MM875033-11 zigbee Module Datasheet

Revision	Date	Description	Author
1.0	2016-11-11	initial release	

contents

1. Introduction

MM875033-11 is a low-power Zigbee module for the Internet of Things,making the terminal more reliable, convenient and easy to use.

The MM875033-11 module contains a NXP JN5169 single-chip solution. the chip in software and hardware are used in low-power technology, the purpose is to lower the power consumption of the entire board, the product more competitive. The module makes up with rf circuit, antenna, zigebee SOC, power supply, crystals and other auxiliary circuit。At present, the module provides a complete serial interface functions and equipment to communicate, so you can through the serial port and mobile client to connect the cloud and equipment.

- 2.4 GHz IEEE802.15.4 compliant

- On-board antenna

- 2.0 V to 3.6 V battery operation

- Power saving technology with low consumption

- RX current 14.7 mA, in low power receive mode 13 mA

- Configurable transmit power

- Deep sleep current 140 nA (wake-up from IO)

- Compensation for temperature drift of crystal oscillator frequency

- The JN5169 features 512 kB embedded Flash, 32 kB RAM and 4 kB

EEPROM memoryand radio outputs up to 10 dBm.

1.1   1.1 Module System Block Diagram

As shown in Figure 1, The MM875033-11   module contains a NXP JN5169 single-chip solution, the chip highly integrated CPU, PMU, RAM, Transceiver, LNA, PA, memmory, and other major parts, thus greatly reducing the machine power, Amplitude reduces the layout area. The module uses the internal antenna design in PCB, both for customers to reduce the cost of the antenna, but also eliminates the need to consider the antenna assembly space.
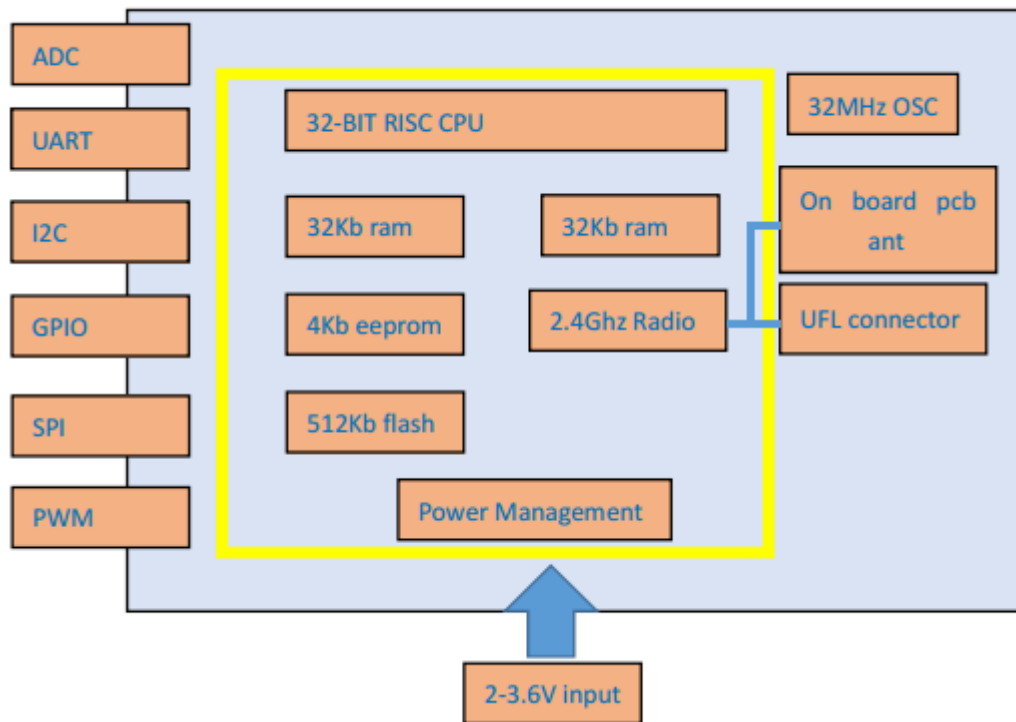

figure 1. Module System Block Diagram

1.2 Module technical specifications

| Main chip	JN5169
Working frequency	2.40~2.485GHz
Supported standard	IEEE802.15.4
Modulation	O-QPSK MODEM
communication interface	UART
PCB layer structure	4 Layer
PCB size	22mm(L)x17mm(W)x2.0mm(H)
Antenna	PCB internal antennas
Operation temperature	0℃~+85℃
Storage temperature	-40℃~+125℃
Hardware version number	Msmart-Zigbee(JN5169)-A[V1.1]

