

An SIC4310 Module with UART Interface and power harvesting

Features Summary

SIC4310 : RFID Tag IC with UART Interface

- Compatible with NFC tag type 2
- 228-byte EEPROM (196-byte user memory)
- Direct data transfer between RFID and UART
- Operating from either RF-harvesting or external supply
- Up to 10mA current sourcing to external circuit (depends on harvested power from RF)
- UART speed from 9600 to 115200 bps

Supported Protocols

- ISO14443A @106kbps

Hardware Features

- Closed Coupling Antenna : size 45 x 30 mm
- Dimension : 48 mm x 48 mm

Power Options

- fully passive mode or 3.3V external supply mode

Interfaces

- SIC4310 interface : UART 115.2 kbps

Operating Conditions

- Storage temperature from -40 to 85°C
- Operating temperature from -40 to 85°C
- Input operating voltage 3.3V

Information Support

- Protocol Information
- Demonstration Android Application
- Software/Firmware source code are available per request



SIC4310-HV, An SIC4310 Demonstration Kit with UART Interface

General Description

The SIC4310-HV is a module of SIC4310, a high-performance ISO14443A RFID tag IC with UART interface from Silicon Craft Technology. SIC4310-HV can connect directly to the PC or other components via UART interface. With completed interface pins and antenna, SIC4310-HV helps user step over the hardware limit and develop the product using SIC4310 faster.

The power source of SIC4310 can be selected to be the external 3.3V power supply or harvesting power from the RF. The harvested power, not only for supplying SIC4310 itself, but it can also source the power to the external circuit up to 10mA. This feature makes SIC4310 to be the "NFC Enabler" by sourcing the power from NFC phone to the external circuit as well as communicating the data in the same time. Therefore, SIC4310 is the best match for the fully-passive battery-less applications.

All support information as well as the demonstration Android applications and are already provided on the website. However, Software and Firmware source code are available per request.

Applications

- Firmware Upgrade via NFC
- NFC Bridge for embedded system products
- NFC powering sensor
- Metering/Vending machine
- Smart Interactive Poster
- Smart Home Appliances
- Wireless industrial machine interface
- Customized, proprietary system RFID
- Smart toy/ Videogames affiliate
- Display-less home appliances

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Revision History

Revision	Date	Description/ Change / Updated / Comment	Hardware version	Product Code
1.0	August 2013	1 st Release	SIC4310- HV v5.0	P102HS4310HV-01

Ordering Information

Product Code	Package
P102HS4310HV-01	An SIC4310 Module with UART Interface and power harvesting

PRELIMINARY

1. Functional Overview

The SIC4310-HV is an SIC4310 Module with UART Interface and power harvesting. Its main purpose is to give the “plug-and-play” experience about the RFID Tag IC with UART Interface “SIC4310”.

Figure 2 shows a simplified schematic diagram of the SIC4310-HV. The RF connection topology of the SIC4310-HV is a close-coupling antenna network. The power supply can be either an external 3.3V or the harvested power from RF*.

Demonstration software for Android phone is able to download at Google Play store. It can be used as a guideline based on the applications. The sample GUI pictures of the demonstration software are illustrated in **Figure 1**.

*For supplying external 3.3V to SIC4310-HV, please read the application note “Supplying the external power to SIC4310” to understand how to supply the power to SIC4310.

