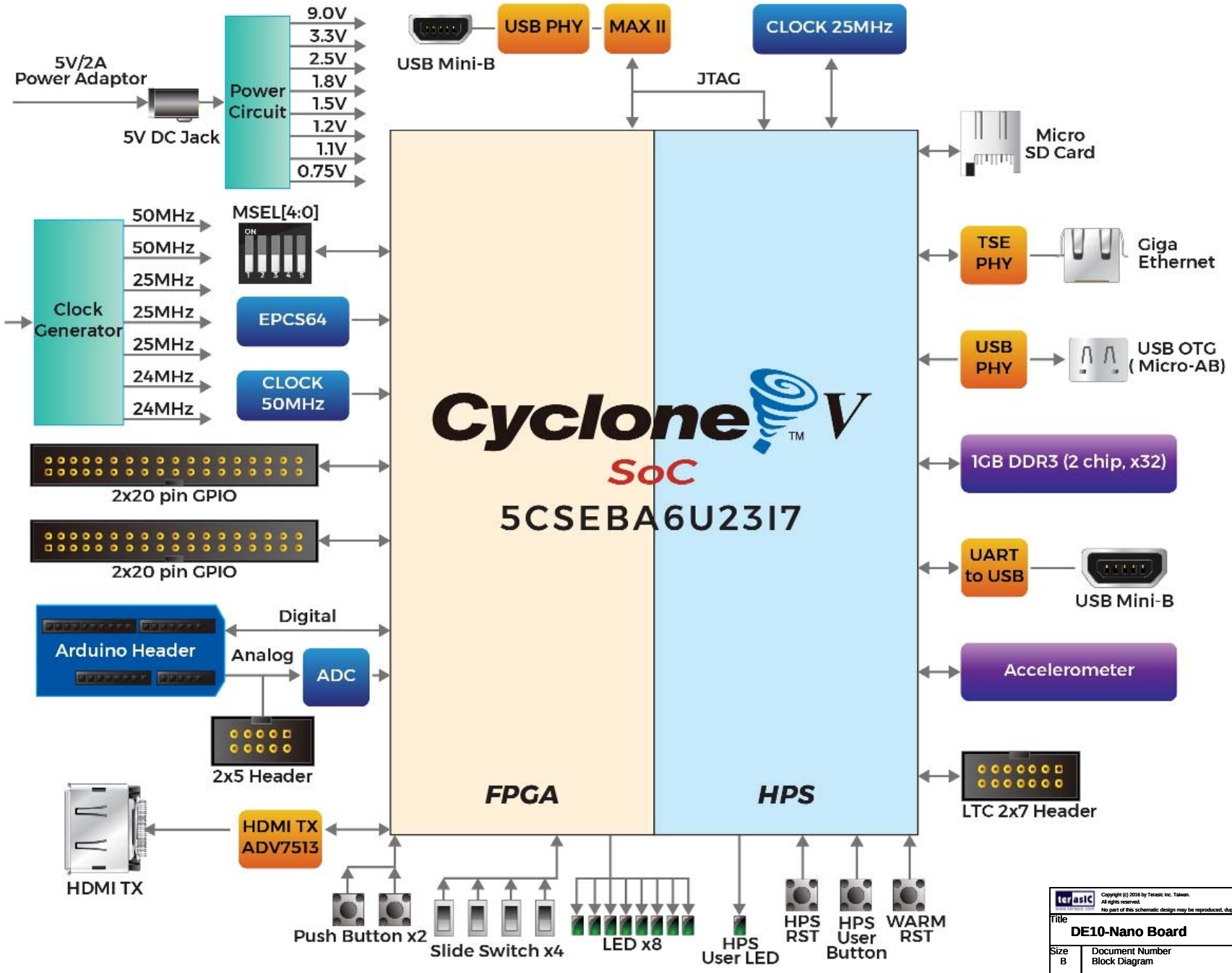


Title
DE10-Nano Board

Size	Document Number	Rev
B	Block Diagram	C0

Date: Wednesday, August 30, 2017 Sheet 2 of 24

U1I

CYCLONE V SoC BANK 3

Bank 3A
VCCIO = 3.3V

GPIO_0_D32	Y11	IO_3A/PR_ERROR/DIFFIO_RX_B7P
GPIO_0_D35	AA11	IO_3A/PR_DONE/DIFFIO_RX_B7N
GPIO_0_D10	AD5	IO_3A/DIFFIO_TX_B8P/DQ1B
GPIO_0_D13	AE6	IO_3A/PR_READY/DIFFIO_TX_B8N/DQ1B

Bank 3B
VCCIO = 3.3V

HDMI_TX_D16	AE4	IO_3B/DIFFIO_TX_B9P/B_WEN/DQ2B	IO_3B/DIFFIO_TX_B17P/B_BA_0/DQ3B	AF7	GPIO_0_D6
GPIO_0_D8	AF4	IO_3B/DIFFIO_TX_B9N/GND	IO_3B/DIFFIO_TX_B17N/GND	AG6	HDMI_TX_D21
HDMI_TX_D5	AD10	IO_3B/DIFFIO_RX_B10P/B_A_14/DQ2B	IO_3B/DIFFIO_RX_B18P/B_BA_1/DQ3B	AF11	HDMI_TX_INT
HDMI_TX_D10	AE9	IO_3B/DIFFIO_RX_B10N/B_A_15/DQ2B	IO_3B/DIFFIO_RX_B18N/B_BA_2/DQ3B	AF10	HDMI_TX_D8
HDMI_LRCLK	T11	IO_3B/DIFFIO_RX_B11P/B_CSN_0/DQS2B	IO_3B/DIFFIO_RX_B19P/B_CK/DQS3B	T13	HDMI_I2S0
HDMI_MCLK	U11	IO_3B/DIFFIO_RX_B11N/B_CSN_1/DQSN2B	IO_3B/DIFFIO_RX_B19N/B_CKN/DQSN3B	T12	HDMI_SCLK
HDMI_TX_D12	AE7	IO_3B/DIFFIO_TX_B12P/B_A_12	IO_3B/DIFFIO_TX_B20P/B_A_6	AH3	GPIO_0_D9
HDMI_TX_D14	AF8	IO_3B/DIFFIO_TX_B12N/B_A_13/DQ2B	IO_3B/DIFFIO_TX_B20N/B_A_7/DQ3B	AH2	HDMI_TX_D17
HDMI_TX_D23	AE8	IO_3B/DIFFIO_TX_B13P/B_A_10/DQ2B			
HDMI_TX_D22	AF9	IO_3B/DIFFIO_TX_B13N/B_A_11/DQ2B			
HDMI_TX_D4	AD11	IO_3B/DIFFIO_RX_B14P/B_A_8/DQ2B	IO_3B/DIFFIO_RX_B22P/B_A_4/DQ3B	AE12	HDMI_TX_D1
HDMI_TX_D6	AE11	IO_3B/DIFFIO_RX_B14N/B_A_9/DQ2B	IO_3B/DIFFIO_RX_B22N/B_A_5/DQ3B	AD12	HDMI_TX_D0
HDMI_TX_D15	AF5	IO_3B/DIFFIO_TX_B16P/B_CASN/DQ2B	IO_3B/DIFFIO_TX_B24P/B_A_0/DQ3B	AH6	HDMI_TX_D20
HDMI_TX_D13	AF6	IO_3B/DIFFIO_TX_B16N/B_RASN/DQ2B	IO_3B/DIFFIO_TX_B24N/B_A_1/DQ3B	AH5	HDMI_TX_D19