2 Structure specification

2.1 Module structure size
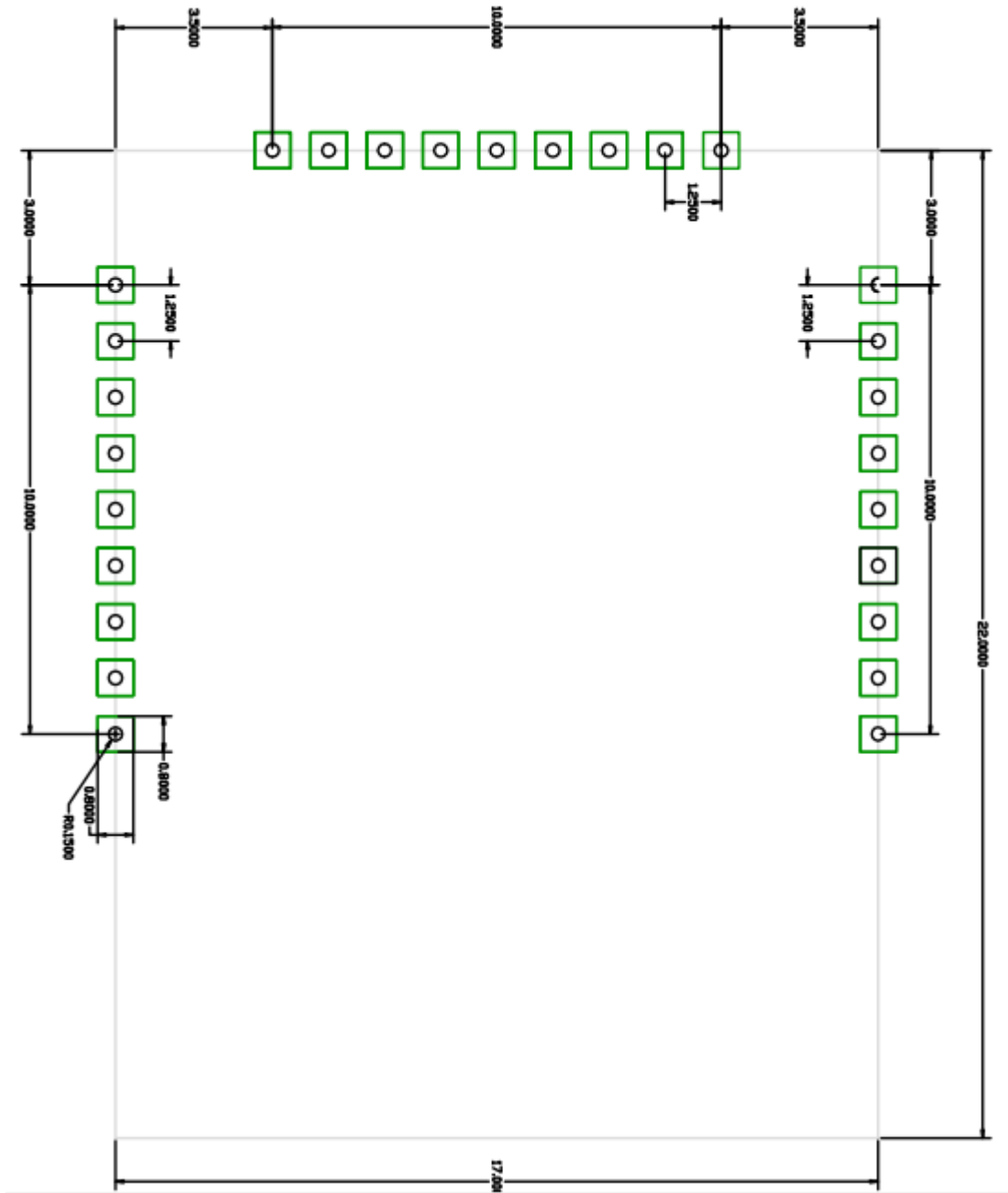
The size of the module as shown above, length 22mm, width 17mm, thickness 2.0mm (error +/- 0.2mm)

