USR-C216 Hardware Manual

File version: 1.0.0.01

Content

1. Product Overview

1.1. Dimension

Dimension size as follow(unit: mm, error ±0.3mm):
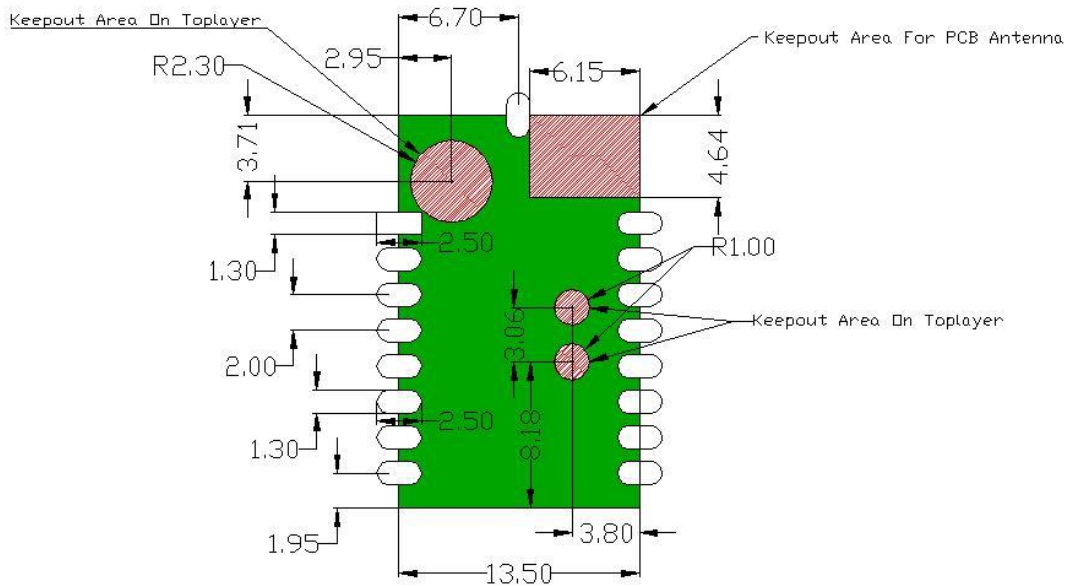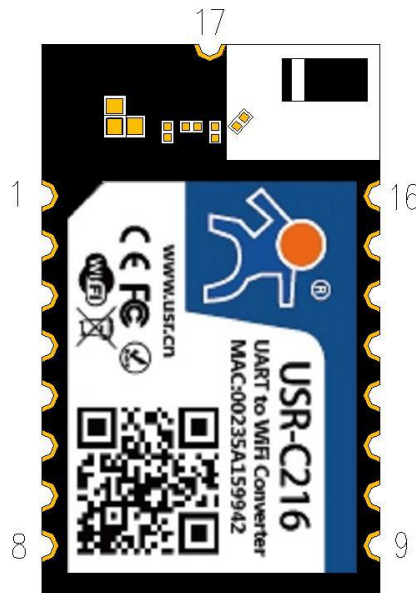

Figure 1 Dimension

1.2. Encapsulation Size

Figure 2 Encapsulation size

1.3. Pin Definition

PIN	Name	Signal Type	Definition
1	GPIO1	NC	Not available
2	GPIO2	NC	Not available
3	GPIO3	I/O	GPIO, don't support now
4	GPIO4	I/O	GPIO, don't support now
5	UART0_ TX	O	Serial port TX pin
6	UART0_ RX	I	Serial port RX pin
7	UART0_ CTS	I	Serial port CTS pin
8	UART0_ RTS	O	Serial port RTS pin
9	SPI_IRQ	I/O	Control RS485 pin
10	nReset	I	Reset module and take effect in low level. Press at least 100ms
11	nReady	O	Indication pin for module working normally, take effect in low level and can connect to external LED
12	nReload	I	Press 0.5~3s to enter Simple Config or Airkiss mode, press over 3s to restore default setting
13	nLink	O	Indication pin for module WIFI linking successfully, take effect in low level and can connect to external LED
14	WPS	I/O	WPS function pin, don't support now
15	VCC	P	3.3V VCC
16	GND	P	Power ground
17	RFIO	O	Radio-frequency signal output