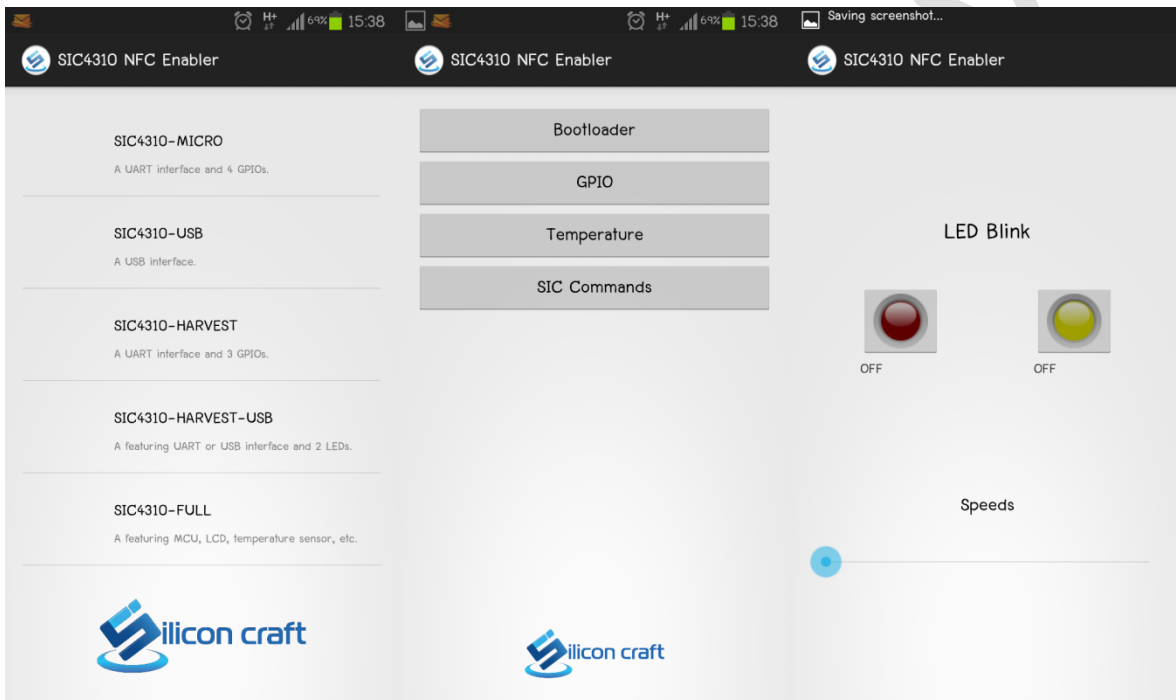


Figure 1 The GUI pictures of the demonstration software

PREVIEW

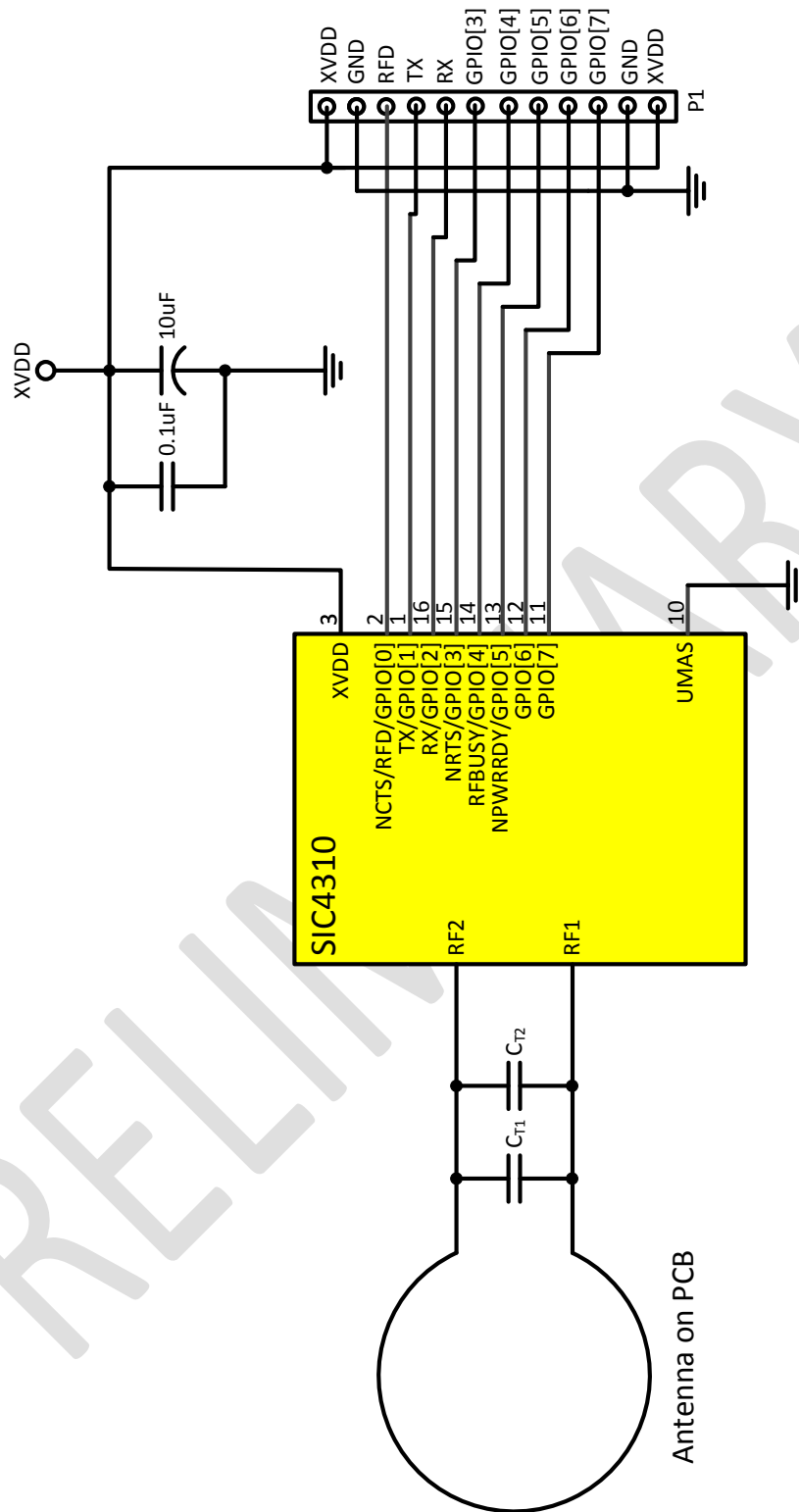
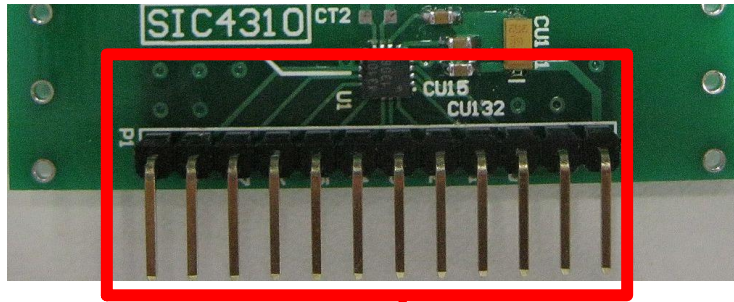


