
DRF4431F13
13dBm ISM RF Transceiver Module

V1.10

Features:

- Frequency Range: 433/868MHz
- Modulation: FSK/GFSK/OOK
- SPI Data Interface
- Sensitivity: -121dBm
- Output Power: +13dBm
- Data Rate: -0.123~256 kbps
- Digital RSSI
- Wake-up Timer
- 64 bytes TX/RX FIFOs
- Integrated Voltage Regulator
- Frequency Hopping Capability
- Temperature sensor and 8-bit ADC
- Working Temperature: -20°C ~+60°C
- Standby current: $\leq 1\mu\text{A}$
- Supply voltage: 1.8~3.6V



Applications

- Remote Control
- Remote AMR
- Home Automation
- Personal data logger
- Wireless sensor network
- Remote Keyless entry
- Wireless PC peripherals

DESCRIPTION

DRF4431F13 is a type of low cost RF front-end transceiver module based on SI4431 from Silicon labs. It keeps all the advantages of RFIC SI4431 but simplifies the circuit design. The high sensitivity (-121dBm) and 13dBm output power make the module suitable for most short range applications.

DRF4431F13 module consists of RFIC Si4431, thin SMD crystal and antenna matching circuit. The antenna port is well matched to standard 50 Ohm impedance. Users don't need to spend time in RF circuit design and choose suitable antennas for different applications. DORJI also provides SMA connector and high gain antenna for longer communication distance. DRF4431D13 operates at 1.8~3.6V with extra low standby current which makes it suitable for battery powered-up applications. DORJI also provides high power module DRF4431F13 with 500mW output power, which provides users high flexible in designing products for different distances.

PIN FUNCTIONS

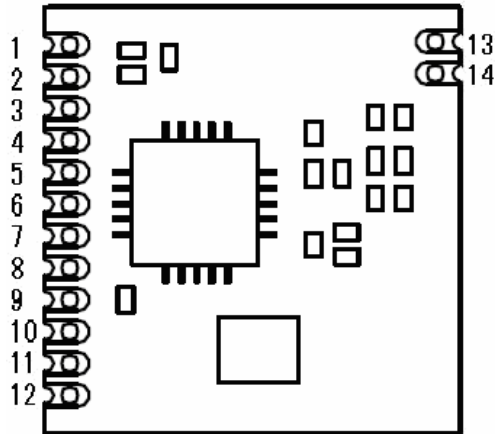


Figure 1: DRF4431F13 Pin Layout

PIN	Name	Function	Description
1	GND	Ground	Ground (0V)
2	GPIO0	Input/Output	General Purpose Digital I/O which can be functioned as: Microcontroller Clock Output, FIFO status, POR, Wake-Up timer, Low Battery Detect, TRSW, Ant Diversity control
3	GPIO1	Input/Output	
4	GPIO2	Input/Output	
5	VCC	Power	+3.3V
6	SDO	Output	SPI data output pin
7	SDI	Input	SPI data input pin
8	SCLK	Input	SPI data clock pin
9	nSEL	Input	SPI select pin
10	nIRQ	Onput	Interrupt status output pin
11	SDN	Input	Shutdown Input pin
12	GND	Ground	Ground (0V)
13	Ant	Output	50 Ohm Impedance
14	GND	Ground	Ground (0V)

Table 1: DRF4431F13 Pin Functions

ELECTRICAL SPECIFICATIONS

Symbol	Parameter (condition)	Min.	Typ.	Max.	Units
VCC	Supply Voltage	1.8	3.3	3.6	V
Temp	Operating temperature range	-20	25	60	°C
Freq	Frequency range	428 863	433 868	438 873	MHz
F _{DEV}	Modulation deviation @433MHz @868MHz	±0.625 ±0.625	--- ---	±160 ±320	KHz
RES _{RSSI}	RSSI resolution		±0.5		dB
I _{DD_R}	Current in receive mode @ 433Mhz @868Mhz		18.5 18.5		mA
I _{DD_T} (1)	Current in transmit mode @ 433Mhz @ 868Mhz		36 36		mA
I _{DD_S}	Current in sleep mode.			1	uA
P _{out}	Max. output power @ 433Mhz @ 868Mhz		12 12	13 13	dBm
Sen. (2)	Receiver sensitivity @ 433Mhz @ 868Mhz	-121 -121	-117 -117		dBm
DR _{FSK}	FSK data rate	0.123		256	Kbps
CH _{BW}	Receiver channel spacing	2.6	---	620	kHz
Z _{ANT}	Antenna Impedance		50		Ohm