5CSEBA6U23I7N

U1K

CYCLONE V SoC BANK 5

Bank 5A
VCCIO = 3.3V

LED4	AF26	IO_5A/RZQ_1/DIFFIO_TX_R1P/DQ1R			
LED5	AE26	IO_5A/PR_REQUEST/DIFFIO_TX_R1N/DQ1R			
			IO_5A/DIFFIO_RX_R6P/DQS1R	Y16	LED6
			IO_5A/DIFFIO_RX_R6N/DQSN1R	W15	LED0
			IO_5A/DIFFIO_TX_R7P/DQ1R	AA24	LED1
GPIO_1_D3	AD26			AA23	LED7
GPIO_0_D29	Y17	IO_5A/CVP_CONFDONE/DIFFIO_TX_R3N/DQ1R	IO_5A/DIFFIO_TX_R7N	V16	LED2
GPIO_0_D28	Y18	IO_5A/DIFFIO_RX_R4P/DQ1R	IO_5A/DIFFIO_RX_R8P/DQ1R	V15	LED3
		IO_5A/DIFFIO_RX_R4N/DQ1R	IO_5A/DIFFIO_RX_R8N/DQ1R		

Bank 5B
VCCIO = 3.3V

GPIO_0_D30	AB25	IO_5B/RZQ_2/DIFFIO_TX_R24N

5CSEBA6U23I7N

U1J

CYCLONE V SoC BANK 4

Bank 4A
VCCIO = 3.3V

Arduino_Reset_n	AH7	IO_4A/RZQ_0/DIFFIO_TX_B25N			
Arduino_IO6	AG8	IO_4A/DIFFIO_TX_B25P/B_DQ_2/DQ4B	IO_4A/DIFFIO_TX_B41P/B_DQ_18/DQ6B	AF18	GPIO_1_D30
Arduino_IO0	AG13	IO_4A/DIFFIO_RX_B26P/B_DQ_1/DQ4B	IO_4A/DIFFIO_RX_B42P/B_DQ_17/DQ6B	AE19	GPIO_1_D34
Arduino_IO1	AF13	IO_4A/DIFFIO_RX_B26N/B_DQ_0/DQ4B	IO_4A/DIFFIO_RX_B42N/B_DQ_16/DQ6B	AD19	HDMI_TX_DE
Arduino_IO4	U14	IO_4A/DIFFIO_RX_B27P/B_DQS_0/DQS4B	IO_4A/DIFFIO_RX_B43P/B_DQS_2/DQS6B	AA19	GPIO_0_D24
Arduino_IO5	U13	IO_4A/DIFFIO_RX_B27N/B_DQSN_0/DQSN4B	IO_4A/DIFFIO_RX_B43N/B_DQSN_2/DQSN6B	AA18	GPIO_0_D26
Arduino_IO3	AG9	IO_4A/DIFFIO_TX_B28P/B_ODT_0	IO_4A/DIFFIO_TX_B44P/B_RESETN	AG18	GPIO_1_D28
Arduino_IO7	AH8	IO_4A/DIFFIO_TX_B28N/B_DQ_3/DQ4B	IO_4A/DIFFIO_TX_B44N/B_DQ_19/DQ6B	AH18	GPIO_1_D29
Arduino_IO2	AG10	IO_4A/DIFFIO_TX_B29P/B_DQ_6/DQ4B	IO_4A/DIFFIO_TX_B45P/B_DQ_22/DQ6B	AG19	GPIO_1_D26
Arduino_IO14	AH9	IO_4A/DIFFIO_TX_B29N/B_ODT_1/DQ4B	IO_4A/DIFFIO_TX_B45N/GND/DQ6B	AH19	GPIO_1_D27
Arduino_IO10	AF15	IO_4A/DIFFIO_RX_B30P/B_DQ_5/DQ4B	IO_4A/DIFFIO_RX_B46P/B_DQ_21/DQ6B	AE20	GPIO_1_D33
Arduino_IO9	AE15	IO_4A/DIFFIO_RX_B30N/B_DQ_4/DQ4B	IO_4A/DIFFIO_RX_B46N/B_DQ_20/DQ6B	AD20	GPIO_0_D17
Arduino_IO15	AG11	IO_4A/DIFFIO_TX_B32P/B_DM_0/DQ4B	IO_4A/DIFFIO_TX_B48P/B_DM_2/DQ6B	AF20	GPIO_1_D31
Arduino_IO12	AH11	IO_4A/DIFFIO_TX_B32N/B_DQ_7/DQ4B	IO_4A/DIFFIO_TX_B48N/B_DQ_23/DQ6B	AG20	GPIO_1_D24
Arduino_IO13	AH12	IO_4A/DIFFIO_TX_B33P/B_DQ_10/DQ5B	IO_4A/DIFFIO_TX_B49P/B_DQ_26/DQ7B	AG21	GPIO_1_D19
Arduino_IO8	AF17	IO_4A/DIFFIO_RX_B34P/B_DQ_9/DQ5B	IO_4A/DIFFIO_RX_B50P/B_DQ_25/DQ7B	AF22	GPIO_1_D22
Arduino_IO11	AG16	IO_4A/DIFFIO_RX_B34N/B_DQ_8/DQ5B	IO_4A/DIFFIO_RX_B50N/B_DQ_24/DQ7B	AF21	GPIO_1_D25
GPIO_0_D27	W14	IO_4A/DIFFIO_RX_B35P/B_DQS_1/DQS5B	IO_4A/DIFFIO_RX_B51P/B_DQS_3/DQS7B	AD23	GPIO_0_D14
HDMI_TX_VS	V13	IO_4A/DIFFIO_RX_B35N/B_DQSN_1/DQSN5B	IO_4A/DIFFIO_RX_B51N/B_DQSN_3/DQSN7B	AE22	GPIO_1_D23
GPIO_0_D11	AG14	IO_4A/DIFFIO_TX_B36P/B_CKE_1			
GPIO_0_D5	AH13	IO_4A/DIFFIO_TX_B36N/B_DQ_11/DQ5B	IO_4A/DIFFIO_TX_B52N/B_DQ_27/DQ7B	AH21	GPIO_1_D18
GPIO_1_D32	AG15	IO_4A/DIFFIO_TX_B37P/B_DQ_14/DQ5B	IO_4A/DIFFIO_TX_B53P/B_DQ_30/DQ7B	AH23	GPIO_1_D20
GPIO_0_D7	AH14	IO_4A/DIFFIO_TX_B37N/B_CKE_0/DQ5B	IO_4A/DIFFIO_TX_B53N/GND/DQ7B	AH22	GPIO_1_D17
GPIO_0_D19	AD17	IO_4A/DIFFIO_RX_B38P/B_DQ_13/DQ5B	IO_4A/DIFFIO_RX_B54P/B_DQ_29/DQ7B	AG23	GPIO_1_D14
GPIO_1_D35	AE17	IO_4A/DIFFIO_RX_B38N/B_DQ_12/DQ5B	IO_4A/DIFFIO_RX_B54N/B_DQ_28/DQ7B	AF23	GPIO_1_D15
KEY0	AH17	IO_4A/DIFFIO_TX_B40P/B_DM_1/DQ5B	IO_4A/DIFFIO_TX_B56P/B_DM_3/DQ7B	AG24	GPIO_1_D16
KEY1	AH16	IO_4A/DIFFIO_TX_B40N/B_DQ_15/DQ5B	IO_4A/DIFFIO_TX_B56N/B_DQ_31/DQ7B	AH24	GPIO_1_D12
			IO_4A/DIFFIO_TX_B57P/B_DQ_34/DQ8B	AG26	GPIO_1_D8
			IO_4A/DIFFIO_RX_B58P/B_DQ_33/DQ8B	AE24	GPIO_0_D15
			IO_4A/DIFFIO_RX_B58N/B_DQ_32/DQ8B	AE23	GPIO_0_D12
			IO_4A/DIFFIO_RX_B59P/B_DQS_4/DQS8B	AC22	GPIO_0_D21
			IO_4A/DIFFIO_RX_B59N/B_DQSN_4/DQSN8B	AC23	GPIO_0_D20
			IO_4A/DIFFIO_TX_B60N/B_DQ_35/DQ8B	AH26	GPIO_1_D11
			IO_4A/DIFFIO_TX_B61P/B_DQ_38/DQ8B	AG28	GPIO_1_D4
			IO_4A/DIFFIO_TX_B61N/GND/DQ8B	AH27	GPIO_1_D9
			IO_4A/DIFFIO_RX_B62P/B_DQ_37/DQ8B	AF25	GPIO_1_D13
			IO_4A/DIFFIO_RX_B62N/B_DQ_36/DQ8B	AG25	GPIO_1_D10
			IO_4A/DIFFIO_TX_B64P/B_DM_4/DQ8B	AF27	GPIO_1_D7
			IO_4A/DIFFIO_TX_B64N/B_DQ_39/DQ8B	AF28	GPIO_1_D5

