

USR-GPRS232-7S3 Hardware Manual

Ver 1.2



Contents

1. Hardware Introduction.....	3
1.1. Pin Defination.....	3
1.2. Dimensions.....	4
1.3. Evaluation Kit.....	5
2. Hardware Reference Design.....	7
2.1. Power Interface.....	7
2.1.1. DC5-18V.....	7
2.1.2. DC 3.6~4.4V.....	7
2.2. UART Interface.....	8
2.3. Turn On/Off.....	错误! 未定义书签。
2.4. Work/Link Indicator.....	9
2.5. Audio Interface.....	10

1. Hardware Introduction

1.1. Pin Defination

Below is the pin diagram

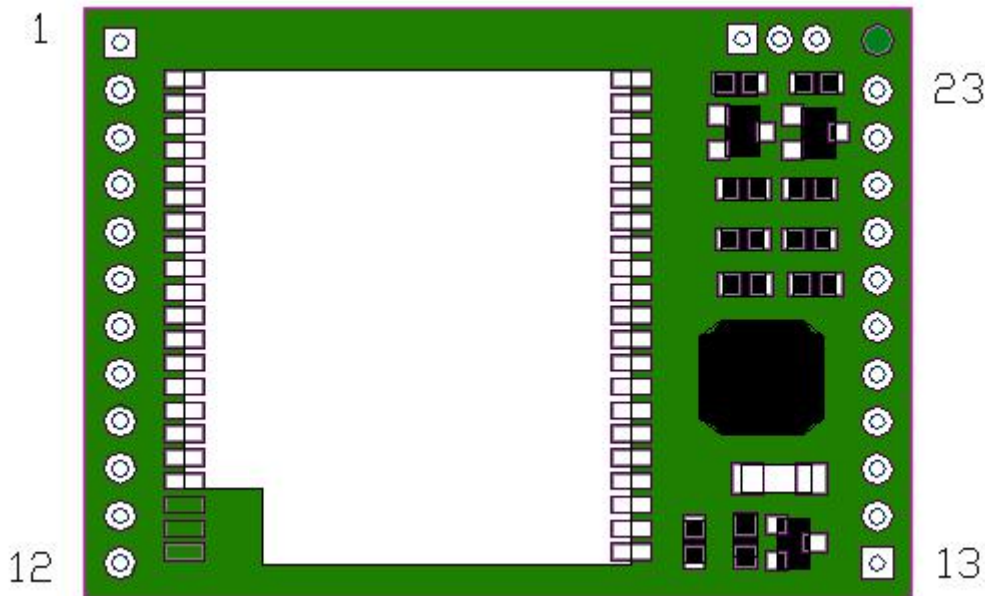


Figure 1 Pin diagram

Pin Description

No.	Pin	Definition	Description
1	LINKA	Network link A	Whether link A connect. Output high level: link connected Output low level: link disconnected
2	LINKB	Network link B	Whether link B connect. Output high level: link connected Output low level: link disconnected
3	NC	Not connected	Not connected
4	NC	Not connected	Not connected
5	UTXD2	Not connected	Not connected
6	UTXD1	UART transmit	Transmit pin, data sent from UART to user's device (2.8V,can connect to 3.3V directly)
7	URXD1	UART receive	Receive pin, data sent from user's device to module UART (2.8v,can connect to 3.3V directly)
8	URXD2	Not connected	Not connected
9	WORK	Work indicator	Pulse for working
10	POWKEY	Turn on/off	Turn on/off, default disable. Details refer to chapter 2.3
11	GND	Power GND and signal GND	- for module power
12	GND		

13	DC5~16V	power	5-16V power. If you use 4V power(connect to VCAP),do not use this pin.
14	DC5~16V		
15	GPRS	GPRS link indicator	Output high level when module connects to GPRS network. Output low level when module disconnects to GPRS network.
16	VCAP	DC 4V power	Connect 470 μ F bypass capacitor. Can't use with DC5-16 simultaneously.
17	RS485_EN	RS485	Enable RS485 function, used for switching transmit/receive. Pull up to transmit, pull down to receive.
18	RELOAD	Reload	1-3s restore to user default setting. Above 6s restore to factory default setting.
19	RESET	Reset	Reset, module should restart when this pin is pulled down.
20	MIC_P	Audio input P	Audio signal input
21	MIC_N	Audio input N	
22	RCV_P	Audio output P	Audio signal output
23	RCV_N	Audio output N	

