

ASSOCIAÇÃO DE PINOS DO FPGA DA PLACA DE10-Lite (Referência: DE10-Lite – User Manual – pg. 24 a 34)

VISTA GERAL DA PLACA DE10 - Lite - TERASIC

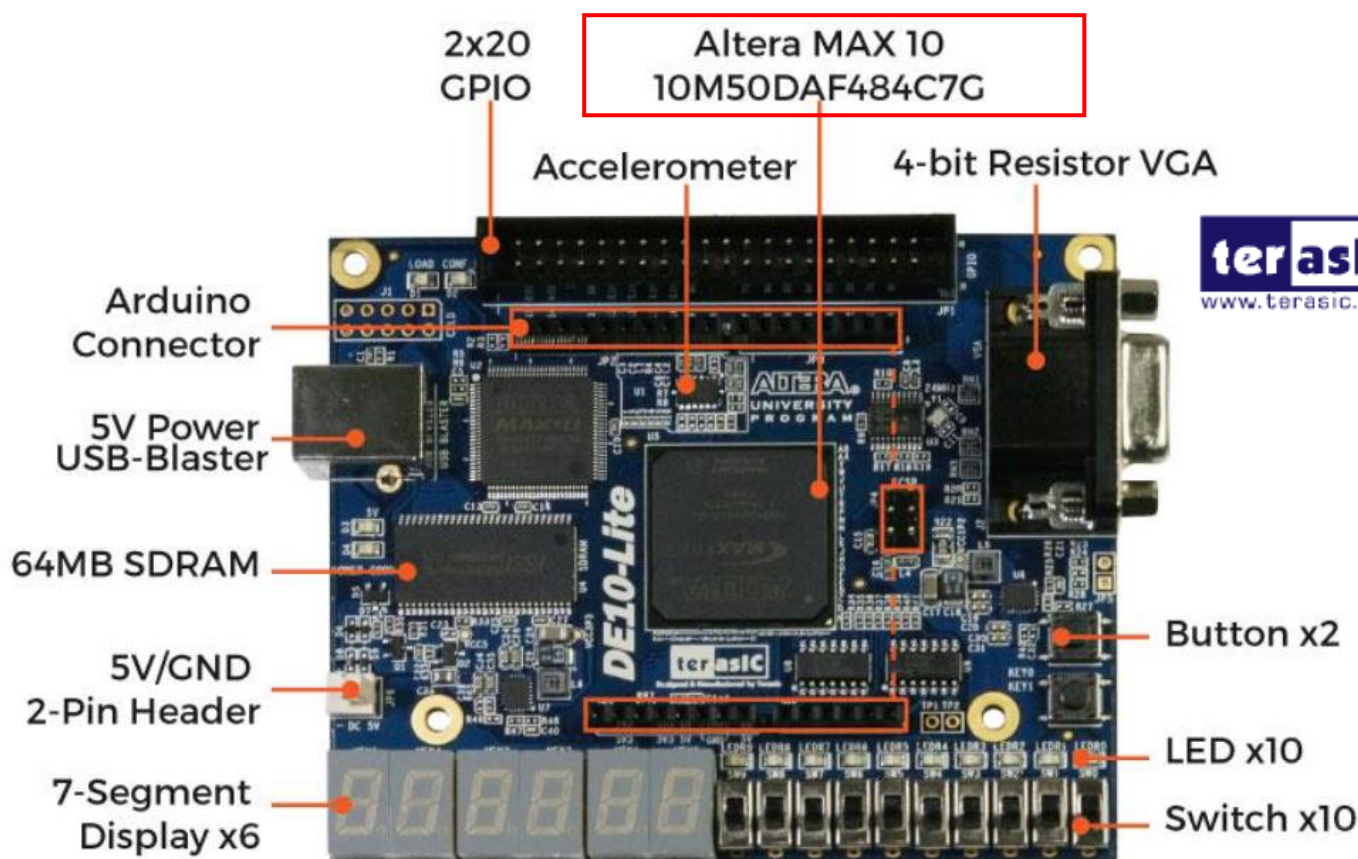
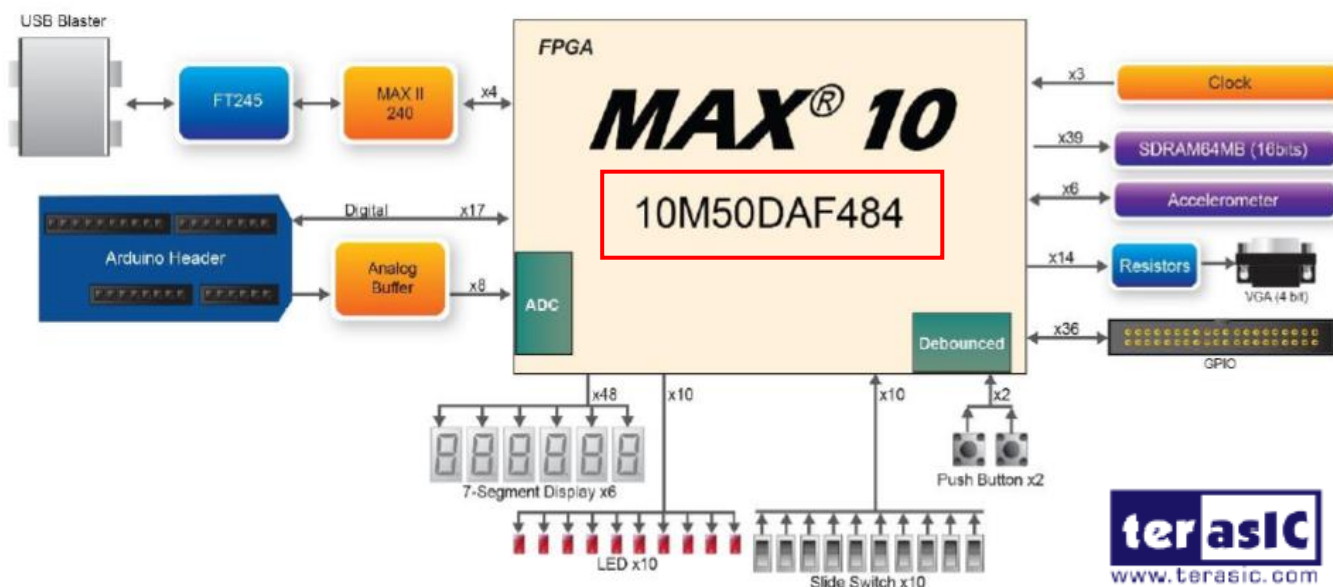