Figure 3 Pin definition

2. Hardware Design
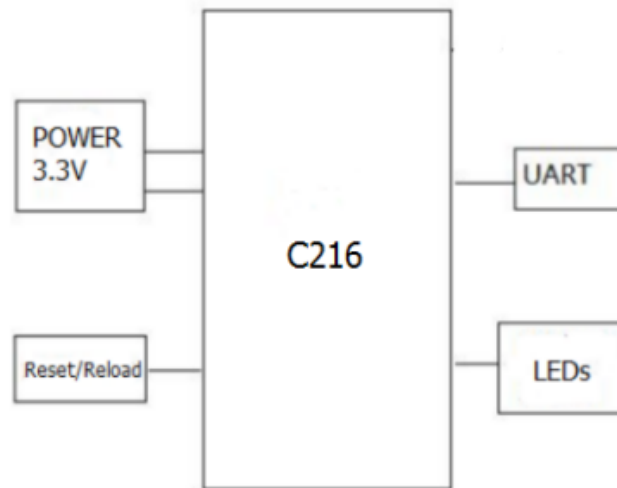
2.1. Typical Connection

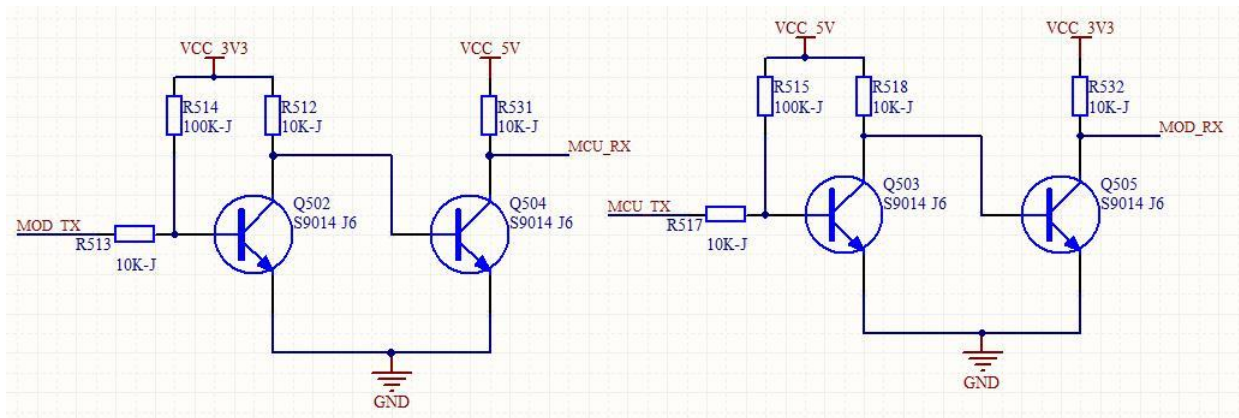
Figure 4 Typical connection

2.2. Power Interface

Switching power supply is recommended. Working voltage VCC range from 3.0V~3.6V, 3.3V is recommended. Power the module by main power pin, pin interface is in parallel with appropriate energy-storage capacitance and high frequency capacitance.

When user design the peripheral circuit for C216, should ensure: 1.Provide adequate power supply. 2.Voltage range from 3.0V~3.6V. 3.Voltage fluctuate within 200mv. 4.Place large capacitance after DC/DC or LDO to prevent external power supply voltage dropping during pulse current period.
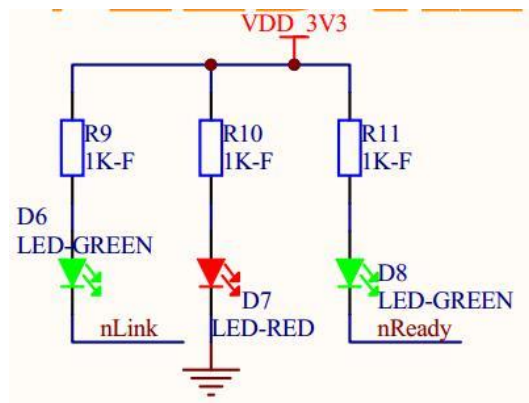
2.3. UART Interface

When communicate to MCU with 3.3V, just connecting TXD of module to RXD of MCU and RXD of module to TXD of MCU.

