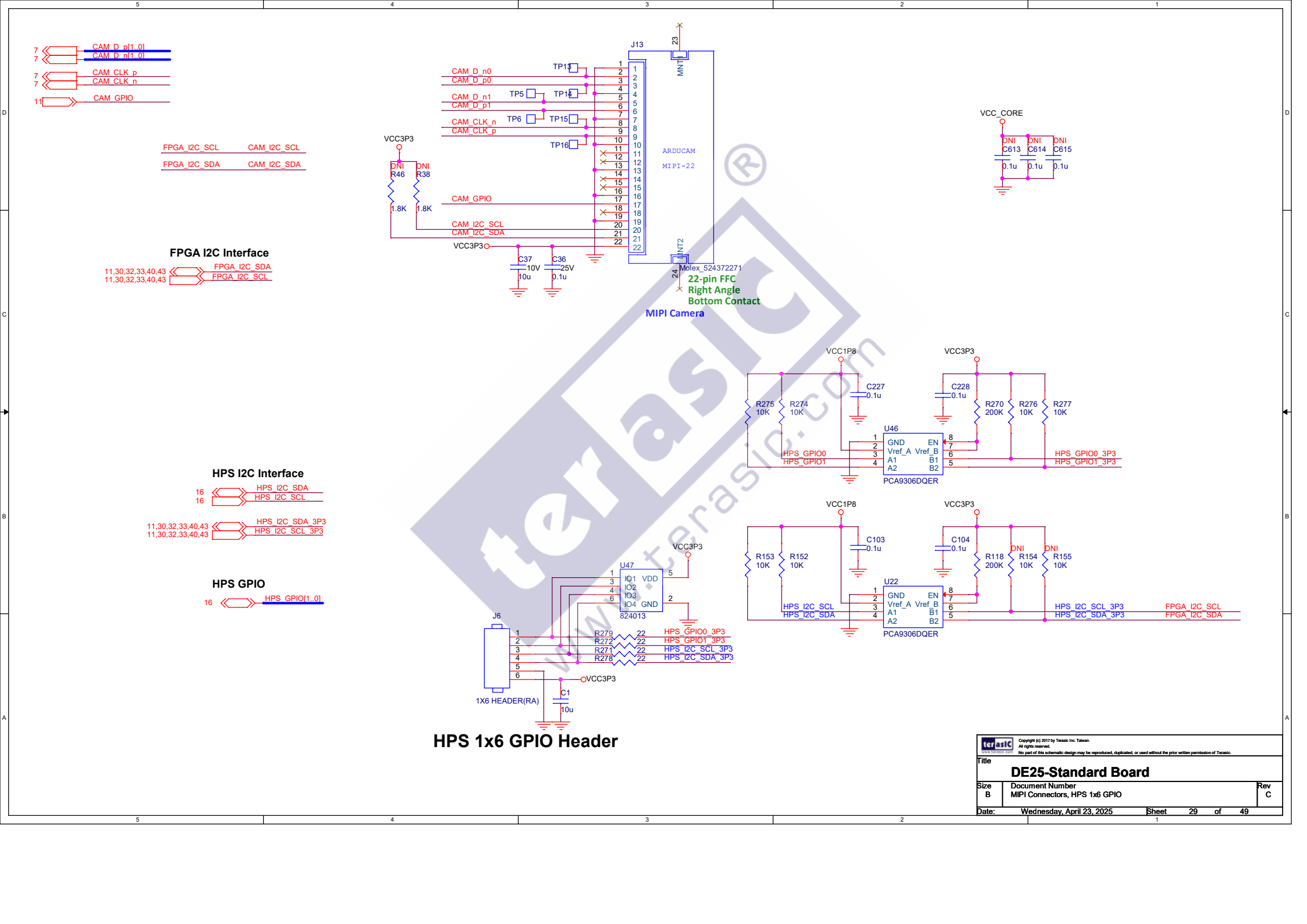
