

UM10956

OM29110 NFC's SBC Interface Boards User Manual

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User manual
COMPANY PUBLIC

Document information

Info	Content
Keywords	OM29110, NFC, Demo kit, Raspberry Pi, BeagleBone, Arduino
Abstract	This document is the user manual of the OM29110 NFC's SBC Interface Boards.



Revision history

Rev	Date	Description
1.1	20160502	<ul style="list-style-type: none">Fix connection issue on BBB interfaceSecurity status changed into COMPANY PUBLIC
1.0	20151203	First official release of the document

Contact information

For more information, please visit: <http://www.nxp.com>

1. Introduction

The present document describes the OM29110 Interface boards, which are used to connect NFC's demo boards (e.g. OM5578 related to PN7150 NFC Controller) to Single-Board-Computer (like Raspberry Pi, BeagleBone...).

This document first describes the NFC generic interface implemented by the OM29110 interface boards.

Then, it gives printed circuit boards details.

2. Generic NFC Interface

2.1 Interface description

The Generic NFC interface exposes Single-Board-Computer physical interfaces required by the NFC's boards. Those are:

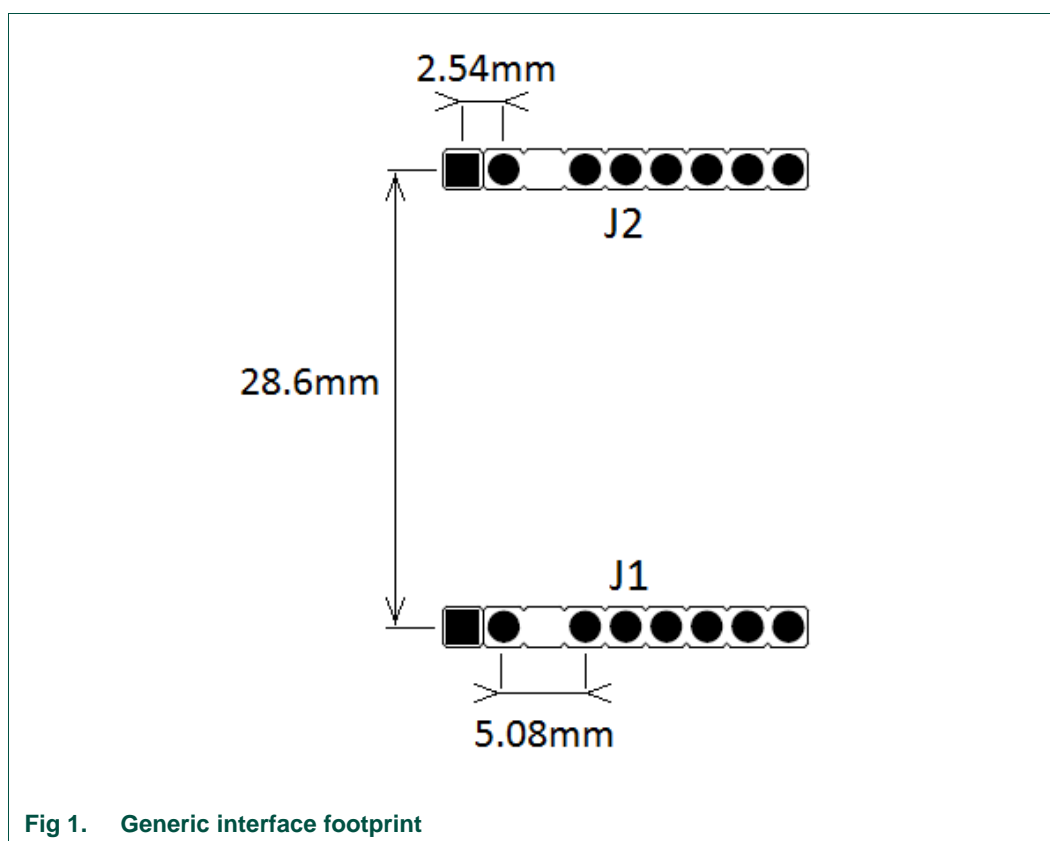
- Usual power supplies (3.3V, 5.0V)
- Usual IC interfaces (I²C, SPI, UART)
- Generic GPIOs (can be used for different purposes depending on IC feature (field detect, interrupt, reset...))
-

2.2 Hardware description

In order to offer a robust and unambiguous assembly with NFC's board 2 raw of 2+6 pins are used.

