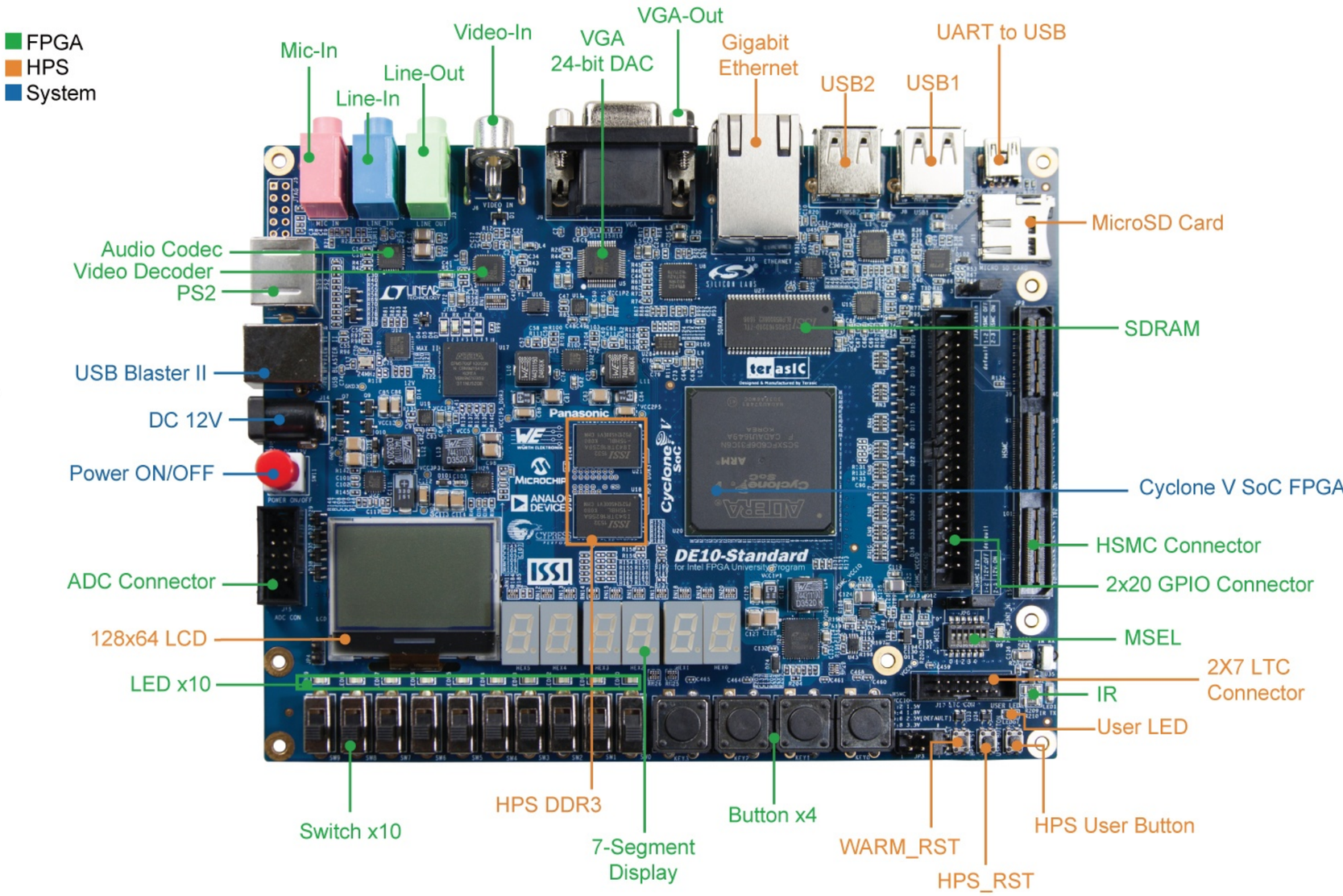
Unlocking the Potential of Cyclone V SoC FPGA with 2x20 GPIO Expansion Header

What is a GPIO Expansion Header?