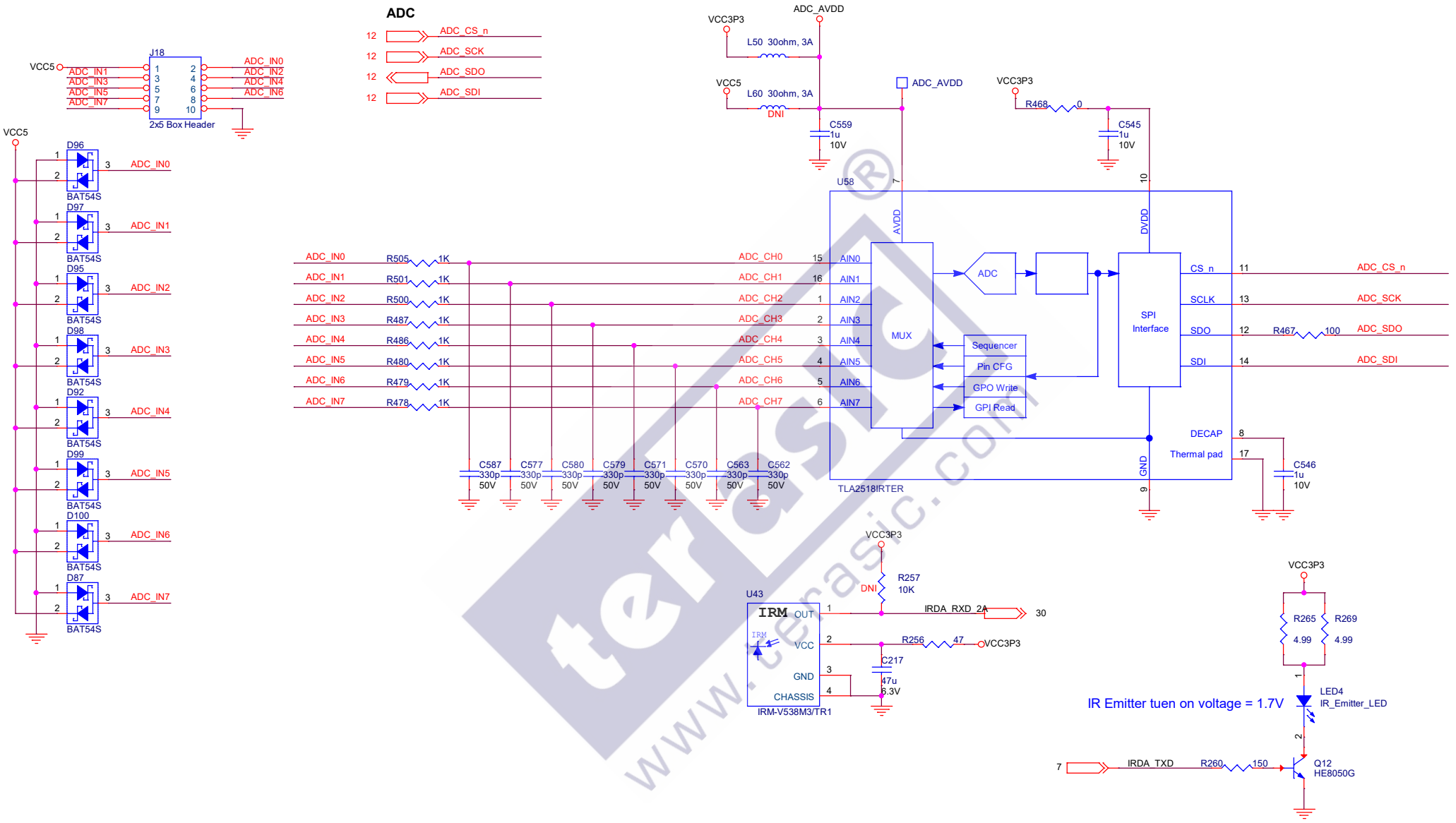