The connector model used is AGSP1-BCZ1.3 from Antelec (refer to [1]).

Below *Fig 1* shows the connectors footprint position.



2.3 Pinning description

Table 1. J1 – Supplies and GPIO

#	Name	Purpose
1	3.3V	3.3 V supply to the NFC board from the SBC
2	5V	5V supply to the NFC board from the SBC
3	Vout	Supply from the NFC board to the SBC (RF harvesting case)
4	GND	Ground
5	GPIO0	General Purpose IO
6	GPIO1	General Purpose IO
7	GPIO2	General Purpose IO
8	GPIO3	General Purpose IO

Table 2. J2 – Host interface

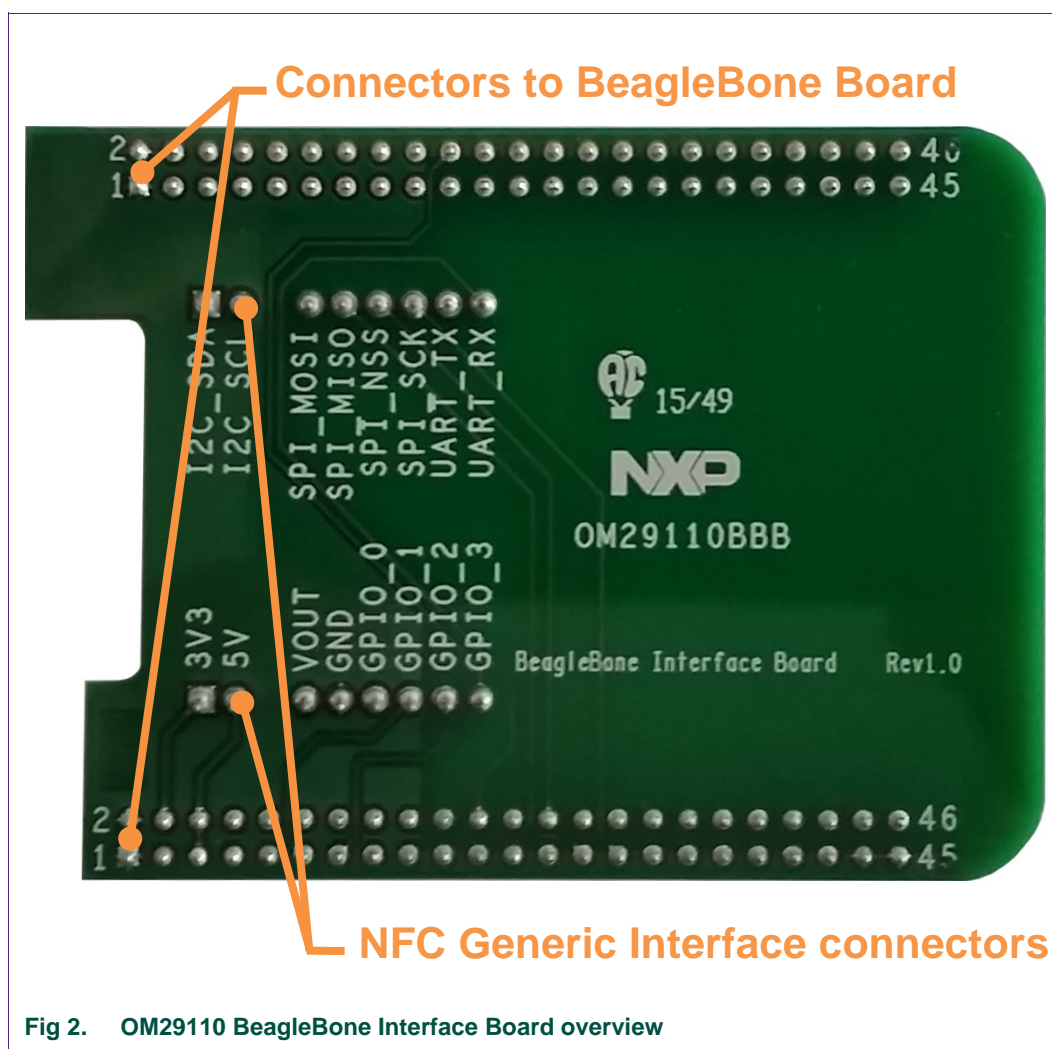
#	Name	Purpose
1	I2C_SDA	I2C data line
2	I2C_SCL	I2C clock line
3	SPI_MOSI	SPI Master Output, Slave Input
4	SPI_MISO	SPI Master Input, Slave Output
5	SPI_NSS	SPI Slave Select
6	SPI_SCKI	SPI Serial Clock
7	UART_TX	SBC GPIO pin
8	UART_RX	SBC GPIO pin

