1.Brief
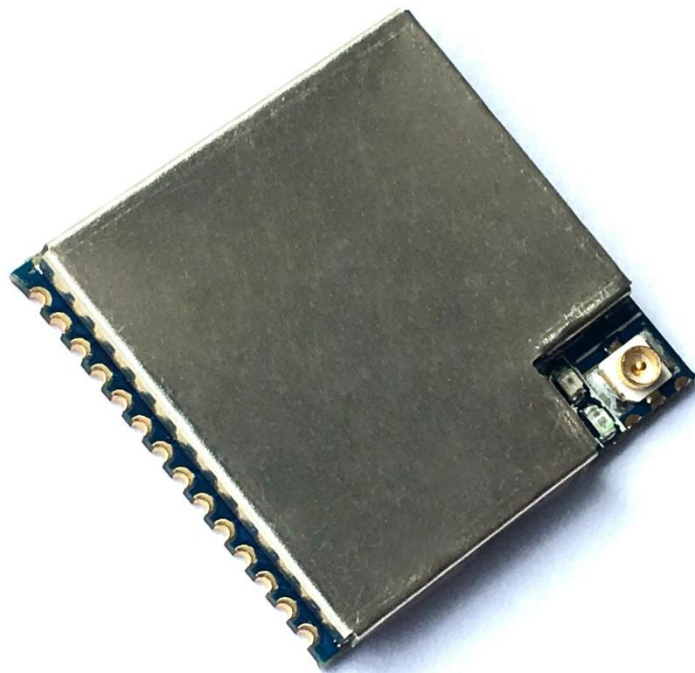
RF1276TS is highly integrated half-duplex micro-powered wireless module, which is embedded 32 bit high speed low-powered MCU and high performance ASR6505. It has adopted innovative efficient cyclic interleaving error correction coding, which can improve the coding gain up to 3dBm with the ability of correcting the continuous 24bits burst error. Hence the capability of error correction and coding efficiency achieve industry-leading levels. The capability of the noise immunity has greatly improved. RF1276TS can support LoRaWAN protocol with Class A and Class B type.

Under LoRaWAN network, the star networks can use gateways to solve possible node conflict problems and low power consumption problems.

The supply voltage of RF1276TS module is 2.5~3.6V, and the average power consumption is less than 15mA in the receiving status.The power consumption of standby is less than 2uA, So RF1276TS is suitable for battery powered scenarios.

2. Dimension
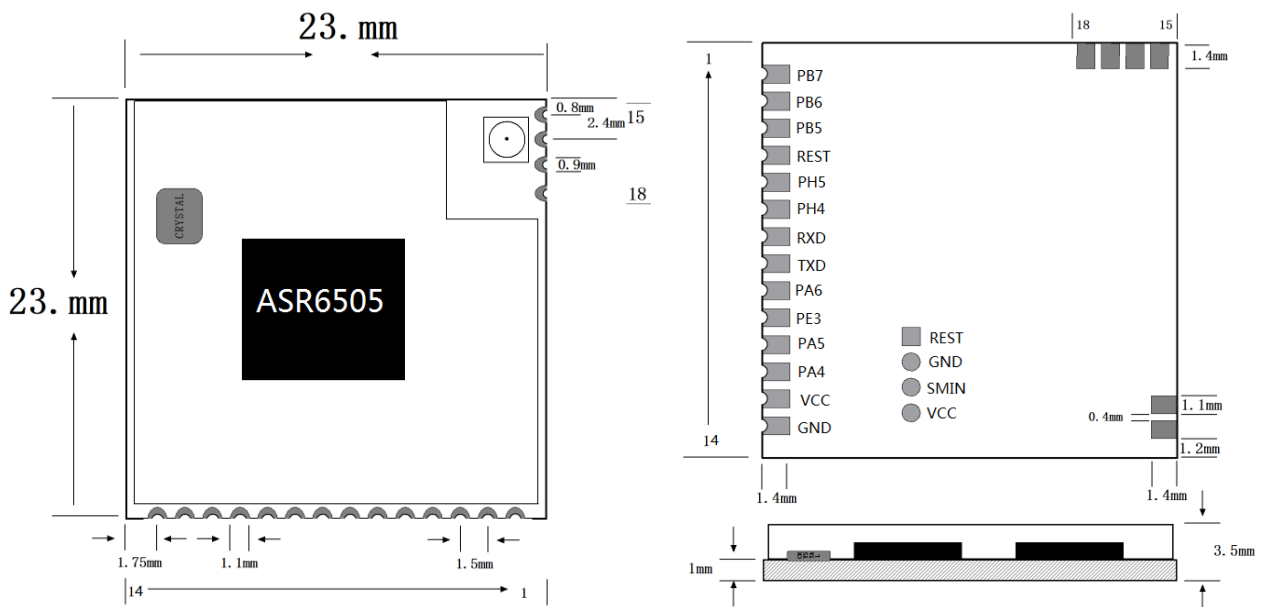
The dimension of RF1276TS is shown in Figure 1.

Figure 1 Dimensional drawing of RF1276TS

3. Pin definition

RF1276TS has 18 pins. The definition is shown on the chart.

