

STM32G4 Development Board

HARDWARE ARCHITECTURE BREIF

REV 0.0

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Revision History

Revision	Release Date	Comments
Rev 0.0		Initial Release. Pending validation. Pending bring-up instructions <small>*Still developing template for HAB documentation so may be lacking in areas*</small>

1. Introduction

This development board was created to test the various features of the STMicroelectronics STM32G4 microcontroller. This Hardware Architecture Brief (HAB) will briefly cover the relevant components of the printed circuit board assembly (PCBA) and address the basic bring-up procedure for the user.

2. Block Diagram

The main components of the development board are shown in Figure 1. Several GPIO were not connected to the I/O breakout headers. These pins were used for SPI, USB, serial wire debug, and external oscillator. Several ground pins will be dispersed amongst the I/O to help maintain signal integrity.

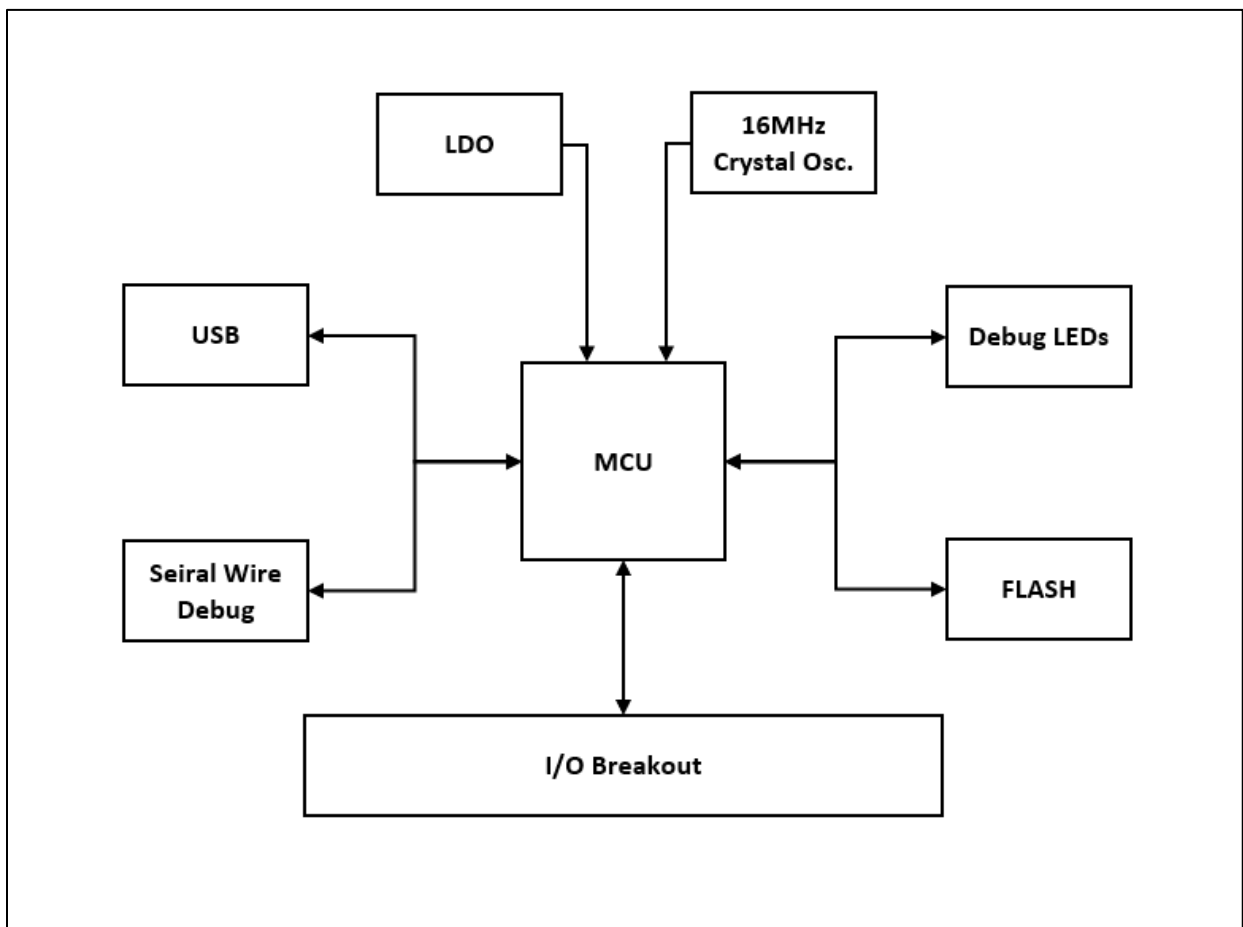


Figure 1. System Block Diagram

3. Design Goals

The widget's primary use is to help the user develop firmware for the STM32G4 series of microcontrollers. These microcontrollers include some unique peripherals such as analog comparators, op-amps, and DSP instructions. Other than designing a versatile, small footprint, platform for hardware and firmware development, there are no hard design goals or specifications for this project.

