

MRF24J40MA 2.4 GHz 802.15.4™/ZigBee® Transceiver Module

Taking the RF Out of Wireless

Summary

Wireless communications technologies have been commonplace in the home and industry for many years. Recently, consumer, appliance, industrial and metering, applications have driven a new demand for a standardized, low power, low data rate, wireless technology that supports remote sensor and command/control applications. The IEEE 802.15.4 standard was developed to address this need.

The MRF24J40MA is a 2.4 GHz IEEE 802.15.4™ transceiver module developed specifically for Microchip PIC® microcontroller customers. This new transceiver module eliminates the complicated radio frequency and antenna design challenges and is compatible with hundreds of PIC microcontrollers. The MRF24J40MA is FCC, ETSI and IC certified which eliminates risk, cost and enables quick time-to-market. Connect via a simple 4-wire SPI interface and the system is wirelessly enabled.

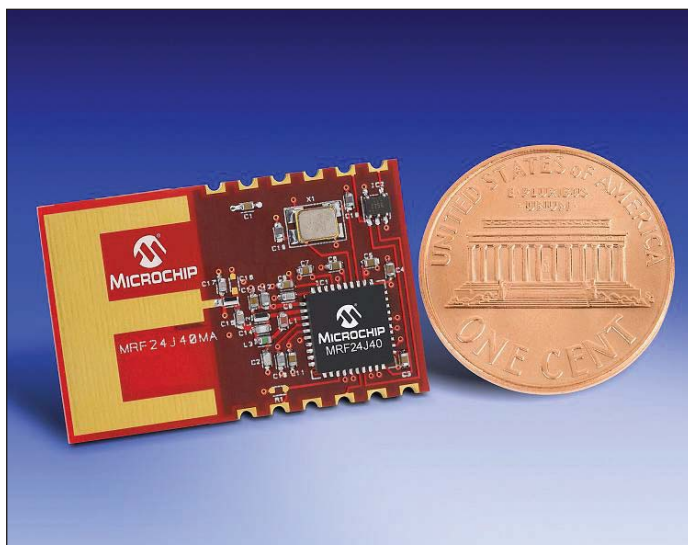
Features

- IEEE 802.15.4™ compliant RF transceiver module
- 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
- Radio regulation certification for United States (FCC), Canada (IC) and Europe (ETSI)
- Compatible with Microchip microcontroller families (PIC16F, PIC18F, PIC24F/H, dsPIC33 and PIC32)
- Up to 400 meters range (outdoor, line-of-sight)

RF/Analog Features

- ISM band 2.4 GHz operation
- -94 dBm Rx sensitivity
- +0 dBm Tx output power
- Integrated low phase noise VCO, frequency synthesizer and PLL loop filter
- Digital VCO and filter calibration
- High receiver and RSSI dynamic range

MRF24J40MA



MAC/Baseband Features

- Hardware CSMA-CA mechanism, automatic ACK response and FCS check
- Independent beacon, transmit and GTS FIFO
- Hardware security engine (AES-128) with CTR, CCM and CBC-MAC modes
- Supports all CCA modes and RSSI/LQI
- Automatic packet retransmit capability
- Supports in-line or stand-alone modes for both encryption and decryption
- Choice of license free wireless protocol stacks:
 - ZigBee – Mesh/Star networks and interoperability
 - MiWi™ – Mesh/Star networks
 - MiWi P2P – Star and P2P networks



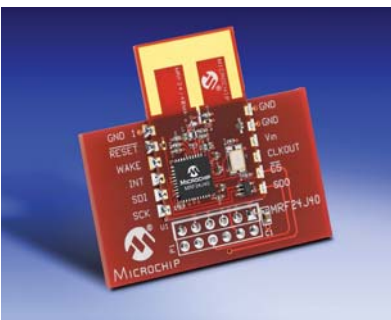
MICROCHIP

Microchip Technology Incorporated

DM163027-5



AC163028



AC164134



Additional Information

- Wireless Design Center: www.microchip.com/wireless
- DS70329, MRF24J40MA Data Sheet
- AN1066, MiWi™ Wireless Networking Protocol Stack
- AN1192, MRF24J40 Radio Driver
- AN1204, Microchip MiWi P2P Wireless Protocol
- AN1232, Microchip ZigBee 2006 Residential Stack Protocol

Sample/Purchasing Information

- Online Sampling: sample.microchip.com
- Online Purchasing: www.microchipdirect.com

802.15.4/ZigBee® Transceivers

Product	Agency Certification	Frequency	Sensitivity	Output Power	Tx Power Consumption	Rx Power Consumption	Interface	MAC/Sleep/RSSI	Encryption	Antenna	Standard Operating Voltage	Packages
MRF24J40	n/a	2.4 GHz	-95 dBm	0 dBm	18 ma	22 ma	4 wire SPI	yes	AES-128	External	2.4V-3.6V	6x6 QFN
MRF24J40MA	FCC/ETSI/IC	2.4 GHz	-94 dBm	0 dBm	18 ma	23 ma	4 wire SPI	yes	AES-128	PCB	2.4V-3.6V	PCB Module
MRF24J40MB*	FCC/ETSI/IC	2.4 GHz	-94 dBm	20 dBm	—	—	4 wire SPI	yes	AES-128	Chip	2.4V-3.6V	PCB Module
MRF24J40MC*	FCC/ETSI/IC	2.4 GHz	-94 dBm	20 dBm	—	—	4 wire SPI	yes	AES-128	External	2.4V-3.6V	PCB Module

*Contact Microchip Sales for availability.

Development Tools from Microchip

Part Number	Development Tool	Description
DM163027-5	PICDEM™ Z MRF24J40MA 2.4 GHz Demo Kit	802.15.4/ZigBee Starter Kit
DM183023	ZENA™ Network Analyzer	802.15.4/ZigBee Sniffer and Network Analyzer
AC163027-4	PICDEM™ Z MRF24J40 2.4 GHz Daughter Card	802.15.4/ ZigBee RF Board for the PICDEM Z and Explorer Development Kits
AC163028	MRF24J40MA PICDEM™ Z 2.4 GHz RF Board	802.15.4/ZigBee RF Board for the PICDEM Z Development Kit – Uses FCC Certified MRF24J40MA Module
AC164134	MRF24J40MA PICtail™ Plus 2.4 GHz RF Card	802.15.4/ZigBee RF Board for the Explorer 16 Development Kit – Uses FCC Certified MRF24J40MA Module



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www.microchip.com/wireless

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Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199

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