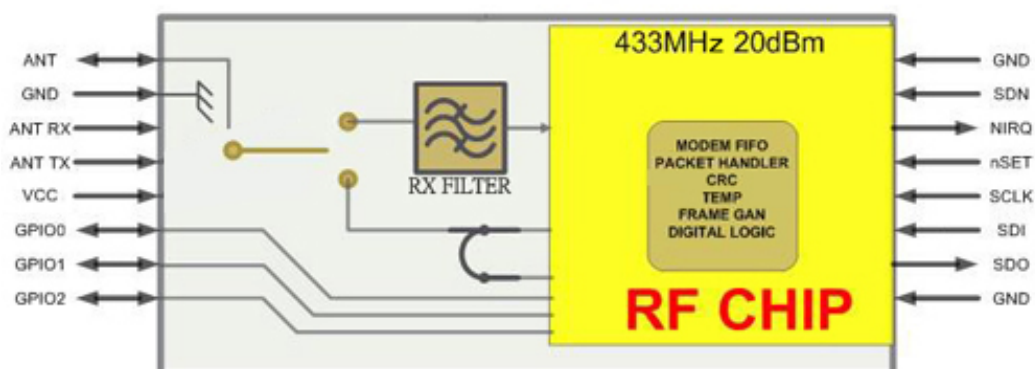


433MHz ISM Transceiver Module



TRW - 4432 - 433
Function Block Diagram



Version History

Version	Date	Changes
V1.00	September 26, 2013	1 st . Edition
V1.00	November 19, 2013	1 st . Edition

Key Features

- Worldwide 433 ISM band operation
- 0.123 to 256KBPs on air datarates
- Ultra low power operation
- Output power range +20 dBm Max
- 18.5 mA receive, 85 mA @ +20 dBm transmit
- Digital RSSI
- FSK, GFSK, and OOK modulation
- Low cost
- 1.8 to 3.6V supply range
- Temperature sensor and 8-bit ADC
- Automatic packet handling
- Auto packet transaction handling
- TX and RX 64 byte FIFOs
- On-chip crystal tuning

Applications

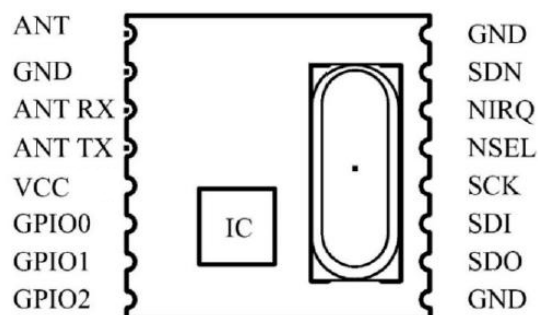
- Wireless PC Peripherals
- Sensor networks
- Toys
- Sports watches and sensors
- Home and commercial automation
- Active RFID
- Home security & alarm
- Advanced Media center remote controls
- Game controllers
- RF remote controls for consumer electronics
- Ultra low power sensor networks
- Asset tracking systems

Product Description

TRW-4432-433 is a fully-integrated and high-power wireless radio module. With high-performance transceivers, it can reach its maximum efficiency at very low power consumption.

This module is mainly used in the ISM (Industrial, Scientific and Medical) and SRD (Short Range Device). It works at frequency band 420MHz~450MHz, with a built-in PA, and an output up to +19dBm. May flexibly adjust the power by an SPI interface. In order to keep abreast of the module in the operating temperature range, you can not only control the output and receive data but also read the RF IC's temperature through the SPI control interface.