DIAGRAMA DE BLOCOS DAS INTERFACES - DE10-Lite



SINAIS DE CLOCK

ATENÇÃO: Utilizar preferencialmente nos projetos do Laboratório de Sistemas Digitais o sinal: **MAX10_CLK1_50**

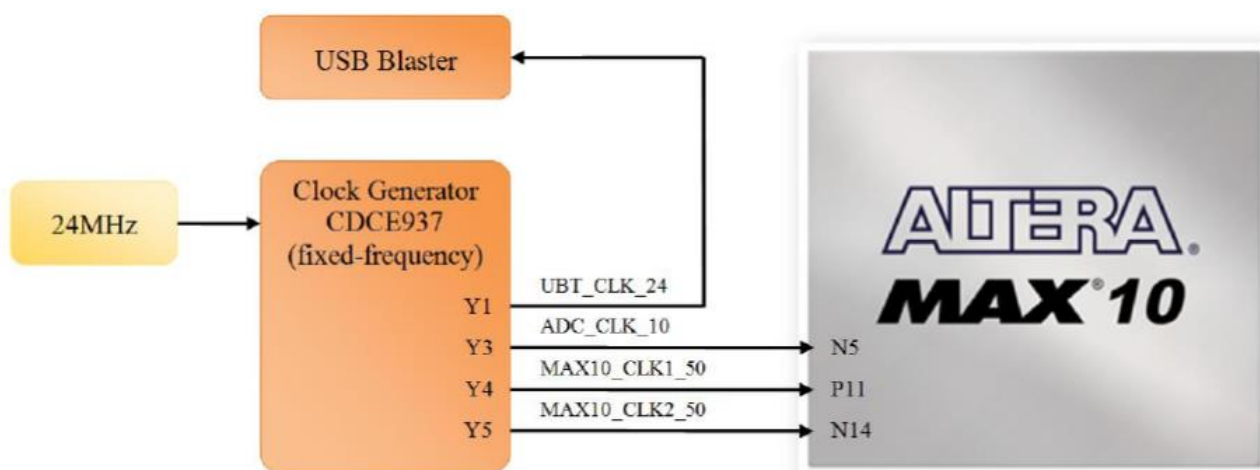


Figure 3-12 Clock circuit of the FPGA Board

Table 3-2 Pin Assignment of Clock Inputs

Signal Name	FPGA Pin No.	Description
ADC_CLK_10	PIN_N5	10 MHz clock input for ADC (Bank 3B)
MAX10_CLK1_50	PIN_P11	50 MHz clock input(Bank 3B)
MAX10_CLK2_50	PIN_N14	50 MHz clock input(Bank 3B)