1.2. Dimensions

Unit: mm

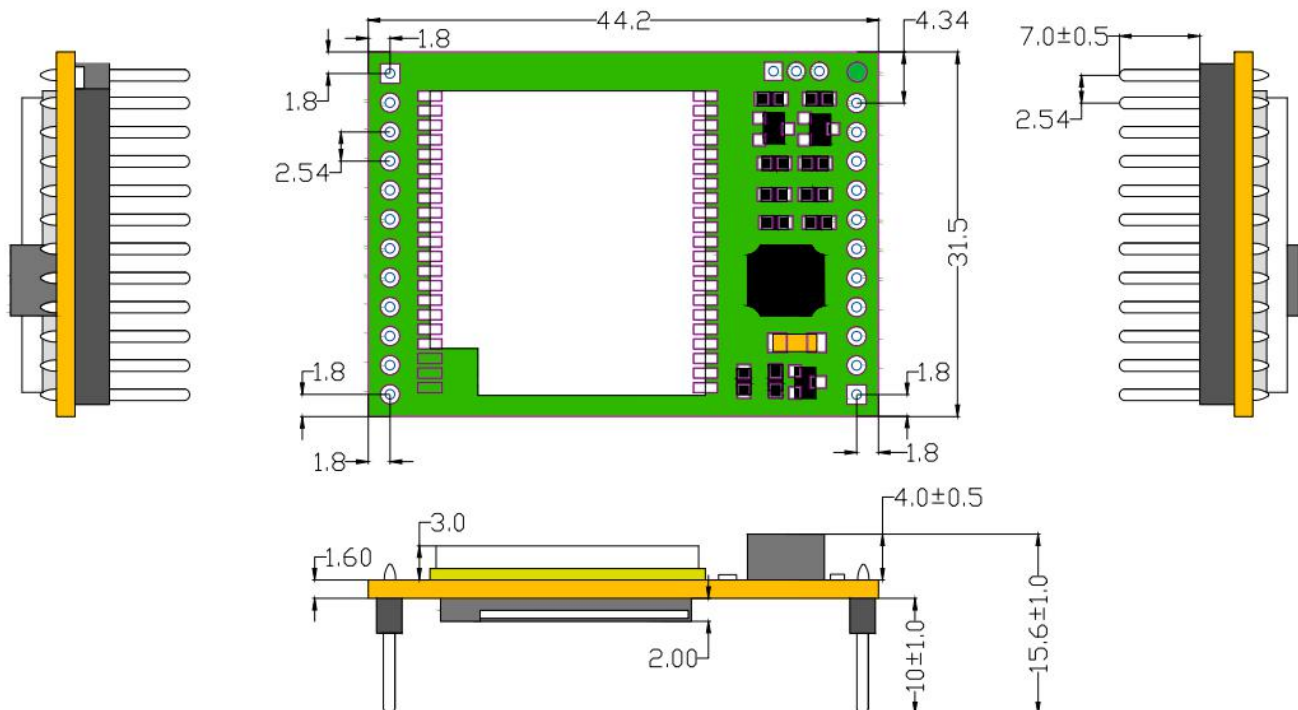


Figure 2 dimensions

1.3. Evaluation Kit

We supply evaluation kit for convenient testing. User can use RS232 for communication. PCB diagram as follows.

- 1) 5-16V power for Pin 1. Pin 3 output 3.6-4.4V
- 2) Indicator:

Indicator	status
POWER	On: power on Off: power off
TXD1	Blink : data is transmitting Off: no data
RXD1	Blink: data is receiving Off: no data
LINK 1	On: Link A has connected Off: Link A has disconnected
LINK 2	On: Link B has connected Off: Link B has disconnected
WORK	Blink : module is working Off: module stops working

- 3) Pay attention to the module direction. There are 11 pins in left side and 12 pins in right side.