2.2 Hardware interface definition
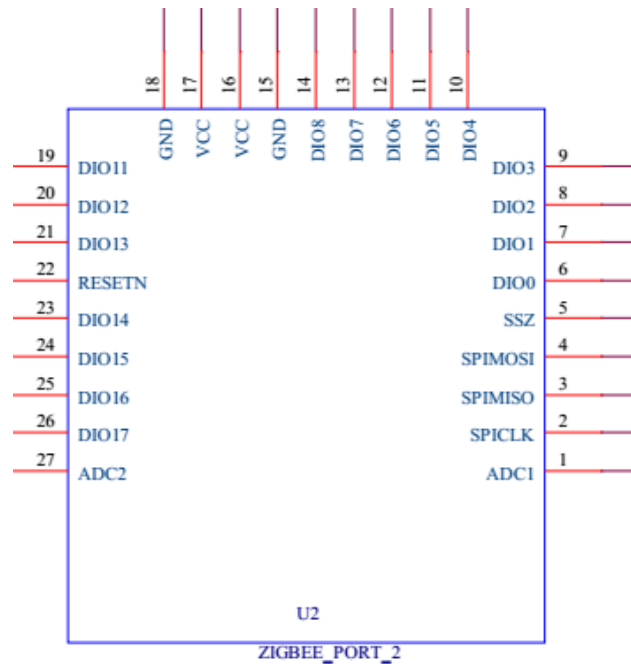
1	ADC1	ADC INPUT 1	15	GND	Ground
2	SPICLK	SPI BUS master clock out	16	VCC	Supply Input Pin
3	SPIMISO	SPI BUS master in,slave out input	17	VCC	Supply Input Pin
4	SPIMOSI	SPI BUS master out,slave in output	18	GND	Ground
5	SSZ	SPI BUS master select output 0	19	DIO11	GPIO
6	DIO0	GPIO&ADC INPUT 3	20	DIO12	GPIO
7	DIO1	GPIO& ADC INPUT 4	21	DIO13	GPIO
8	DIO2	GPIO& ADC INPUT 5	22	RESETN	Reset pin，Active Low
9	DIO3	GPIO& ADC INPUT 6	23	DIO14	UART1-TX&I2C-SCL
10	DIO4	GPIO	24	DIO15	UART1-RX&I2C-SDA
11	DIO5	GPIO	25	DIO16	I2C-SCL &GPIO
12	DIO6	UART0-TX	26	DIO17	I2C-SDA &GPIO
13	DIO7	UART0-RX	27	ADC2	ADC INPUT 2
14	DIO8	GPIO			

3 Wireless Specification

		reference	section	limit
Transmission	TX Maximum Power	ETSI EN 300 328	4.3.2.1	20dBm
	TX Spurious 30Mhz-1Ghz	ETSI EN 300 328	4.3.2.8	-36 or -54dbm(depends on frequency)(100khz BW)
		ETSI EN 300 328	4.3.2.8	-30 dBm
	ECM	802.15.4	10.3.8	35%
	TX Frequency Tolerance	802.15.4	10.3.9	+/-40 ppm
	min of max power	802.15.4	10.3.10	-3dBm
	phase noise(unspread)	No reference		
Reception	RX spurious 30Mhz - 1GHz	ETSI EN 300 328	4.3.2.9.2	-57dBm(100 Khz)
	RX spurious 1G - 12.5GHz	ETSI EN 300 328	4.3.2.9.2	-47 dBm(1 Mhz)
	RX sensitivity	802.15.4	10.3.4	-85dBm
	Interference rejection N+/-1(adjacent)	802.15.4	10.3.5	0dB
	Interference rejection N+/-2(alternate)	802.15.4	10.3.5	30dB
	RX Max input	802.15.4_2011	10.3.11	-20dBm

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help.
This device complies with Part 15 of 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.

FCC Warnings:

Modifications: Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC Rules.

Radio Frequency Exposure:

Notes:

1) For mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculators indicate the MPE distance is less.

2) This equipment has been evaluated in accordance with the FCC bulletin 56 "Hazards of radio frequency and electromagnetic fields" and bulletin 65 " Human exposure to radio frequency and electromagnetic fields.

3) Safe operation in an uncontrolled environment will result if the following distances from the device are maintained as a minimum.

Use of Modular Certification:

For a host manufacture's using a certified modular, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module:
"Contains Transmitter Module FCC ID:2AIRV0003" or "Contains FCC ID:2AIRV0003" must be used.