E07-433M20S

Wireless Module

catalogue

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Introduction

1.1 Brief Introduction

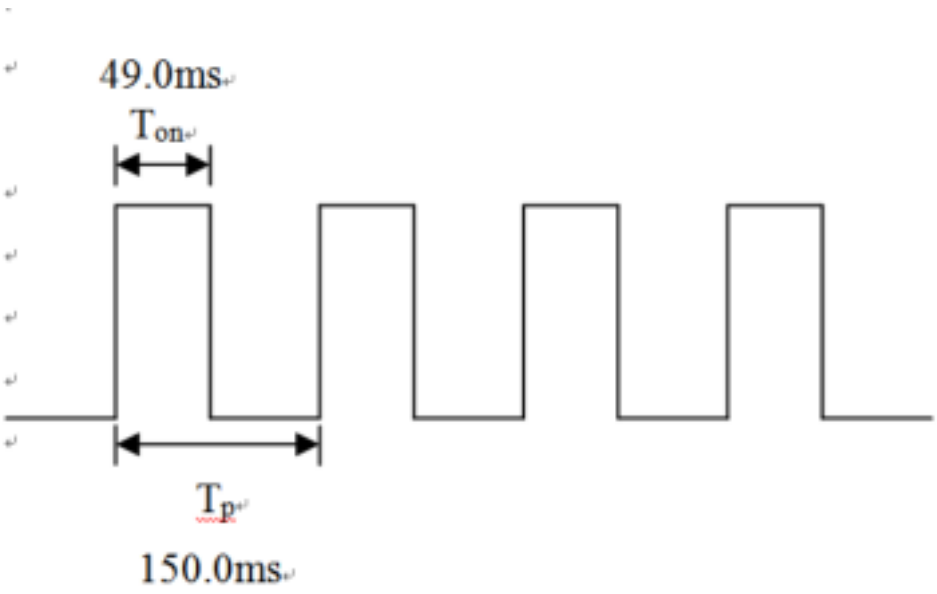
E07-433M20S is one low power, small-size, 425MHz-450.5MHz SMD wireless module based on CC1101 scheme.

1.2 Features

- The measured communication distance can reach approximate 50m;
- Support the global license-free 425 MHz~450.5 MHz band;
- Support 2.1V~3.6V power supply, power supply over 3.3 V can guarantee the best performance;

1.3 Application

- Home security alarm and remote keyless entry;
  The duty cycle is as follow: 49ms/100ms×100% =49%



2 Specification and parameter

2.1 Limit parameter

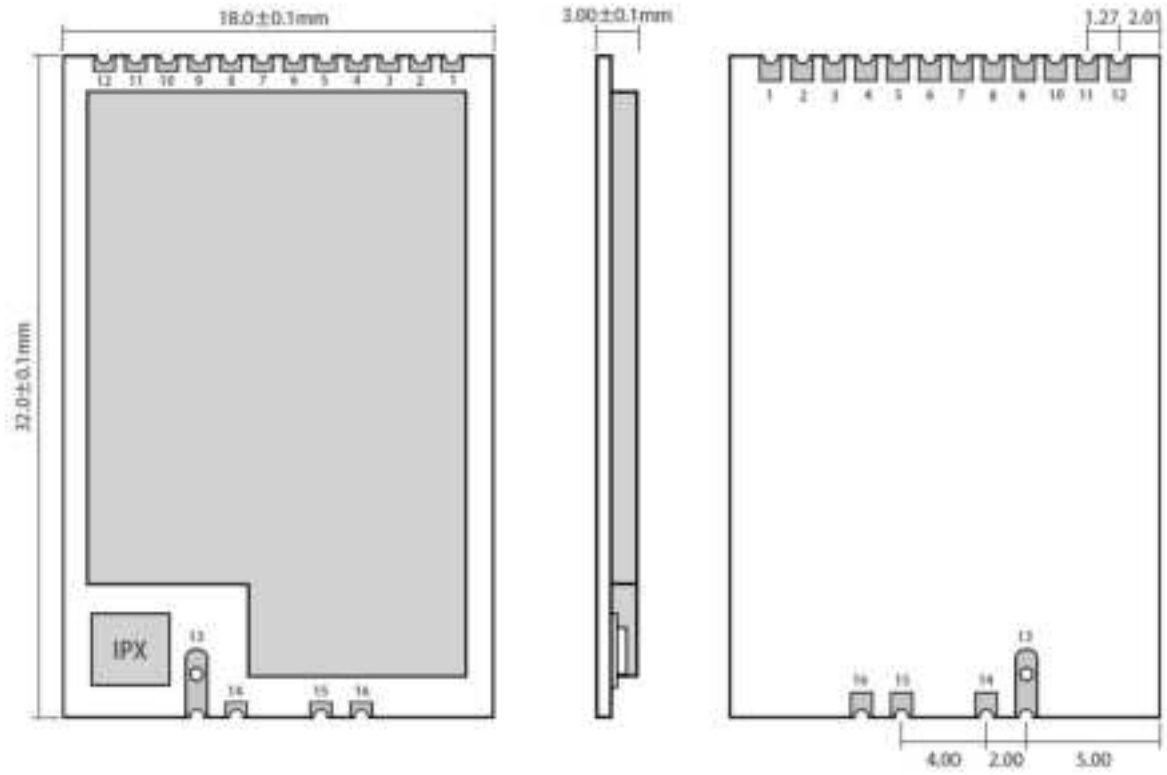
Main parameter	Performance		Remark
	Min	Max	
Power supply（V）	0	3.6	Voltage over 3.6V will cause permanent damage to module
Operating temperature（℃）	-40	85	-