A **GPIO Expansion Header** is a connecto on the Cyclone V SoC FPGA board that provides **general-purpose input/output (GPIO)** pins. These pins can be used to connect to **external devices and sensors** to expand the functionality of the FPGA.



3.6.3 2x20 GPIO Expansion Header

The board has one 40-pin expansion headers. The header has 36 user pins connected directly to the Cyclone V SoC FPGA. It also comes with DC +5V (VCC5), DC +3.3V (VCC3P3), and two GND pins. The maximum power consumption allowed for a daughter card connected to one GPIO ports is shown in Table 3-10.

Table 3-10 Voltage and Max. Current Limit of Expansion Header(s)

Supplied Voltage	*Max. Current Limit*
5V	1A
3.3V	1.5A

Each pin on the expansion headers is connected to two diodes and a resistor for protection against high or low voltage level. Figure 3-19 shows the protection circuitry applied to all 36 data pins. Table 3-11 shows the pin assignment of the GPIO header.

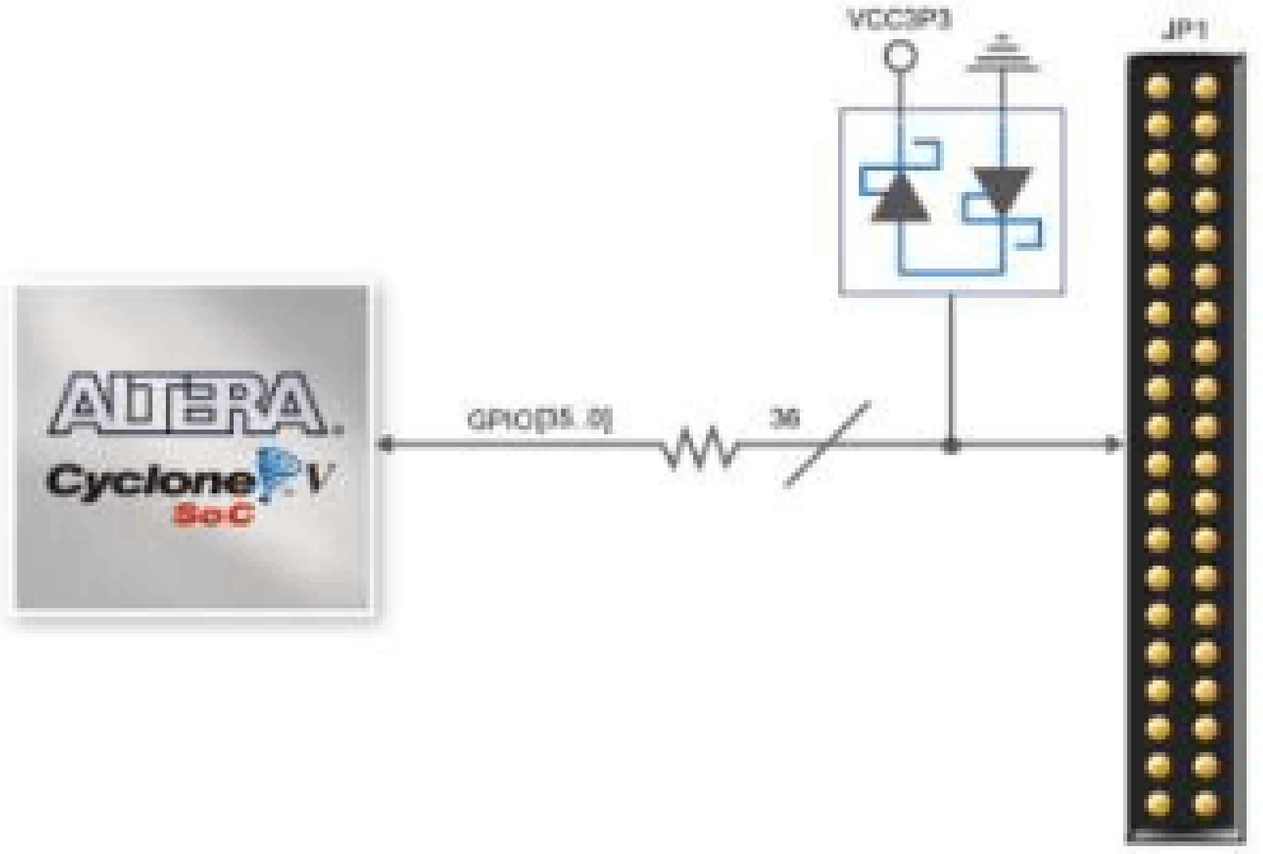


Figure 3-19 Connections between the GPIO header and Cyclone V SoC FPGA

Table 3-11 Pin Assignment of Expansion Headers

Signal Name	FPGA Pin No.	Description	I/O Standard
GPIO[0]	PIN_W15	GPIO Connection 0[0]	3.3V
GPIO[1]	PIN_AK2	GPIO Connection 0[1]	3.3V
GPIO[2]	PIN_Y16	GPIO Connection 0[2]	3.3V
GPIO[3]	PIN_AK3	GPIO Connection 0[3]	3.3V
GPIO[4]	PIN_AJ1	GPIO Connection 0[4]	3.3V