5CSEBA6U23I7N

User Interface (FPGA)

20	KEY[1..0]	
20	LED[7..0]	

GPIO

6,7,19	GPIO_0_D[35..0]	
6,19	GPIO_1_D[35..0]	

Arduino Digital Interface

19	Arduino_IO[15..0]	
19	Arduino_Reset_n	

HDMI TX

6,21	HDMI_TX_D[23..0]	
6,21	HDMI_TX_CLK	
6,21	HDMI_TX_HS	
6,21	HDMI_TX_VS	
6,21	HDMI_TX_DE	

HDMI Audio Interface

21	HDMI_MCLK	
21	HDMI_LRCLK	
21	HDMI_I2S0	
21	HDMI_SCLK	

HDMI Interface

21	HDMI_TX_INT	
21	HDMI_TX_DE	
21	HDMI_TX_VS	

Title: **DE10-Nano Board**

Size	Document Number	Rev
B	FPGA Bank 3, 4, 5, 8	C0

Date: Friday, July 14, 2017 Sheet 3 of 24

DDR3 Interface (HPS)

12 HPS_DDR3_ADDR[14..0]
12 HPS_DDR3_BA[2..0]
12 HPS_DDR3_DM[3..0]
12 HPS_DDR3_DQ[31..0]
12 HPS_DDR3_DQS_P[3..0]
12 HPS_DDR3_DQS_N[3..0]
12 HPS_DDR3_RESET_N
12 HPS_DDR3_CK_P
12 HPS_DDR3_CK_N
12 HPS_DDR3_CAS_N
12 HPS_DDR3_RAS_N
12 HPS_DDR3_CS_N
12 HPS_DDR3_WE_N
12 HPS_DDR3_ODT
12 HPS_DDR3_CKE
12 HPS_DDR3_CS1_N
12 HPS_DDR3_CKE1
12 HPS_DDR3_ODT1

U1L

CYCLONE V SoC BANK 6 (HPS)