Table 2: DRF4431F13 Electrical Specifications

Notes:

- (1) Transmit current is tested at the Max. output power.
- (2) Sensitivity is measured at DR_{FSK} = 1.2k bps and F_{DEV} = 30 kHz

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min.	Max.	Units
VCC	Supply Voltage	-0.3	3.6	V
VI	Input voltage	-0.3	VCC+0.3	V
VO	Output voltage	-0.3	VCC+0.3	V
T _{ST}	Storage temperature	-55	125	°C

Table 3: DRF4431F13 Maximum Ratings

TYPICAL APPLICATION CIRCUIT

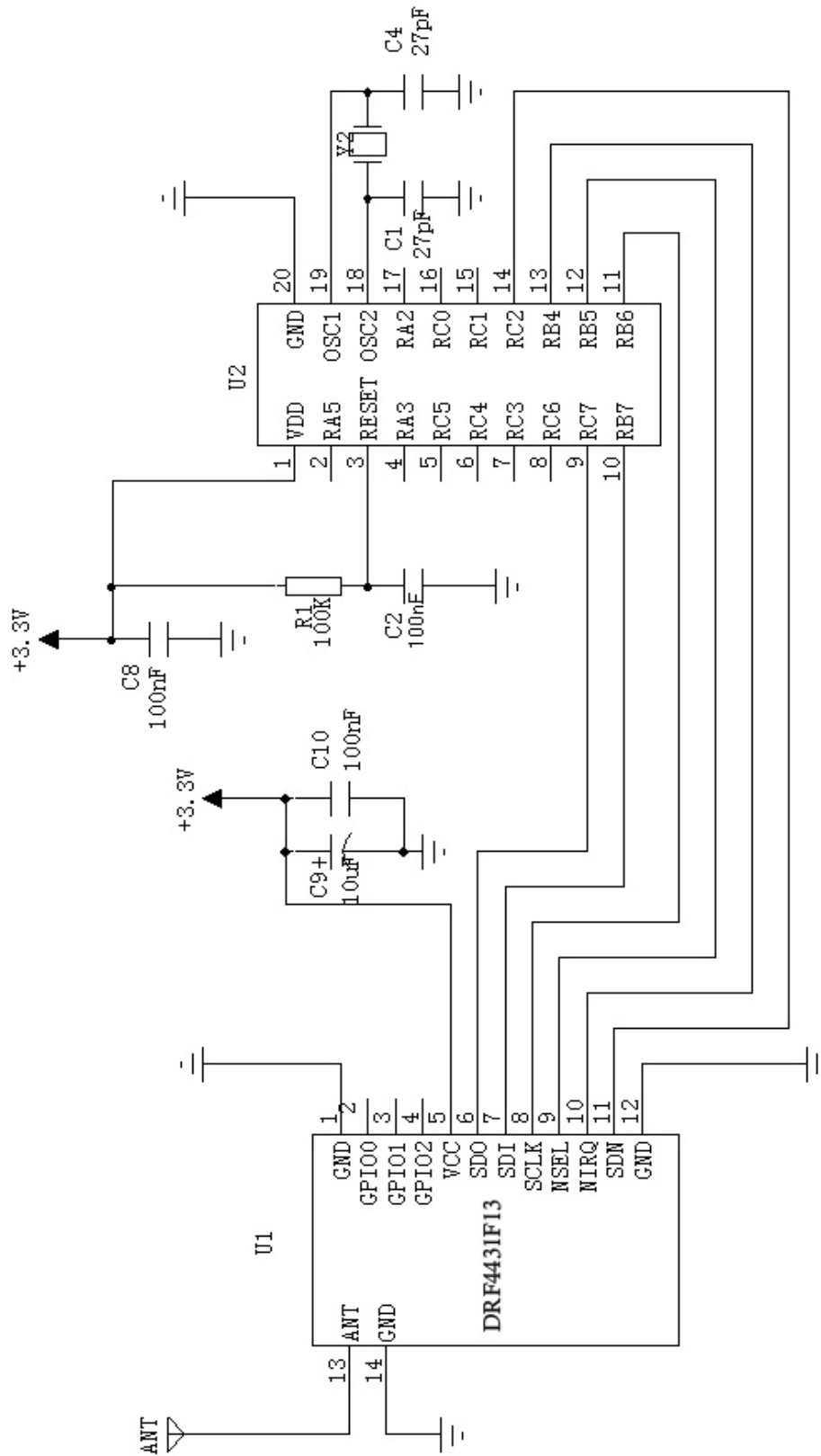


