

### Product Description

The RIF211 is an integrated RF Front End Module designed for ISM band applications at 2.4 GHz. The device consists of an integrated Power Amplifier, LNA and Switch. The Device can be used for Class 1 Bluetooth and Cordless Phone Applications. Typically the device operates at 3.3 V DC with an output power of 20 dBm. The FEM is fully matched internally to a 50 ohm input and output impedance.

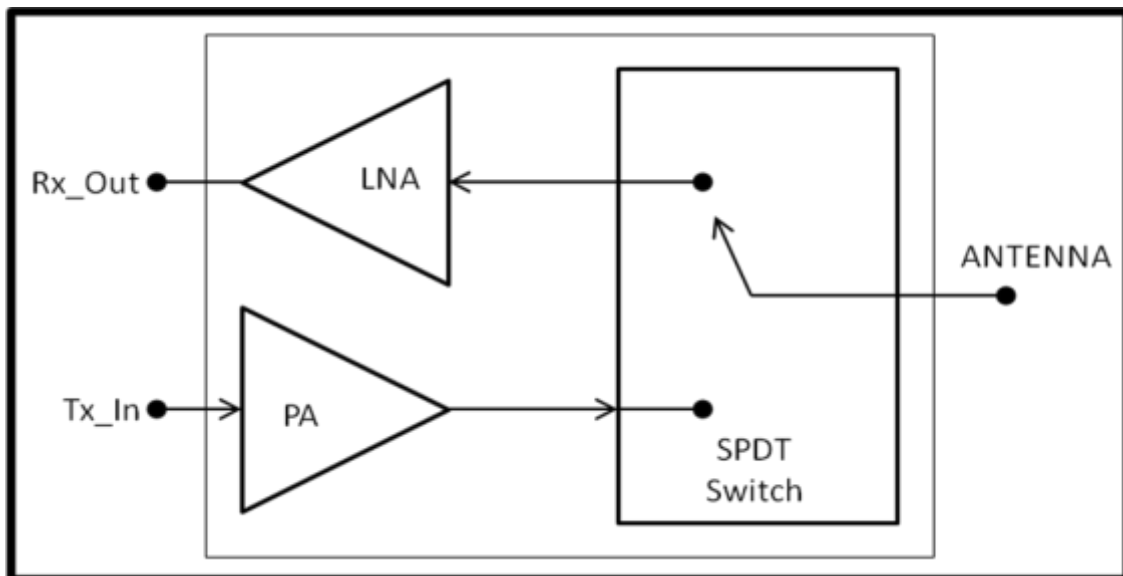
### Application

- IEEE 802.15.4 and ZigBee Systems
- Wireless Audio Systems
- Wireless Consumer Systems
- Wireless Sensor Networks
- All 2.4GHz ISM Band Systems
- Wireless Industrial Systems

### Features

- ISM Band @ 3.3V Operation
- Integrated PA/LNA/SPDT switch
- Matched to 50 Ohms
- Operation from 2.7V to 3.6V
- Package: 3.0 x 3.0 x 0.75mm<sup>3</sup> QFN16 Package

