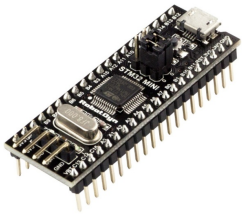
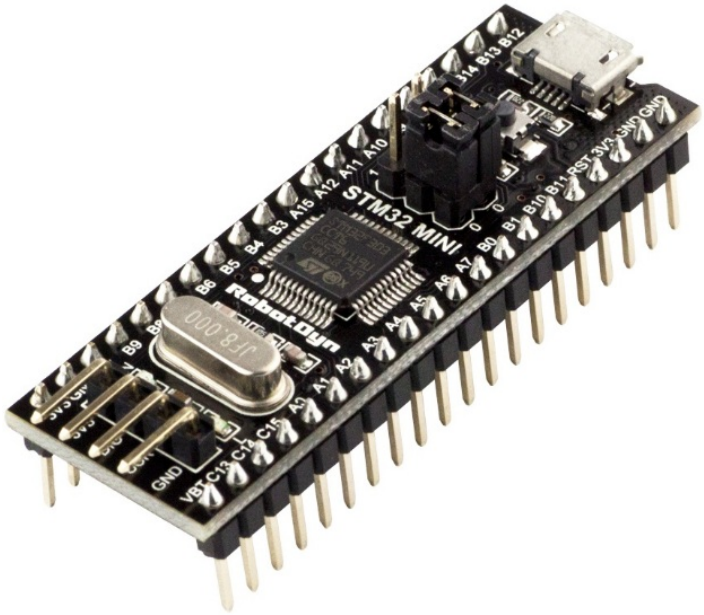


# Fastbit Embedded STM32F303CCT6 Nano Board User Manual



**Fastbit Embedded STM32F303CCT6 Nano Board User Manual**

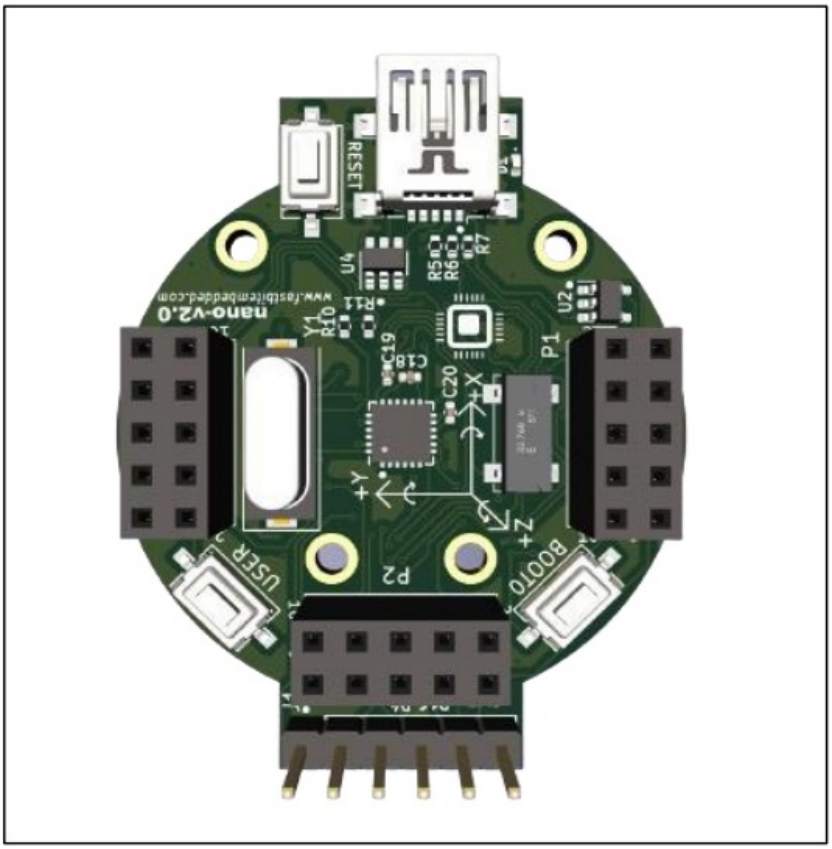


Contents



## Introduction

The Nano board allows users to easily develop applications with the STM32F303CCT6 micro controller with the Arm Cortex-M4 32-bit core.
Based on STM32F303CCT6, it includes one MPU6050 (is a 3-axis gyroscope and a 3- axis accelerator sensor), LEDs, push-buttons and a mini USB port.