3. OM29110 BeagleBone Interface Board

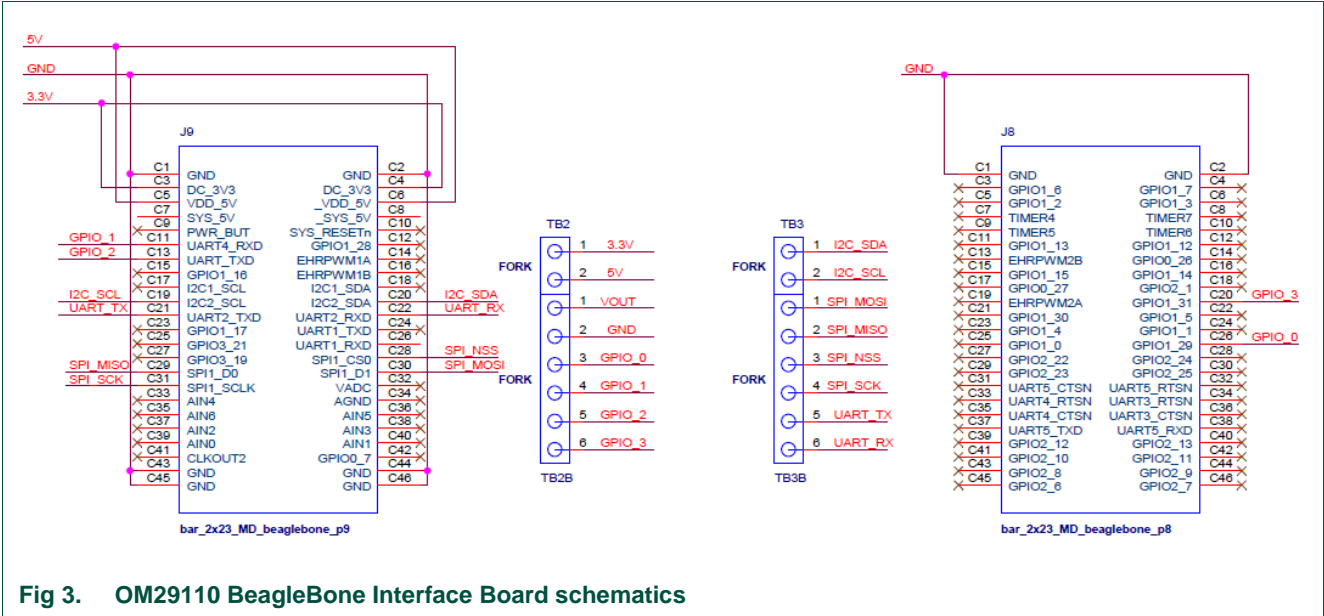
3.1 Overview

The BeagleBone Interface Board offers support for connection to BeagleBone board (refer to [3] for more details).