BOTÕES DE PRESSÃO (CONTATO MOMENTÂNEO):

ATENÇÃO: Esses botões são ativos em nível lógico zero (quando NÃO ESTÃO PRESSIONADOS geram sinais em nível lógico um)

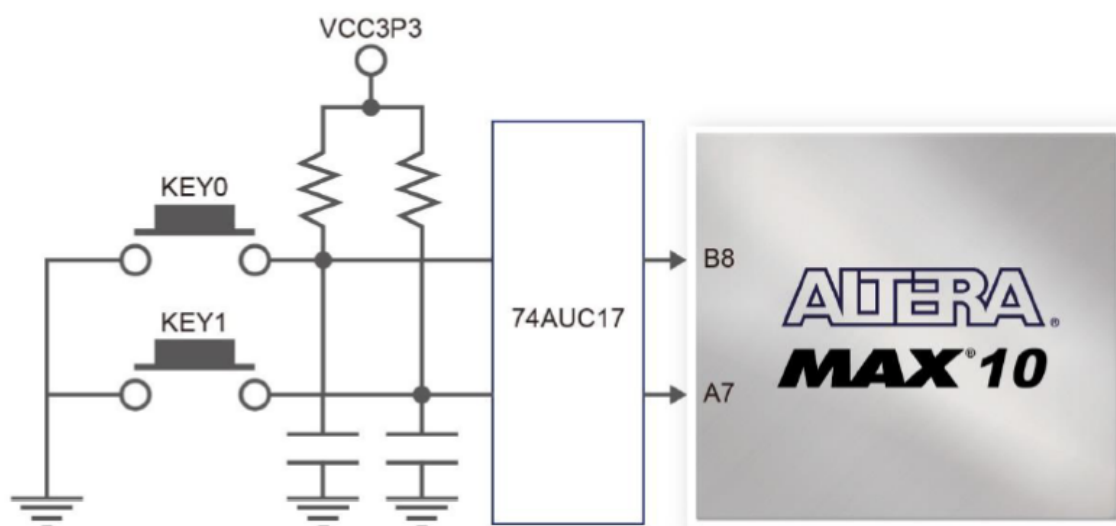


Figure 3-13 Connections between the push-button and MAX 10 FPGA

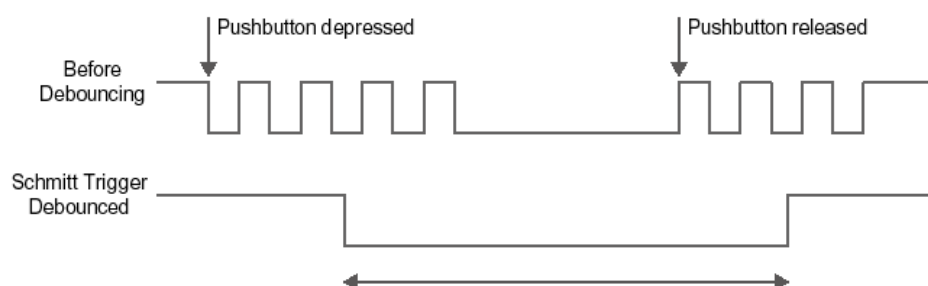


Figure 3-14 Switch debouncing

Table 3-3 Pin Assignment of Push-buttons

Signal Name	FPGA Pin No.	Description
KEY0	PIN_B8	Push-button[0]
KEY1	PIN_A7	Push-button[1]

CHAVES DESLIZANTES DE DUAS POSIÇÕES:



Figure 3-15 Connections between the slide switches and MAX 10 FPGA

Table 3-4 Pin Assignment of Slide Switches

Signal Name	FPGA Pin No.	Description
SW0	PIN_C10	Slide Switch[0]
SW1	PIN_C11	Slide Switch[1]
SW2	PIN_D12	Slide Switch[2]
SW3	PIN_C12	Slide Switch[3]
SW4	PIN_A12	Slide Switch[4]
SW5	PIN_B12	Slide Switch[5]
SW6	PIN_A13	Slide Switch[6]
SW7	PIN_A14	Slide Switch[7]
SW8	PIN_B14	Slide Switch[8]
SW9	PIN_F15	Slide Switch[9]

LED'S VERMELHOS (LEDR):

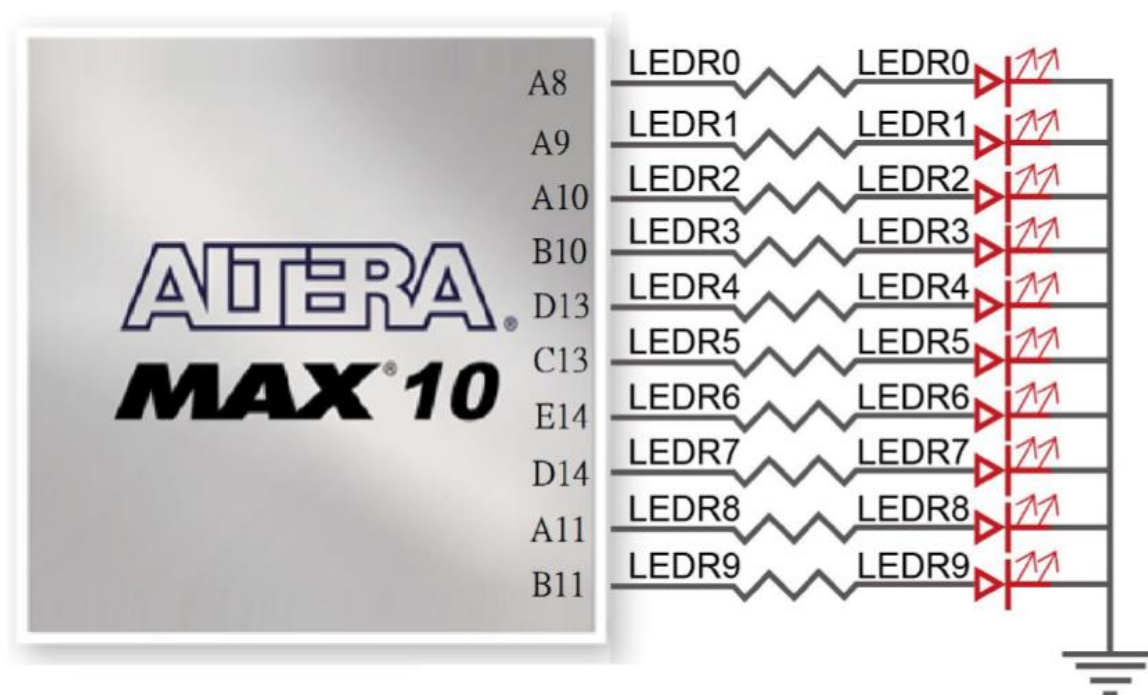


Figure 3-16 Connections between the LEDs and MAX 10 FPGA

Table 3-5 Pin Assignment of LEDs

Signal Name	FPGA Pin No.	Description
LEDR0	PIN_A8	LED [0]
LEDR1	PIN_A9	LED [1]
LEDR2	PIN_A10	LED [2]
LEDR3	PIN_B10	LED [3]
LEDR4	PIN_D13	LED [4]
LEDR5	PIN_C13	LED [5]
LEDR6	PIN_E14	LED [6]
LEDR7	PIN_D14	LED [7]
LEDR8	PIN_A11	LED [8]
LEDR9	PIN_B11	LED [9]

DISPLAYS DE SETE SEGMENTOS:

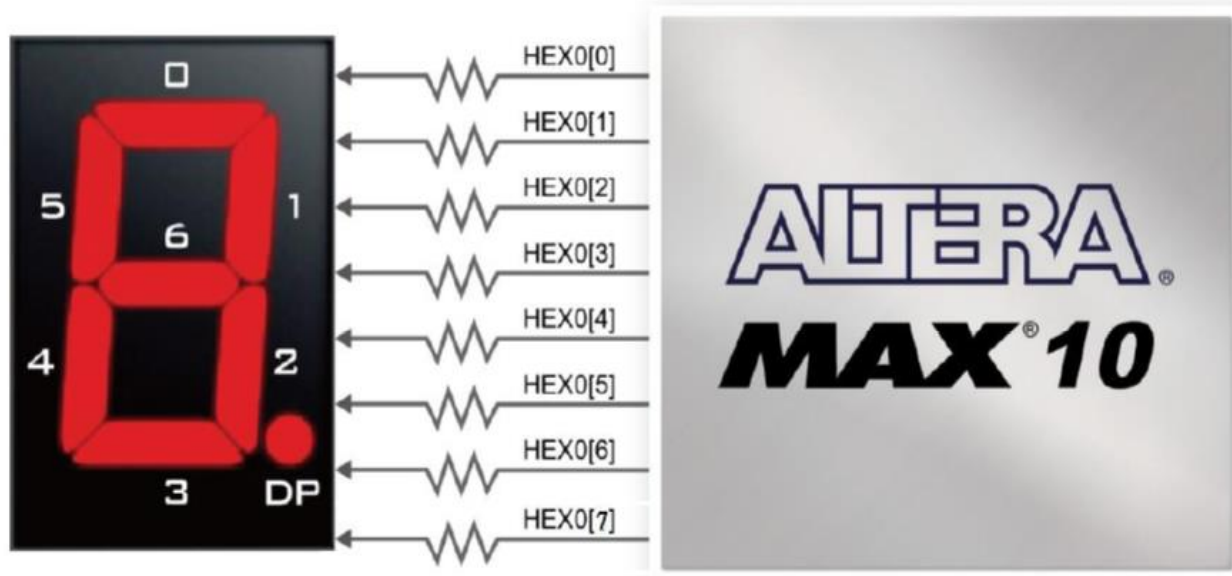


Figure 3-17 Connections between the 7-segment display HEX0 and the MAX 10 FPGA

Table 3-6 Pin Assignment of 7-segment Displays

Signal Name	FPGA Pin No.	Description
HEX00	PIN_C14	Seven Segment Digit 0[0]
HEX01	PIN_E15	Seven Segment Digit 0[1]
HEX02	PIN_C15	Seven Segment Digit 0[2]
HEX03	PIN_C16	Seven Segment Digit 0[3]
HEX04	PIN_E16	Seven Segment Digit 0[4]
HEX05	PIN_D17	Seven Segment Digit 0[5]
HEX06	PIN_C17	Seven Segment Digit 0[6]
HEX07	PIN_D15	Seven Segment Digit 0[7], DP
HEX10	PIN_C18	Seven Segment Digit 1[0]
HEX11	PIN_D18	Seven Segment Digit 1[1]
HEX12	PIN_E18	Seven Segment Digit 1[2]
HEX13	PIN_B16	Seven Segment Digit 1[3]

HEX14	PIN_A17	Seven Segment Digit 1[4]
HEX15	PIN_A18	Seven Segment Digit 1[5]
HEX16	PIN_B17	Seven Segment Digit 1[6]
HEX17	PIN_A16	Seven Segment Digit 1[7] , DP
HEX20	PIN_B20	Seven Segment Digit 2[0]
HEX21	PIN_A20	Seven Segment Digit 2[1]
HEX22	PIN_B19	Seven Segment Digit 2[2]
HEX23	PIN_A21	Seven Segment Digit 2[3]
HEX24	PIN_B21	Seven Segment Digit 2[4]
HEX25	PIN_C22	Seven Segment Digit 2[5]
HEX26	PIN_B22	Seven Segment Digit 2[6]
HEX27	PIN_A19	Seven Segment Digit 2[7] , DP
HEX30	PIN_F21	Seven Segment Digit 3[0]
HEX31	PIN_E22	Seven Segment Digit 3[1]
HEX32	PIN_E21	Seven Segment Digit 3[2]
HEX33	PIN_C19	Seven Segment Digit 3[3]
HEX34	PIN_C20	Seven Segment Digit 3[4]
HEX35	PIN_D19	Seven Segment Digit 3[5]
HEX36	PIN_E17	Seven Segment Digit 3[6]
HEX37	PIN_D22	Seven Segment Digit 3[7] , DP
HEX40	PIN_F18	Seven Segment Digit 4[0]
HEX41	PIN_E20	Seven Segment Digit 4[1]
HEX42	PIN_E19	Seven Segment Digit 4[2]
HEX43	PIN_J18	Seven Segment Digit 4[3]
HEX44	PIN_H19	Seven Segment Digit 4[4]
HEX45	PIN_F19	Seven Segment Digit 4[5]
HEX46	PIN_F20	Seven Segment Digit 4[6]
HEX47	PIN_F17	Seven Segment Digit 4[7] , DP
HEX50	PIN_J20	Seven Segment Digit 5[0]
HEX51	PIN_K20	Seven Segment Digit 5[1]
HEX52	PIN_L18	Seven Segment Digit 5[2]
HEX53	PIN_N18	Seven Segment Digit 5[3]
HEX54	PIN_M20	Seven Segment Digit 5[4]
HEX55	PIN_N19	Seven Segment Digit 5[5]
HEX56	PIN_N20	Seven Segment Digit 5[6]
HEX57	PIN_L19	Seven Segment Digit 5[7] , DP