## List of abbreviation

**SWD:** Serial Wire Debug
**LQFP:** Low Profile Quad Flat Package
**LSE:** Low Speed External
**HSE:** High Speed External

## Feature:

**The Nano offers the following features:**

- The STM32F303CCT6 micro controller features a 32-bit Arm Cortex-M4 with FPU core (72 MHz max), 256-Kbyte Flash memory, and 48-Byte DRAM in a LQFP48 package.
- **Three push buttons:**
  - SW1(reset), SW 2 (user button), SW(boot).
- **Four LEDs:**
  - D1 (red) for 3.3 V power on / off.
  - Three user LED, D2 (blue), D3 (green), D4 (red).
- **Board connectors:**
  - J1 SWD.
  - J2 USB-B Micro.
  - 2.54 mm pitch extension header for 30 pins of LQFP48 I/Os for quick connection to prototyping board and easy probing.
- Power-supply options: ST-LINK or USB VBUS.

## Hardware and layout

The Nano is designed around the STM32F303CCT6 micro controller in a 48-pin LQFP package.
**Figure 2** and **Figure 3** help users to locate STM32F303CCT6 and its peripherals (MPU6050, push buttons, LEDs).

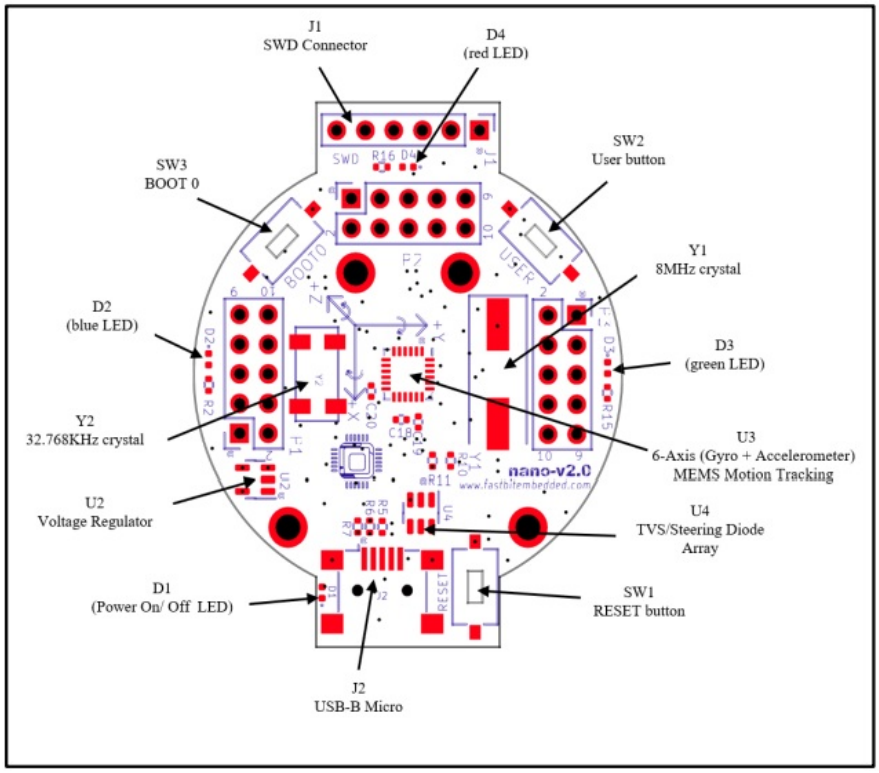



**Figure 2: Nano top layout**

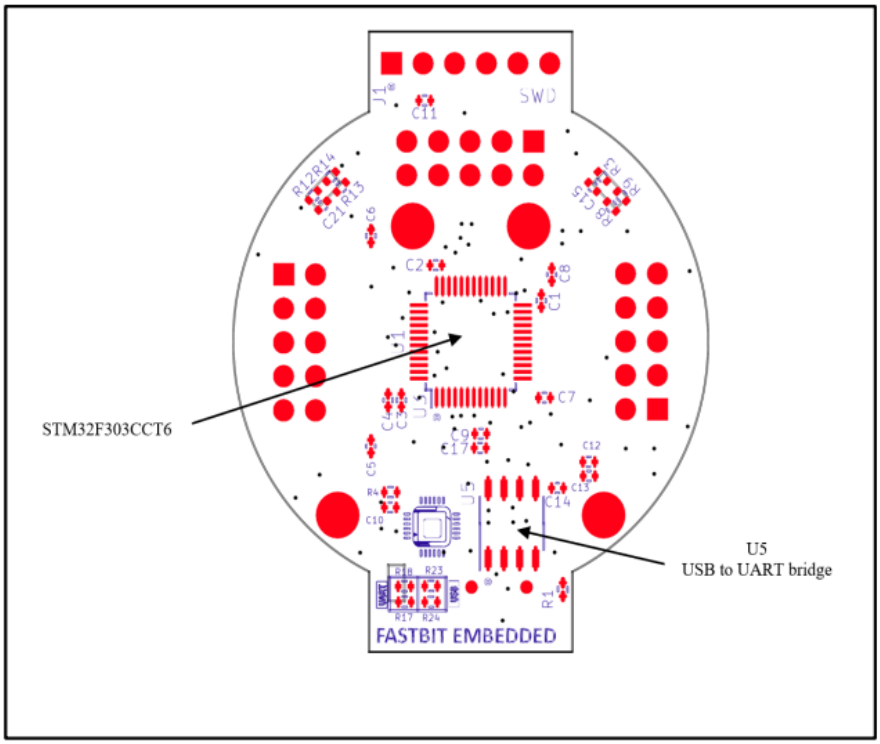



**Figure 3: Nano bottom layout**

### Power supply and power selection

- The power supply is provided either by the host PC through the USB cable or via the SWD port using an ST-Link connection.
    - U2 regulates the 5V input from USB to provide a steady 3.3V output.

