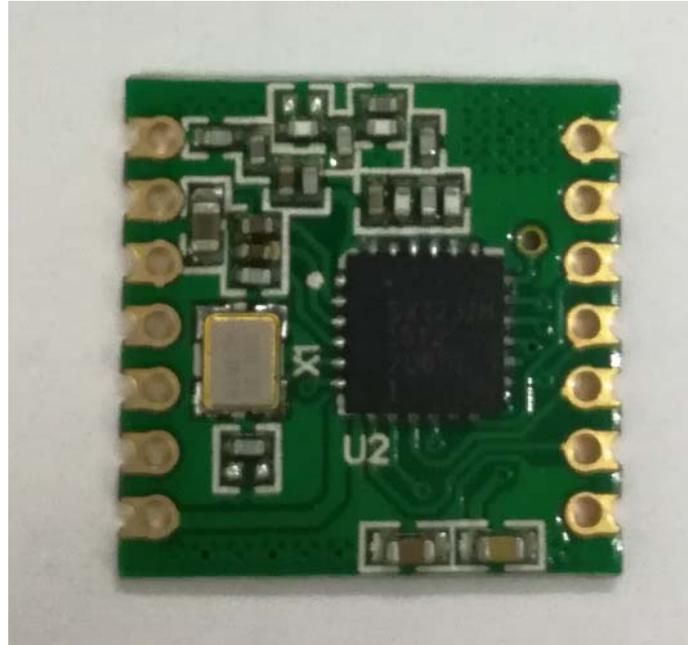


SPECIFICATION



WRF1231-315/433/868/915 MHz

Low power consumption, long range, high performance RF transceiver module. Frequency is 315/433/868/915 MHz. The chip is Semtech's SX1231.

Detailed specification

By DEC 2016

Document: V1.0

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WINCOM RF TECH. Co., Ltd



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2. Disclaimer

Because of the difference of the working environment and other factors, we try to make the document description is accurate, but it is still difficult to rule out the individual is not accurate or not detailed description. Therefore, this document is only for the purposes of the user's reference, We do not do any legal commitments and guarantees, if there is any objection, please contact us .

3. General Description

The WRF1231 is a highly integrated RF transceiver capable of operation over a wide frequency range, including the 315, 433,868 and 915 MHz license-free ISM(Industry Scientific and Medical) frequency bands. Its highly integrated architecture allows for a minimum of external components whilst maintaining maximum design flexibility. All major RF communication parameters are programmable and most of programmable dynamically set. The WRF1231 offers the unique advantage of programmable narrow-band and wideband communication modes without the need to modify external components. The WRF1231 is optimized for low power consumption while offering high RF output power and channelized operation. TrueRF™ technology enables a low cost external component count whilst still satisfying ETSI and FCC regulations.

