NUCLEO-F070RB

Affordable and flexible platform to ease prototyping using a STM32F070RBT6 microcontroller.

To compile a program for this board using Mbed CLI, use **nucleo_f070rb** as the target name.

Board Partner

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Overview

The STM32 Nucleo board provides an affordable and flexible way for users to try out new ideas and build prototypes with any STM32 microcontroller line, choosing from the various combinations of performance, power consumption and features.

The Arduino™ connectivity support and ST Morpho headers make it easy to expand the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields.

The STM32 Nucleo board does not require any separate probe as it integrates the ST-LINK/V2-1 debugger/programmer.

Microcontroller features

- STM32F070RBT6 in LQFP64 package
- ARM®32-bit Cortex®-M0 CPU
- 48 MHz max CPU frequency
- VDD from 2.4 V to 3.6 V
- 128 KB Flash
- 16 KB SRAM
- GPIO (51) with external interrupt capability
- 12-bit ADC with 16 channels
- RTC
- Timers (8)
- I2C (2)
- USART (4)
- SPI (2)
- USB 2.0 full-speed

Nucleo features

- Two types of extension resources
  - Arduino Uno Revision 3 connectivity
  - STMicroelectronics Morpho extension pin headers for full access to all STM32 I/Os
- On-board ST-LINK/V2-1 debugger/programmer with SWD connector
  - Selection-mode switch to use the kit as a standalone ST-LINK/V2-1
- Flexible board power supply
  - USB VBUS or external source (3.3 V, 5 V, 7 - 12 V)
  - Power management access point
- User LED (LD2)
- Two push buttons: USER and RESET
- USB re-enumeration capability: three different interfaces supported on USB
  - Virtual Com port
  - Mass storage (USB Disk drive) for drag'n'drop programming
  - Debug port

Board pinout

Pins Legend

Labels usable in code

PX_Y	MCU pin without conflict	XXX	Arduino connector names (A0, D1, ...)
PX_Y	MCU pin connected to other components See **PeripheralPins.c** (link below) for more information	XXX	LEDs and Buttons (LED_1, USER_BUTTON, ...)

Labels not usable in code (for information only)

XXX	Serial pins (USART/UART)	XXX	AnalogIn (ADC) and AnalogOut pins (DAC)
XXX	SPI pins	XXX	CAN pins
XXX	I2C pins		
XXX	PWMOut pins (TIMER n/c[N]) n = Timer number c = Channel N = Inverted channel	XXX	Power and control pins (3V3, GND, RESET, ...)

You can find more details on the available pins and labels in the **PeripheralPins.c** and **PinNames.h** files.

These files can be found in:

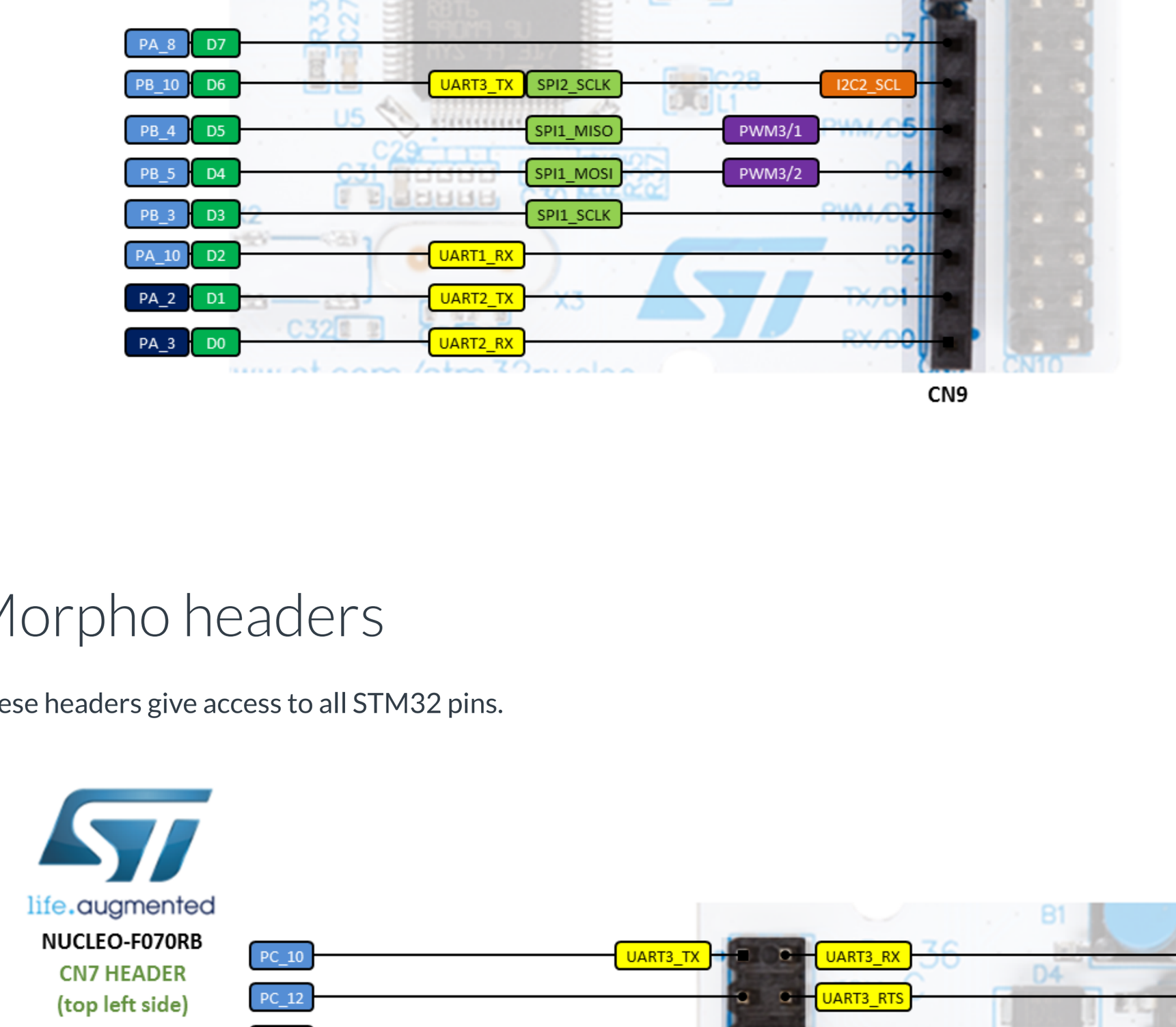
- ARMmbed/mbed-os repository on GitHub (**up-to-date** version, used with **mbed CLI commands**)