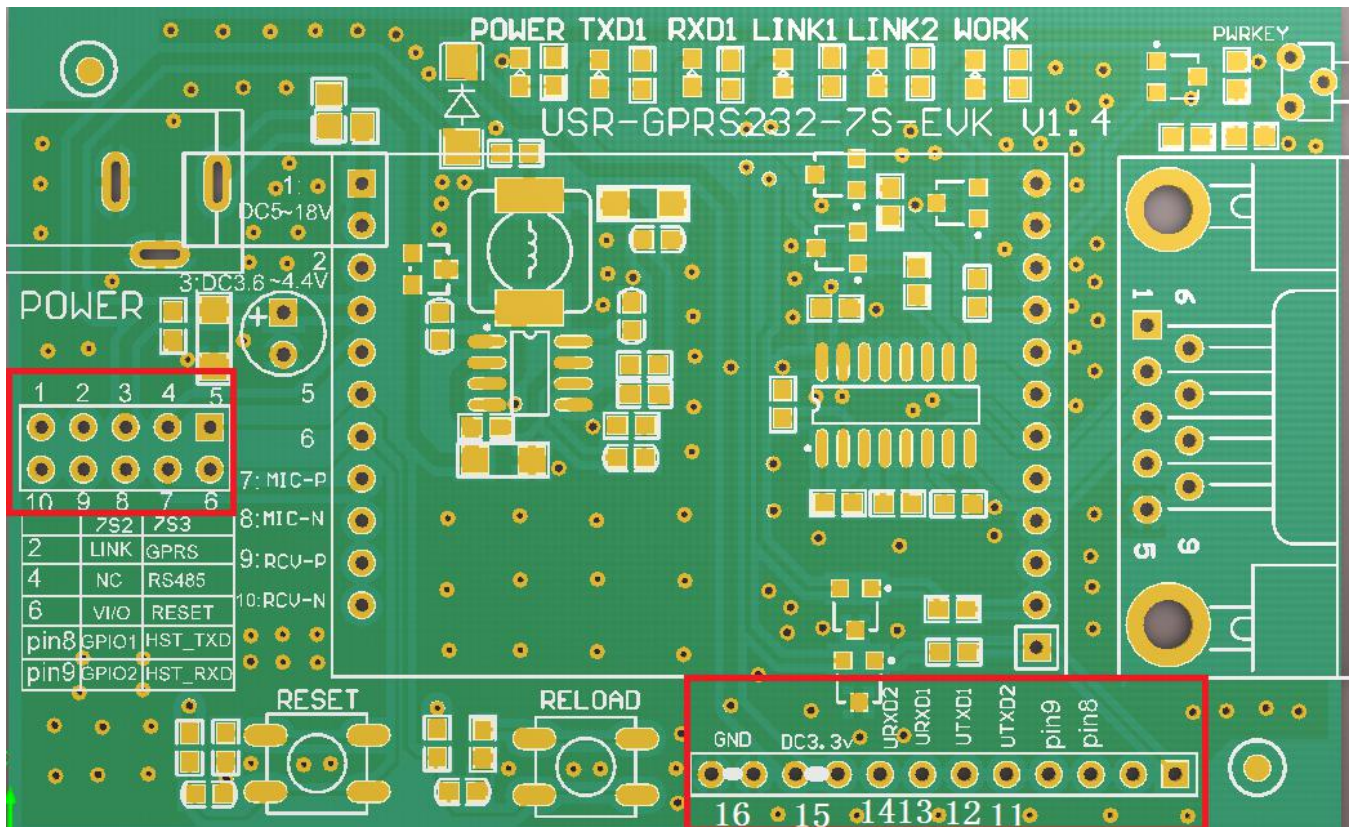


Figure 3

Pins in red square corresponding pin instructions

No.	Pin
1	DC5-16V
2	GPRS
3	DC3.6-4.4V
4	RS485_EN
5	RELOAD
6	RESET
7	MIC_P
8	MIC_N
9	RCV_P
10	RCV_N
Pin8	HST_TXD
Pin9	HST_RXD
11	UTXD2
12	UTXD1
13	URXD1
14	URXD2
15	DC3.3V
16	GND

Interface description

Function	Name	Description
External Interface	DC Jack	5-16V power input
	DB9	9-Pin female connector
	Module	DIP connector
LED light	Power	3.3V power indicator
	TXD	TXD indicator
	RXD	RXD indicator
	WORK	Work indicator
	Link A	Link A connect indicator
	Link B	Link B connect indicator
Button	Reset	Restart the module
	Reload	Return to factory setting or user default setting.
Shut down	PWRKEY	Turn on/off the module

2. Hardware Reference Design

2.1. Power Interface

There are 2 way for power: DC 5~16V or DC 4V. Do not use them simultaneously.