Bank 6A
VCCIO = 1.5V

R117 100 HPS_DDR3_RZQ D25 — HPS_RZQ_0

HPS_DDR3_ADDR0	C28	HPS_DDR/HPS_A_0	
HPS_DDR3_ADDR1	B28	HPS_DDR/HPS_A_1	
HPS_DDR3_ADDR2	E26	HPS_DDR/HPS_A_2	
HPS_DDR3_ADDR3	D26	HPS_DDR/HPS_A_3	
HPS_DDR3_ADDR4	J21	HPS_DDR/HPS_A_4	
HPS_DDR3_ADDR5	J20	HPS_DDR/HPS_A_5	
HPS_DDR3_ADDR6	C26	HPS_DDR/HPS_A_6	
HPS_DDR3_ADDR7	B26	HPS_DDR/HPS_A_7	
HPS_DDR3_ADDR8	F26	HPS_DDR/HPS_A_8	
HPS_DDR3_ADDR9	F25	HPS_DDR/HPS_A_9	
HPS_DDR3_ADDR10	A24	HPS_DDR/HPS_A_10	
HPS_DDR3_ADDR11	B24	HPS_DDR/HPS_A_11	
HPS_DDR3_ADDR12	D24	HPS_DDR/HPS_A_12	
HPS_DDR3_ADDR13	C24	HPS_DDR/HPS_A_13	
HPS_DDR3_ADDR14	G23	HPS_DDR/HPS_A_14	
	F24	HPS_DDR/HPS_A_15	
HPS_DDR3_CK_P	N21	HPS_DDR/HPS_CK	
HPS_DDR3_CK_N	N20	HPS_DDR/HPS_CKn	
HPS_DDR3_CKE	L28	HPS_DDR/HPS_CKE_0	
HPS_DDR3_CKE1	K28	HPS_DDR/HPS_CKE_1	
HPS_DDR3_BA0	A27	HPS_DDR/HPS_BA_0	
HPS_DDR3_BA1	H25	HPS_DDR/HPS_BA_1	
HPS_DDR3_BA2	G25	HPS_DDR/HPS_BA_2	
HPS_DDR3_RAS_N	A25	HPS_DDR/HPS_RASn	
HPS_DDR3_CAS_N	A26	HPS_DDR/HPS_CASn	
HPS_DDR3_WE_N	E25	HPS_DDR/HPS_WEn	
HPS_DDR3_CS_N	L21	HPS_DDR/HPS_CSn_0	
HPS_DDR3_CS1_N	L20	HPS_DDR/HPS_CSn_1	
HPS_DDR3_ODT	D28	HPS_DDR/HPS_ODT_0	
HPS_DDR3_ODT1	G26	HPS_DDR/HPS_ODT_1	

HPS_DDR/HPS_DQ_0	J25	HPS_DDR3_DQ0	
HPS_DDR/HPS_DQ_1	J24	HPS_DDR3_DQ1	
HPS_DDR/HPS_DQ_2	E28	HPS_DDR3_DQ2	
HPS_DDR/HPS_DQ_3	D27	HPS_DDR3_DQ3	
HPS_DDR/HPS_DQ_4	J26	HPS_DDR3_DQ4	
HPS_DDR/HPS_DQ_5	K26	HPS_DDR3_DQ5	
HPS_DDR/HPS_DQ_6	G27	HPS_DDR3_DQ6	
HPS_DDR/HPS_DQ_7	F28	HPS_DDR3_DQ7	
HPS_DDR/HPS_DQS_0	R17	HPS_DDR3_DQS_P0	
HPS_DDR/HPS_DQSn_0	R16	HPS_DDR3_DQS_N0	
HPS_DDR/HPS_DM_0	G28	HPS_DDR3_DM0	
HPS_DDR/HPS_DQ_8	K25	HPS_DDR3_DQ8	
HPS_DDR/HPS_DQ_9	L25	HPS_DDR3_DQ9	
HPS_DDR/HPS_DQ_10	J27	HPS_DDR3_DQ10	
HPS_DDR/HPS_DQ_11	J28	HPS_DDR3_DQ11	
HPS_DDR/HPS_DQ_12	M27	HPS_DDR3_DQ12	
HPS_DDR/HPS_DQ_13	M26	HPS_DDR3_DQ13	
HPS_DDR/HPS_DQ_14	M28	HPS_DDR3_DQ14	
HPS_DDR/HPS_DQ_15	N28	HPS_DDR3_DQ15	
HPS_DDR/HPS_DQS_1	R19	HPS_DDR3_DQS_P1	
HPS_DDR/HPS_DQSn_1	R18	HPS_DDR3_DQS_N1	
HPS_DDR/HPS_DM_1	P28	HPS_DDR3_DM1	
HPS_GPI10	U15		
HPS_GPI11	U16		
HPS_GPI12	AC27		
HPS_GPI13	V24		

Bank 6B
VCCIO = 1.5V

HPS_DDR3_DQ16	N24	HPS_DDR/HPS_DQ_16	
HPS_DDR3_DQ17	N25	HPS_DDR/HPS_DQ_17	
HPS_DDR3_DQ18	T28	HPS_DDR/HPS_DQ_18	
HPS_DDR3_DQ19	U28	HPS_DDR/HPS_DQ_19	
HPS_DDR3_DQ20	N26	HPS_DDR/HPS_DQ_20	
HPS_DDR3_DQ21	N27	HPS_DDR/HPS_DQ_21	
HPS_DDR3_DQ22	R27	HPS_DDR/HPS_DQ_22	
HPS_DDR3_DQ23	V27	HPS_DDR/HPS_DQ_23	
HPS_DDR3_DQS_P2	T19	HPS_DDR/HPS_DQS_2	
HPS_DDR3_DQS_N2	T18	HPS_DDR/HPS_DQSn_2	
HPS_DDR3_DM2	W28	HPS_DDR/HPS_DM_2	
HPS_DDR3_DQ24	R26	HPS_DDR/HPS_DQ_24	
HPS_DDR3_DQ25	R25	HPS_DDR/HPS_DQ_25	
HPS_DDR3_DQ26	AA28	HPS_DDR/HPS_DQ_26	
HPS_DDR3_DQ27	W26	HPS_DDR/HPS_DQ_27	
HPS_DDR3_DQ28	R24	HPS_DDR/HPS_DQ_28	
HPS_DDR3_DQ29	T24	HPS_DDR/HPS_DQ_29	
HPS_DDR3_DQ30	Y27	HPS_DDR/HPS_DQ_30	
HPS_DDR3_DQ31	AA27	HPS_DDR/HPS_DQ_31	
HPS_DDR3_DQS_P3	U19	HPS_DDR/HPS_DQS_3	
HPS_DDR3_DQS_N3	T20	HPS_DDR/HPS_DQSn_3	
HPS_DDR3_DM3	AB28	HPS_DDR/HPS_DM_3	

HPS_DDR/HPS_DQ_32	T26	HPS_DDR3_DQ32	
HPS_DDR/HPS_DQ_33	U25	HPS_DDR3_DQ33	
HPS_DDR/HPS_DQ_34	AC28	HPS_DDR3_DQ34	
HPS_DDR/HPS_DQ_35	V25	HPS_DDR3_DQ35	
HPS_DDR/HPS_DQ_36	V19	HPS_DDR3_DQ36	
HPS_DDR/HPS_DQ_37	V20	HPS_DDR3_DQ37	
HPS_DDR/HPS_DQ_38	AE27	HPS_DDR3_DQ38	
HPS_DDR/HPS_DQ_39	AD28	HPS_DDR3_DQ39	
HPS_DDR/HPS_DQS_4	V18	HPS_DDR3_DQS_P4	
HPS_DDR/HPS_DQSn_4	V17	HPS_DDR3_DQS_N4	
HPS_DDR/HPS_DM_4	AE28	HPS_DDR3_DM4	
HPS_GPI0	M25		
HPS_GPI1	K27		
HPS_GPI2	R20		
HPS_GPI3	R21		
HPS_GPI4	R28		
HPS_GPI5	P26		
HPS_GPI6	T17		
HPS_GPI7	T16		
HPS_GPI8	Y28		
HPS_GPI9	Y26		
HPS_DDR/HPS_RESETn	V28	HPS_DDR3_RESET_N	