Number	Pin Symbol	Pin Function	Pin Description
1	PB7	LED_TX	Output data indication
2	PB6	LED_RX	Input data indication
3	PB5	485_EN	RS485 Enable control
4	RST	Hardware reset	Low level reset hardware
5	PH5	GPIO	Reserved IO port
6	PH4	GPIO	Reserved IO port
7	RXD	Data entry pin	Level data input foot, connect the user's TXD.
8	TXD	Data output pin	Level data output foot, connect the user's RXD.
9	PA6	GPIO	Reserved IO port
10	PE3	GPIO	Reserved IO port
11	PA5	GPIO	Reserved IO port
12	PA4	Sleep control pin	Low level working, High Level sleep
13	VCC	Power supply	Power range 4.5V-5.5V(customized 2.1-3.6V)
14	GND	Ground for Power	GND（ usually connected to the user's GND.）
15	GND	Ground for Radio	Radio ground pin
16	RF	Radio pin	Radio pin for antenna.
17	GND	Ground for Radio	Radio ground pin
18	ADC	ADC	Reserved

Note：TXD,RXD 3.3V level, if the user's MCU is 5V, it is suggested to make level conversion for stability,.

Chart 1. Pin definition of RF1276TS

4. Feature

- Supply voltage: 2.5V-3.6V (4.5V-5.5V optional)
- Physical Layer: CN470, EU433, EU868, CN779, US915, IN865.
- Output power: 22±1dBm(max)
- Reception sensitivity: -137±1dBm(@SF=12，292bps);

- Communication range: 3km to 5km
- Support LoRaWAN Specification V1.1, CN470、EU433、EU868、CN779、US915、IN865.
- Integrated LoRaWAN stack. Support Class A and Class B.
- Receiving currecy: <15mA
- Standby power consumption: ≤2uA
- USART/TTL port, 1.2mm pitch socket.

5. Parameter configuration

5.1 Configure via SSCOM by AT command.

RF1276TS can be configured by USB adatper and SSCOM. The RF1276TS can be soldering with break-out board. We clarify how to configure the RF1276TS module as below.

Neccessary tools When configuration.

a) RF1276TS module.

b) Break-out board

c) USB adapter with PL2303 driver

d) AT command list.

e) SSCOM.

1) Connect the RF1276TS module with Laptop via USB adapter as below shown.

2) Open the SSCOM.select the serial port that RF tool can recognize the RF1276TS module. And then Input the AT command to configure the module.

5.3 AT Commands

Users can send AT command to read and configure RF1276TS module. Pls check the document <The AT command for LoRaWAN>

6. Specification of RF1276TS

Technical Specification of RF1276TS	
Frequency	CN470、EU433、EU868、CN779、US915、IN865
Modulation	LoRa
Output power	22±ldBm(max)
Receipt sensitivity	-137±ldBm(@SF=12，292bps)
Interface	UART/Parity
UART baudrate	1200bps~115200bps(default 9600bps)
Supply voltage	2.5~3.6VDC(4.5V~5.5V)
Humidity	10%～90% （No condensation）
Temperature	-40℃ - 85℃
TX current	＜120mA
RX current	＜15mA
Sleep current	＜2uA
Antenna	Impedance 50 Omega, ceramic antenna /FPC antenna

7. Q&A:

Questions and Answers	
Can not communicate	1．The communication protocol is different between two modules, for instance: data rate and checkout.

between two devices	2．The frequency or RF data rate is different between two communicated modules.
	3．They are not the same kind products.
	4．The connection between module and terminal is wrong.
	5、The module is wrong.
	6．The setting of EN is wrong.
	7．The communication distance exceeds the range, or the connection of antenna is bad.
Short communication distance	1．The supply voltage exceeds range
	2．The ripple of power is too big.
	3．The connection of antenna is bad or it is a wrong kind of antenna
	4．Antenna is too close to the surface of metal or the ground
	5．Receiving circumstance is very bad, for instance buildings and strong interference.
	6．There is interference of the same frequency
Receive wrong data	1．Wrong setting of COM, for example, Baud rate is wrong
	2．The connection of UART is wrong.
	3．The cable to the UART is too long.

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