2.1.1. DC 5-18V

When module adopts 5-18V power, pin 13 & pin 14 used to power the module. Connect 100 μ F/16V bypass capacitor for module working stably. Diagram as follows

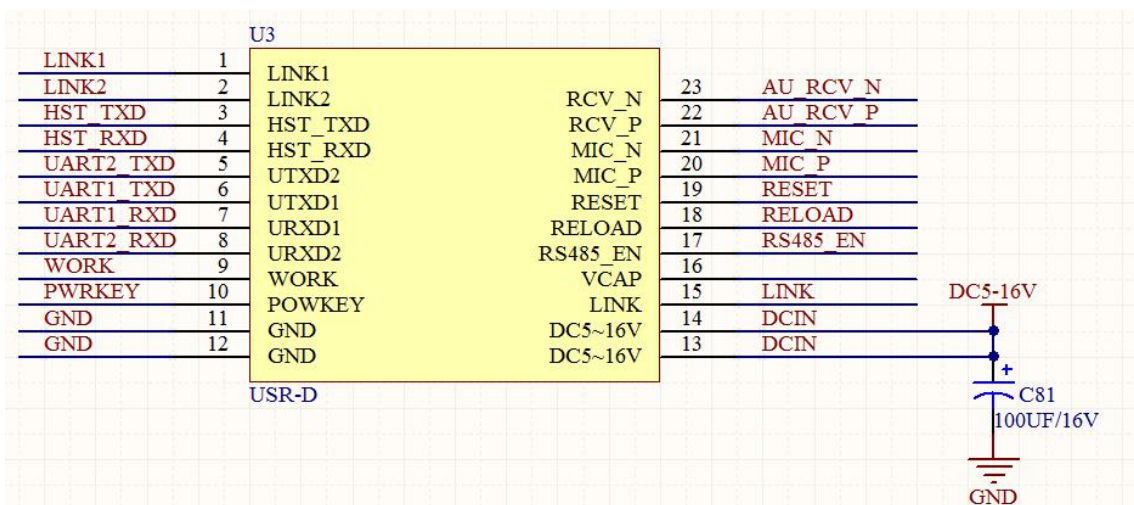


Figure 4-1 DC 5~16V power

2.1.2. DC 3.6~4.4V

When module adopts 4V (at present, voltage input range from 3.6-4.4V, do NOT beyond this range), pin 16 is used to power module with 4V. Connect to bypass capacitor for module working stably.