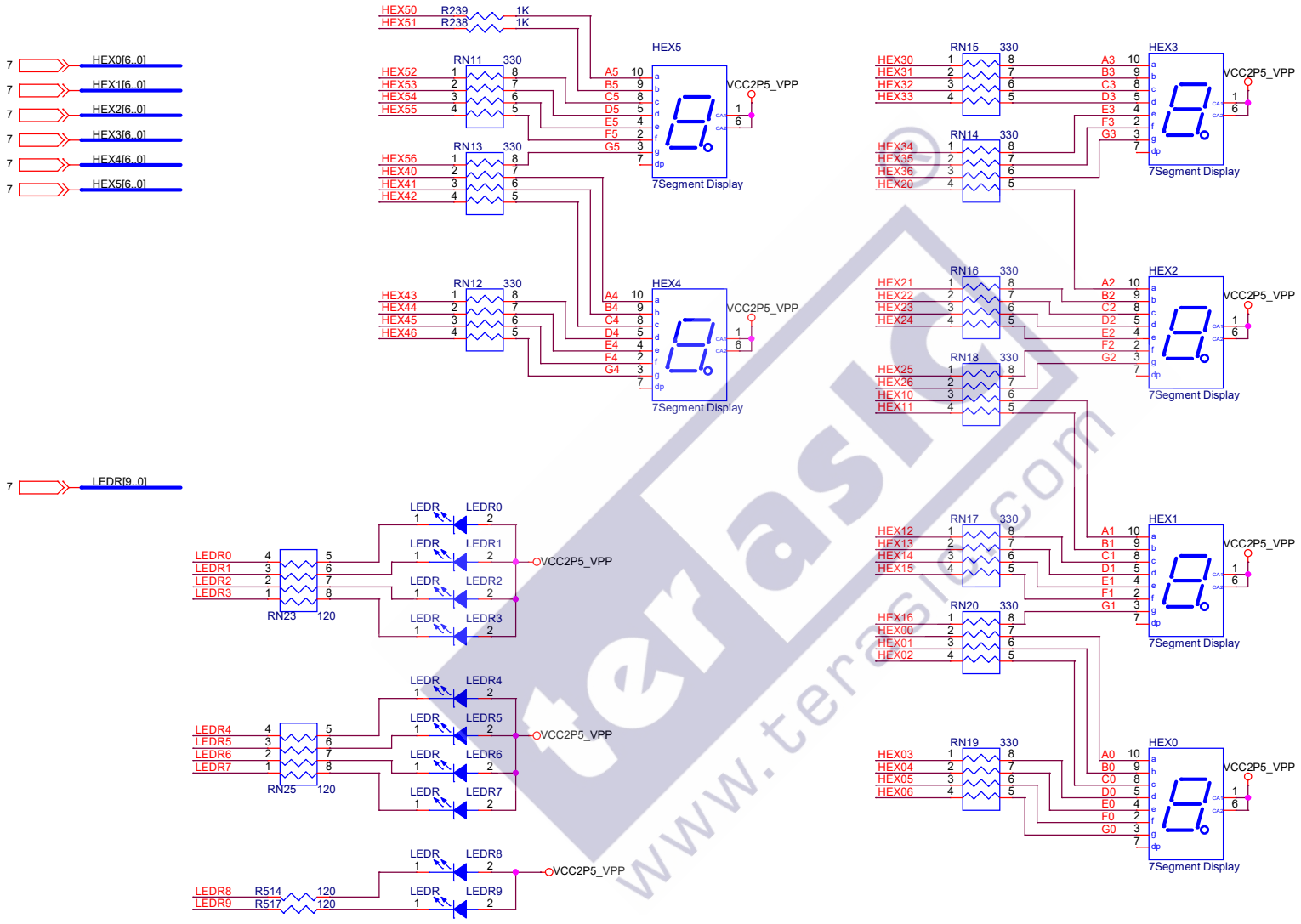



| | | |
|---|---|---|
| Title | DE25-Standard Board | |
| Size: B | Document Number: MIPI Connectors, HPS 1x6 GPIO | Rev: C |
| Date: Wednesday, April 23, 2025 | Sheet 29 of 49 | |






| | | |
|---|---|---|
| Title | DE25-Standard Board | |
| Size B | Document Number ADC, IR Tx, IR Rx | Rev C |
| Date: Tuesday, April 22, 2025 | Sheet 31 of 49 | |






Title
**DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | 7-Segment Display, LED | C |

