UPduino Documentation

Release 0.1

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Contents

TinyVision.ai

1.1 UPDuino v3.0: PCB Design Files, Designs, Documentation

The UPDuino v3.0 is a small, low cost FPGA board. The board features an on-board FPGA programmer, flash and LED with _all_ FPGA pins brought out to easy to use 0.1" header pins for fast prototyping.

The tinyVision.ai UPduino v3.0 Board Features:

- Lattice UltraPlus ICE40UP5K FPGA with 5.3K LUTs, 1Mb SPRAM, 120Kb DPRAM, 8 Multipliers
- FTDI FT232H USB to SPI Device
- _ALL_ 32 FPGA GPIO on 0.1" headers
- 4MB SPI Flash
- RGB LED
- On board 3.3V and 1.2V Regulators, can supply 3.3V to your project
- Open source schematic and layout using KiCAD design tools
- Integrated into the open source APIO toolchain

Please see the wiki page for the changes that were implemented from v2.1. Some salient features are:

- 4 layer board with a solid ground plane, proper layout and decoupling for good signal integrity and FPGA operation
- Access to on-board 12MHz oscillator using a jumper (short R16)
- _All_ FPGA pins including LED driver pins are brought to 0.1" headers
- qSPI capabile: Short R24, R25
- tinyFPGA bootloader compatible (short R22/R23/C26, install 1.5K on R21, open R35/R36)

Please fill out the survey to suggest improvements to this board. We really appreciate the feedback and will make improvements as business permits!

Useful links:

- osresearch: large collection of very useful code and a good overview.
- UPduino FPGA tutorial using APIO
- A very detailed blog on implementing a RISCV in the FPGA

1.1.1 Introduction

The UPduino is a rather powerful device. Insert more information

First Steps

These are the first steps in getting started with the UPduino...

1.1.2 Tool Installation

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1.1.3 Specifications

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1.1.4 Usage

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