成都亿佰特电子科技有限公司
Chengdu Ebyte Electronic Technology Co.,Ltd.

E72-2G4M23S-2630 Datasheet v1.0

Contents

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1. Introduction

E72-2G4M23S-2630 is small SMD wireless RF module designed by Chengdu Ebyte, working at 2.402~2.480GHz, with 23dB maximum power and PCB antenna&IPEX interface. It has super low RF & MCU current and low power consumption.

E72-2G4M23S-2630 adopts the RFIC CC2630 of TI, which integrates 128KB intra-system programmable flash and 8KB buffer static RAM (SRAM), and it supports ZigBee®、 6LoWPAN and ZigBee RF4CE, etc. With rich peripherals and the special built-in ultra-low power consumption sensor controller, it is suitable for connecting external sensors and collecting analog and digital data automatically when other parts are in sleep mode.

E72-2G4M23S-2630 is a hardware platform without firmware, so users need to conduct secondary development.

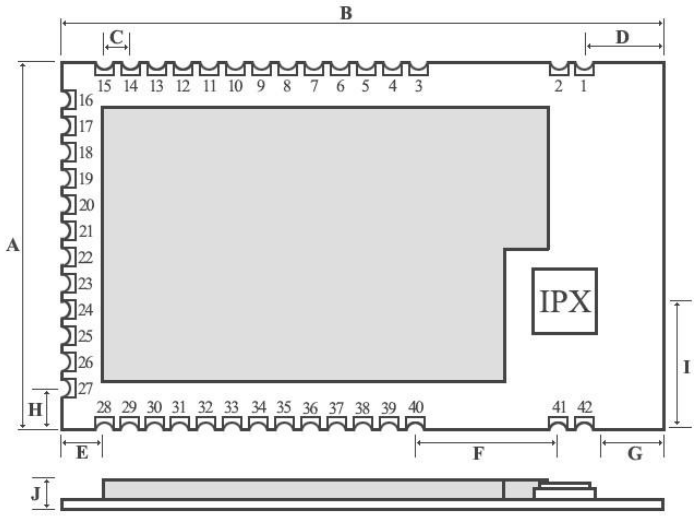
2. E72 Series

Model	RFIC	Frequency MHz	Power dBm	Range m	Packing	Antenna
E72-2G4M05S-2630	CC2630	2402~2480	5	150/500	SMD	PCB/IPX
E72-2G4M23S-2630	CC2630	2402~2480	23	500/1500	SMD	PCB/IPX
E72-2G4M05S-2640	CC2640	2402~2480	5	150/500	SMD	PCB/IPX

3. Electrical Parameter

No.	Item	Parameter details	Description
1	RFIC	CC2630+CC2592	TI
2	Size	33.5 * 17.5mm	-
3	Weight	2.1g	Average weight
4	Frequency band	2402 ~ 2480MHz	Can be configured with software, it adopts 24MHz oscillator
5	PCB	4-layer PCB	Impedance-matching, lead-free, anti-interference with shield
6	Connector	1.27mm spacing	SMD
7	Operation voltage	2.0~3.7V	Recommended difference between supply voltage is less than 0.3V to lower power consumption
8	Supply Voltage	-0.3~ 3.8V DC	Note: the voltage higher than 3.8V is forbidden
9	Communication level	-0.3 ~ 3.8V	Note: the voltage higher than 3.8V is forbidden
10	Operation Range	500m	Test condition: clear and open area & 5dBm , PCB antenna, height: 2m.
		1500m	Test condition: clear and open area & 5dBm, antenna gain: 5dBi , height: 2m.
11	Transmitting power	Maximum 23dBm	About 199.5mW, can be configured to -21~5dBm
12	Air data rate	1Mbps	IEEE802.15.4; please refer to IC datasheet
13	Standby current	2uA	CPU, RAM, Clock and some register reserved
14	Transmitting current	180mA@23dBm3.3V	≥300mA (recommended)
15	Receiving current	11.5mA , BW = 10KHz	Average value
16	Transmitting length	37 bytes; 128 bytes	IEEE802.15.4 ; please refer to CC2630 datasheet
17	Receiving length	37 bytes; 128 bytes	IEEE802.15.4 ; please refer to CC2630 datasheet
18	Antenna type	PCB / IPEX	50Ω characteristic impedance, selected from 0R resistor, PCB antenna by default
19	Operating temperature	-40 ~ +85℃	-
20	Operating humidity	10% ~ 90%	Relative humidity, no condensation
21	Storage temperature	-40 ~ +150℃	-
22	Receiving sensitivity	-100dBm@1Mbps	Please refer to CC2630 datasheet