When communicate to MCU with 5V, switching circuit is necessary. Switching circuit diagram as follows:

Figure 5 UART interface

2.4. LED

Module provide LED output and can display module working status by LED status. Connecting to 1K Ohm pull-up resistor to 3.3V is recommended. User can also drive LED by triode to improve LED luminance.
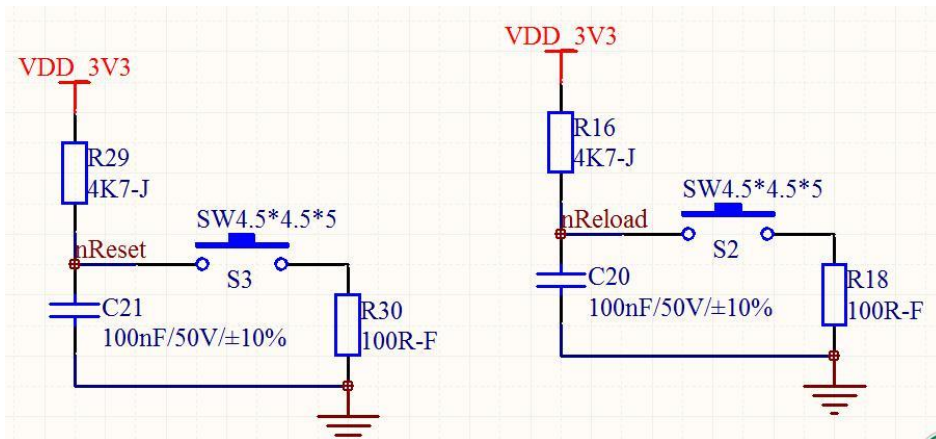

Figure 6 LED interface

2.5. Reset and Reload

nReload: nReload pin can connect to external button or configuration pin. Press button 1s to 3s to enter simplelink mode, press over 3s to restore default settings. nReload pin should connect to external 4.7k-10k Ohm pull-up resistor.

nReset: Resetting the module and taking effect in low level. nReset pin connect to internal 100K Ohm pull-up resistor to 3.3V. Press over 0.5s and release to reset the device.

Circuit diagram as follows:

Figure 7 Reset and Reload

2.6. Antenna

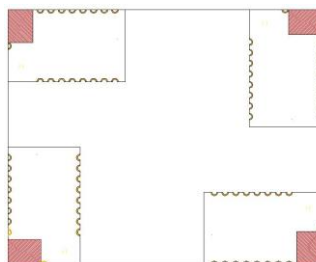USR-C216 have internally installed antenna USR-C216a and external installed antenna USR-C216b.

2.6.1.USR-C216a

User need follow these rules when adopt USR-C216a solution:

1. On PCB board, user can't place component on antenna part as follow red line area:

Figure 8 USR-C216a antenna part

2. Keep antenna away from metal, maintain a distance at least 10 mm from surrounding high components.
3. Antenna can't be covered by metal shell and keep at least 10mm away from plastics shell.
4. When user place C216 on test board, please place C216 on the area as follow Figure 9 to reduce influence to antenna.

Figure 9 USR-C216a area

2.6.2. USR-C216b

User need reserved π type match circuit to output radio-frequency signal. RF line need guarantee 50ohm impedance matching. User can refer to below reserved match circuit:
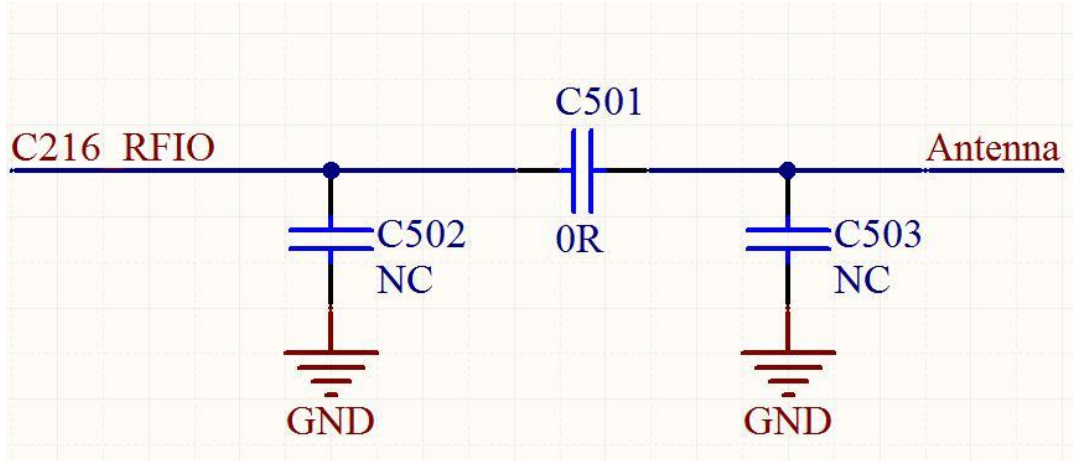

Figure 10 USR-C216b reserved match circuit

3. Contact

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5. Update History

2017-09-26   V1.0.0.01 created.