5CSEBA6U23I7N

Title: DE10-Nano Board

Size	Document Number	Rev
B	FPGA Bank 6	C0

Date: Friday, July 14, 2017 Sheet 4 of 24

UBS PHY Interface (ULPI)

14 HPS_USB_DATA[7..0]
14 HPS_USB_CLKOUT
14 HPS_USB_NXT
14 HPS_USB_DIR
14 HPS_USB_STP
10,14 HPS_USB_RESET

Ethernet PHY Interface (RGMII)

15 HPS_ENET_TX_DATA[3..0]
15 HPS_ENET_GTX_CLK
15 HPS_ENET_TX_EN
15 HPS_ENET_RX_DATA[3..0]
15 HPS_ENET_RX_CLK
15 HPS_ENET_RX_DV
15 HPS_ENET_INT_N
15 HPS_ENET_MDC
15 HPS_ENET_MDIO
10,15,17 HPS_ENET_RESET_N

SD Card Interface

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

UART Interface

13 HPS_UART_RX
13 HPS_UART_TX
13 HPS_CONV_USB_N

HPS Reset

10,17 HPS_WARM_RST_N
10,17 HPS_RESET_N

HPS Clock

6 HPS_CLK1_25
6 HPS_CLK2_25

HPS JTAG INTERFACE

11 HPS_TCK
11 HPS_TMS
11 HPS_TDI
11 HPS_TDO
10 JTAG_TRST

Accelerometer Interface

16 HPS_I2C0_SDAT
16 HPS_I2C0_SCLK
16 HPS_GSENSOR_INT

LTC Interface

16 HPS_I2C1_SDAT
16 HPS_I2C1_SCLK
16 HPS_SPIM_MOSI
16 HPS_SPIM_MISO
16 HPS_SPIM_CLK
16 HPS_SPIM_SS
16 HPS_LTC_GPIO

HPS Key and LED

17 HPS_KEY
17 HPS_LED

VCC3P3
R143 4.7K HPS_PORSEL
R118 4.7K JTAG_TRST
R119 0 DNI HPS_TCK HPS_TMS HPS_TDI HPS_TDO
C89 33p 50V DNI

U1M

CYCLONE V SoC BANK 7 (HPS)

Bank 7A
VCCIO = 3.3V

HPS_WARM_RST_N	A23	HPS_NRST	TRACE_CLK/ - / - /HPS_GPIO48	C21	
HPS_RESET_N	H19	HPS_NPOR	TRACE_D0/SPIS0_CLK/UART0_RX/HPS_GPIO49	A22	HPS_UART_RX
			TRACE_D1/SPIS0_MOSI/UART0_TX/HPS_GPIO50	B21	HPS_UART_TX
HPS_CLK1_25	E20	HPS_CLK1	TRACE_D2/SPIS0_MISO/I2C1_SDA/HPS_GPIO51	A21	HPS_I2C1_SDAT
HPS_CLK2_25	D20	HPS_CLK2	TRACE_D3/SPIS0_SS0/I2C1_SCL/HPS_GPIO52	K18	HPS_I2C1_SCLK
			TRACE_D4/SPIS1_CLK/CAN1_RX/HPS_GPIO53	A20	HPS_LED
HPS_PORSEL	E18	HPS_PORSEL	TRACE_D5/SPIS1_MOSI/CAN1_TX/HPS_GPIO54	J18	HPS_KEY
			TRACE_D6/SPIS1_SS0/I2C0_SDA/HPS_GPIO55	A19	HPS_I2C0_SDAT
JTAG_TRST	C22	HPS_TRST	TRACE_D7/SPIS1_MISO/I2C0_SCL/HPS_GPIO56	C18	HPS_I2C0_SCLK
HPS_TCK	K19	HPS_TCK	SPIM0_CLK/I2C1_SDA/UART0_CTS/HPS_GPIO57	A18	
HPS_TMS	C23	HPS_TMS	SPIM0_MOSI/I2C1_SCL/UART0_RTS/HPS_GPIO58	C17	
HPS_TDI	D22	HPS_TDI	SPIM0_MISO/CAN1_RX/UART1_CTS/HPS_GPIO59	B18	
HPS_TDO	B23	HPS_TDO	SPIM0_SS0,BOOTSEL0/CAN1_TX/UART1_RTS/HPS_GPIO60	J17	HPS_BOOTSEL0
			UART0_RX/CAN0_RX/SPIM0_SS1/HPS_GPIO61	A17	HPS_GSENSOR_INT
			UART0_TX,CLKSEL1/CAN0_TX/SPIM1_SS1/HPS_GPIO62	H17	HPS_CLOCKSEL1
			I2C0_SDA/UART1_RX/SPIM1_CLK/HPS_GPIO63	C19	HPS_SPIM_CLK
			I2C0_SCL/UART1_TX/SPIM1_MOSI/HPS_GPIO64	B16	HPS_SPIM_MOSI
			CAN0_RX/UART0_RX/SPIM1_MISO/HPS_GPIO65	B19	HPS_SPIM_MISO
			CAN0_TX,CLKSEL0/UART0_TX/SPIM1_SS0/HPS_GPIO66	C16	HPS_SPIM_SS