CONECTORES DE EXPANSÃO - GPIO 2X20):

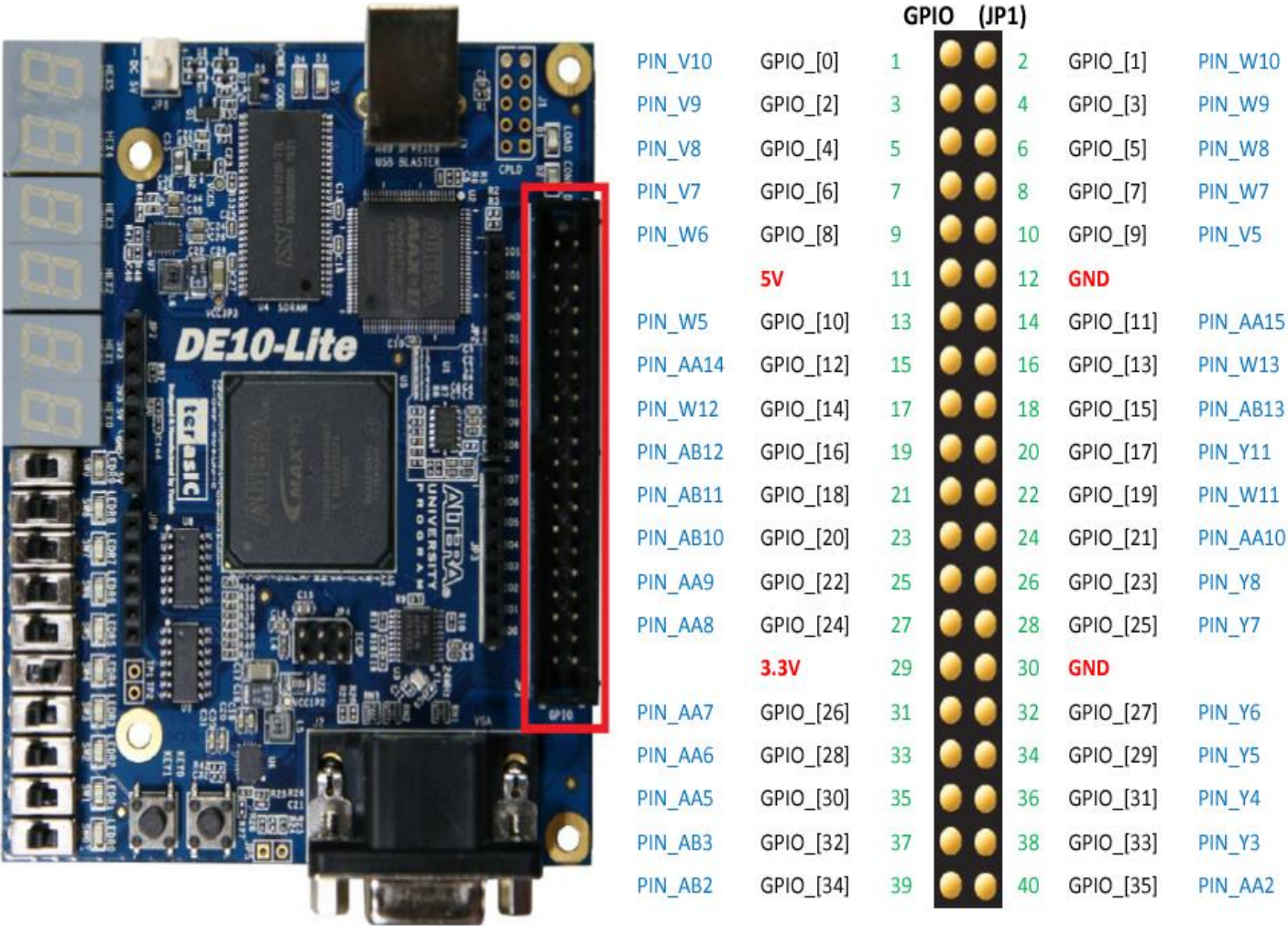


Figure 3-18 I/O distribution of the expansion headers

Table 3-7 Show all Pin Assignment of Expansion Headers

Signal Name	FPGA Pin No.	Description
GPIO_0	PIN_V10	GPIO Connection [0]
GPIO_1	PIN_W10	GPIO Connection [1]
GPIO_2	PIN_V9	GPIO Connection [2]
GPIO_3	PIN_W9	GPIO Connection [3]
GPIO_4	PIN_V8	GPIO Connection [4]
GPIO_5	PIN_W8	GPIO Connection [5]
GPIO_6	PIN_V7	GPIO Connection [6]
GPIO_7	PIN_W7	GPIO Connection [7]
GPIO_8	PIN_W6	GPIO Connection [8]
GPIO_9	PIN_V5	GPIO Connection [9]
GPIO_10	PIN_W5	GPIO Connection [10]
GPIO_11	PIN_AA15	GPIO Connection [11]
GPIO_12	PIN_AA14	GPIO Connection [12]
GPIO_13	PIN_W13	GPIO Connection [13]
GPIO_14	PIN_W12	GPIO Connection [14]
GPIO_15	PIN_AB13	GPIO Connection [15]
GPIO_16	PIN_AB12	GPIO Connection [16]
GPIO_17	PIN_Y11	GPIO Connection [17]
GPIO_18	PIN_AB11	GPIO Connection [18]
GPIO_19	PIN_W11	GPIO Connection [19]
GPIO_20	PIN_AB10	GPIO Connection [20]
GPIO_21	PIN_AA10	GPIO Connection [21]
GPIO_22	PIN_AA9	GPIO Connection [22]
GPIO_23	PIN_Y8	GPIO Connection [23]
GPIO_24	PIN_AA8	GPIO Connection [24]
GPIO_25	PIN_Y7	GPIO Connection [25]
GPIO_26	PIN_AA7	GPIO Connection [26]
GPIO_27	PIN_Y6	GPIO Connection [27]
GPIO_28	PIN_AA6	GPIO Connection [28]
GPIO_29	PIN_Y5	GPIO Connection [29]
GPIO_30	PIN_AA5	GPIO Connection [30]
GPIO_31	PIN_Y4	GPIO Connection [31]
GPIO_32	PIN_AB3	GPIO Connection [32]
GPIO_33	PIN_Y3	GPIO Connection [33]
GPIO_34	PIN_AB2	GPIO Connection [34]
GPIO_35	PIN_AA2	GPIO Connection [35]

CONECTORES DE EXPANSÃO – ARDUINO UNO R3:

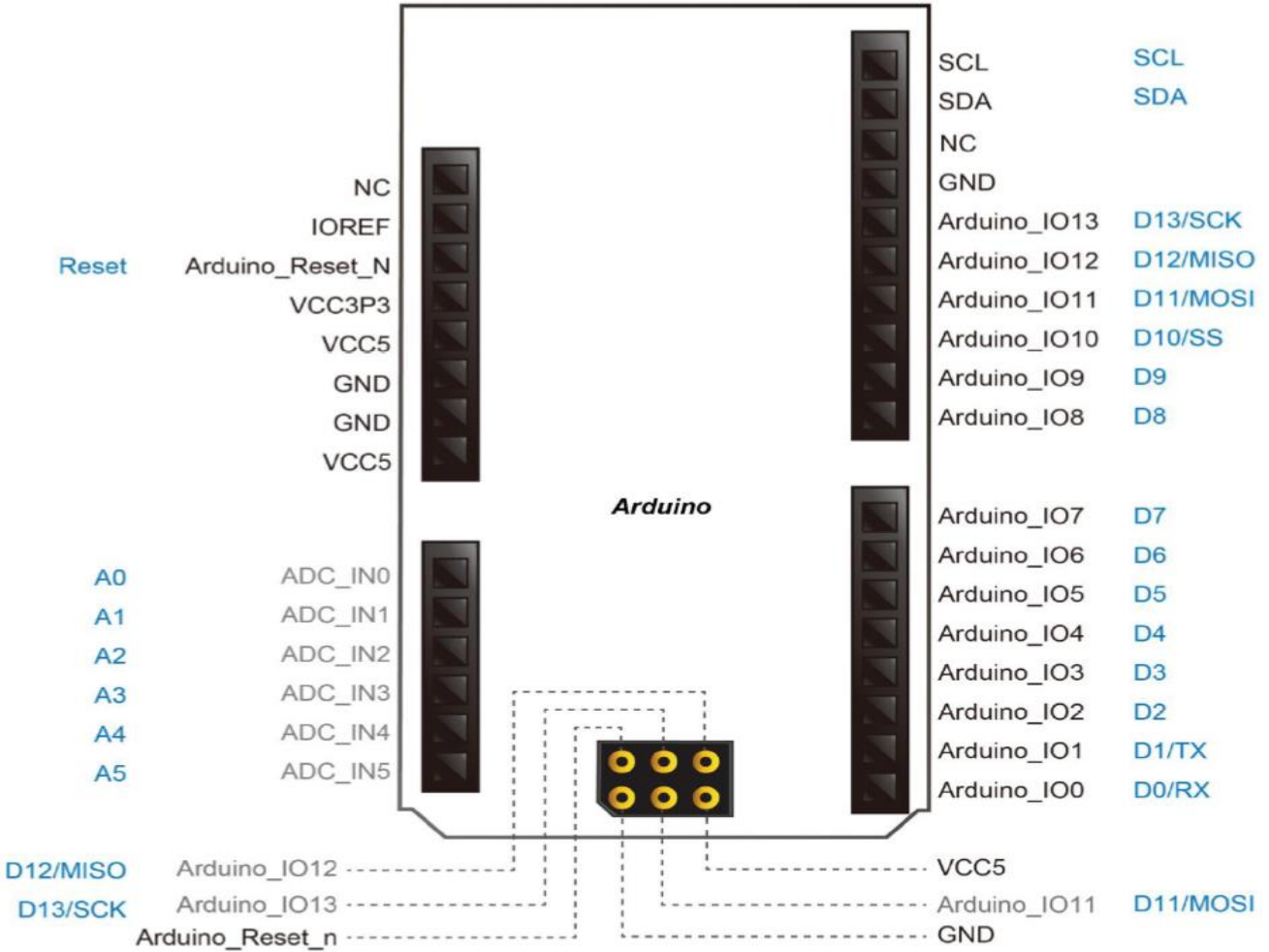


Figure 3-19 lists the all the pin-out signal name of the Arduino Uno connector. The blue font represents the Arduino pin-out definition.

Table 3-8 Pin Assignments for Arduino Uno Expansion Header connector

Schematic Signal Name	FPGA Pin No.	Description	Specific features For Arduino
Arduino_IO0	PIN_AB5	Arduino IO0	RXD
Arduino_IO1	PIN_AB6	Arduino IO1	TXD
Arduino_IO2	PIN_AB7	Arduino IO2	
Arduino_IO3	PIN_AB8	Arduino IO3	
Arduino_IO4	PIN_AB9	Arduino IO4	
Arduino_IO5	PIN_Y10	Arduino IO5	
Arduino_IO6	PIN_AA11	Arduino IO6	
Arduino_IO7	PIN_AA12	Arduino IO7	
Arduino_IO8	PIN_AB17	Arduino IO8	
Arduino_IO9	PIN_AA17	Arduino IO9	
Arduino_IO10	PIN_AB19	Arduino IO10	SS
Arduino_IO11	PIN_AA19	Arduino IO11	MOSI
Arduino_IO12	PIN_Y19	Arduino IO12	MISO
Arduino_IO13	PIN_AB20	Arduino IO13	SCK
Arduino_IO14	PIN_AB21	Arduino IO14	SDA
Arduino_IO15	PIN_AA20	Arduino IO15	SCL
ARDUINO_RESET_N	PIN_F16	Reset signal, low active.	