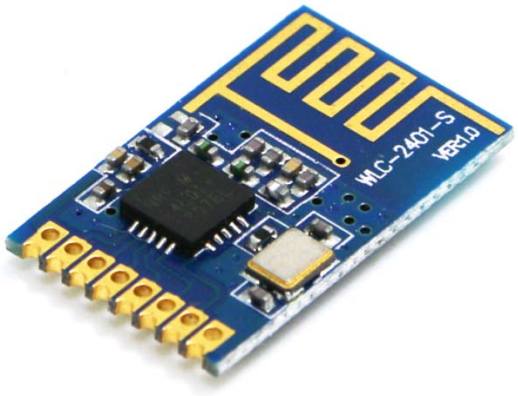
High Performance 2.4G Transceiver Module

SPECIFICATION

Model No.: DL-24S

Version: V1.1



Before using this module, please pay attention to the following important matters:

This module is an electrostatic sensitive product. Please operate it on an anti-static workbench during installation and testing.

The module is integrated with all RF related devices and has PCB onboard antenna, so excellent RF performance can be obtained without additional antenna configuration. Please do not use metal case above the antenna, otherwise it will lead to serious attenuation of radio frequency signals, which will affect the effective use of distance.

Metal objects and wires should be kept away from the antenna as much as possible.

When installing the module, nearby objects should be kept at a sufficient safety distance from the module to prevent short circuit damage.

This module should be used in a dry environment. Please do not make any liquid substance come into this module.

Please use an independent voltage regulator circuit to supply power to this module, and avoid sharing with other circuits. The tolerance of the power supply should not be less than 5%.

Limitations:

This module is intended to be embedded in the customer's terminal product application, and does not provide a casing itself. It is not recommended that the customer directly resell this module as a final product without permission.

This series of modules are in accordance with commonly used international standards. If there is any special certification needed, we can adjust certain indicators according to your needs.

This module cannot be applied to life rescue, life-support systems, or any occasion where personal injury or life threatening may cause by equipment failure. Any organization or individual carrying out the above-mentioned applications shall bear all risks at their own.

1. Brief Introduction

DL-24S is a small size, excellent performance, long-distance 2.4G wireless module. The module is widely used in the fields of smart home, toy aircraft model and short distance data transmission control. The sensitivity can reach -82dbm@2M, with the maximum transmission rate of 2Mbps, and the output power is configured by register from - 20dbm to 0dbm. The module integrates all RF related functions, so users can easily develop wireless products with stable performance and high reliability without deep understanding of RF circuit design, thus shortening the development cycle;

This module uses high precision, high temperature stability crystal, with a high cost performance, suitable for mass application. It adopts stamp edge half hole interface mode, which can not only meet the customer's SMT application, but also realize horizontal and vertical welding by arranging pins. Its compact size makes it easy to use in portable products.

2. Features:

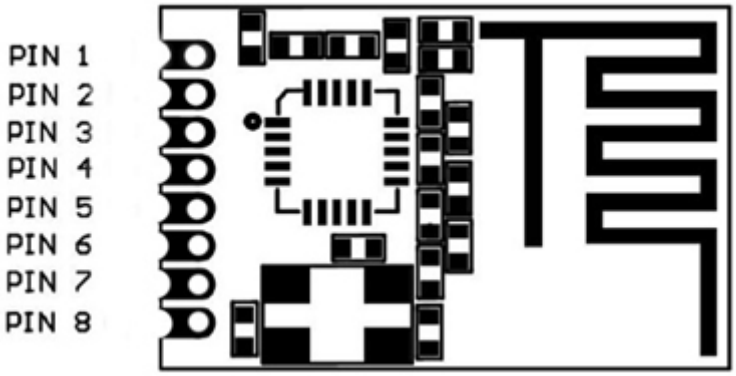
- Transmission distance in open air is about 120 meters @ 250kHz
- Working frequency: 2400-2483 MHz
- Working voltage: 1.9V-3.6V
- Programmable carrier detection, digital RSSI output
- Excellent selectivity and out of band isolation performance
- The chip crystal with 10ppm precision has excellent performance
- High cost performance sunken gold plate PCB-ANT

3. Application:

Wireless game controller, toys
Wireless keyboard and mouse
Aeromodelling & consumer electronics
Data monitoring and transmission
Wireless voice transmission
Smart home control
Remote controller that support radio frequency (RF) technology

4. Pins Definition

The DL-24S module has 8 PINs, which are defined in the following table:



Pin	Definition	Function	Remark
1	VDD	Power Supply: DC1.9-3.6V	
2	CE	Work mode selection, TX or RX mode selection	
3	CSN	CSN=0 Effective, SPI chip selection enabled	
4	SCLK	SPI Clock	
5	MOSI	SPI data input，MOSI	
6	MISO	SPI data output，MISO	
7	IRQ	Interrupt signal	
8	GND	Grounding, common ground with the system	
Antenna	PCB	Original standard encapsulated PCB board antenna	