Bank 7B
VCCIO = 3.3V

HPS_ENET_GTX_CLK	J15	NAND_ALE/RGMII1_TX_CLK/QSPI_SS3/HPS_GPIO14	QSPI_IO0/ - /USB1_CLK/HPS_GPIO29	A8	
HPS_ENET_TX_DATA0	A16	NAND_CE/RGMII1_TXD0/USB1_D0/HPS_GPIO15	QSPI_IO1/ - /USB1_STP/HPS_GPIO30	H16	
HPS_ENET_TX_DATA1	J14	NAND_CLE/RGMII1_TXD1/USB1_D1/HPS_GPIO16	QSPI_IO2/ - /USB1_DIR/HPS_GPIO31	A7	
HPS_ENET_TX_DATA2	A15	NAND_RE/RGMII1_TXD2/USB1_D2/HPS_GPIO17	QSPI_IO3/ - /USB1_NXT/HPS_GPIO32	J16	
HPS_ENET_TX_DATA3	D17	NAND_RB/RGMII1_TXD3/USB1_D3/HPS_GPIO18	QSPI_SS0,BOOTSEL1/ - / - /HPS_GPIO33	A6	HPS_BOOTSEL1
HPS_ENET_RX_DATA0	A14	NAND_DQ0/RGMII1_RXD0/ - /HPS_GPIO19	QSPI_CLK/ - / - /HPS_GPIO34	C14	
HPS_ENET_MDIO	E16	NAND_DQ1/RGMII1_MDIO/I2C3_SDA/HPS_GPIO20	QSPI_SS1/ - / - /HPS_GPIO35	B14	HPS_ENET_INT_N
HPS_ENET_MDC	A13	NAND_DQ2/RGMII1_MDC/I2C3_SCL/HPS_GPIO21			
HPS_ENET_RX_DV	J13	NAND_DQ3/RGMII1_RX_CTL/USB1_D4/HPS_GPIO22			
HPS_ENET_TX_EN	A12	NAND_DQ4/RGMII1_TX_CTL/USB1_D5/HPS_GPIO23			
HPS_ENET_RX_CLK	J12	NAND_DQ5/RGMII1_RX_CLK/USB1_D6/HPS_GPIO24			
HPS_ENET_RX_DATA1	A11	NAND_DQ6/RGMII1_RXD1/USB1_D7/HPS_GPIO25			
HPS_ENET_RX_DATA2	C15	NAND_DQ7/RGMII1_RXD2/ - /HPS_GPIO26			
HPS_ENET_RX_DATA3	A9	NAND_WP/RGMII1_RXD3/QSPI_SS2/HPS_GPIO27			
HPS_BOOTSEL2	D15	NAND_WE,BOOTSEL2/QSPI_SS1/ - /HPS_GPIO28			

Bank 7C
VCCIO = 3.3V

HPS_SD_CMD	D14	SDMMC_CMD/USB0_D0/ - /HPS_GPIO36	SDMMC_PWREN/USB0_D1/ - /HPS_GPIO37	A5	
HPS_SD_DATA0	C13	SDMMC_D0/USB0_D2/ - /HPS_GPIO38	SDMMC_D4/USB0_D4/ - /HPS_GPIO40	H13	HPS_LTC_GPIO
HPS_SD_DATA1	B6	SDMMC_D1/USB0_D3/ - /HPS_GPIO39	SDMMC_D5/USB0_D5/ - /HPS_GPIO41	A4	
HPS_SD_DATA2	B11	SDMMC_D2/USB0_DIR/ - /HPS_GPIO46	SDMMC_D6/USB0_D6/ - /HPS_GPIO42	H12	R120 0 DNI HPS_USB_RESET
HPS_SD_DATA3	B9	SDMMC_D3/USB0_NXT/ - /HPS_GPIO47	SDMMC_D7/USB0_D7/ - /HPS_GPIO43	B4	R121 0 DNI HPS_ENET_RESET_N
	B12	SDMMC_FB_CLK_IN/USB0_CLK/ - /HPS_GPIO44	SDMMC_CCLK_OUT/USB0_STP/ - /HPS_GPIO45	B8	HPS_SD_CLK

Bank 7D
VCCIO = 3.3V

HPS_USB_DATA4	C8	RGMII0_RXD0/USB1_D4/ - /HPS_GPIO5	RGMII0_TXD0/USB1_D0/ - /HPS_GPIO1	C10	HPS_USB_DATA0
HPS_USB_STP	C5	RGMII0_RXD1/USB1_STP/ - /HPS_GPIO11	RGMII0_TXD1/USB1_D1/ - /HPS_GPIO2	F5	HPS_USB_DATA1
HPS_USB_DIR	E5	RGMII0_RXD2/USB1_DIR/ - /HPS_GPIO12	RGMII0_TXD2/USB1_D2/ - /HPS_GPIO3	C9	HPS_USB_DATA2
HPS_USB_NXT	D5	RGMII0_RXD3/USB1_NXT/ - /HPS_GPIO13	RGMII0_TXD3/USB1_D3/ - /HPS_GPIO4	C4	HPS_USB_DATA3
HPS_USB_CLKOUT	G4	RGMII0_RX_CLK/USB1_CLK/ - /HPS_GPIO10	RGMII0_TX_CTL/ - / - /HPS_GPIO9	C6	HPS_CONV_USB_N
HPS_USB_DATA7	F4	RGMII0_RX_CTL/USB1_D7/ - /HPS_GPIO8	RGMII0_TX_CLK/ - / - /HPS_GPIO0	E4	
HPS_USB_DATA5	D4	RGMII0_MDIO/USB1_D5/I2C2_SDA/HPS_GPIO6			
HPS_USB_DATA6	C7	RGMII0_MDC/USB1_D6/I2C2_SCL/HPS_GPIO7			

5CSEBA6U23I7N

Default Setting: BOOTSEL[2:0]=101 (Boot from SD CARD)
CLKSEL[1:0] =00

VCC3P3

DNI R127 1K	HPS_BOOTSEL0	(BOOTSEL0)	R140 10K			
R126 1K	HPS_BOOTSEL1	(BOOTSEL1)	R139 10K DNI			
DNI R125 1K	HPS_BOOTSEL2	(BOOTSEL2)	R138 10K			
R124 1K	HPS_SPIM_SS	(CLOCKSEL0)	R137 10K DNI			
R123 1K	HPS_CLOCKSEL1	(CLOCKSEL1)	R135 10K DNI			

Title: **DE10-Nano Board**

Size	Document Number	Rev
B	FPGA Bank 7	C0

Date: Friday, July 14, 2017 Sheet 5 of 24

GPIO

3,7,19 GPIO_0_D[35..0]

3,19 GPIO_1_D[35..0]

User Interface (FPGA)

20 SW[3..0]

Clock Generator

5 HPS_CLK1_25

5 HPS_CLK2_25

15 CLK_ENET_25

10 CLK_UB2_24

14 CLK_USB_24

HDMI TX

3,21 HDMI_TX_D[23..0]