Figure 2 Simplified schematic diagram of SIC4310-HV

2. Port and Pin Selection



P1 : Interface Port

Figure 3 SIC4310-HV interface port.

Table 1 Port and Jumper in SIC4310-HV		
Port/Jumper	Name	Note
P1	Interface port	<ul style="list-style-type: none"> <input type="checkbox"/> XVDD <input type="checkbox"/> GND <input type="checkbox"/> RFD <input type="checkbox"/> TX <input type="checkbox"/> RX <input type="checkbox"/> GPIO[3] <input type="checkbox"/> GPIO[4] <input type="checkbox"/> GPIO[5] <input type="checkbox"/> GPIO[6] <input type="checkbox"/> GPIO[7] <input type="checkbox"/> GND <input type="checkbox"/> XVDD

PRELIMINARY

3. Specifications

3.1 Absolute maximum rating

Stresses above those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to the absolute maximum rating conditions for an extended period of time may affect the device reliability. Only one absolute maximum rating can be applied at a time.

Table 2 Absolute maximum rating	
Parameter	Rating
Power supply input voltage	3V to 3.6V
Operating Temperature Range	-40 °C to +85 °C
Storage Temperature Range	-40 °C to +85 °C

3.2 Electrical characteristic

Table 3 Operating condition						
Parameter	Description	Min	Typ	Max	Unit	Conditions
VDD	Input Supply Voltage	3	3.3	3.6	V	
I _{XVDD}	Supply current at XVDD pin			10	mA	<ul style="list-style-type: none"> Read range = 0 cm Up to the power supplied from the NFC phone
V _{GPIO}	GPIO Voltage		3.3		V	

Table 4 Performance Characteristic						
Parameter	Description	Min	Typ	Max	Unit	Conditions
Read range	Read range		TBD		cm	
UART Speed	UART Communication Speed	9.6		115.2	Kbit/s	

Table 5 Physical Characteristic				
Parameter	Description	Value	Unit	Conditions
Dimension	Width	48	mm	
	Length	48	mm	
	Height	TBD	mm	
Weight	Weight	TDB	gram	