Pin Assignments



Pin Function

Pin	Name	I/O	Description
1	Antenna	Input/output	Antenna
2	GND	GND	Ground
3	ANT RX	Input	Controlled antenna switch, IF Receiver MODE IS High Voltage
4	ANT TX	Input	Controlled antenna switch, IF Transmitter MODE IS High Voltage
5	VCC	Input	+1.8V to +3.6 V Supply Voltage Input to Internal Regulators
6	GPIO0	Digital I/O	General Purpose Digital I/O that may be configured through the registers to perform various functions including: Microcontroller Clock Output, FIFO status, POR, Wake-Up timer, Low Battery Detect, TRSW, AntDiversity control, etc. See the SPI GPIO Configuration Registers, Address 0Bh, 0Ch, and 0Dh for more information.
7	GPIO1	Digital I/O	
8	GPIO2	Digital I/O	
9	GND	GND	ground.
10	SDO	Digital Output	Provides a serial read back function of the internal control registers.
11	SDI	Digital Input	This pin provides the serial data stream for the 4-line
12	SCLK	Digital Input	Serial Clock Input. digital input. This pin provides the serial data clock function for the 4-line serial data bus. Data is clocked into the RF CHIP on positive edge transitions
13	nSEL	Digital Input	Serial Interface Select input. 0– VDD V digital input. This pin provides the Select/Enable function for the 4-line serial data bus. The signal is also used to signify burst read/write mode
14	NIRQ	Digital Output	General Microcontroller Interrupt Status output. When the Si4430/31/32 exhibits anyone of the

			Interrupt Events the nIRQ pin will be set low=0. Please see the Control Logic registers section for more information on the Interrupt Events. The Microcontroller can then determine the state of the interrupt by reading a corresponding SPI Interrupt Status Registers, Address 03h and 04h. No external resistor pull-up is required, but it may be desirable if multiple interrupt lines are connected
15	SDN	Digital Input	Shutdown input pin. 0–VDD V digital input. SDN should be = 0 in all modes except Shutdown mode. When SDN =1 the chip will be completely shut down and the contents of the registers will be lost.
16	GND	GND	Ground

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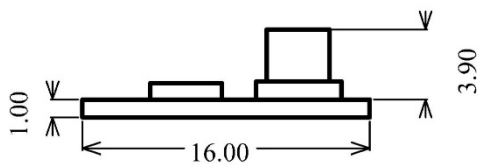
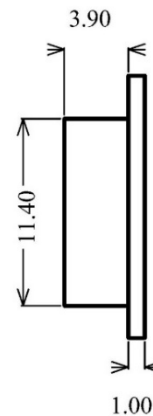
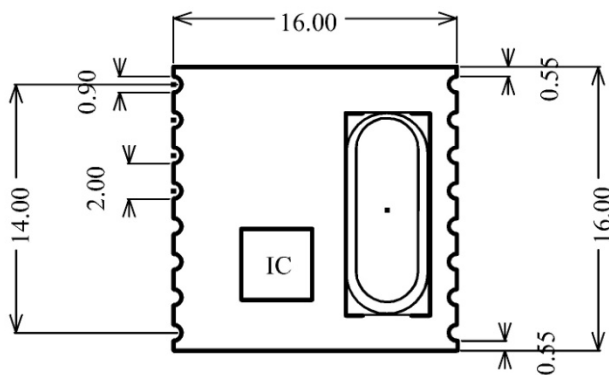
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1 Hardware Specification

1.1 Specification

Conditions: VDD =VCC= 3V, VSS = 0V, TA = 25°C

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Supply Voltage Range	Power		1.8	3	3.6V	V
Power Down	Power	Power Down		15		nA
RX Mode Current	Receiver	1KBPS		18.5		mA
TX Mode Current	Transmitter	20dBm			85	mA
RX Sensitivity	Receiver	512bps 433MHz	-121dBm			dBm



Support

TRW-4432-433 module has the built-in antenna switch. While transmitting or receiving Signals, ANT TX and ANT RX are controllable. Either MCU or GPIO 0/GPIO 1/GPIO 2 can be Chosen to control.

For instance, connect GPIO-0 to ANT TX PIN and GPIO-1 to ANT RX PIN. When the module is in Receiving mode, GPIO-0 should be initialized as LO and GPIO-1 as HI; while in Transmitting mode, GPIO-0 should be initialized as HI and GPIO-1 as LO.

	GPIO-0	GPIO-1	NS
Receiver	LO	HI	
Transmit	HI	LO	

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