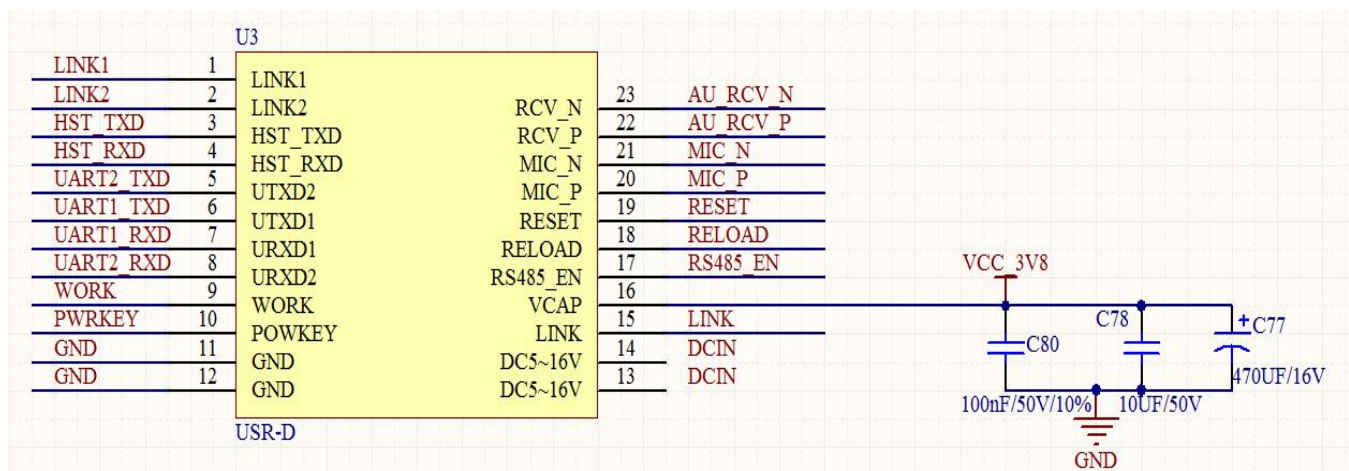


Figure 4-2 DC 4V power

2.2. UART Interface

If the I/O level of microcontroller is not 2.8V (or 3.3V), level converter is demanded. DEVDD is the I/O power of user's MCU. V-PAD is the I/O power of module. User can convert the voltage level with pull-up power. Voltage converting circuit is shown below:

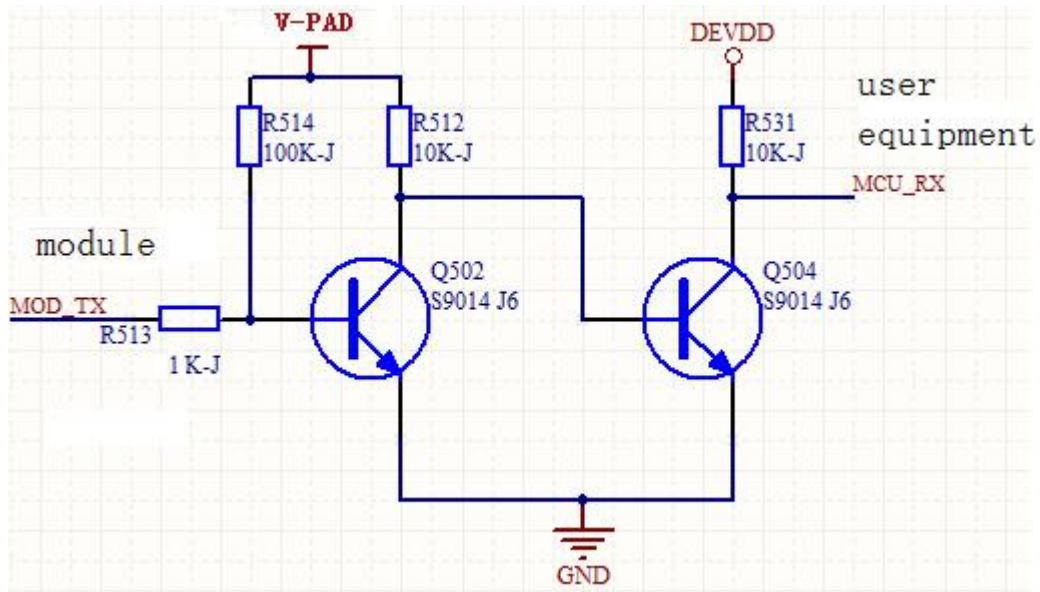


Figure 5

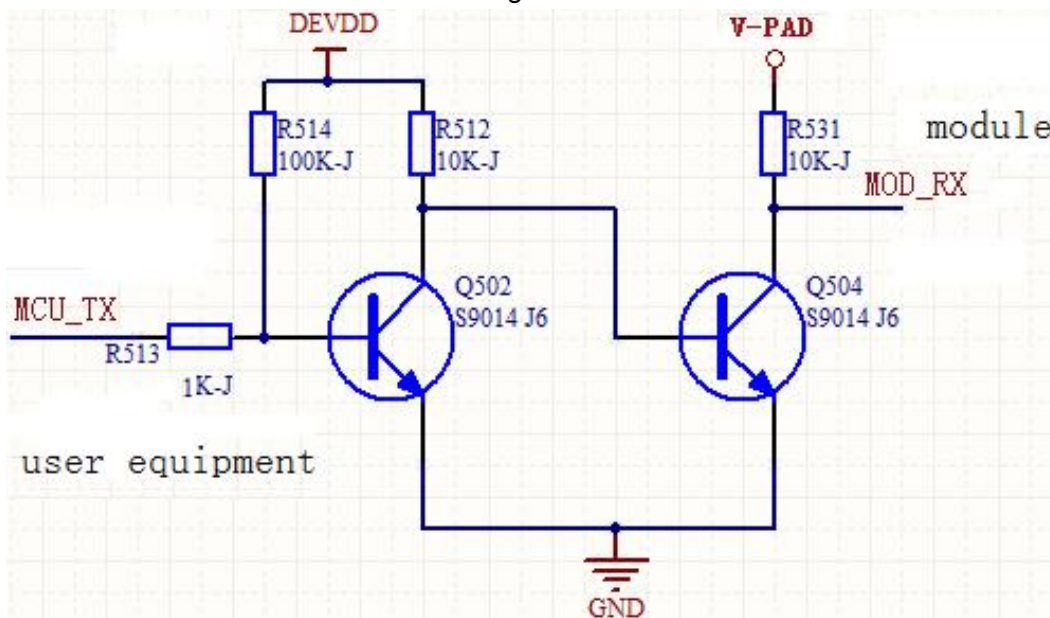


Figure 6

2.3. Shut down

This is a function optional interface. If user needn't shut down the module in working status, this pin should not be connected. Pull down this pin will shut down the module. The circuit is as follow.

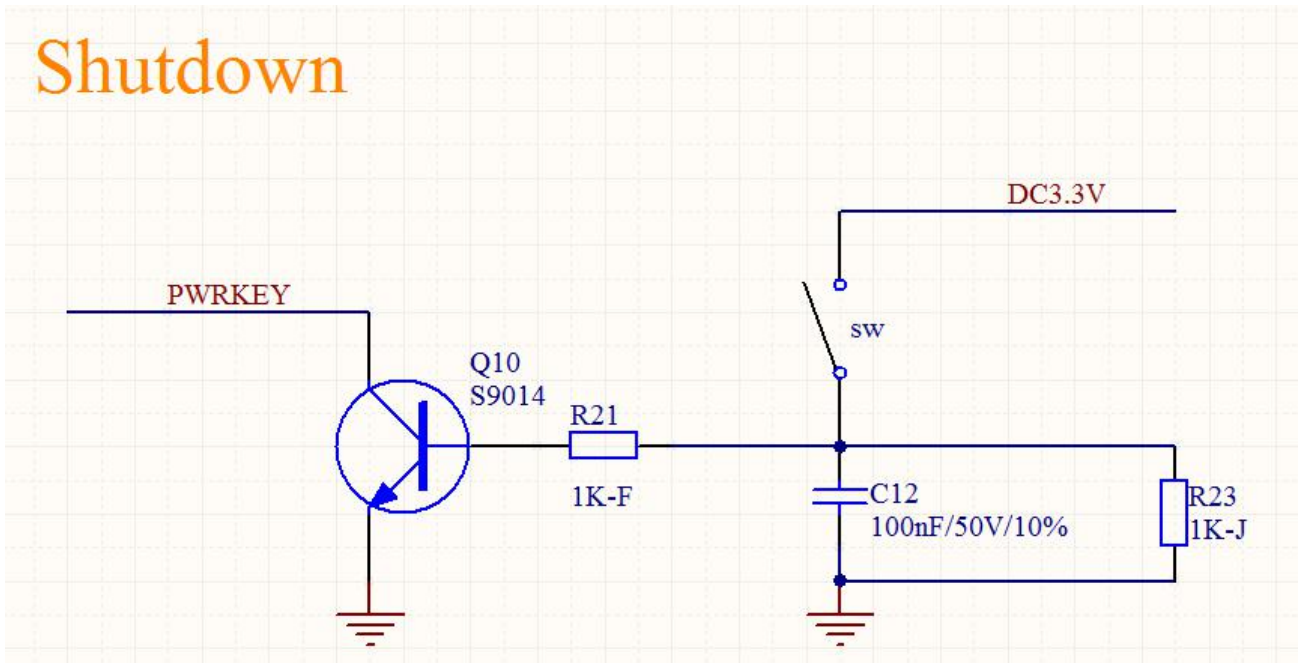


Figure 7

2.4. Work/Link Indicator

There are 3 LED (Power, GPRS, DATA) on 7S3 board, and we suggest user use the WORK pin to indicate the work status.

