RocKid-EB2-1F4D
Development Board User Guide

Welcome to Agate Logic Angelo family Development Kit: RocKid. Whether you just want to learn about the Agate Logic device design, or have a specific design implementation to complete, the kit provides a perfect environment to help you start designing with and evaluating the powerful features of Agate Logic Angelo Devices quickly and efficiently.

Overview

RocKid-EB2-1F4D with the board version 1.0 is an Angelo module board with an AG1F4N4L144 device on it. It enables users to use all the powerful features of AG1F4N4L144 devices without having to worry about how to design the complex circuitry for power supply and configuration; Also, RocKid-EB2-1F4D users can access all the available AG1F4N4L144 I/Os without having to worry about how to create and manufacture the complex PCB board.

This document mainly describes features and operation of RocKid-EB2-1F4D.

Features

The important features of RocKid-EB2-1F4D are listed below:

- Agate Logic Angelo AG1F4N4L144 device on board
- Provides 62 user I/O pins
- Two headers (on the top and bottom sides) to ease the layout design of user's own mother board
- Easy configuration via JTAG with the data transfer up to 1MB per second
- Various configuration schemes
  - ✓ JTAG-based configuration
  - ✓ AS SPI configuration from embed flash
- Provides a PLCC44 socket for 8051 MCU
- Provides one on-board clock oscillator
- Provides one chip reset push button and two user push buttons
- Provides two LEDs
- Power jack for power and power switch

Block Diagram

The block diagram of RocKid-EB2-1F4D is shown in **Figure 1**.

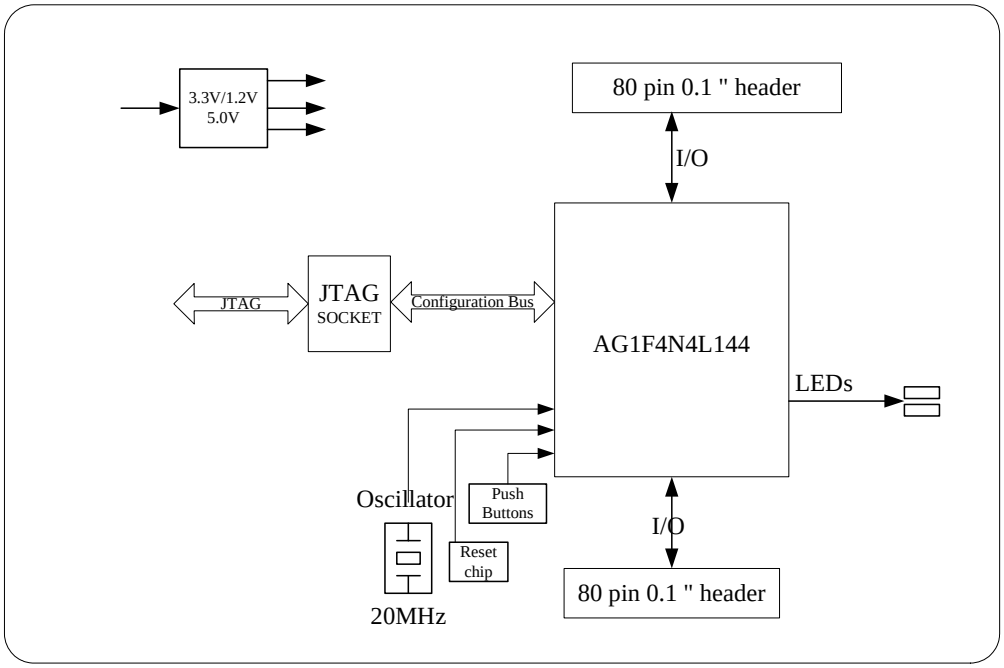

Figure 1 RocKid-EB2-1F4D Block Diagram

General Description

This section mainly introduces to you about signal definitions of RocKid-EB2-1F4D development board.

Signal Assignments

Table 1 summarizes the pin assignment of the connectors on RocKid-EB2-1F4D development board. They are arranged by the function description.

The whole table is divided into three parts of different colours. The part with words in blue describes components on RocKid-EB1-MA mother board whose signals are connected to RocKid-EB2-1F4D. The part with words in red defines components on RocKid-EB2-1F4D only. The part with black words are headers unspent.

Table 1 Pin Assignment of the Connectors				
AG1F4N4L144 Pin	**Signal**	**Header on RocKid-EB2-1F4D**	**Header on RocKid-EB2-MA**	**Description**
	GND	J4-1	J9-1	Power

Table 1 Pin Assignment of the Connectors

AG1F4N4L144 Pin	Signal	Header on RocKid-EB2-1F4D	Header on RocKid-EB2-MA	Description	
	GND	J4-2	J9-2		
	+3.3V	J4-3	J9-3		
	+3.3V	J4-4	J9-4		
	GND	J4-41	J9-41		
	GND	J4-42	J9-42		
	GND	J4-79	J9-79		
	GND	J4-80	J9-80		
	GND	J3-1	J10-1		
	GND	J3-2	J10-2		
	+5V	J3-3	J10-3		
	+5V	J3-4	J10-4		
	GND	J3-41	J10-41		
	GND	J3-42	J10-42		
	GND	J3-79	J10-79		
	GND	J3-80	J10-80		
IO31	CLOCK0			Global clock input	
IO53	CAN_AD0	J4-62	J9-62	Multiplexed address/data bus	CAN
IO54	CAN_AD1	J4-63	J9-63		
IO55	CAN_AD2	J4-64	J9-64		
IO56	CAN_AD3	J4-65	J9-65		
IO57	CAN_AD4	J4-66	J9-66		
IO58	CAN_AD5	J4-67	J9-67		
IO59	CAN_AD6	J4-68	J9-68		
IO60	CAN_AD7	J4-69	J9-69		
IO62	CAN_/WR	J4-71	J9-71	CAN controller control signals	
IO63	CAN_/RD_E	J4-72	J9-72		
IO64	CAN_/CS	J4-73	J9-73		
IO65	CAN_ALE/AS	J4-74	J9-74		
IO66	CAN_INT	J4-75	J9-75		
IO61	CAN_DIR	J4-70	J9-70	Data direction control	
IO75	DIG3	J3-56	J10-56	DS1-DS4 Select	7-segment Display
IO74	DIG2	J3-57	J10-57		
IO73	DIG1	J3-58	J10-58		
IO72	DIG0	J3-59	J10-59		
IO85	SEG7	J3-48	J10-48	7-segment Display	
IO84	SEG6	J3-49	J10-49		
IO83	SEG5	J3-50	J10-50		
IO80	SEG4	J3-51	J10-51		

