

# M05A/M05A-C RF Module – 2.4GHz, FSK/GFSK 500Kbps (RoHS Compliant)

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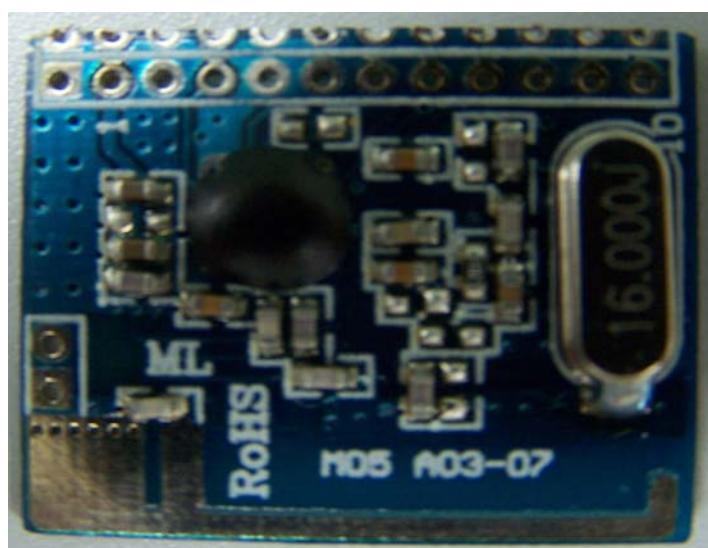
## 1.0 General Description

The M05A-C module is designed for 2.4GHz ISM band wireless applications using U1 GFSK transceiver. This module features a fully programmable frequency synthesizer by SPI. The data rate is 500Kbps.

## 2.0 Electrical specification

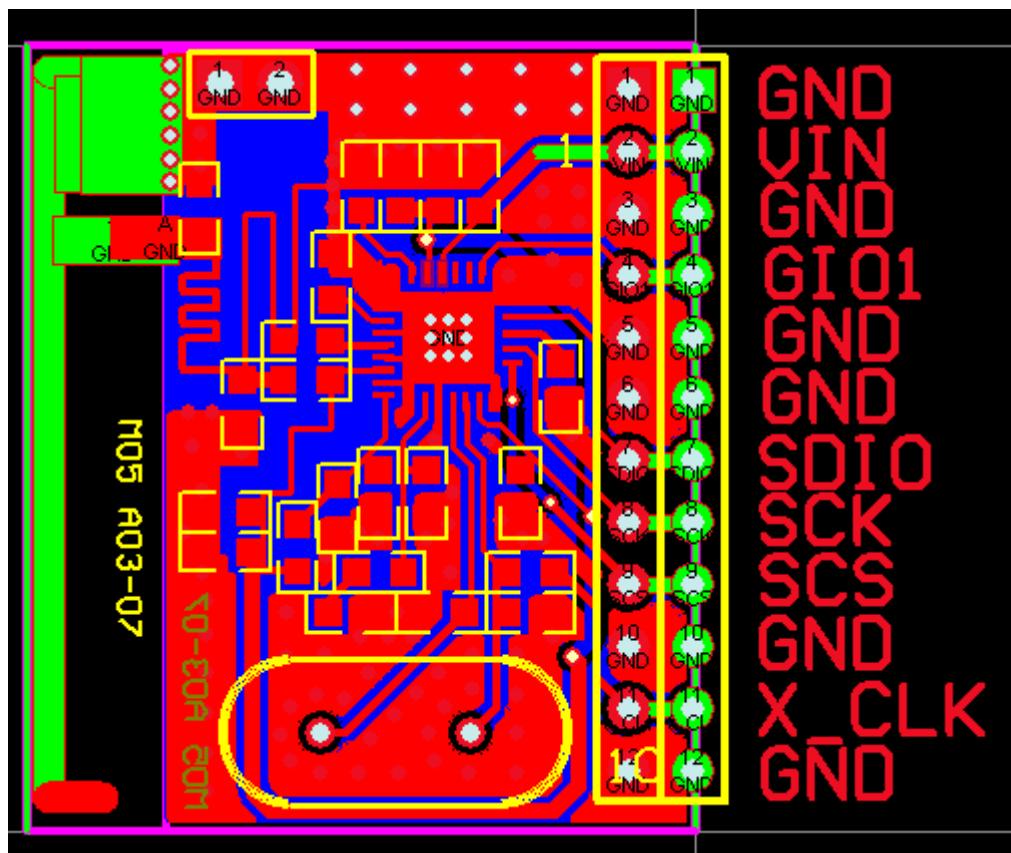
Item	Specification	Remark
Supply voltage	1.9V~3.6V	
Current consumption	1uA (typical) @ sleep mode 1.5mA (typical) @Stand-by mode 19mA (typical) @Tx power = 0dBm 14mA (typical) @Tx power = -4dBm 16mA (typical) @Rx mode	
Frequency	2400 – 2483MHz	
Transmit output power	0 ± 2 dBm @ Maximum Power Setting	
Rx sensitivity	-96 dBm (typical) @ 500K mode	BER, 1E-3
Modulation	FSK/GFSK	
Transmission distance	~10 meters (typical) ~ 20 meters (typical)	Closed area Open area (LOS)
Interface	12 pin 2.0mm header	
Dimension	25.4(L) x 21.5(W) x 4.25(H) mm 25.4(L) x 21.5(W) x 2.1(H) mm	M05A-C M05A
Operating temperature	-10 ~ 70 C	

## 3.0 Module dimension drawings (With Antenna)



Size : 25.4mm x 21.5mm, connector pad pitch : 2mm

#### 4.0 Connector Interface And Application Diagram



##### Layout Notice:

There is no ground place on the PCB-antenna area in the PCB

#### 5.0 Frequency hopping

There are totally 160 frequency channels designed on the RF module.

We have selected 16 different frequency channels out of 160 and the frequency hopping table is created. Frequency hopping(channel switching) will carried out in every 20ms.

##### 5.1 Hopping sequence channel selection example

16 Channel hopping table:

2418MHz	//CH36
2452MHz	//CH104
2466MHz	//CH132
2460MHz	//CH120
2474MHz	//CH148
2428MHz	//CH56
2408MHz	//CH16
2436MHz	//CH72
2410MHz	//CH20

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2442MHz	//CH84
2462MHz	//CH124
2432MHz	//CH124
2444MHz	//CH88
2472MHz	//CH144
2448MHz	//CH96
2476MHz	//CH152

### 5.2 Avoid RF Interference

To avoid RF interference, RF channel frequency will be changed at transmit side and receive side at every 20ms. If there is any packet lost or error during communication, RF linking will be re-established.

### 5.3 RF module pin description:

The RF module has 12pins for external interface as described on below table:

Pin	Signal Name	Type	Description
1	GND	PWR	Ground
2	VIN	PWR	1.9V~3.6V power supply voltage.
3	GND	PWR	Ground
4	GPIO1	O	Data transfer over or ready
5	GND	PWR	Ground
6	GND	PWR	Ground
7	SDIO	I/O	SPI data input/output
8	SCK	I	SPI clock
9	SCS	I	SPI communication Enable control
10	GND	PWR	Ground
11	X_CLK	I	External clock
12	GND	PWR	Ground

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### **6. Other Information**

This product is RF module, and all the end OEM should Labeled their end product as “ **Contains FCC ID: V8UM7105A03081009**” or “ **contains transmitter module FCC ID: V8UM7105A03081009**”

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.