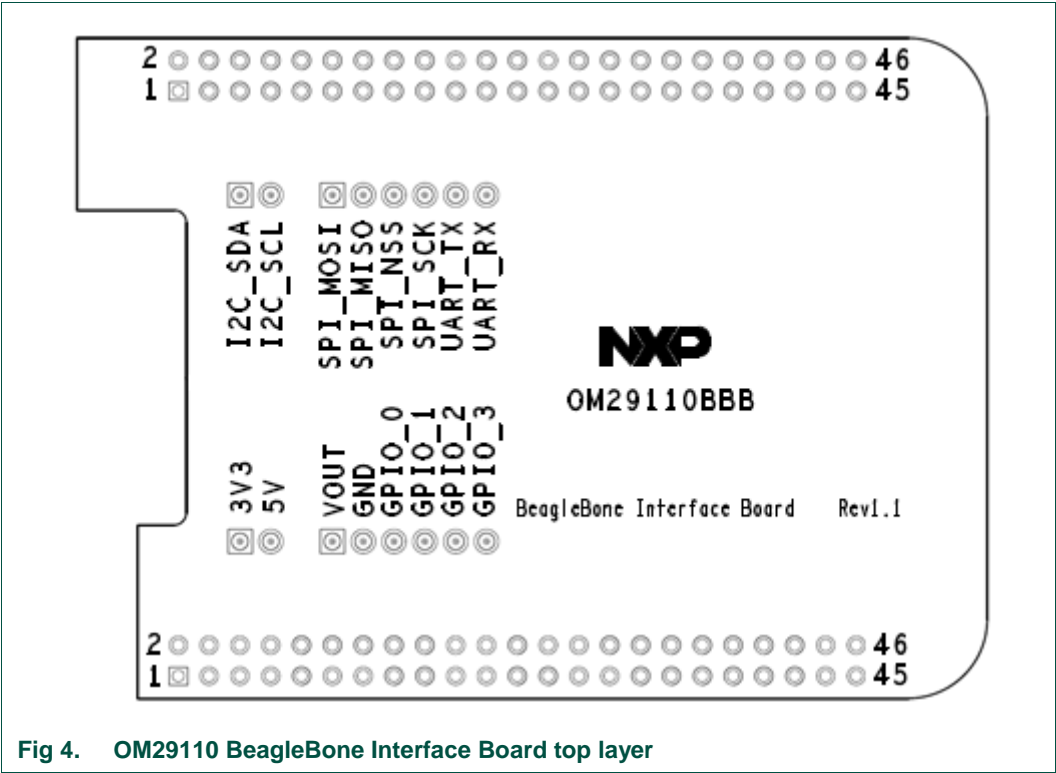
As such it integrate the NFC generic interface connectors allowing NFC's board to be plugged on it, as well as connectors to be assembled on top of the BeagleBone board.



3.2 Schematics



3.3 Layout

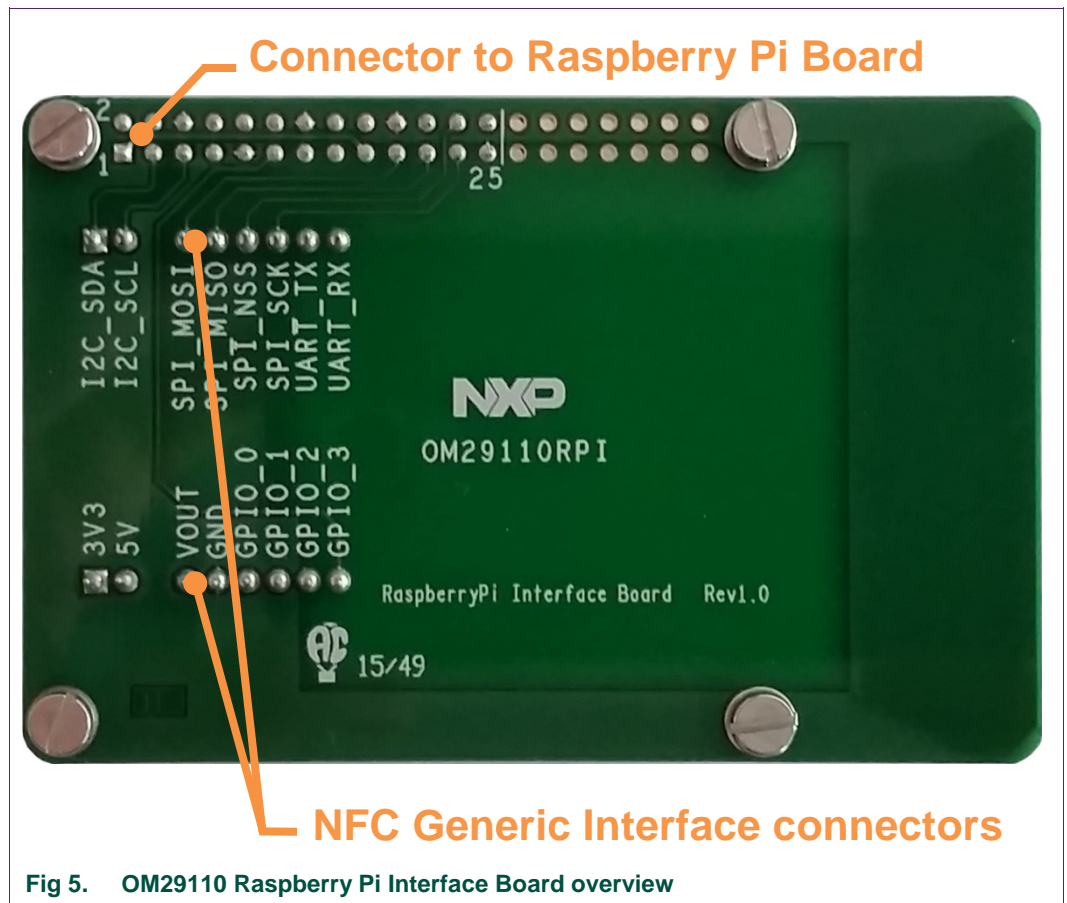


4. OM29110 Raspberry Pi Interface Board

4.1 Overview

The Raspberry Pi Interface board offers support for connection to Raspberry Pi board (refer to [2] for more details).