4. Schematic

The top-level schematic is shown in Figure 2. This figure highlights some of the useful configurations of the I/O breakout on the development board. Stepping down the hierarchy, Figure 3 shows the various components of the development board.

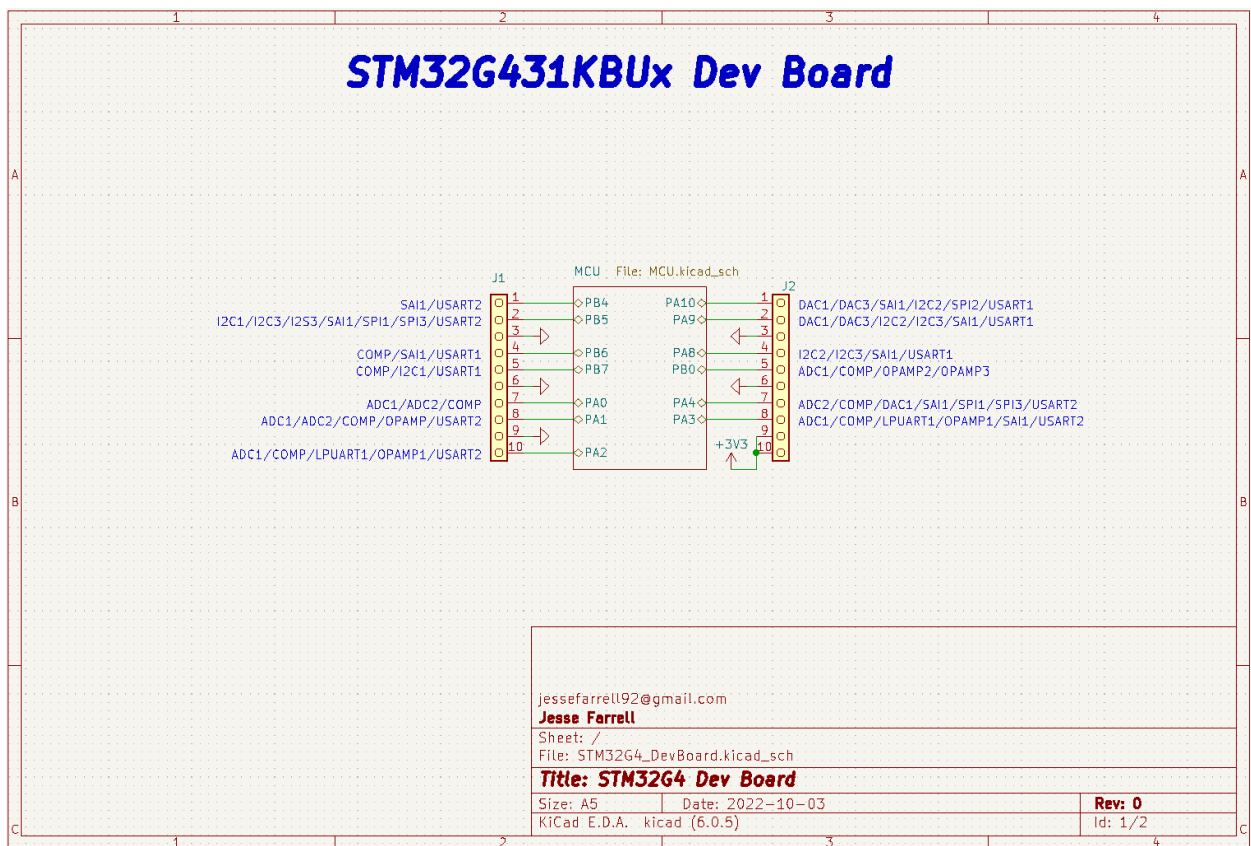


Figure 2. Schematic Top Level

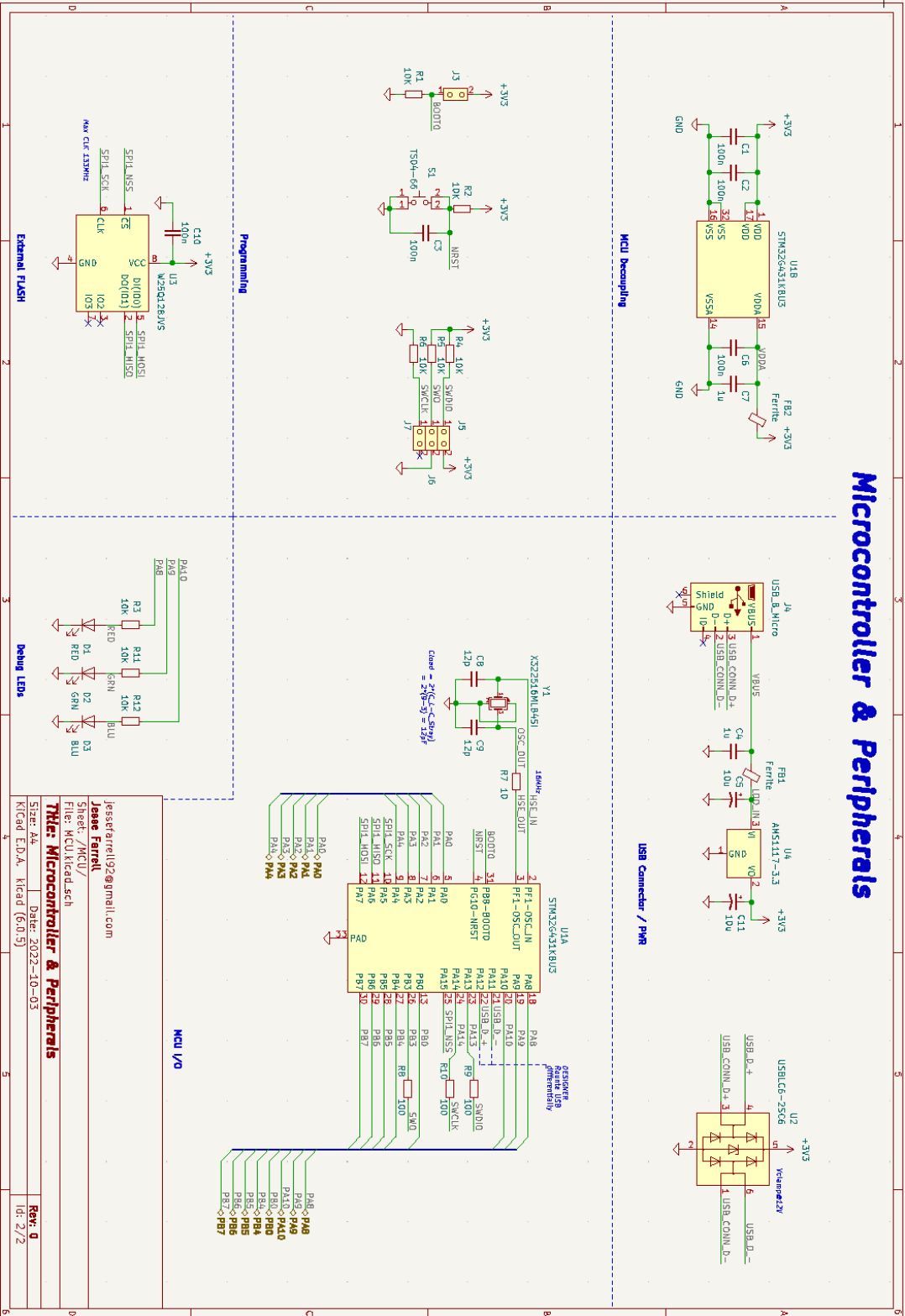


Figure 3. Schematic MCU & Peripherals

5. PCB Layout

In this section the PCBA layout will be briefly overviewed. See Figure 4 for the general board feature overview. The main components of the widget the end user should note are (a) three debug LEDs connected to PA10/PA9/PA8, (b) 16MHz external crystal, (c) external flash, and (d) USB connectivity.

