QMA-RFM1

2.4 GHz IEEE 802.15.4™ RF Transceiver Module

DATA SHEET

Quan

Features

- IEEE Std. 802.15.4™ Compliant RF Transceiver
- Supports ZigBee®, MiWi™, MiWi™ P2P and Proprietary Wireless Networking Protocols
- Small Size: 0.7” x 1.1” (17.8 mm x 27.9 mm), Surface Mountable
- Integrated Crystal, Internal Voltage Regulator, Matching Circuitry and PCB Antenna
- Easy Integration into Final Product – Minimize Product Development, Quicker Time to Market
- Compatible with Microchip Microcontroller Families (PIC16F, PIC18F, PIC24F/H, dsPIC33 and PIC32)
- Up to 400ft Range (outdoor, line-of-sight)

Operational

- Operating Voltage: 2.4-3.6V (3.3V typical)
- Temperature Range: -40°C to +85°C Industrial
- Simple, Four-Wire SPI Interface
- Low-Current Consumption:
  - RX mode: 19 mA (typical)
  - TX mode: 23 mA (typical)
  - Sleep: 2 μA (typical)

RF/Analog Features

- ISM Band 2.405-2.48 GHz Operation
- Data Rate: 250 kbps
- -94 dBm Typical Sensitivity with +5 dBm Maximum Input Level
- +0 dBm Typical Output Power with 36 dB TX Power Control Range
- Integrated Low Phase Noise VCO, Frequency Synthesizer and PLL Loop Filter
- Digital VCO and Filter Calibration
- Integrated RSSI ADC and I/Q DACs
- Integrated LDO
- High Receiver and RSSI Dynamic Range

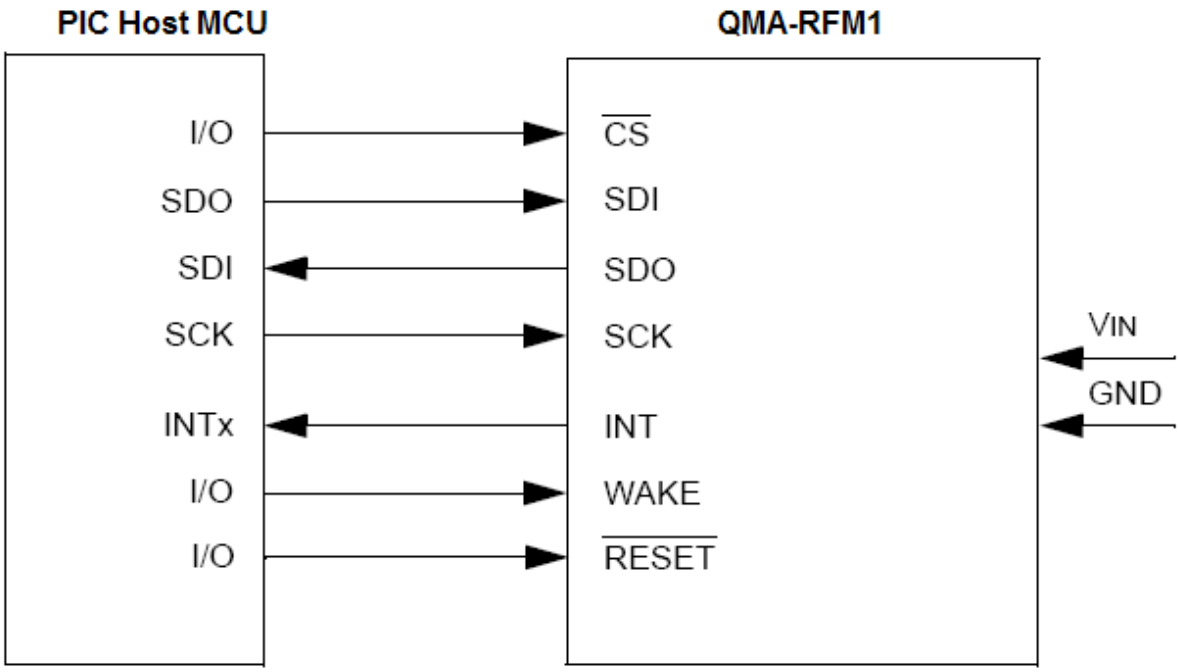
MAC/Baseband Features:

- Hardware CSMA-CA Mechanism, Automatic ACK
- Response and FCS Check
- Independent Beacon, Transmit and GTS FIFO
- Supports all CCA modes and RSS/LQI
- Automatic Packet Retransmit Capable
- Hardware Security Engine (AES-128) with CTR, CCM and CBC-MAC modes
- Supports Encryption and Decryption for MAC Sublayer and Upper Layer

Overview

The QMA-MRF1 is a 2.4 GHz IEEE Std. 802.15.4™ compliant, surface mount module with integrated crystal, internal voltage regulator, matching circuitry and PCB antenna. The QMA-MRF1 module operates in the non-licensed 2.4 GHz frequency band. The integrated module design frees the integrator from extensive RF and antenna design, and regulatory compliance testing, allowing quicker time to market.