Table 1 Pin Assignment of the Connectors					
AG1F4N4L144 Pin	**Signal**	**Header on RocKid-EB2-1F4D**	**Header on RocKid-EB2-MA**	**Description**	
IO79	SEG3	J3-52	J10-52		
IO78	SEG2	J3-53	J10-53		
IO77	SEG1	J3-54	J10-54		
IO76	SEG0	J3-55	J10-55		
IO42	DS_SCLK	J4-51	J9-51	RTC	
IO43	DS_IO	J4-52	J9-52		
IO44	DS_CE	J4-53	J9-53		
IO93	LCD_D0	J3-08	J10-08	LCD data bit 0	LCD
IO92	LCD_D1	J3-09	J10-09	LCD data bit 1	
IO91	LCD_D2	J3-10	J10-10	LCD data bit 2	
IO90	LCD_D3	J3-11	J10-11	LCD data bit 3	
IO89	LCD_D4	J3-12	J10-12	LCD data bit 4	
IO88	LCD_D5	J3-13	J10-13	LCD data bit 5	
IO87	LCD_D6	J3-14	J10-14	LCD data bit 6	
IO86	LCD_D7	J3-15	J10-15	LCD data bit 7	
IO96	LCD_RS	J3-05	J10-05	LCD register select	
IO95	LCD_E	J3-06	J10-06	LCD enable signal	
IO94	LCD_RW	J3-07	J10-07	LCD read, write select	
IO71	LED_USER7	J3-71	J10-71	LEDs	
IO67	RS232_TX1	J4-77	J9-77	RS-232	
IO68	RS232_RX1	J4-78	J9-78		
IO40	SCL	J4-49	J9-49	I2C clock signal	EEPROM
IO41	SDA	J4-50	J9-50	I2C data signal	
IO35	SPI_SCLK	J4-44	J9-44	SPI ADC	
IO36	SPI_ADDR	J4-45	J9-45		
IO37	SPI_CS	J4-46	J9-46		
IO38	SPI_DOUT	J4-47	J9-47		

Table 1 Pin Assignment of the Connectors				
AG1F4N4L144 Pin	**Signal**	**Header on RocKid-EB2-1F4D**	**Header on RocKid-EB2-MA**	**Description**
IO39	SPI_EOC	J4-48	J9-48	
IO45	SW_DIP7	J4-54	J9-54	DIP switch S1
IO46	SW_DIP6	J4-55	J9-55	
IO47	SW_DIP5	J4-56	J9-56	
IO48	SW_DIP4	J4-57	J9-57	
IO49	SW_DIP3	J4-58	J9-58	
IO50	SW_DIP2	J4-59	J9-59	
IO51	SW_DIP1	J4-60	J9-60	
IO52	SW_DIP0	J4-61	J9-61	
IO1	SW_USER0	J4-11	J9-11	Push button SW1-SW4
IO2	SW_USER1	J4-12	J9-12	
IO3	SW_USER2	J4-13	J9-13	
IO4	SW_USER3	J4-14	J9-14	
IO81	SW1	-	-	Push button on up-board
IO82	SW2	-	-	
IO25	AD0			8051 Signal
IO27	AD1			
IO29	AD2			
IO33	AD3			
IO34	AD4			
IO30	AD5			
IO28	AD6			
IO26	AD7			
IO12	A8			
IO14	A9			
IO16	A10			
IO17	A11			
IO18	A12			
IO19	A13			
IO20	A14			
IO21	A15			
IO13	P3_0			
IO11	P3_1			
IO10	P3_2			
IO9	P3_3			
IO8	P3_4			
IO7	P3_5			
IO6	P3_6			
IO5	P3_7			
IO24	P1_0			

Table 1 Pin Assignment of the Connectors				
AG1F4N4L144 Pin	**Signal**	**Header on RocKid-EB2-1F4D**	**Header on RocKid-EB2-MA**	**Description**
IO23	P1_1			
IO22	ALE			
IO15	RESET			
IO70	LED1	-	-	LEDs on up-board
IO69	LED2	-	-	

Powering up the Development Board

To quickly see your kit board function, the following actions are required:

1. Power up the development board:

   Plug the 5VDC power plug in the power jack and push down the power switch SW4.

2. Connect your computer and the RocKid-EB2-1F4D board using USB -> JTAG cable, and then you can debug your design.

3. Push down the Chip_Rst push button on RocKid-EB2-1F4D to reset the chip.

About Agate Logic

Agate Logic is the global pioneer and leader of the innovative Adaptable Programmable Gate Array (APGA) technologies. The company offers a full spectrum of programmable logic devices, software design tools, intellectual property (IP) and design services. Focusing on multiple applications such as telecommunication equipments, industrial control systems and consumer products, we use the Chinese leading foundry partner, SMIC, to manufacture our chips to offer solutions tailored for China market.

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