2.4G RF Transceiver Module

SPECIFICATION

Model No.: DL-24LT

Version: V1.0

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.

This module defaults to using an external antenna, you can choose wire antenna or standard UHF antenna, according to the using condition, if there is metal case of the final product, please make sure install the antenna on the metal shell, 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 of the Module

Designed base on LT8900 wireless transceiver chip, DL-24LT is a compact, cost-effective, long-range wireless transceiver module. This 2.4G module is widely used in the fields of smart home, toy model airplane and near range digital transmission control. The maximum transmitting power is 6dBm. The receiver adopts Low-IF Architecture, the receiving sensitivity can reach -87dbm, and the highest transmission rate can reach 1Mbps.

The module has integrated all radiofrequency related functions, and users can easily develop wireless products with stable performance and high reliability directly, which will extremely shorten the development cycle without in-depth understanding of RF circuit design

SMD and DIP interface modes are adopted, but manual welding is required due to different thermal expansion coefficient of the black glue and the binding wire inside. Small module size makes it easy to use in portable products. And it can well meet the requirements of low-power system by combining with low-power MCU.

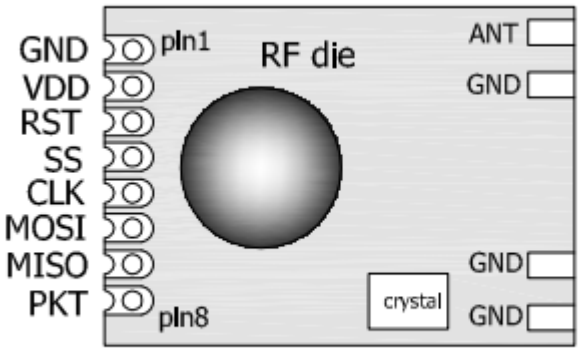
2. Typical application

- Wireless Toy Controller
- Wireless keyboard, Mouse
- Wireless networking
- Intelligent home control
- Industrial and commercial close range communications
- IP phone, cordless phone
- Communication between machines

3. Features

- Support frequency hopping;
- Support SPI and I2C interface
- Built in auto_ ACK function
- Data rate 1Mbps
- Low power consumption
- Support signal energy detection

4. Pins Definition



Pin	Definition	Function
1	GND	Grounding, common ground with the system
2	VDD	Power Supply, DC 1.8-3.6V
3	RST	When RST_n is low, the chip will be turned off, the current <1uA, and the value of digital part will also be lost. If you want to keep the value of the digital register, you can enter sleep mode. When RST_ n is high, the chip will be turned on and the register will return to the reset value
4	SS	SPI: Enables SPI signal, low level validity; or shift chip into sleep mode I2C: set the chip into sleep mode
5	CLK	Internal clock output
6	MOSI	SPI Data Input，MOSI
7	MISO	SPI Data Output，MISO
8	PKT	Transmit/Receive bit supported

Table 1 Pin Definition of DL-24LT

5. Product Size：

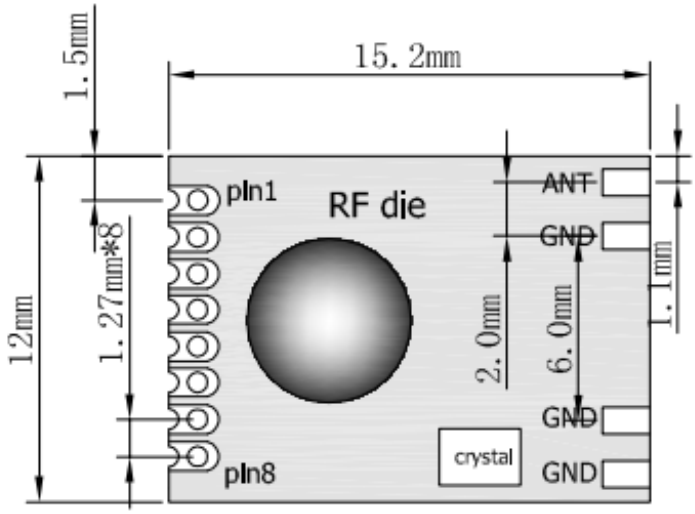


Figure 1: Product Size

6. Technical Parameters of DL-24LT

DC Features:

Description	Min.	Max.	Unit
Power supply voltage	1.8	3.6	V
Working current	RX ＜17mA	TX=18mA@2dbm	mA
Stand-by current		＜1uA	uA
Voltage of IO Port	Vss-0.3	Vdd+0.3	V
Working temperature	-20	+75	℃

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	-17		6	dBm
4	Reception sensitivity		-87		dBm
5	Modulation mode	GFSK	2-FSK	OOK	MSK

6	Transmission rate	1.2		500	Kbps
7	Harmonic power	-48	——	-45	dBm
8	Communication Distance	80		100	M
9	Sensitivity at 2.4K		-80		dBm
10	OOK Modulation mode, Rate			100	Kbps
11	Standby Power Consumption			0.9	uA
12	Crystal Precision *3225/2*6		10		PPM

Table 3: High Frequency Characteristic of the module

7. Module Connection Diagram (TTL Level):

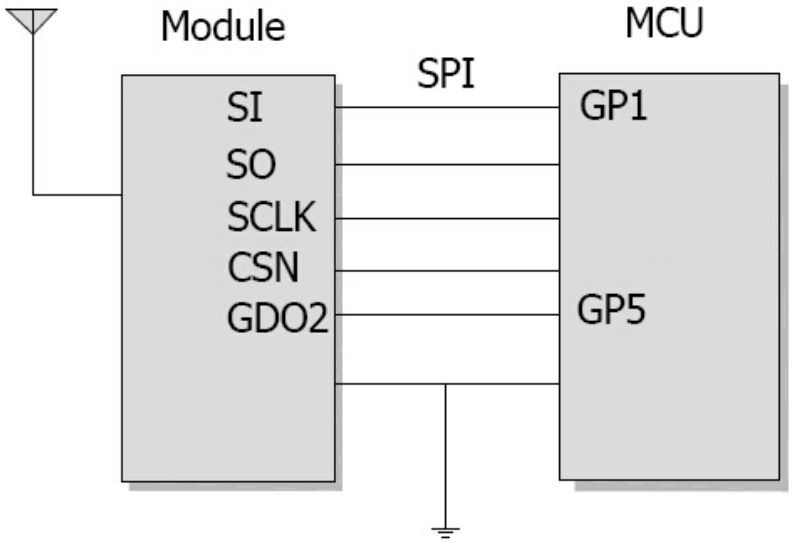


Figure 2: Module connection diagram

8. Notice in Module Application

Considering the complexity of data transmission, radio frequency modulation mode of data and some inherent characteristics of electromagnetic waves, the following aspects should be considered in the application process.

1. The electromagnetic interference of the application environment will affect the actual distance of the remote control. Electromagnetic wave interference can be divided into power transformer, main board power supply interference, TFT screen data layout interference, Flash/DDR/SDRAM data exchange interference, as well as carrier co-frequency interference, noise interference, interference from high-power signal source in the air, and so on.

2. The dimensions of the products, the internal space, the coating of the housing and other factors will cause the attenuation of the wireless signal, which will affect the remote-control distance. Usually the narrow space inside the product is not conducive to the extension of the antenna. The outer shell should avoid metal or metal coating as much as possible. The antenna should be wounded along the inner wall of the outer shell.

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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