Usually QMA-MRF1 needs to work with a host MCU which hosts the driver for the transceiver and the application. The host MCU communicates with the RF module through SPI interface (see figure below).



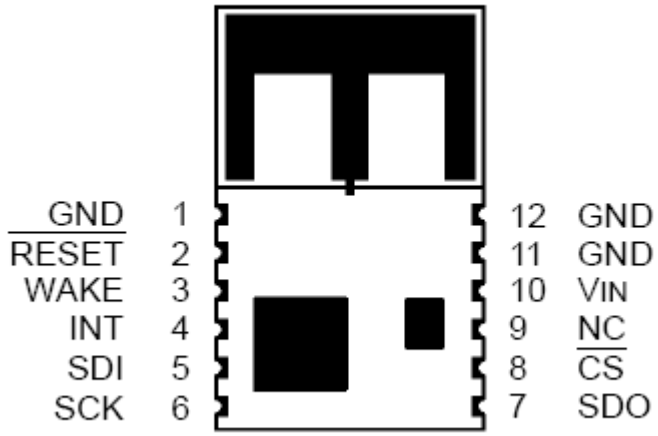
Device Pinout

Pin #	Pin Name	Description
1	GND	Power Ground
2	$\overline{\text{RESET}}$	Global hardware Reset pin
3	WAKE	External wake-up trigger
4	INT	Interrupt pin to microcontroller
5	SDI	Serial interface data input

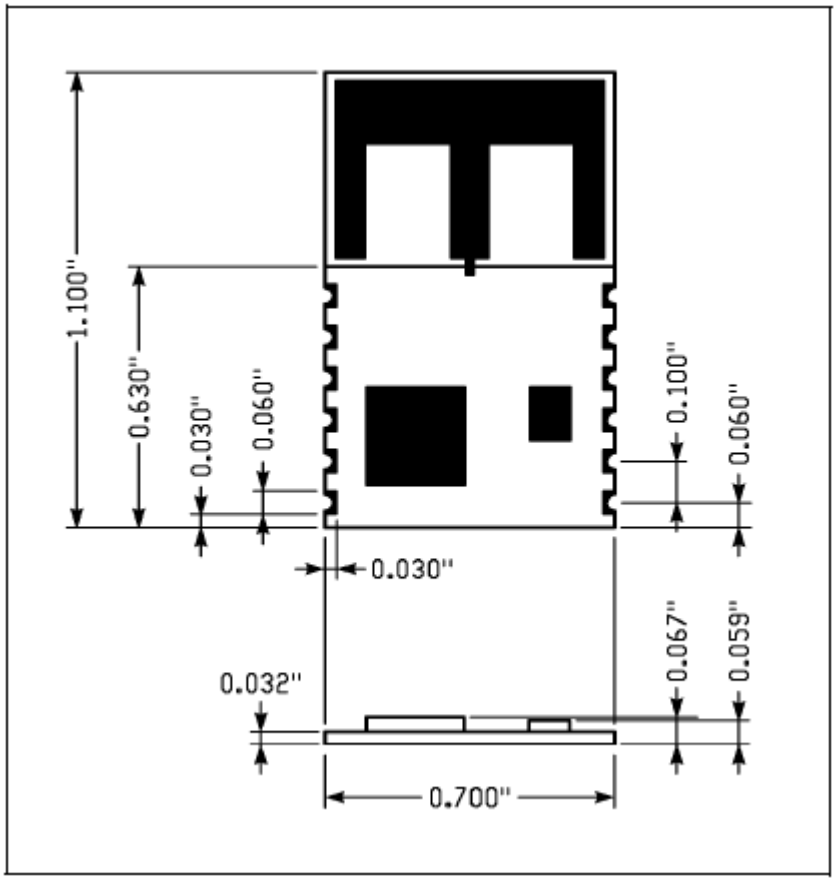
Pin #	Pin Name	Description
6	SCK	Serial interface clock
7	SDO	Serial interface data output from MRF24J40
8	$\overline{CS}$	Serial interface enable
9	NC	No Connection(allow pin to float; do not connect signal)
10	Vin	Power Supply
11	GND	Power Ground
12	GND	Power Ground

Device Diagram

Pin Diagram



Dimention : 17.8 mm X 27.9mm



Manufacturer Infomation:

Quan International Co., Ltd.,