GPIO[5]	PIN_AJ2	GPIO Connection 0[5]	3.3V
GPIO[6]	PIN_AH2	GPIO Connection 0[6]	3.3V
GPIO[7]	PIN_AH3	GPIO Connection 0[7]	3.3V
GPIO[8]	PIN_AH4	GPIO Connection 0[8]	3.3V
GPIO[9]	PIN_AH5	GPIO Connection 0[9]	3.3V
GPIO[10]	PIN_AG1	GPIO Connection 0[10]	3.3V
GPIO[11]	PIN_AG2	GPIO Connection 0[11]	3.3V
GPIO[12]	PIN_AG3	GPIO Connection 0[12]	3.3V
GPIO[13]	PIN_AG5	GPIO Connection 0[13]	3.3V
GPIO[14]	PIN_AG6	GPIO Connection 0[14]	3.3V
GPIO[15]	PIN_AG7	GPIO Connection 0[15]	3.3V
GPIO[16]	PIN_AG8	GPIO Connection 0[16]	3.3V
GPIO[17]	PIN_AF4	GPIO Connection 0[17]	3.3V
GPIO[18]	PIN_AF5	GPIO Connection 0[18]	3.3V
GPIO[19]	PIN_AF6	GPIO Connection 0[19]	3.3V
GPIO[20]	PIN_AF8	GPIO Connection 0[20]	3.3V
GPIO[21]	PIN_AF9	GPIO Connection 0[21]	3.3V
GPIO[22]	PIN_AF10	GPIO Connection 0[22]	3.3V
GPIO[23]	PIN_AE7	GPIO Connection 0[23]	3.3V
GPIO[24]	PIN_AE9	GPIO Connection 0[24]	3.3V
GPIO[25]	PIN_AE11	GPIO Connection 0[25]	3.3V
GPIO[26]	PIN_AE12	GPIO Connection 0[26]	3.3V
GPIO[27]	PIN_AD7	GPIO Connection 0[27]	3.3V
GPIO[28]	PIN_AD9	GPIO Connection 0[28]	3.3V
GPIO[29]	PIN_AD10	GPIO Connection 0[29]	3.3V
GPIO[30]	PIN_AD11	GPIO Connection 0[30]	3.3V
GPIO[31]	PIN_AD12	GPIO Connection 0[31]	3.3V
GPIO[32]	PIN_AC9	GPIO Connection 0[32]	3.3V
GPIO[33]	PIN_AC12	GPIO Connection 0[33]	3.3V
GPIO[34]	PIN_AB12	GPIO Connection 0[34]	3.3V
GPIO[35]	PIN_AA12	GPIO Connection 0[35]	3.3V

Thank You