4. Pin Definition



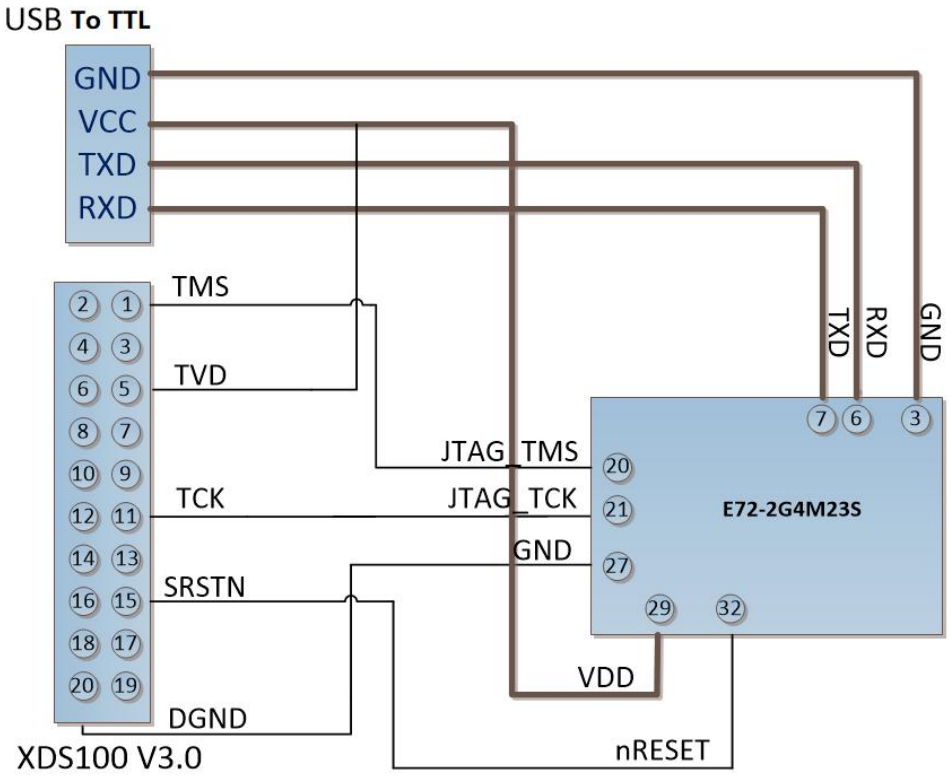
Units: mm

	MIN	NOR	MAX
A	17.4	17.5	17.6
B	28.6	28.7	28.8
C	1.27	1.27	1.27
D	6.245	6.25	6.255
E	1.76	1.765	1.77
F	3.8	3.8	3.8
G	5.8	5.85	5.9
H	1.745	1.75	1.755
I	6.6	6.65	6.7
J	1.75	1.78	1.8

No.	Pin item	Pin direction	Application
1,2,3	GND		Ground electrode, connected to power source reference ground
4	DIO_0	Input/output	GPIO, sensor controller (refer to IC datasheet)
5	DIO_1	Input/output	GPIO, sensor controller (refer to IC datasheet)
6	DIO_2	Input/output	GPIO, sensor controller (refer to IC datasheet)
7	DIO_3	Input/output	GPIO, sensor controller (refer to IC datasheet)
8	DIO_4	Input/output	GPIO, sensor controller (refer to IC datasheet)
9	DIO_5	Input/output	High drive GPIO, sensor controller (refer to IC datasheet)
10	DIO_6	Input/output	High drive GPIO, sensor controller (refer to IC datasheet)
11	DIO_7	Input/output	High drive GPIO, sensor controller (refer to IC datasheet)
12	DIO_8	Input/output	GPIO, (refer to IC datasheet)
13	DIO_9	Input/output	GPIO, (refer to IC datasheet)
14	DIO_10	Input/output	GPIO, (refer to IC datasheet)
15	DIO_11	Input/output	GPIO, (refer to IC datasheet)
16	DIO_12	Input/output	GPIO, (refer to IC datasheet)
17	DIO_13	Input/output	GPIO, (refer to IC datasheet)
18	DIO_14	Input/output	GPIO, (refer to IC datasheet)
19	DIO_15	Input/output	GPIO, (refer to IC datasheet)
20	JTAG_TMS	Input/output	JTAG_TMSC, high drive capability (refer to IC datasheet)
21	JTAG_TCK	Input/output	JTAG_TCKC, high drive capability (refer to IC datasheet)
22	DIO_16	Input/output	High drive GPIO, JTAG_TDO (refer to IC datasheet)
23	DIO_17	Input/output	High drive GPIO, JTAG_TDI (refer to IC datasheet)
24	DIO_18	Input/output	GPIO, (refer to IC datasheet)
25	DIO_19	Input/output	GPIO, (refer to IC datasheet)
26	DIO_20	Input/output	GPIO, (refer to IC datasheet)
27	GND		Ground electrode, connected to power source reference ground
28	DIO_21	Input/output	GPIO, (refer to IC datasheet)