https://github.com/ARMmbed/mbed-os/blob/master/targets/TARGET_STM/TARGET_STM32F0/TARGET_NUCLEO_F070RB/

- mbed-dev library in developer.mbed.org (source files of the mbed library used on **mbed compiler IDE**)

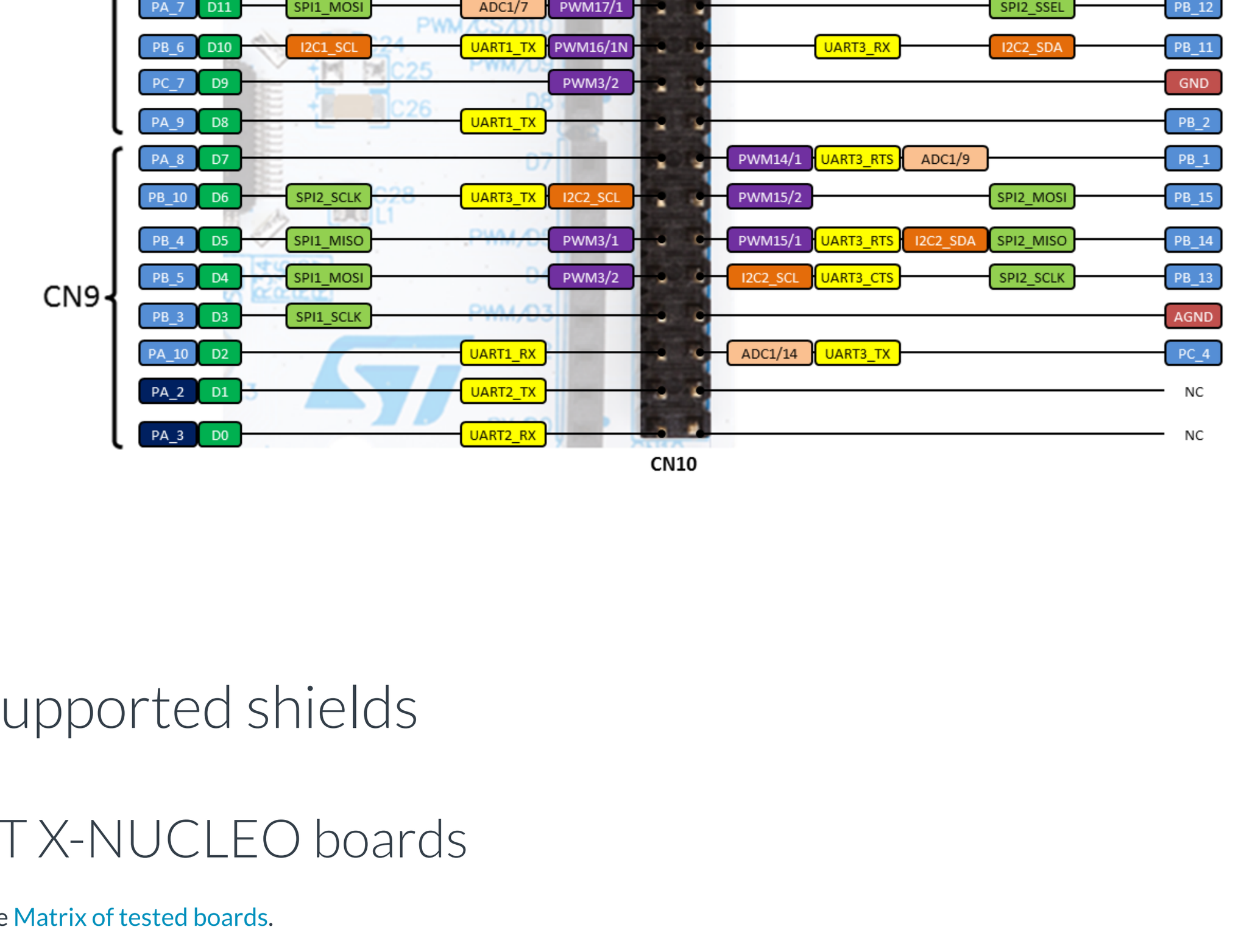
https://developer.mbed.org/users/mbed_official/code/mbed-dev/file/default/targets/TARGET_STM/TARGET_STM32F0/TARGET_NUCLEO_F070RB/