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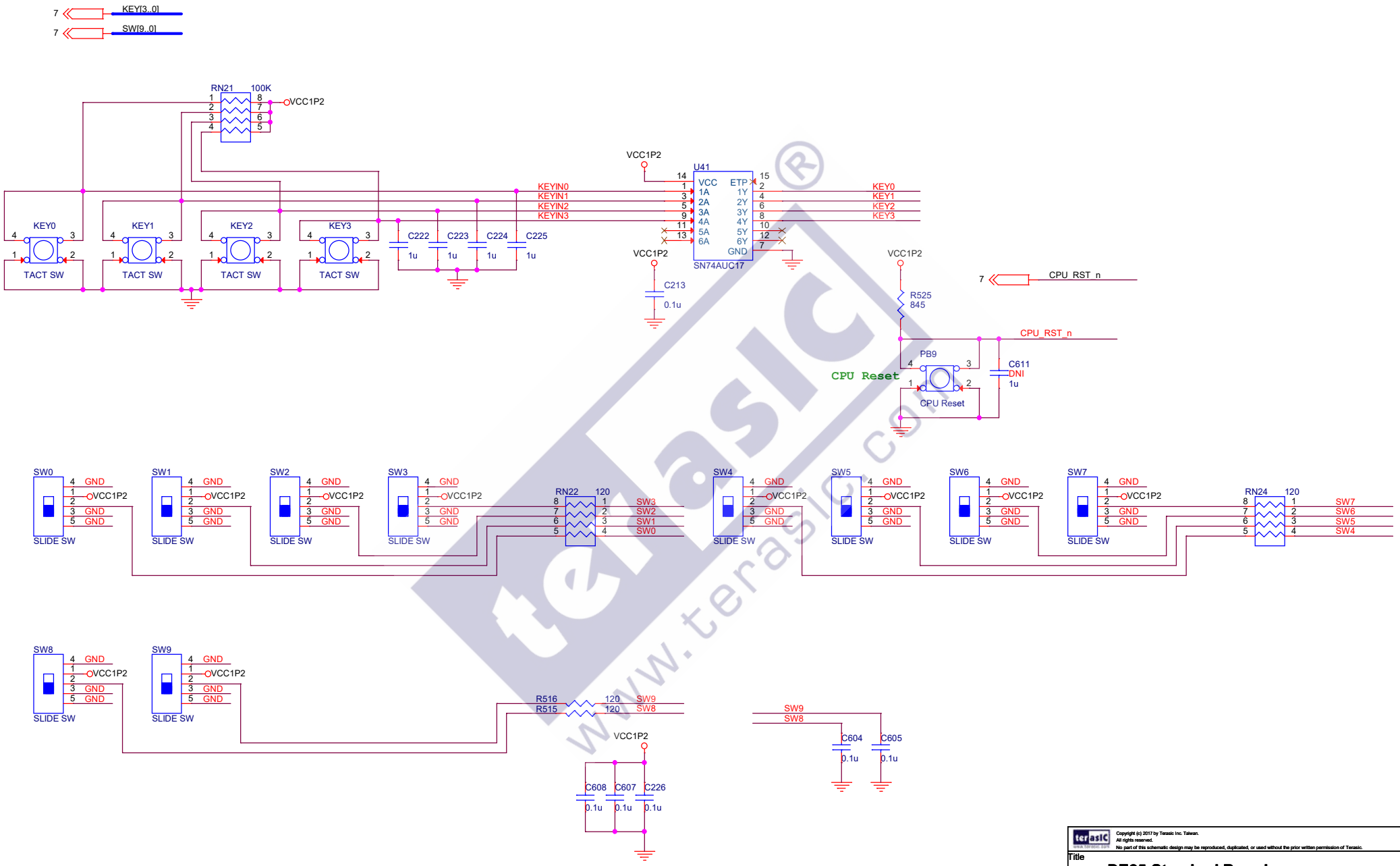
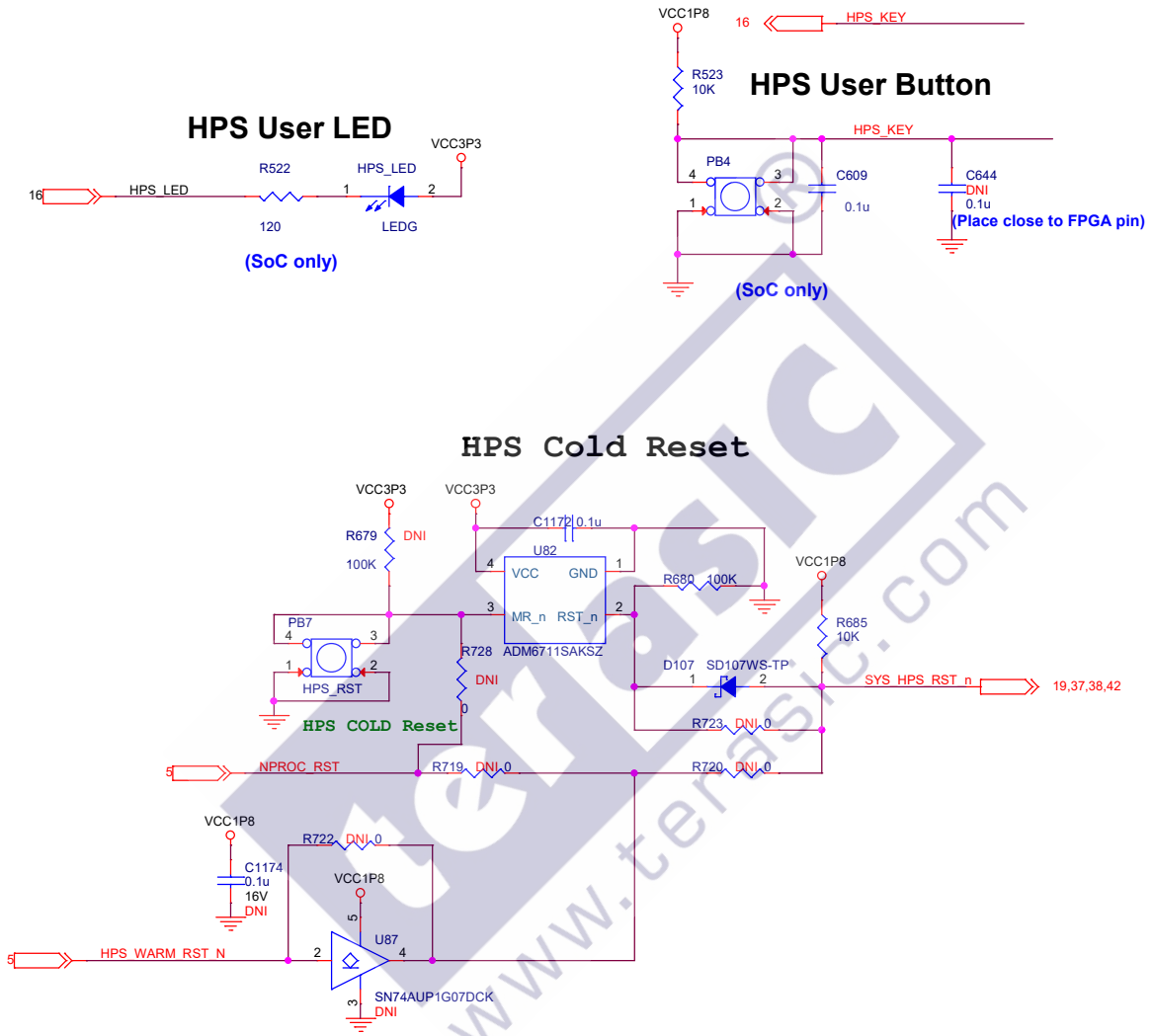





Title: **DE25-Standard Board**

| Size | Document Number | Rev |
|---|---|---|
| B | FPGA BUTTON, Switch | C |

Date: Tuesday, April 22, 2025 Sheet 35 of 49






| | | |
|---|---|---|
| Title | DE25-Standard Board | |
| Size: B | Document Number: HPS BUTTON, HPS LED | Rev: C |
| Date: Tuesday, April 22, 2025 | Sheet 36 of 49 | |