Indicator	Status
Power	On: 3.3V power is supplied
WORK	Pulse(LED: Blink): module is working Low Level (LED: off): module is not working
GPRS	High Level (LED: on): module has connected to GPRS network. Low level (LED: off): Module has disconnected to GPRS network
DATA	Blink: data is transmitting or receiving. Maintain low level (Led: off): no data

Figure 8

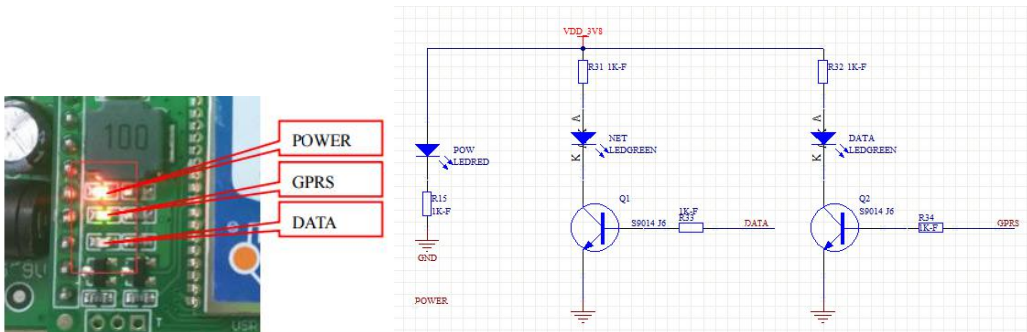


Figure 9

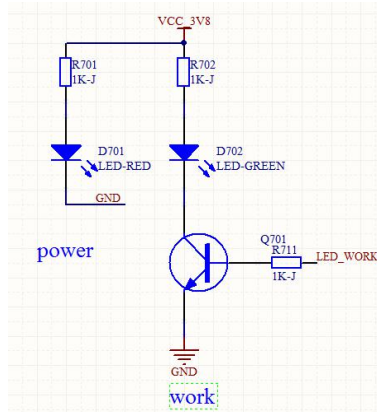


Figure 10

2.5. Audio Interface

Audio interface support voice call/receive function. When module works in AT command mode, can launch voice calling by AT command, and receive the voice called.

MIC_P /MIC_N is used for audio input, can connect with pickup or amplifier for subtle input.

RCV_P/RCV_N is used for audio output, can connect with loud-speaker or amplifier for larger volume output.

33pF, 100pF circuit is used for filtering audio noisy, so can get better tone quality