21 HDMI_TX_CLK

21 HDMI_TX_HS

21 HDMI_TX_DE

U1B

CYCLONE V SoC Clock

Bank 3B VCCIO = 3.3V

FPGA_CLK1_50	V11	IO_3B/CLK0P,FPLL_BL_FBP/DIFFIO_RX_B15P	IO_3B/FPLL_BL_CLKOUT0,FPLL_BL_CLKOUTP,FPLL_BL_FB/DIFFIO_TX_B21P/B_A_2/DQ3B
GPIO_0_D25	W11	IO_3B/CLK0N,FPLL_BL_FBN/DIFFIO_RX_B15N	IO_3B/FPLL_BL_CLKOUT1,FPLL_BL_CLKOUTN/DIFFIO_TX_B21N/B_A_3/DQ3B
GPIO_0_D0	V12	IO_3B/CLK1P/DIFFIO_RX_B23P	
GPIO_0_D2	W12	IO_3B/CLK1N/DIFFIO_RX_B23N	

AG5 HDMI_TX_CLK

AH4 HDMI_TX_D18

Bank 4A VCCIO = 3.3V

FPGA_CLK2_50	Y13	IO_4A/CLK2P/DIFFIO_RX_B31P
GPIO_0_D34	AA13	IO_4A/CLK2N/DIFFIO_RX_B31N
GPIO_1_D0	Y15	IO_4A/CLK3P/DIFFIO_RX_B39P
GPIO_1_D2	AA15	IO_4A/CLK3N/DIFFIO_RX_B39N

Bank 5B VCCIO = 3.3V

SW0	Y24	IO_5B/CLK4P,FPLL_BR_FBP/DIFFIO_RX_R23P	IO_5B/FPLL_BR_CLKOUT0,FPLL_BR_CLKOUTP,FPLL_BR_FB/DIFFIO_TX_R22P
SW1	W24	IO_5B/CLK4N,FPLL_BR_FBN/DIFFIO_RX_R23N	IO_5B/FPLL_BR_CLKOUT1,FPLL_BR_CLKOUTN/DIFFIO_TX_R22N
SW2	W21	IO_5B/CLK5P/DIFFIO_RX_R21P	
SW3	W20	IO_5B/CLK5N/DIFFIO_RX_R21N	

AB26 GPIO_0_D31

AA26 GPIO_0_D33

Bank 8A VCCIO = 3.3V

FPGA_CLK1_50 R159 0 FPGA_CLK3_50

FPGA_CLK3_50	E11	IO_8A/CLK6P,FPLL_TL_FBP/DIFFIO_RX_T9P	IO_8A/FPLL_TL_CLKOUT0,FPLL_TL_CLKOUTP,FPLL_TL_FB/DIFFIO_TX_T4P
GPIO_0_D3	D11	IO_8A/CLK6N,FPLL_TL_FBN/DIFFIO_RX_T9N	IO_8A/FPLL_TL_CLKOUT1,FPLL_TL_CLKOUTN/DIFFIO_TX_T4N
GPIO_0_D16	D12	IO_8A/CLK7P/DIFFIO_RX_T1P	
GPIO_0_D18	C12	IO_8A/CLK7N/DIFFIO_RX_T1N	

E8 GPIO_0_D1

D8 GPIO_0_D4

5CSEBA6U23I7N

VCC3P3

C316 0.47u C317 0.47u C318 0.47u C319 0.47u C320 0.47u

VCC3P3

C315 0.1u

Y1 25.00MHz (EN, VCC, GND, OUT)

R262 0

U35 Si5350C-B07837-GM

VDDOA (11) VDDOB (10) VDDOC (18) VDDOD (14) VDD (20)

GND (3, 4, 5, 7) GND_EP (21)

CLKIN (6) XA (1) XB (2)

CLK0	13	R47	18.2	CLK_UB2_24
CLK1	12	R49	18.2	CLK_USB_24
CLK2	9	R48	18.2	CLK_ENET_25
CLK3	8			
CLK4	19	R54	18.2	HPS_CLK1_25
CLK5	17	R55	18.2	HPS_CLK2_25
CLK6	16	R56	18.2	FPGA_CLK1_50
CLK7	15	R57	18.2	FPGA_CLK2_50

Default: 24MHz
Default: 24MHz
Default: 25MHz
Default: 25MHz
Default: 25MHz
Default: 50MHz
Default: 50MHz

Title: DE10-Nano Board

Size: B | Document Number: FPGA Clock and Clock Generator | Rev: C0

Date: Wednesday, August 30, 2017 | Sheet 6 of 24

USB Blaster

10 JTAG_Blaster_TCK
10 JTAG_Blaster_TMS
10 JTAG_Blaster_TDO
10 JTAG_Blaster_TDI

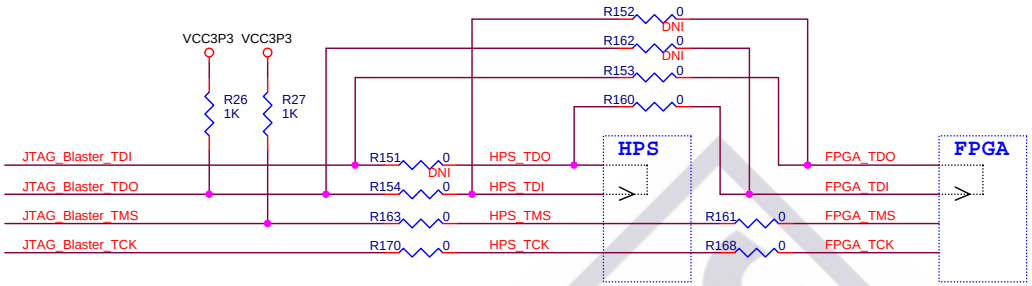
FPGA JTAG INTERFACE

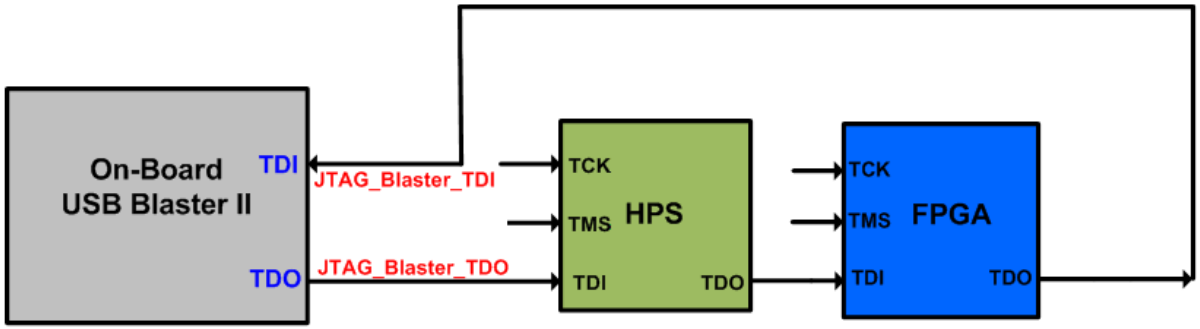
7 FPGA_TCK
7 FPGA_TMS
7 FPGA_TDI
7 FPGA_TDO