Figure 2: Application Circuit

MECHANICAL DATA

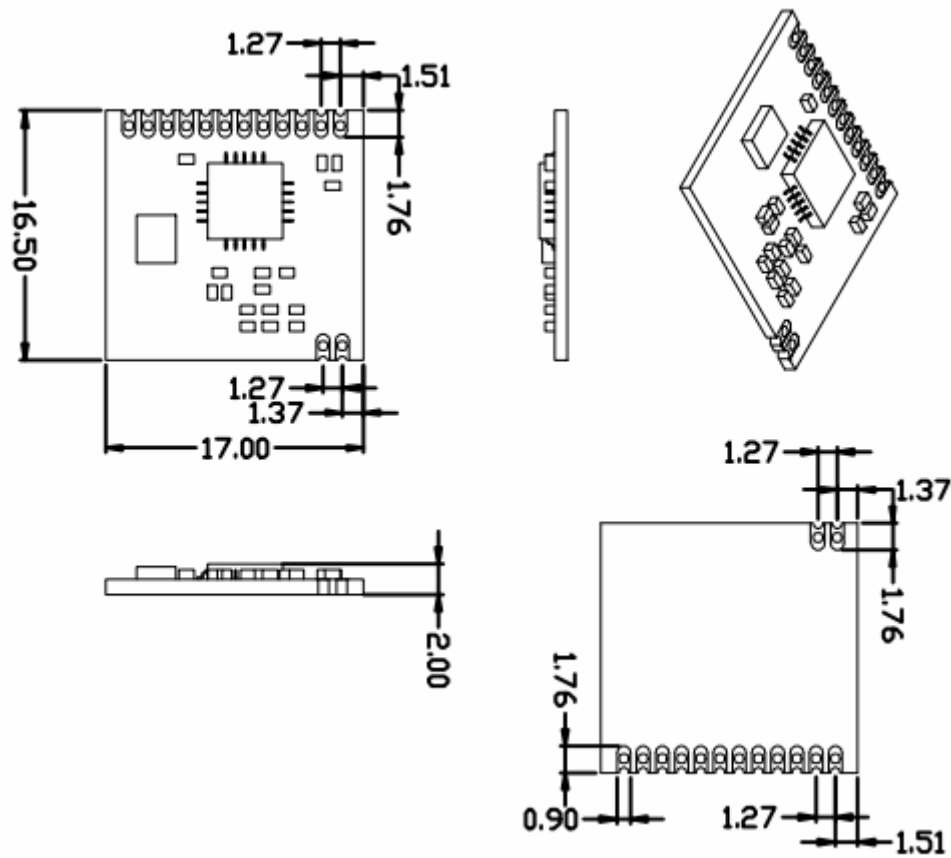


Figure 3: Mechanical Dimension

ORDERING INFORMATION

DRF 4431 F 13 — 043 S

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Num	Symbol	Meaning
①	RF module	RF FSK/GFSK module
②	IC Type	SI4431
③	Module Function	RF front-end module
④	Power	13dBm output power
⑤	Freq. Band	043: 433MHz 086:868MHz
⑥	Package	S: SMD package; D: DIP package

Table 4: Ordering Information

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