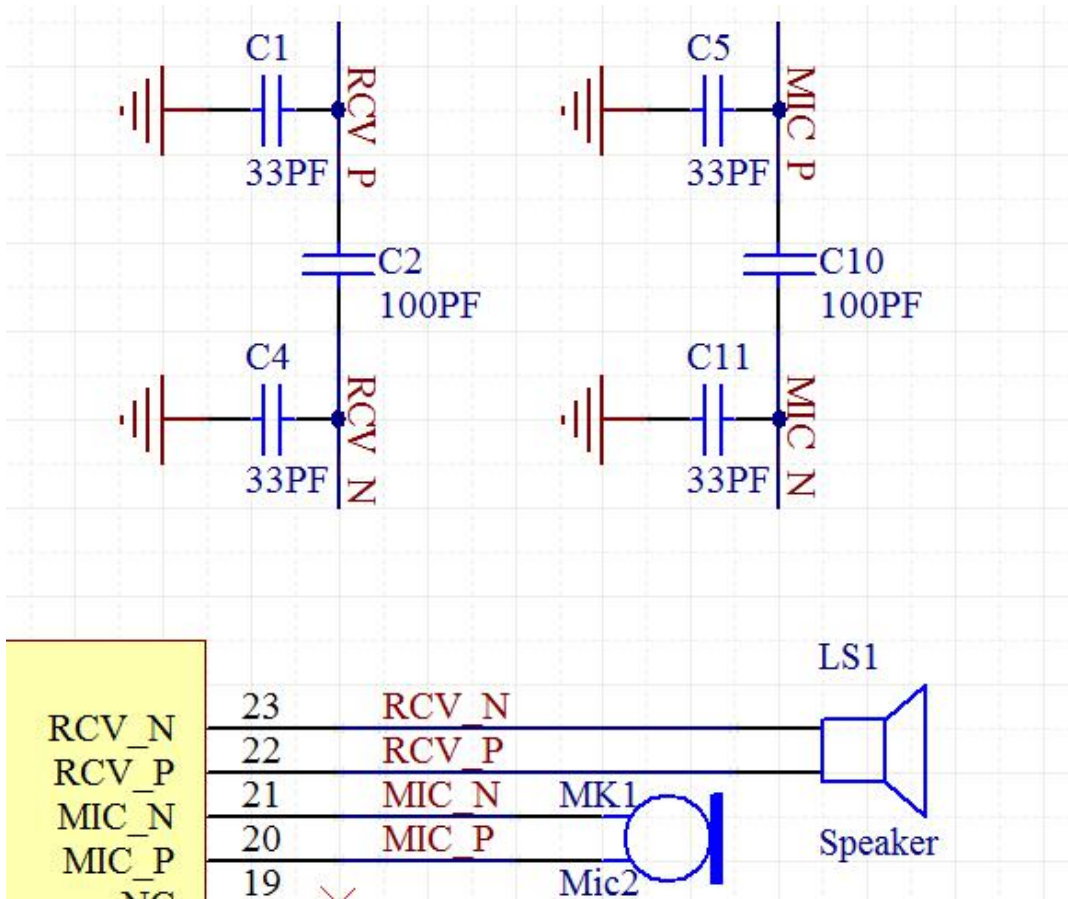


Figure 11

When input/output audio signal by pickup/loud-speaker, if user want to process the audio signal by amplifying circuit, can refer to related audio design information, suggest gain not too large.

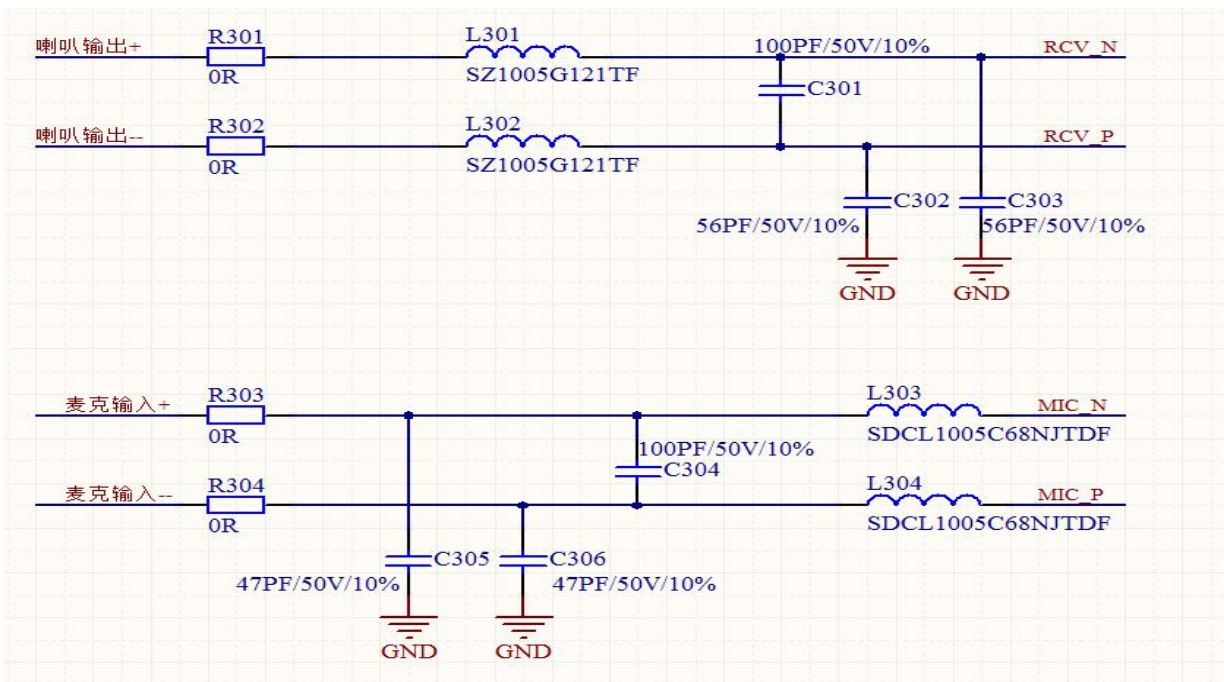


Figure 12