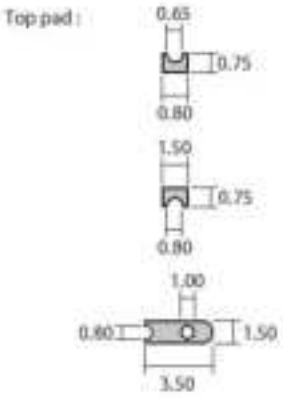
2.2 Operating parameter

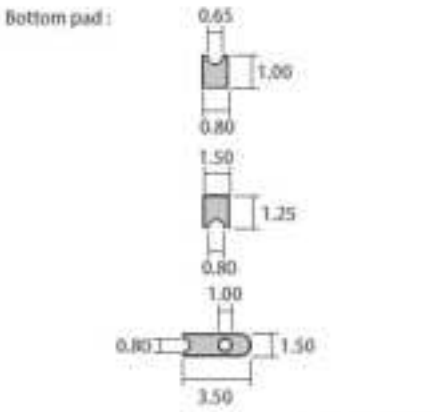
Main parameter		Performance			Remark
		Min	Type	Max	
Operating voltage(V)		2.1	3.3	3.6	≥3.3 V ensures output power
Operating temperature(℃)		-40	-	85	Industrial grade
Operating frequency(MHz)		425	433	450.5	Support ISM band
Power Consump - tion	TX current(mA)	-	100	-	Instant power consumption
	RX current(mA)	-	20	-	-
	Sleep current (μA)	-	2.0	-	Shut down by software

Main parameter	Description	Remark
Reference distance	50m	-
FIFO	64Byte	Maximum length of single transmission
Crystal Oscillator	26MHz	-
Modulation	GFSK	-
Package	SMD	-
Interface	1.27mm	Stamp hole
Size	18*32mm	-
Antenna	RSP-SMA-K	50 ohm impedance

3 Size and pin definition







Pad quantity : 16
Unit: mm

Pin No.	Item	Direction	Description
1	GND	-	Ground
2	MOSI	Input	SPI data Input pin
3	SCK	Input	SPI clock pin
4	MISO/GDO1	Output	SPI data output pin
5	GDO2	Output	Data output pin
6	GDO0	Output	Data output pin
7	CSN	Output	Module chip selection pin for starting SPI communication
8	TX_EN	Input	The transmission control pin controls the RF switch and PA enable in the module..
9	RX_EN	Input	The receiving control pin controls the module to enter the receiving state.
10	NC	-	Not connected
11	VCC	-	Power supply, 2.1V - 3.6V
12	GND	-	Ground
13	ANT	-	Antenna
14	GND	-	Ground
15	GND	-	Ground
16	GND	-	Ground

FCC STATEMENT

Important Notice to OEM integrators

(Reference KDB 996369 D03 OEM Manual v01, 996369 D04 Module Integration Guide v02)

1. Applicable FCC rules:

This device complies with part 15.231 of the FCC Rules. This module is limited to OEM installation ONLY.