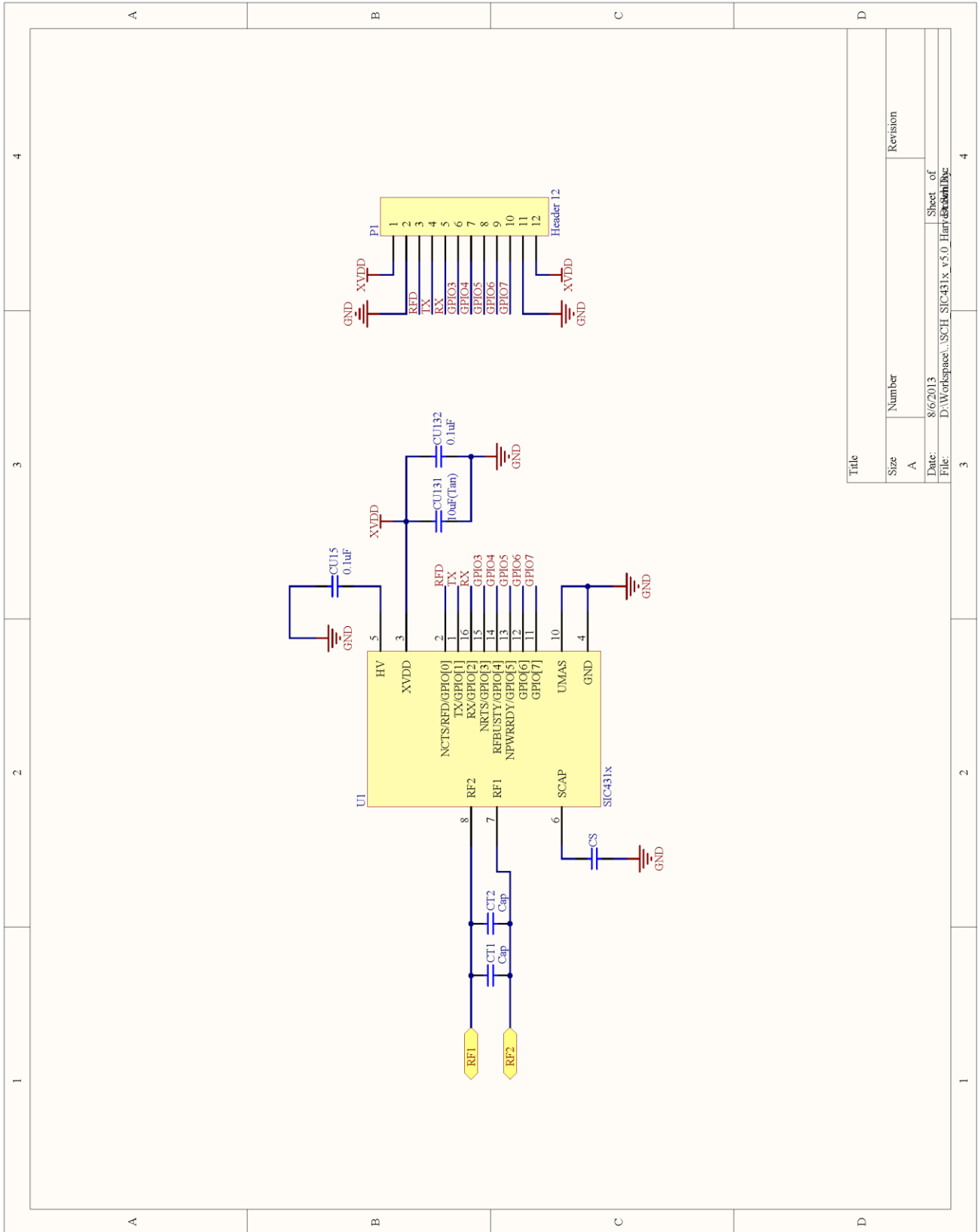
4. Usage

Before operating the SIC4310-HV, user shall check the following lists to ensure the correct operation.

4.1 Power setup

If SIC4310 is set to **use the external 3.3V supply**, user shall follow the instructions in “Special configuration for using external supply voltage” application note before power-up the SIC4310-HV.

PRELIMINARY



Title		Revision	
Size	Number		
A			
Date:	8/6/2013	Sheet of	
File:	D:\Workspace\SCH_SIC431x v5.0_Harry	8/28/2013	

Figure 4 Schematic Diagram

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