Table 1: Pin Definition of DL-24S

5. Product Size

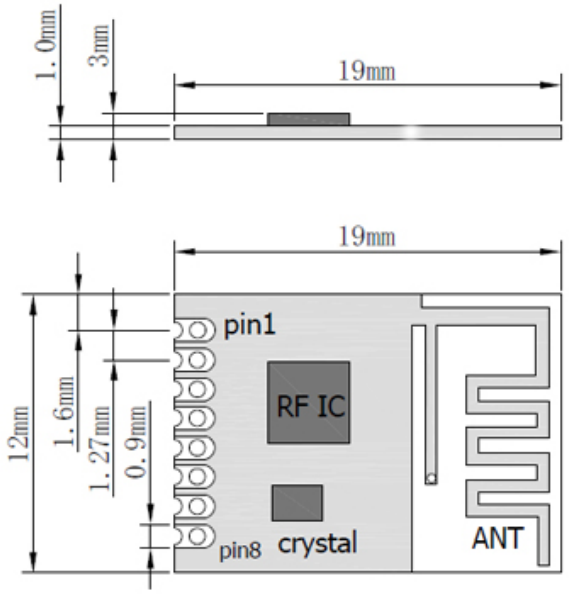


Figure 1: Product Size

6. Technical Parameters:

DC Features:

Description	Min.	Max.	Unit
Power supply voltage	1.9	3.6	V
Working current	11.3mA@0dbm	13.5mA@2Mbps	mA
Stand-by current	26uA@Standby Mode	0.9uA@Powerdown	mA
Working temperature	-40	85	℃
I/O Port Voltage	Vss-0.3	Vdd+0.3	V
Rate Rang	0.5	50	Kbps

Table 2: DC Features of the module

RF Features (unless otherwise stated, Temperature is 25℃, VCC = 3.3V)

No	Description	Parameter Range			Unit
		Min.	Type.	Max.	
1	Applied Frequency Range	2400		2483.5	MHz
2	Frequency Interval		100K		Hz
3	Transmit Power (4 levels)	-18	-12	-6	0dBm
4	Reception sensitivity		-82		dBm
5	Modulation mode		GFSK		
6	Transmission speed	1.2		2000	Kbps
7	Harmonic power	-48	——	-45	dBm
8	Communication Distance	80		120	M
9	Sensitivity at 2.4K		-95		dBm
10	Standby Power Consumption			0.9	uA
11	Crystal Precision *3225/16MHz		10		PPM

Table 3: High Frequency Characteristic of the module

7. Module Connection Diagram (TTL Level):

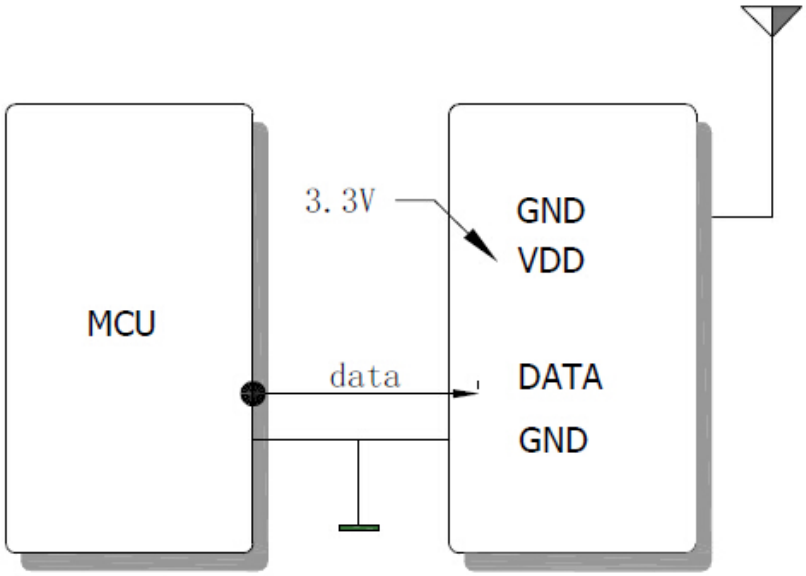


Figure 2: Module connection diagram

8. Notice in Module Application

Module application system is generally divided into two categories: remote control and fixed transmitter station. Two factors need to consider in different systems: power type, product internal space.

1. The power supply types of the remote control CR2032 (3V), AAA (1.5V*2), 27A (12V) need to be considered when applying. 12V batteries need to increase LDO for voltage conversion. However, in the selection of LDO, attention should be paid to the "sudden wave" problem of LDO in the voltage conversion process. When the voltage spike exceeds 7.5V, there is a risk of damage to IC. Also, attention should be paid to the protection of ESD.

2. Ultra-thin remote control needs to consider the module thickness, usually using PCB board antenna. A standard remote control also needs to consider the placement of the antenna and the radiation capability of the antenna.

3. Selection of antenna is very important. Antenna is an important part of the communication system, its performance directly affects the indicators of the communication system. Users must pay attention to its performance (antenna type, antenna electrical performance) when choosing the antenna. Therefore, when choosing the antenna, you can contact us for advice or recommendation...

9. Contact us

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★ Data collection, Smart home, Internet of Things applications, Wireless remote-control technology, Remote active RFID, Antennas ★

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