2. This module is limited to installation in mobile or fixed applications, according to Part 2.1091(b).

3. The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations

4. For FCC Part 15.31 (h) and (k): The host manufacturer is responsible for additional testing to verify compliance as a composite system. When testing the host device for compliance with Part 15 Subpart B, the host manufacturer is required to show compliance with Part 15 Subpart B while the transmitter module(s) are installed and operating. The modules should be transmitting and the evaluation should confirm that the module's intentional emissions are compliant (i.e. fundamental and out of band emissions). The host manufacturer must verify that there are no additional unintentional emissions other than what is permitted in Part 15 Subpart B or emissions are complaint with the transmitter(s) rule(s).

The Grantee will provide guidance to the host manufacturer for Part 15B requirements if needed.

Important Note notice that any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, require that the host product manufacturer must notify to Chengdu Ebyte that they wish to change the antenna trace design. In this case, a Class II permissive change application is required to be filed by the USA, or the host manufacturer can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

End Product Labeling

When the module is installed in the host device, the FCC ID label must be visible through a window on the final device or it must be visible when an access panel, door or cover is easily re-moved. If not, a second label must be placed on the outside of the final device that contains the following text: "Contains FCC ID: 2BNBP-042069"

The FCC ID can be used only when all FCC compliance requirements are met.

Antenna Installation

(1) The authorized antenna must be used, and

(2) The transmitter module may not be co-located with any other transmitter or antenna.

(3) Only antennas of the same type and with equal or less gains as shown below may be used with this module. Other types of antennas and/or higher gain antennas may require additional authorization for operation.

Antenna type	Antenna Connector	Peak Gain
Rod Antenna	RSP-SMA-K	2.62 dBi

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

Information on test modes and additional testing requirements

1) The modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to retest all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions). 2) 2) The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration. It is important to note that host product manufacturers should not assume that because the modular transmitter is certified that they do not have any responsibility for final product compliance.

3) If the investigation indicates a compliance concern the host product manufacturer is obligated to mitigate the issue. Host products using a modular transmitter are subject to all the applicable individual technical rules as well as to the general conditions of operation in Sections 15.5, 15.15, and 15.29 to not cause interference. The operator of the host product will be obligated to stop operating the device until the interference have been corrected .

4) Additional testing, Part 15 Sub part B disclaimer: The device is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host / module combination need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device. The host integrator installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation and should refer to guidance in KDB 996369. For host products with certified modular transmitter, the frequency range of investigation of the composite system is specified by rule in Sections 15.33(a)(1) through (a)(3), or the range applicable to the digital device, as shown in Section 15.33(b)(1), whichever is the higher frequency range of investigation When testing the host product, all the transmitters must be operating. The transmitters can be enabled by using publicly-available drivers and turned on, so the transmitters are active. When testing for emissions from the unintentional radiator, the transmitter shall be placed in the receive mode or idle mode, if possible. If receive mode only is not possible then, the radio shall be passive (preferred) and/or active scanning. In these cases, this would need to enable activity on the communication BUS (i.e., PCIe, SDIO, USB) to ensure the unintentional radiator circuitry is enabled. Testing laboratories may need to add attenuation or filters depending on the signal strength of any active beacons (if applicable) from the enabled radio(s). See ANSI C63.4, ANSI C63.10 for further general testing details. The product under test is set into a link/association with a partnering device, as per the normal intended use of the product. To ease testing, the product under test is set to transmit at a high duty cycle, such as by sending a file or streaming some media content.

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user’ s manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as show in this manual.

Federal Communication Commission Interference Statement

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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses 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 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

List of applicable FCC rules

This module has been tested and found to comply with part 15.231 requirements for Modular Approval.

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of

certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuit), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1) The authorized antenna must be used, and

2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

To meet provisions of this section15.231(a), specific at commands is input and locked

in firmware. And it is trigger by click the key in test software during test.

Provided the RF module installed in host or end product, it shall employ one switch to manually operated transmitter or equivalent method.

Don't change the size of the data packet and any other radio-frequency parameter by program.

Any changes to RF parameters must be re-evaluated and re-certified.