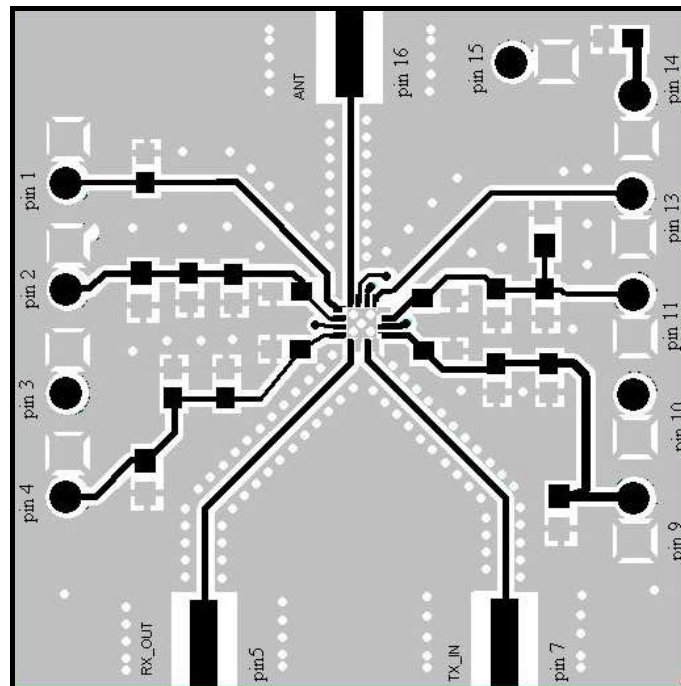
### Functional Block Diagram



### Absolute Ratings

RF Input Power: +5 dBm  
 Operating Temp. Range: -40 to +85°C

**Evaluation Board**



**Pin Configuration**

Pin No.	Name	Description
1	V_CntI2 3.6 / 0 V	Enable/ Disable the switch in receive path with logic high 3.6V and logic low 0V
2	LNA_EN 2.2 – 3.0 / 0 V	Low Noise Amplifier Enable pin. A digital control signal with logic high (power up) and logic low (power down) is used to turn the device on and off.
3	LNA_Reg 2.85 – 3.3 V	Supply voltage for bias circuits of Low Noise Amplifier
4	LNA_Vcc 3.3 V	Drain supply voltage for Low Noise Amplifier
5	Rx_Out	RF output power from Low Noise Amplifier
6	GND	RF Ground
7	Tx_In	RF input power for power amplifier
8	GND	RF Ground
9	PA_EN 2.2 – 3.0 / 0 V	Power Amplifier Enable pin. A digital control signal with logic high (power up) and logic low (power down) is used to turn the device on and off.
10	PA_Reg 2.85 – 3.3 V	Supply voltage for bias circuits of Power Amplifier
11	PA_Vcc 3.3 V	Drain supply voltage for Power Amplifier
12	GND	RF Ground
13	NC	No Connection
14	Vt 0.2 V	Control Voltage for switch irrespective of Tx/Rx path on
15	V_CntI1 3.6 / 0 V	Enable/ Disable the switch in transmit path with logic high 3.6V and logic low 0V
16	ANTENNA	RF Output/Input for transmit and receive path respectively

### To Turn-On the Transmit Channel

- Step 1: Apply 3.6 V(DC) to pin 15 and 0.2 V(DC) to Pin 14 and ground the pin 1. This will turn-on the Switch in transmit mode and turn-off the receive chain.
- Step 2: Now apply 2.2 V(DC) to pin 9 and 2.85 - 3.3(DC) to pin 10. The voltage at pin 10 should be regulated. This will turn-on the bias circuit of the power amplifier in the transmit path.
- Step 3: Provide the RF input signal to pin 7 and then apply 3.3 V (DC) to pin 11. This will turn-on the power amplifier and hence the transmit channel would be ready to take results from pin 16.

\* The evaluation board should not have any other connections to turn-on the transmit channel.

### To Turn-On the Receive Channel

- Step 1: Apply 3.6 V(DC) to pin 1 and 0.2 V(DC) to Pin 14 and ground the pin 15. This will turn-on the switch in receive mode and turn-off its transmit line.
- Step 2: Now apply 2.2 V(DC) to pin 2 and 2.85 - 3.3V(DC) to pin 3. The voltage at pin 3 should be regulated. This will turn-on the bias circuit of the low noise amplifier in the receive path.
- Step 3: Provide RF input signal to pin 16 and then apply 3.3 V (DC) to pin 4. This will turn-on the low noise amplifier and hence the receive channel would be ready to take results from pin 5.

\* The Evaluation board should not have any other connections to turn-on the Receive channel.

**Note:** We recommend use of battery for DC voltages to achieve a good performance and before applying any positive voltage, first connect the DUT ground to the supply ground. All the supply grounds should be common.

**Caution:** When using external power supplies additional decoupling capacitors (10uF & 100nF) are required on Vcc lines to remove power supply hums.

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#### Product Preview

The document contains information from the product concept specification. RF Arrays Inc. reserves the right to change information at any time without notification.

#### Preliminary Information

The document contains information from the design target specification. RF Arrays Inc. reserves the right to change information at any time without notification.

#### Production testing may not include testing of all parameters.

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