As such it integrate the NFC generic interface connectors allowing NFC's board to be plugged on it, as well as connectors to be assembled on top of the BeagleBone board.



4.2 Schematics

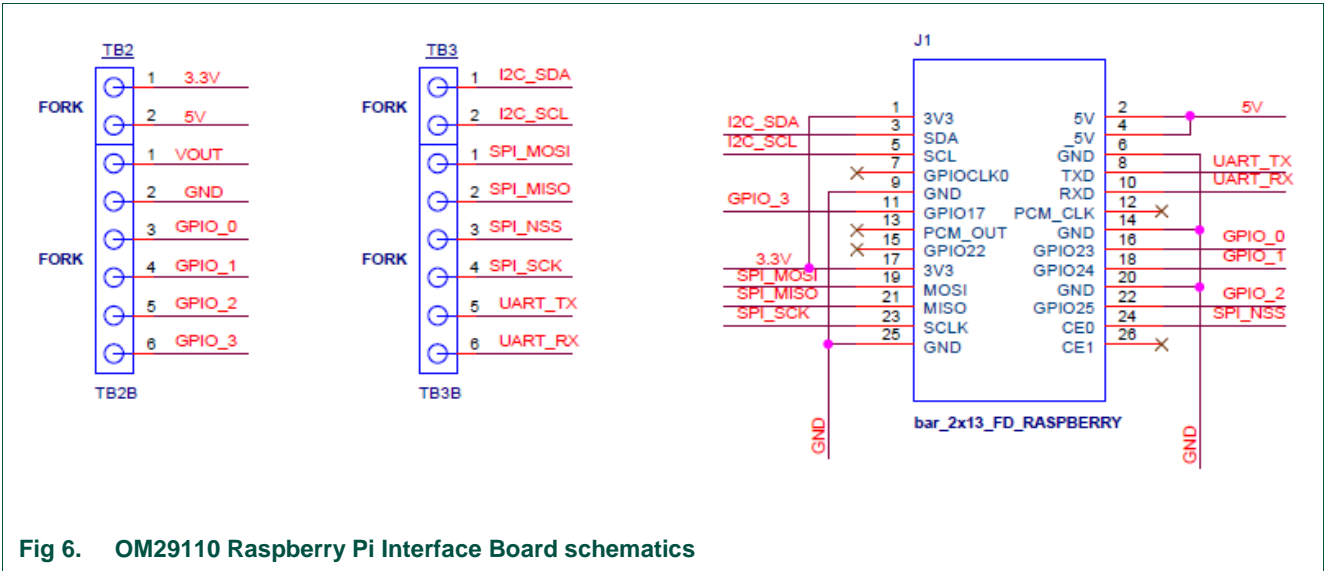


Fig 6. OM29110 Raspberry Pi Interface Board schematics

4.3 Layout

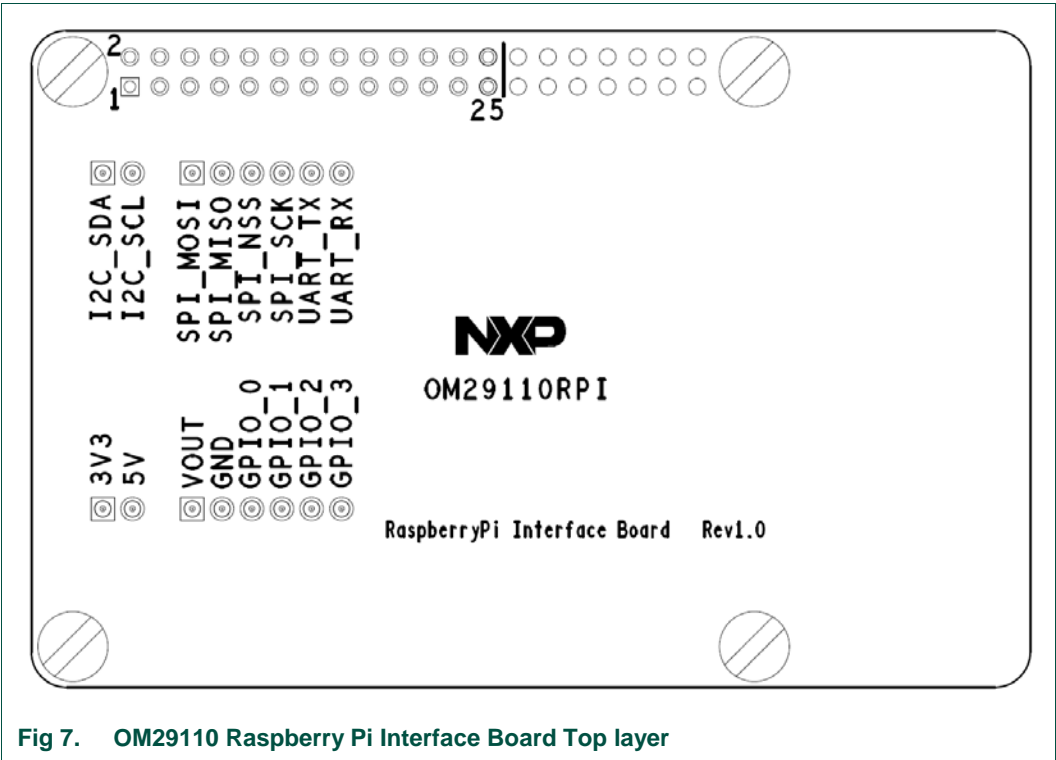


Fig 7. OM29110 Raspberry Pi Interface Board Top layer

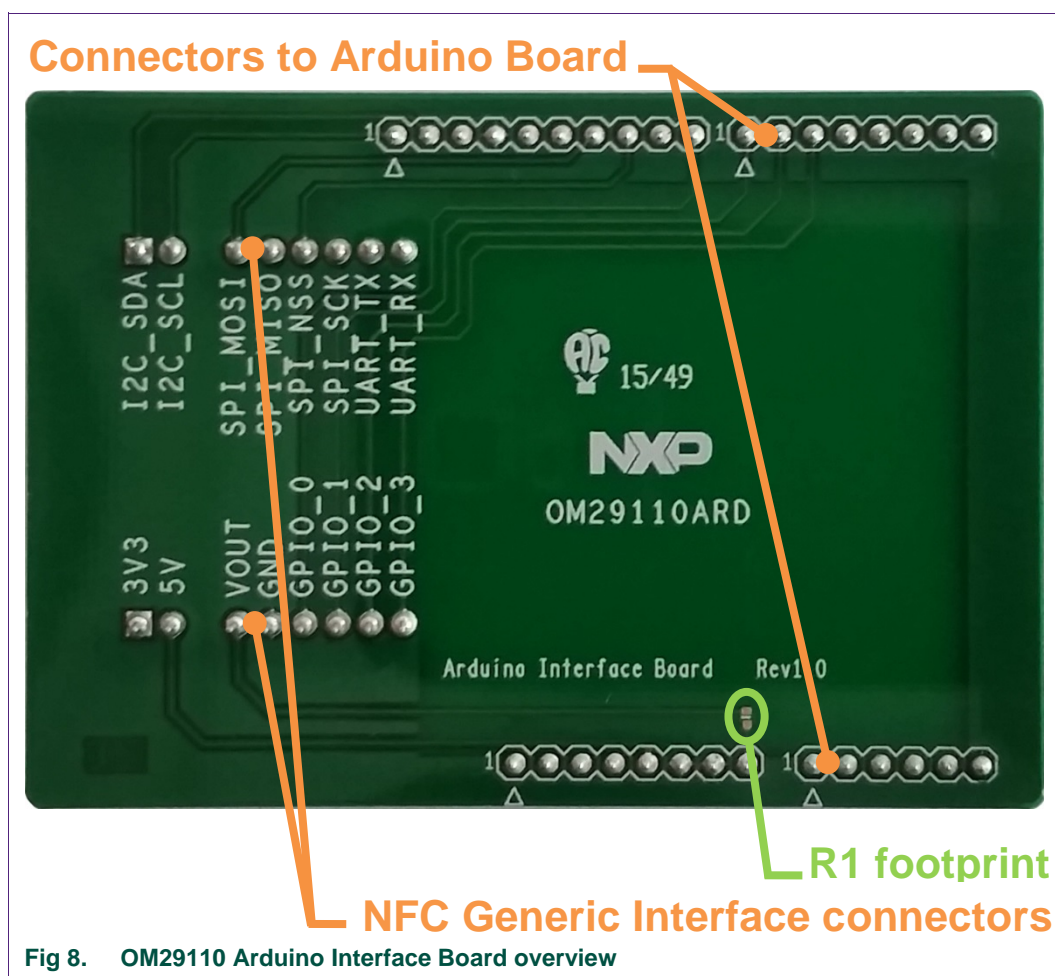
5. OM29110 Arduino Interface Board

5.1 Overview

The Arduino Interface board offers support for connection to any SBC board implementing Arduino™ connectors compatible with the 'Arduino UNO' platform (see [4]).

As such it integrates the NFC generic interface connectors allowing NFC's board to be plugged on it, as well as connectors to be assembled on top of an Arduino compatible Controller board like for instance LPC824 MAX LPCXpresso board (see [5]).

The board includes a R1 footprint between the VOUT pin of the NFC Generic connector and the VIN pin of the Arduino connector. The purpose of it is to allow powering the Arduino compatible platform from the NFC Board in case both support it (for instance in the case of RF harvesting).



