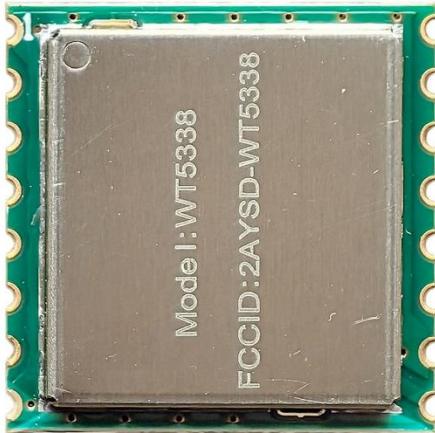


WT5338 LoRa Module



WT5338 integrates Semtech RF transceiver chip LLCC68, which adopts LoRa Spread Spectrum modulation frequency hopping technique. Compare with the FSK and GFSK module, The WT5338 has extremely low RX sensitivity to improve link performance. It can be widely used in wireless meter reading, remote industrial control filed.

Features

- Frequency Range: 862-960MHz
- Sensitivity up to -126dBm LoRa
- Maximum output power: 20dBm±1dB
- 1.8-3.7 V Power supply
- Ultra-low consumption shut down mode
- Digital received signal strength indicator(RSSI)
- Configurable date packet structure
- Operating Temperature Range: -40 ~ +85°C

Applications

- Automated Meter Reading
- Home and Building Automation
- Wireless Alarm and Security Systems
- Industrial Monitoring and Control

➤ Long range Irrigation Systems

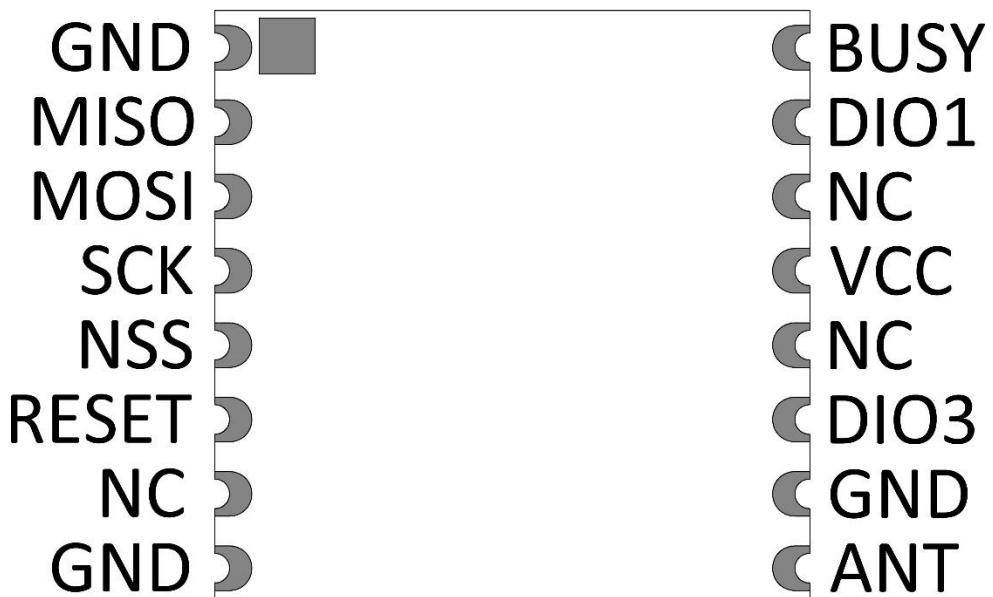
Electrical Characteristics

$T_A = 25^\circ\text{C}$, 3.3V , $F_c = 862\text{~}960\text{ MHz}$

Parameter	Value	Note
Frequency range	862-960MHz	
Frequency error	$\pm 10\text{ppm}$	
Frequency drift	$\pm 20\text{ppm}$	$-40^\circ\text{C}\text{~}85^\circ\text{C}$
Modulation	FSK/LoRa	
Date Rate	1.76-62.5kbps ¹	LoRa
TX Power	22dBm $\pm 1\text{dB}^2$	862-960MHz
Spurious Emission	$\leq 40\text{dBm}$	862-960MHz
TX Current	$\leq 150\text{mA}^3$	862-960MHz
RX Sensitivity	-129dBm ⁴	BW=250K, SF=10
RX Current	$\leq 6\text{mA}$	DC~DC
Sleep Current	$\leq 1\text{uA}$	
Operating Voltage	1.8 ~3.7V	
Operating emperature	$-40^\circ\text{C}\text{~}85^\circ\text{C}$	
Dimension	16.0*16.0*2.6mm	

1. The maximum error (frequency error + temperature drift) of the crystal oscillator within the range of -40°C to 85°C is $+/30\text{ppm}$, and the bandwidth must not be less than 250KHz. ;
2. The output power of LLCC68 is configured to a maximum of 22dBm ;
3. Within the working frequency band, when a 50-ohm test device is connected, the maximum current does not exceed 150mA ;
4. It is the sensitivity under the allowable limit bandwidth and spread spectrum factor of the module crystal oscillator.