HPS JTAG INTERFACE

5 HPS_TCK
5 HPS_TMS
5 HPS_TDI
5 HPS_TDO

JTAG Chain





Title: **DE10-Nano Board**

Size	Document Number	Rev
B	JTAG Chain	C0

Date: Friday, July 14, 2017 Sheet 11 of 24

GPIO

3,6,7 — GPIO_0_D[35..0]

3,6 — GPIO_1_D[35..0]

Arduino Digital Interface

3 — Arduino_IO[15..0]

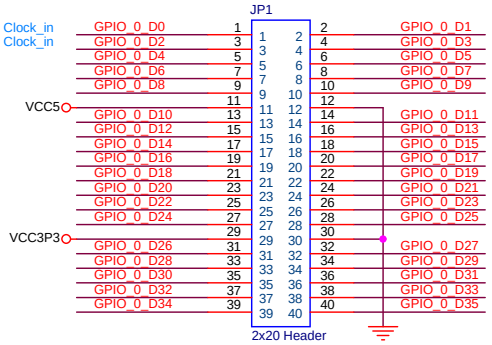
3 — Arduino_Reset_n

Analog input interface

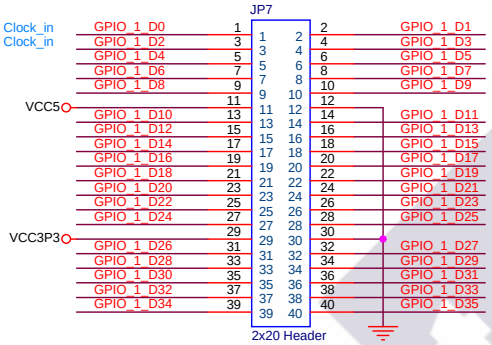
18 — ADC_IN[7..0]

18 — Arduino_VREF

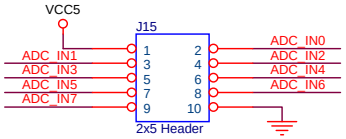
GPIO 0 Header

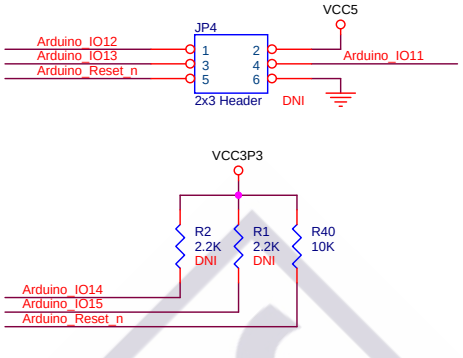


GPIO 1 Header

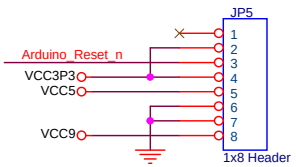


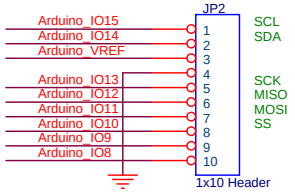
ADC Header

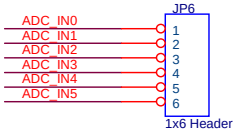


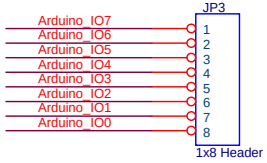


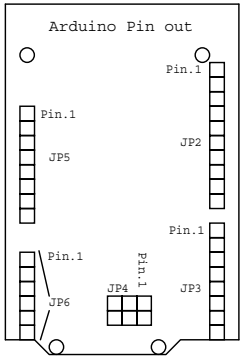
Arduino UNO Rev3











Title: **DE10-Nano Board**

Size	Document Number	Rev
B	FPGA : GPIO, ADC & Arduino Expansion Header	C0

Date: Friday, July 14, 2017 Sheet 19 of 24

KEY

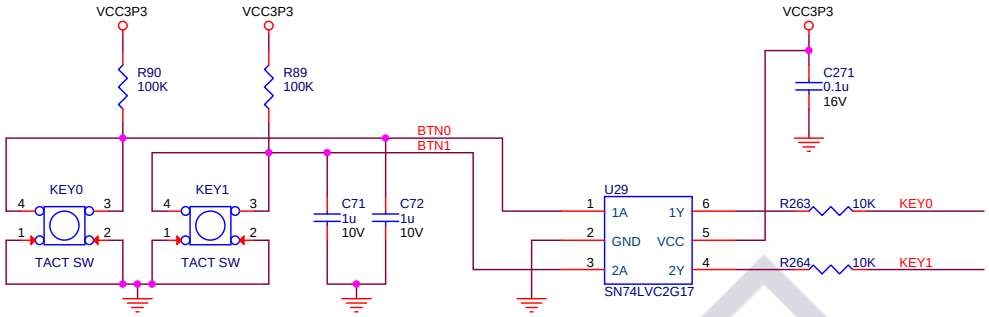
3 KEY[1..0]

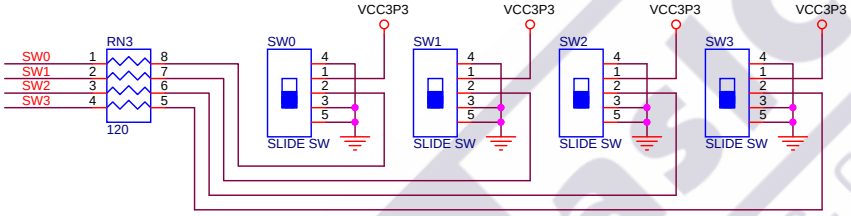
SWITCH

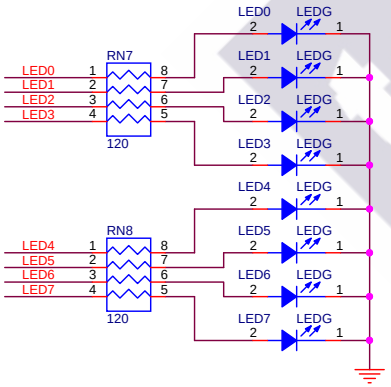
3 SW[3..0]

LED

3 LED[7..0]







Title
DE10-Nano Board

Size	Document Number	Rev
B	FPGA : LED, KEY, SW	C0

Date: Wednesday, August 30, 2017 Sheet 20 of 24