29	VDD		Power supply, 2.0V ~ 3.7V
30	DIO_22	Input/output	GPIO, (refer to IC datasheet)
31	DIO_23	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
32	nRESET	Input	Reset, low level, (refer to IC datasheet)
33	DIO_24	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
34	DIO_25	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
35	DIO_26	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
36	DIO_27	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
37	DIO_28	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
38	DIO_29	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
39	DIO_30	Input/output	GPIO, sensor controller, digital analog (refer to IC datasheet)
40,41,42	GND		Ground electrode, connected to power source reference ground
★ Please refer to "CC26XX Datasheet" of TI for pin definition, software drive and protocol ★			

5. Usage

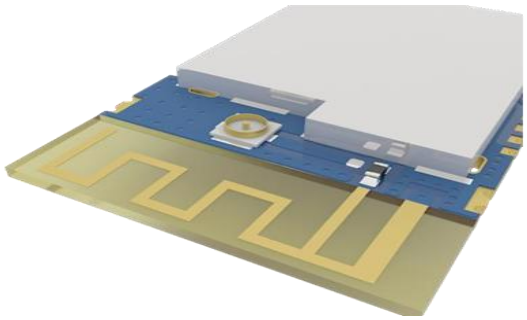


No.	Brief description for connecting module to simulator XDS100V3.0
1	TMS, TCK, RESET and GROUND shall be connected between the module and simulator, and extra 3.3V power supply shall be added for simulator.
2	Connect the module with USB-TTL module, multiplex module serial port and IO interface, users can configure based on needs.
3	Grounding shall be good enough with large area of grounding and little power ripple, add filter capacitor close to module VCC and GND pins.

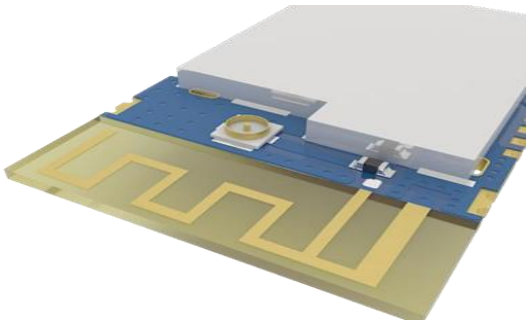
6. Antenna Type

The default 0R resistance showed as below(left), it is PCB antenna.

If users need the IPEX as antenna interface, just change the 0R resistance as below(right).



Choose PCB



Choose IPEX

7. Software Programming

No.	Notes
1	When transmitting, set DIO_7 as high, DIO_13 and DIO_14 as low; When receiving, set DIO_7 as low, DIO_13 and DIO_14 as high. Before turn off, set DIO_7,DIO_13,DIO_14 as low.
2	The register parameters can be re-initiated for better stability when the IC is in idle status.

8. Customization

★Please contact us for customization.

★Ebyte has established profound cooperation with various well-known enterprises.

9. About us

Chengdu Ebyte Electronic Technology Co., Ltd. (Ebyte) is specialized in wireless solutions and products.

- We research and develop various products with diversified firmware;
- Our catalogue covers WiFi, Bluetooth, Zigbee, PKE, wireless data transceivers & etc.;
- With about one hundred staffs, we have won tens of thousands customers and sold millions of products;
- Our products are being applied in over 30 countries and regions globally;
- We have obtained ISO9001 QMS and ISO14001 EMS certifications;
- We have obtained various of patents and software copyrights, and have acquired FCC, CE, RoHs & etc.