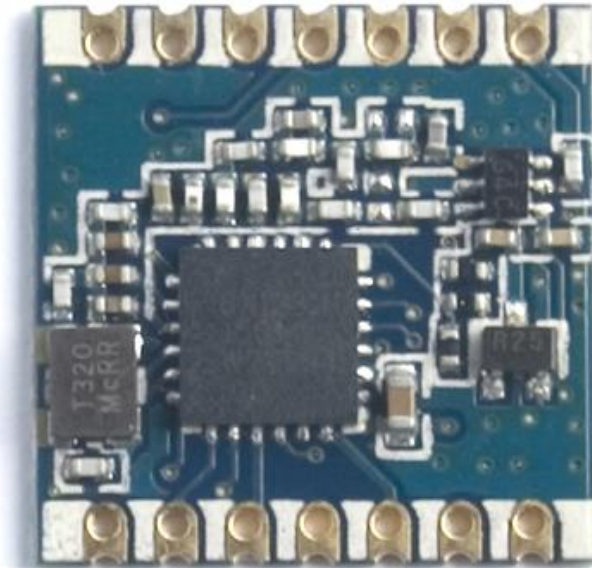


SPECIFICATION



WRT1231H-433/868/915

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

Detailed specification

By July 2014

Document: V1.1

PCB: V1.0

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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 WRF1231H is a highly integrated RF transceiver capable of operation over a wide frequency range, including the 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 them can be dynamically set. The WRF1231H offers the unique advantage of programmable narrow-band and wideband communication modes without the need to modify external components. The WRF1231H 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

- Power supply: 2.1 to 3.6 V @20dBm
- Receive sensitivity: -120 dBm
- Programmable Pout : -18 to 20 dBm;
- Low active power consumption: 16 mA RX
TX @20 dBm 130mA;
TX @13dBm 45mA;
- Constant RF performance over voltage range of chip
- 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

5. Typical Applications

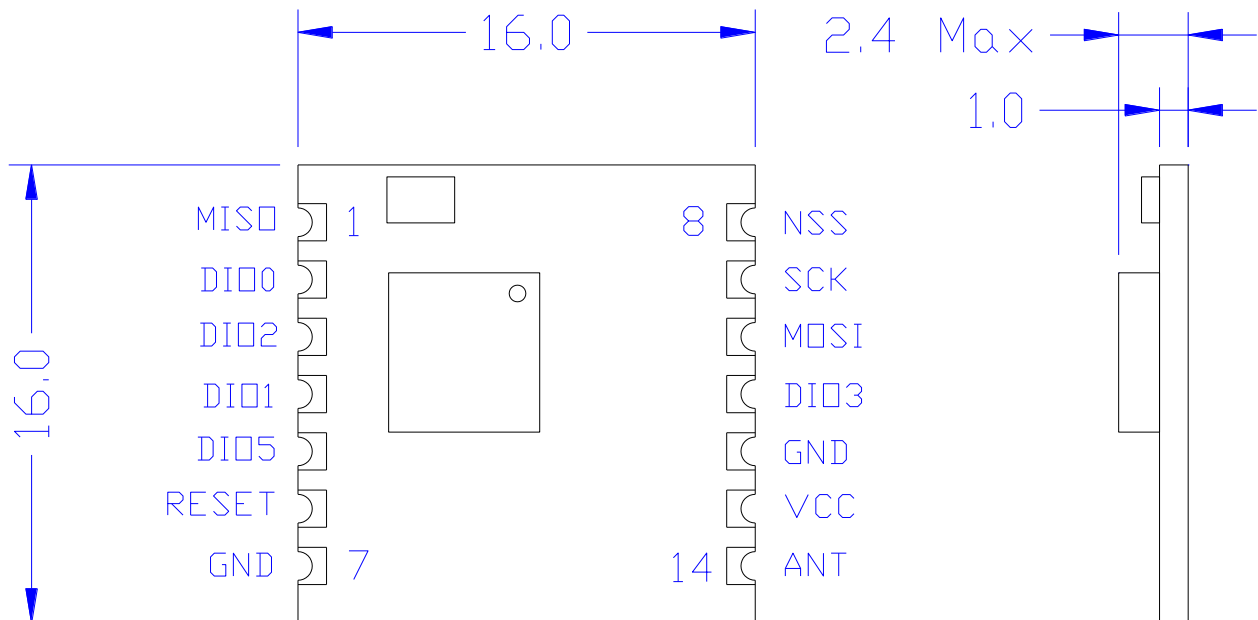
- § Automated Meter Reading
- § Wireless Sensor Networks
- § Home and Building Automation
- § Wireless Alarm and Security Systems
- § Industrial Monitoring and Control
- § Wireless M-BUS