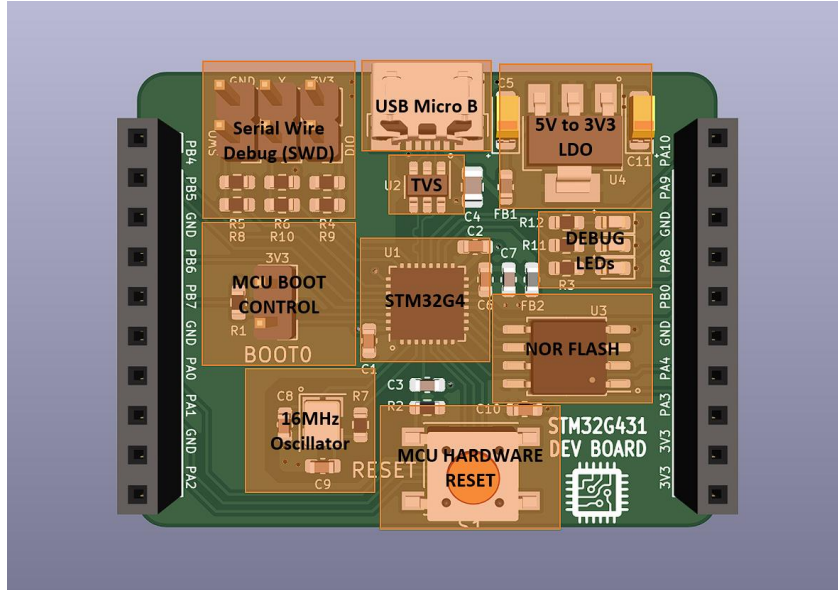


Figure 4. PCBA Overview

For a more in-depth overview of the board refer to the top and bottom copper layers shown in Figure 5, and Figure 6 respectively. Gerber's will be provided within the project directory either through GitHub or Hackaday.

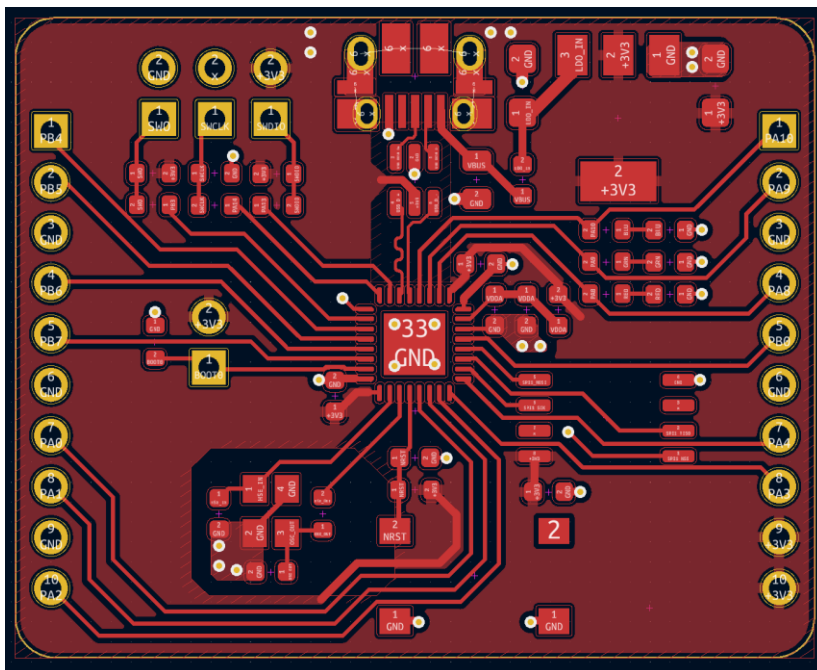


Figure 5. PCB Top Layer Copper

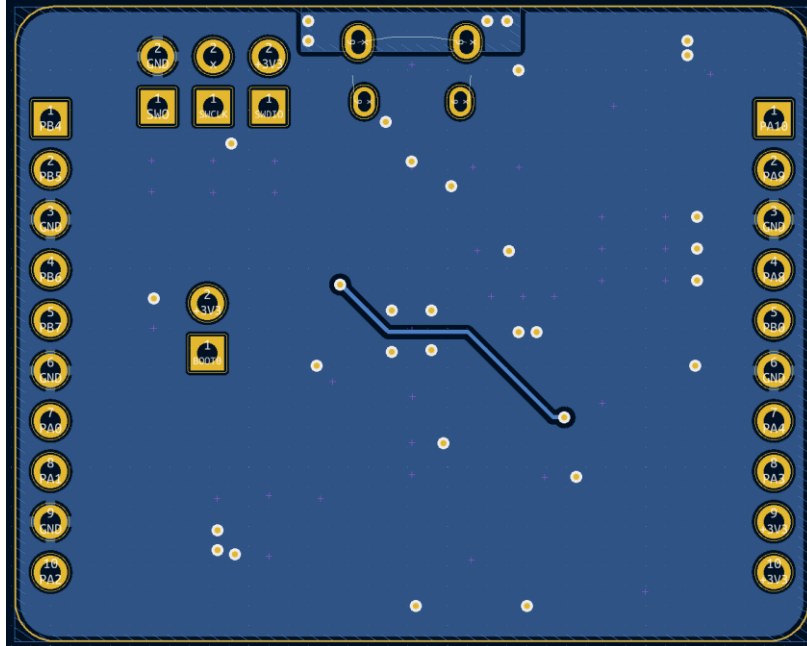


Figure 6. PCB Bottom Layer Copper

6. Quick Start Guide

To be written...

7. Validation

To be conducted...