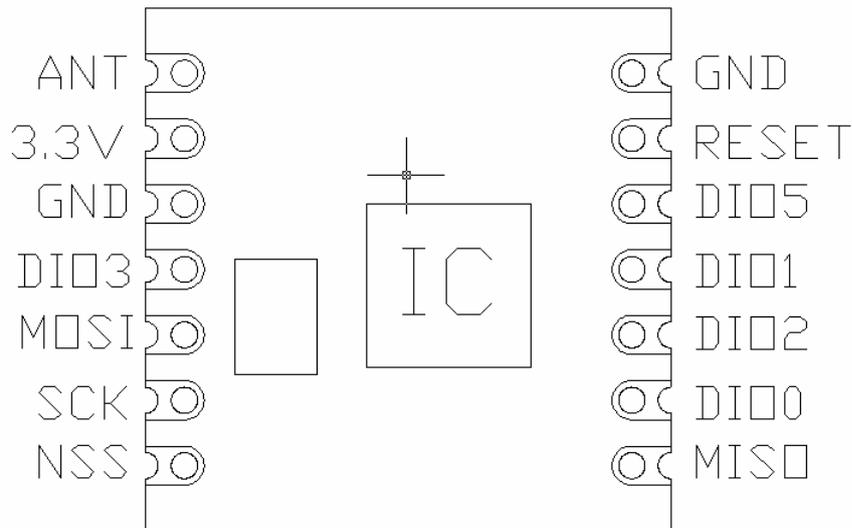
4. Key Features

- +13 dBm Power Output Capability
- High Sensitivity : down to -120 dBm at 1.2 kbps
- High Selectivity : 16-tap FIR Channel Filter
- Bullet-proof front end : IIP3 = -18 dBm, IIP2= +35 dBm, 80 dBm Blocking Immunity, no Image Frequency response
- Low current: Rx = 16 mA, 100 nA register retention
- Programmable Pout: -18 to +13 dBm in 1 dB steps
- Constant RF performance over voltage range of module
- FSK Bit rates up to 300 kb/s
- Fully integrated synthesizer with a resolution of 61 Hz
- FSK, GFSK, MSK, GMSK and OOK modulations
- Built-in Bit Synchronizer performing Clock Recovery
- Incoming Sync Word Recognition
- 115 dB+ Dynamic Range RSSI
- Automatic RF Sense with ultra-fast AFC
- Packet engine with CRC-16, AES -128, 66-byte FIFO
- Built-in temperature sensor
- Module Size: 16*16mm

5. Typical Applications

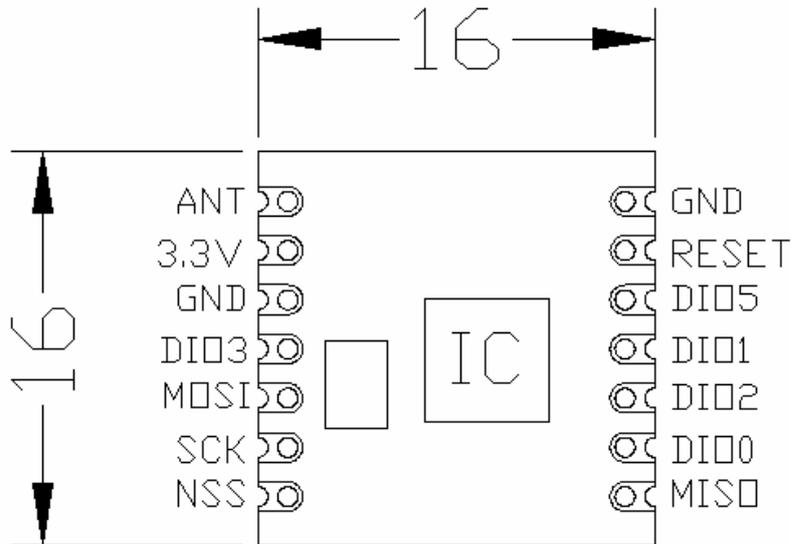
- Automated Meter Reading
- Wireless Sensor Networks
- Home and Building Automation
- Wireless Alarm and Security Systems
- Industrial Monitoring and Control
- Wireless M-BUS.

6. Pin Definition



No.	Definition	Type	Function
1	ANT	-	RF signal output/input
2	3.3V	-	Supply voltage
3	GND	-	Ground
4	DIO3	I/O	Digital I/O, software configured
5	MOSI	I	SPI Data input
6	SCK	I	SPI Clock input
7	NSS	I	SPI Chip select input
8	MISO	O	SPI Data output
9	DIO0	I/O	Digital I/O, software configured
10	DIO2	I/O	Digital I/O, software configured
11	DIO1	I/O	Digital I/O, software configured
12	DIO5	I/O	Digital I/O, software configured
13	RESET	I/O	Reset trigger input
14	GND		Ground

7. Outline



8. Absolute Maximum Ratings (non-operating)

Symbol	Parameter	Min	Max	Units
V_{dd}	Positive supply voltage	-0.3	+3.6	V
T_j	Junction Temperature		125	°C
ESD	Electrostatic discharge		2000	V

9. Recommended Operating Range

Symbol	Parameter	Min	Max	Units
V_{dd}	Positive supply voltage	+1.8	+3.6	V
C_t	TX mode current @13 dBm		45	mA
C_r	RX mode current		16	mA
T	Storage temperature range	-40	+85	°C
T_{op}	Operating temperature range	-25	+80	°C
C_{sleep}	Load capacitance on digital ports		0.05	uA
Sensitivity	500 bps, FSK, Fdev = 250 Hz		-120	dBm
Data rate		1.2	300	Kbps

10. Field testing range

Band	Test condition	Distance
433 MHz band	Receiver Bandwidth = 67KHz, data rate=1.2kbps, transmitter frequency deviation=600Hz(matches with WRF1231) in free open area	>500M

11. Typical Application



12. Contact information

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