6. Pin Definition

No.	Definition	Type	Function
1	MISO	O	SPI data output
2	DIO0	I/O	Software configured

3	DIO2	I/O	Data /
4	DIO1	I/O	DCLK
5	DIO5	I/O	
6	RESET	I	Reset Trigger Input
7	GND		POWER GROUND
8	NSS	I	SPI chip selection input
9	SCK	I	SPI clock input
10	MOSI	I	SPI data input
11	DIO3	I/O	
12	GND		Power Ground
13	VCC		Positive power supply
14	ANT		Antenna

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

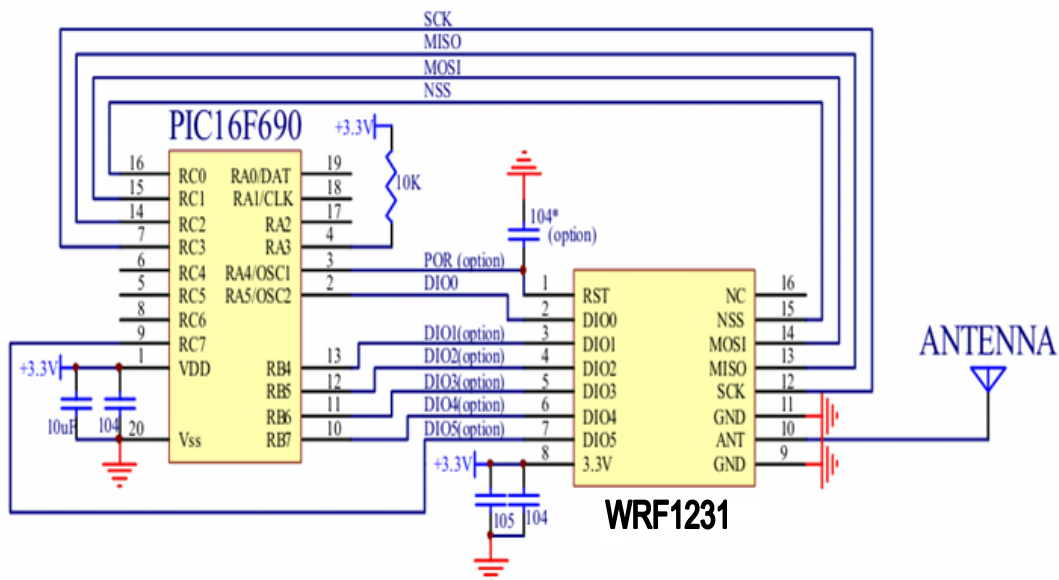
Symbol	Parameter	Min	Max	Units
V_{dd}	Positive supply voltage	1.8	3.6	V
C_t	TX mode current @20 dBm @433		85	mA
C_r	RX mode current		16	mA
T_{op}	Ambient operating temperature	-40	85	°C
C_{sleep}	Load capacitance on digital ports		0.05	uA

Sensitivity	500 bps, FSK, Fdev = 250Hz		-120	dBm
Data rate		1.2	300	Kbps

10. Field testing range

Band	Test condition	Distance
433 MHz band	Receiver Bandwith=67KHz, data rate=1.2kbps, transmitter frequency deviation =600HZ (matches with WRF1231H) in free open area	>2000M

11. Typical Application



12. Contact information

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