**Note: Don’t connect external power supply to header sockets.**

### LEDs

- **D1 PWR:** red LED indicates that the board is powered.
- **User D2**: blue LED is a user LED connected to the I/O PA1 of the STM32F303CCT6.
- **User D3:** green LED is a user LED connected to the I/O PA2 of the STM32F303CCT6.
- **User D4**: red LED is a user LED connected to the I/O PA3 of the STM32F303CCT6.

### Push buttons

- **SW1 RESET:** Push button connected to NRST is used to RESET the STM32F303CCT6.
- **SW2 USER**: User button is connected to the I/O PA0 of the STM32F303CCT6.
- **SW3 BOOT0:** Push button connected to BOOT0 is used to toggle the boot mode of the STM32F303CCT6.

| BOOT0 | Boot Mode |
|---|---|
| 0 | Main flash memory |
| 1 | System memory |

**Table 1: Boot modes**

**Note:** By default, the micro controller runs the application code from the main flash memory. To change this behaviour, use the BOOT0 button.

1. Press the BOOT0 button and then press the reset button.
2. This action makes the micro controller to run the built-in boot loader from the system memory (i.e., micro controller enters the boot loader mode).

### Axis (Gyro + Accelerator) MEMS Motion Tracking

- MPU6050 sensor is a low power, low cost, and high-performance 6-axis (Gyro + Accelerator).
- The MPU6050 devices combine a 3-axis gyroscope and a 3-axis accelerometer on the same silicon die, together with an onboard Digital Motion Processor (DMP), which processes complex 6-axis Motion Fusion algorithms.
- The STM32F303CCT6 micro controller controls this sensor through the I2C interface.

### OSC Clock

- **LSE: OSC 32.768 kHz clock supply**
  Refers to an external oscillator running at 32.768 kHz. It typically provides a low frequency clock source for real-time clocks (RTC) or other timing-sensitive functions.

| Pin Name | Pin Function |
|---|---|
| PC14 | OSC32_IN |
| PC15 | OSC32_OUT |

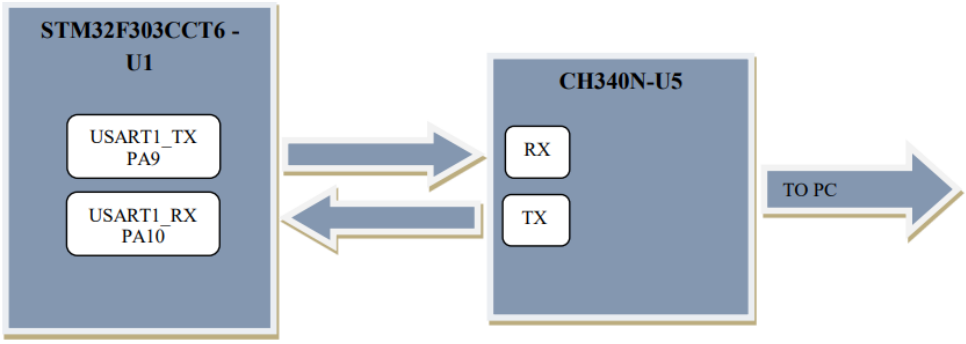
- **HSE: OSC 8 MHz clock supply**
  Refers to an external oscillator running at 8MHz. It provides a higher-frequency clock source suitable for driving the core processing unit or other high-speed peripherals.

| Pin Name | Pin Function |
|---|---|
| PF0 | OSC_IN |
| PF1 | OSC_OUT |

### USB to UART bridge

- The USB to UART bridge facilitates communication between a computer and a STM32F303CCT6, with Stuart and UART1Rx serving as the transmit and receive pins, respectively, connected to pins PA9 and PA10 on the micro controller.

| Pin Name | Pin Function |
|---|---|
| PA9 | UART1_Tx |
| PA10 | UART1_Rx |




## Documents / Resources

| | |
|---|---|
|  | Fastbit Embedded STM32F303CCT6 Nano Board [pdf] User Manual<br>STM32F303CCT6 Nano Board, STM32F303CCT6, Nano Board, Board |

## References

- FASTBIT EMBEDDED TECHNOLOGIES PRIVATE LIMITED
- FASTBIT EMBEDDED TECHNOLOGIES PRIVATE LIMITED
- User Manual