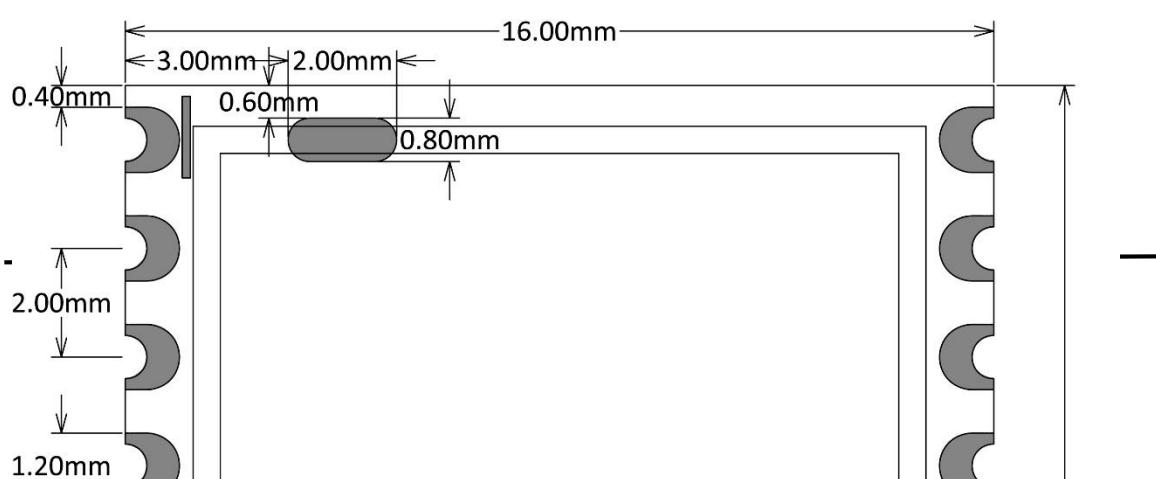
Pin description



Pin Name	Type	Description
GND	Ground	
MISO	O	SPI slave output
MOSI	I	SPI slave input
SCK	I	SPI clock
NSS	I	SPI Slave Select
RESET	I	Reset signal, active low
BUSY	O	Busy indicator
DIO1	I/O	Multi-purpose digital IO
VCC	Power	Supply for Module 1.8-3.7V
NC		
DIO3	I/O	Multi-purpose digital I/O
ANT	Antenna	50ohm

Note : DIO2 controls the transmission and reception. It is raised during transmission and lowered during reception and standby.

Packaging Information



Operation method

This module can achieve wireless data transmission within the range of 862-960 MHz. The communication parameters of the module are configured using a single-chip microcomputer, and the module is set to receive or send respectively. If data needs to be sent, it is transmitted to the wireless module and then converted into a wireless signal. When there is data transmission, the receiving end is configured with the same communication parameters and set to the receiving state. Within the communication distance, data from the sending end will be received. If there is no need to send or receive, the module can be set to sleep state to save power consumption.

FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following

measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM

Manual v01r01

2.2) List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the modular transmitter

2.3) Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4) Limited module procedures

Not applicable

2.5) Trace antenna designs

Not applicable

2.6) RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

2.7) Antennas

This radio transmitter FCC ID: 2AYSD-WT5338 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna No.	Type of antenna:	Gain of the antenna (Max.)	Frequency range:
ANT-915-A2	Welded Antenna	0 dBi	860-930MHz

2.8) Label and compliance information

The final end product must be labeled in a visible area with the following " Contains FCC ID: 2AYSD-WT5338".

2.9) Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

2.10) Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.

2.11) Note EMI Considerations

Host manufacture is recommended to use D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties.

2.12) How to make changes

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system. According to the KDB 996369 D02 Q&A Q12, that a host manufacture only needs to do an evaluation (i.e., no C2PC required when no emission exceeds the limit of any individual device (including unintentional radiators) as a composite. The host manufacturer must fix any failure.