Arduino-compatible headers



Morpho headers

These headers give access to all STM32 pins.



Supported shields

ST X-NUCLEO boards

See Matrix of tested boards.

Other Non-ST boards

See here.

Getting started

This video shows how to get started with ARM mbed Integrated Development Environment using STM32 Nucleo platform:

Nucleo ST-LINK/V2 driver installation and firmware upgrade

- Install the ST-LINK/V2 driver before connecting the Nucleo board to your PC the first time. Follow this **LINK** for all details.
- For optimum performances, ensure that the Nucleo ST-LINK/V2 firmware is upgraded to the latest version. Follow this **LINK** for all details.

Technical references

For more information, please refer to:

- STM32F070RB microcontroller
- Nucleo board
- SDK changes log

Known limitations

The following section describes known limitations of the platform. Note that general issues are tracked into the mbed repository available on GitHub.

- On Nucleo 64-pins boards, the D0 and D1 pins are not available per default as they are used by the STLink Virtual Comm Port. More information HERE

Tips and Tricks

Find more information in ST WIKI pages.

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Mbed OS support

- Mbed OS 2
- Mbed OS 5.10
- Mbed OS 5.11
- Mbed OS 5.12
- Mbed OS 5.13
- Mbed OS 5.14
- Mbed OS 5.15
- Mbed OS 5.4
- Mbed OS 5.5
- Mbed OS 5.6
- Mbed OS 5.7
- Mbed OS 5.8
- Mbed OS 5.9
- Mbed OS 6.0
- Mbed OS 6.1
- Mbed OS 6.10
- Mbed OS 6.11
- Mbed OS 6.12
- Mbed OS 6.13
- Mbed OS 6.14
- Mbed OS 6.15
- Mbed OS 6.2
- Mbed OS 6.3
- Mbed OS 6.4
- Mbed OS 6.5
- Mbed OS 6.6
- Mbed OS 6.7
- Mbed OS 6.8
- Mbed OS 6.9

Example programs

Mbed 2 deprecated
Seeed_BlueBot_demo
6
37612
Nucleo board with Seeed bot and bluetooth shields demo.
bluetooth , bot , Nucleo , Seeed
Last updated: 21 May 2015

Mbed 2 deprecated
IDW01M1_Cloud_IBM
25
11753
Connect through Wifi to IBM MQTT cloud https://quickstart.internetofthings.
Last updated: 24 Nov 2016

Mbed 2 deprecated
HelloWorld_IDW01M1v2
13
9733
Simple test application for the STMicroelectronics X-NUCLEO-IDW01M1 Wi-Fi expansion board.
Nucleo , stm32 , Wi-Fi , X-NUCLEO-IDW01M1
Last updated: 16 Jan 2017

Mbed 2 deprecated
STM32_ADC_InternalChan...
9
49840
ADC internal channels read example.
Internal Channels , stm32 , temperature sensor , VBAT
Last updated: 17 Aug 2017

Mbed 2 deprecated
HelloWorld_IHM01A1
38
1830
Simple test application for the STMicroelectronics X-NUCLEO-IHM01A1 Stepper Motor Control Expansion Board.
Last updated: 13 Mar 2017

Mbed 2 deprecated
HelloWorld_IHM02A1
27
3280
Simple test application for the STMicroelectronics X-NUCLEO-IHM02A1 Stepper Motor Control Expansion Board.
Last updated: 13 Mar 2017

You need to log in to post a discussion

Discussion topics

Topic		Replies	Last post
STM32F070RB_Frist	Nucleo-F070RB	0	20 Jan 2017 by yuzhou Luo

Questions

1 answer
Cutting the PCB causes clock issues Ryan Walmsley
7 years, 3 months ago

Nucleo-F070RB