DRF4432F20
20dBm ISM RF Transceiver Module

Features:
- Frequency Range: 433/868MHz
- Modulation: FSK/GFSK/OOK
- SPI Data Interface
- Sensitivity: -121dBm
- Output Power: +20dBm
- 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: ≤ 1µA
- 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

DRF4432F20 is a type of low cost RF front-end transceiver module based on SI4432 from Silicon labs. It keeps all the advantages of RFIC SI4432 but simplifies the circuit design. The high sensitivity (-121dBm) and 20dBm high power output make the module suitable for most short range applications.

DRF4432F20 module consists of RFIC Si4432, 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. DRF4432D20 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 DRF4431F27 with 500mW output power, which provides users high flexible in designing products for different distances.
## PIN FUNCTIONS

![Figure 1: DRF4432F20 Pin Layout](image)

### Table 1: DRF4432F20 Pin Functions

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
<td>Ground (0V)</td>
</tr>
<tr>
<td>2</td>
<td>GPIO0</td>
<td>Input</td>
<td>Tx_EN pin; High in transmit mode and Low in receive mode</td>
</tr>
<tr>
<td>3</td>
<td>GPIO1</td>
<td>Input</td>
<td>Rx_EN pin; High in receive mode and Low in transmit mode</td>
</tr>
<tr>
<td>4</td>
<td>GPIO2</td>
<td>Input/Output</td>
<td>General purpose Input/Output pin</td>
</tr>
<tr>
<td>5</td>
<td>VCC</td>
<td>Power</td>
<td>Normal 3.3V</td>
</tr>
<tr>
<td>6</td>
<td>SDO</td>
<td>Output</td>
<td>SPI data output pin</td>
</tr>
<tr>
<td>7</td>
<td>SDI</td>
<td>Input</td>
<td>SPI data input pin</td>
</tr>
<tr>
<td>8</td>
<td>SCLK</td>
<td>Input</td>
<td>SPI data clock pin</td>
</tr>
<tr>
<td>9</td>
<td>nSEL</td>
<td>Input</td>
<td>SPI select pin</td>
</tr>
<tr>
<td>10</td>
<td>nIRQ</td>
<td>Output</td>
<td>Interrupt status output pin</td>
</tr>
<tr>
<td>11</td>
<td>SDN</td>
<td>Input</td>
<td>Shutdown Input pin</td>
</tr>
<tr>
<td>12</td>
<td>GND</td>
<td>Ground</td>
<td>Ground (0V)</td>
</tr>
<tr>
<td>13</td>
<td>Ant</td>
<td>Output</td>
<td>50 Ohm Impedance</td>
</tr>
<tr>
<td>14</td>
<td>GND</td>
<td>Ground</td>
<td>Ground (0V)</td>
</tr>
</tbody>
</table>
ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter (condition)</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC</td>
<td>Supply Voltage</td>
<td>1.8</td>
<td>3.6</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Temp</td>
<td>Operating temperature range</td>
<td>-20</td>
<td>25</td>
<td>60</td>
<td>°C</td>
</tr>
<tr>
<td>Freq</td>
<td>Frequency range</td>
<td>428</td>
<td>433</td>
<td>438</td>
<td>MHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>863</td>
<td>868</td>
<td>873</td>
<td></td>
</tr>
<tr>
<td>FDEV</td>
<td>Modulation deviation</td>
<td>±0.625</td>
<td>---</td>
<td>±160</td>
<td>KHz</td>
</tr>
<tr>
<td></td>
<td>@433MHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@868MHz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSSI</td>
<td>RSSI resolution</td>
<td>±0.5</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>IDD_R</td>
<td>Current in receive mode</td>
<td>18.1</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>@433Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@868Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDD_T</td>
<td>Current in transmit mode</td>
<td>85</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td></td>
<td>@433Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@868Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDD_S</td>
<td>Current in sleep mode.</td>
<td></td>
<td>1</td>
<td></td>
<td>uA</td>
</tr>
<tr>
<td>Pout</td>
<td>Max. output power</td>
<td>18.5</td>
<td>19.5</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td></td>
<td>@433Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@868Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sen.</td>
<td>Receiver sensitivity</td>
<td>-121</td>
<td>-118</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>(2)</td>
<td>@433Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>@868Mhz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRFSK</td>
<td>FSK data rate</td>
<td>0.123</td>
<td>256</td>
<td></td>
<td>Kbps</td>
</tr>
<tr>
<td>CHBW</td>
<td>Receiver channel spacing</td>
<td>2.6</td>
<td>---</td>
<td>620</td>
<td>kHz</td>
</tr>
<tr>
<td>ZANT</td>
<td>Antenna Impedance</td>
<td>50</td>
<td></td>
<td></td>
<td>Ohm</td>
</tr>
</tbody>
</table>

Table 2: DRF4432F20 Electrical Specifications

Notes:
(1) Transmit current is tested at the Max. output power.
(2) Sensitivity is measured at DRFSK =1.2k bps and FDEV =±30 kHz

ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Min.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC</td>
<td>Supply Voltage</td>
<td>-0.3</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>VI</td>
<td>Input voltage</td>
<td>-0.3</td>
<td>VCC+0.3</td>
<td>V</td>
</tr>
<tr>
<td>VO</td>
<td>Output voltage</td>
<td>-0.3</td>
<td>VCC+0.3</td>
<td>V</td>
</tr>
<tr>
<td>TST</td>
<td>Storage temperature</td>
<td>-55</td>
<td>125</td>
<td>°C</td>
</tr>
</tbody>
</table>

Table 3: DRF4432F20 Maximum Ratings
TYPICAL APPLICATION CIRCUIT

Figure 2: Application Circuit
MECHANICAL DATA

Figure 3: Mechanical Dimension

ORDERING INFORMATION

DRF 4432 F 20 — 043 S
① ② ③ ④ ⑤ ⑥

<table>
<thead>
<tr>
<th>Num</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>RF module</td>
<td>RF FSK/GFSK module</td>
</tr>
<tr>
<td>②</td>
<td>IC Type</td>
<td>SI4432</td>
</tr>
<tr>
<td>③</td>
<td>Module Function</td>
<td>RF front-end module</td>
</tr>
<tr>
<td>④</td>
<td>Power</td>
<td>20dBm output power</td>
</tr>
<tr>
<td>⑤</td>
<td>Freq. Band</td>
<td>043: 433MHz  086: 868MHz</td>
</tr>
<tr>
<td>⑥</td>
<td>Package</td>
<td>SMD package</td>
</tr>
</tbody>
</table>

Table 4: Ordering Information
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