5.2 Schematics

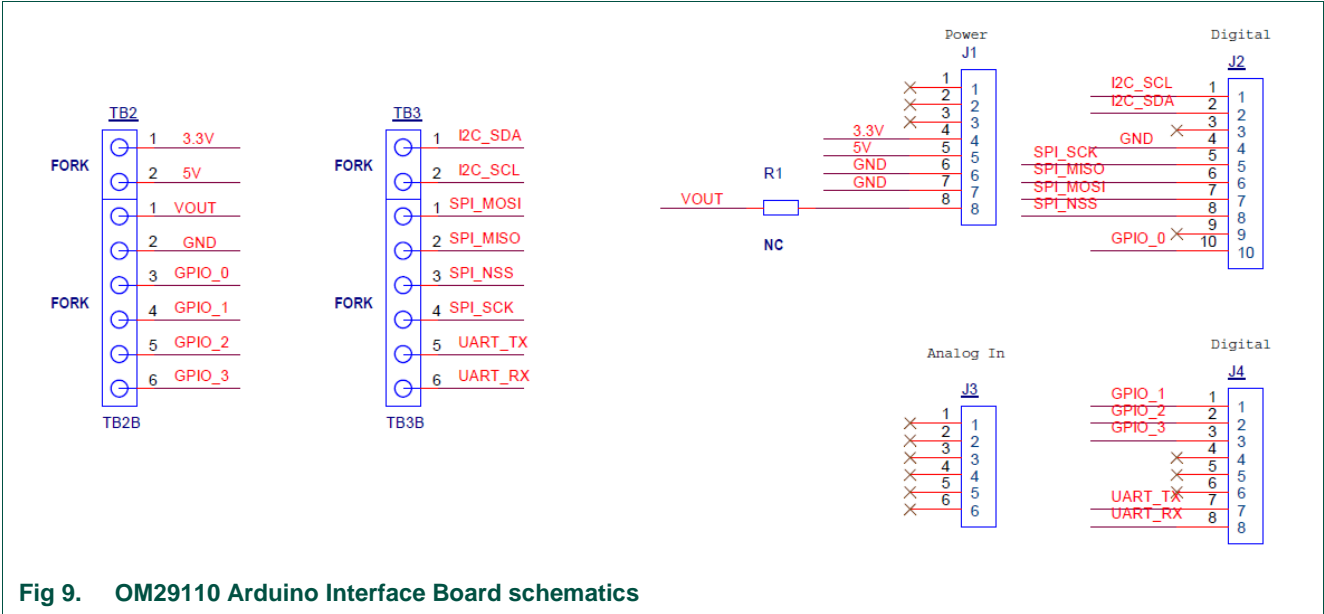


Fig 9. OM29110 Arduino Interface Board schematics

5.3 Layout

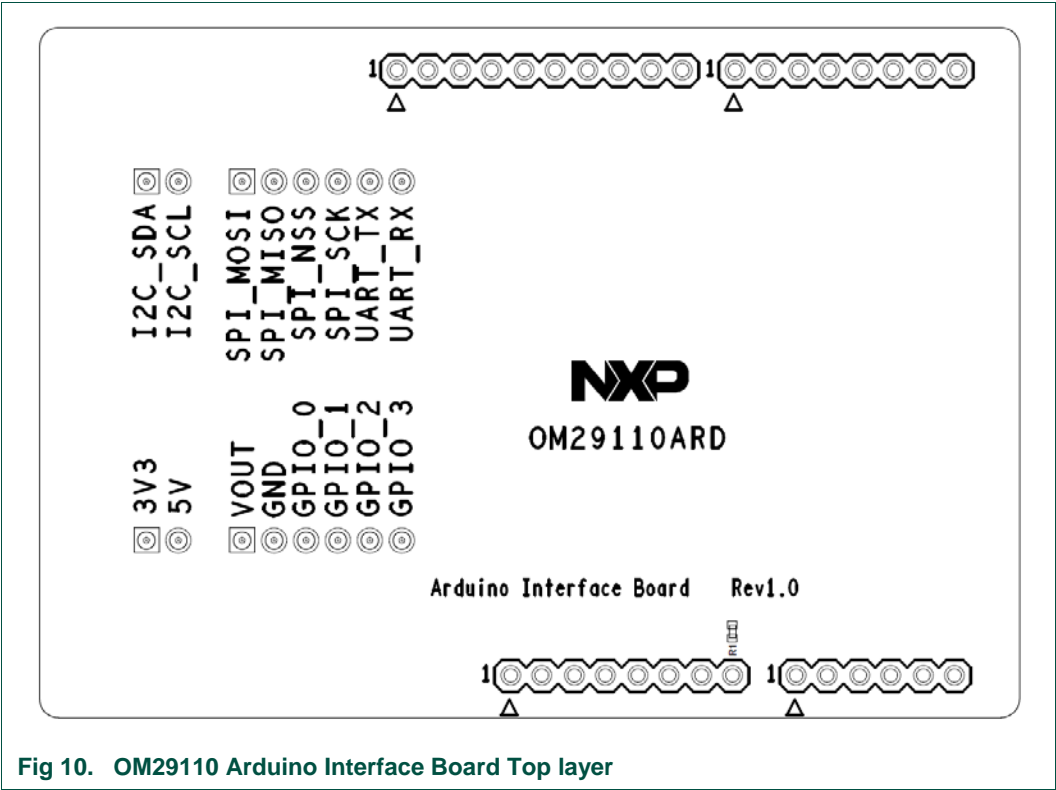


Fig 10. OM29110 Arduino Interface Board Top layer

6. References

- [1] Antelec AGSP1 connector:
www.nxp.com/redirect/antelec.fr/en/product.php?id=264&t=0

- [2] The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games.
For more information about it please visit <http://www.raspberrypi.org/>

- [3] The BeagleBone is a low-cost, community-supported development platform for developers and hobbyists. It is a credit-card-sized Linux computer that connects to the Internet and runs software such as Android 4.0 and Ubuntu. With plenty of I/O and processing power for real-time analysis provided by an ARM® processor.
For more information about it please visit <http://www.beagleboard.org/bone>.

- [4] The Arduino Uno is a microcontroller board with 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button.
For more information about it please visit
www.nxp.com/redirect/arduino.cc/en/Main/ArduinoBoardUno.

- [5] The LPC824 MAX LPCXpresso board with NXP's ARM Cortex-M0+ microcontroller has been designed to make it as easy as possible to get started with Cortex-M0+.
For more information about it please visit
http://www.embeddedartists.com/products/lpcxpresso/lpc824_xpr.php.

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8. Contents

1.	Introduction	3
2.	Generic NFC Interface.....	4
2.1	Interface description	4
2.2	Hardware description	4
2.3	Pinning description	5
3.	OM29110 BeagleBone Interface Board.....	6
3.1	Overview	6
3.2	Schematics.....	7
3.3	Layout	7
4.	OM29110 Raspberry Pi Interface Board	8
4.1	Overview	8
4.2	Schematics.....	9
4.3	Layout	9
5.	OM29110 Arduino Interface Board.....	10
5.1	Overview	10
5.2	Schematics.....	11
5.3	Layout	11
6.	References	12
7.	Legal information	13
7.1	Definitions	13
7.2	Disclaimers.....	13
7.3	Licenses	13
7.4	Trademarks	13
8.	Contents.....	14

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