



成都泽耀科技有限公司

Chengdu Ashining Technology Co.,Ltd.

AS4432-SMD User's Manual v4.0

Module Introduction AS4432-SMD

AS4432-SMD-SMD is a 433MHz, 100mW, high stability, high performance around the radiation, through the wall ability of excellent industrial-grade wireless transceiver integrated digital transmission module. The module comes with high-performance spring antenna, accurate impedance matching, and is designed and developed with the original SI4432 RF chip imported from CoreTech Labs, USA, which has high reception sensitivity and strong anti-interference capability. The module transmit power is sufficient, good spectral characteristics, harmonic small, channel crosstalk small, small size, inductance components all use Murata B grade material, with 10ppm high precision crystal, the model of industrial standard.

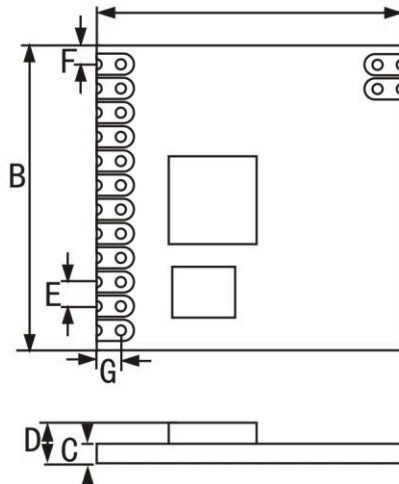


Electrical parameters AS4432-SMD

serial number	Parameter name	parameter value	summaries
1	RF chip	SI4432	Silicon Labs
2	Module Size	16*16	without antenna
3	Module Weight	1g	without antenna
4	operating frequency	425M~525MHz	Adjustable via software, module utilizes a 30M crystal.
5	Production process	Lead-free and environmentally friendly process	
6	interface method	1*12*1.27mm	chip
7	Supply Voltage	1.8 ~ 3.6VDC	NOTE: Voltages above 3.6V will result in permanent destruction of the module.
8	communications level	0.7VCC ~ 3.6V	VCC is the module supply voltage

9	measured distance	1500m	Clear and open, max power, height 1.5m, 1k airspeed
10	firing power	20dBm max.	Approx. 100mW
11	air speed	0.123k ~ 256Kbps	The software is adjustable and it is recommended that low airspeeds be used as much as possible.
12	Shutdown current	0.5uA	In power-down mode
13	electric current (e.g. electrostatic)	85mA@100dBm	Power supply capacity must be greater than 200mA
14	Receiving Current	18.5mA	average value
15	communications interface	SPI	Up to 10Mbps
16	launch length	Single packet 1~64 bytes	single packet
17	receiver length	Single packet 1~64 bytes	single packet
18	RSSI Support	be in favor of	See chip manual for details
19	Antenna Interface	Spring Antenna	50Ω Characteristic Impedance
20	operating temperature	-40 ~ +85°C	industrial grade
21	Operating humidity	10% ~ 90%	Relative humidity, non-condensing
22	Storage temperature	-40 ~ +125°C	industrial grade
23	receiver sensitivity	-121dBm@1kbps	See chip manual for details

Interface Definition AS4432-SMD



编号	毫米
A	16
B	16
C	1
D	2.2
E	1.27
F	1.27
G	1.27

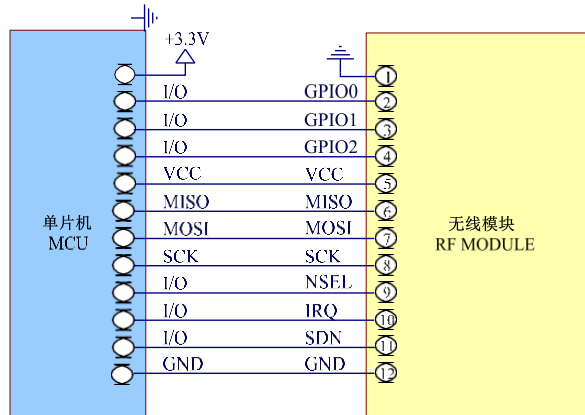
Pin Number	Pin Name	Pin orientation	Pin Usage
1	GND		Ground, connected to power reference ground
2	GPIO0	Input/Output	Configurable general purpose GPIO port (see SI4432 manual for details)
3	GPIO1	Input/Output	Configurable general purpose GPIO port (see SI4432 manual for details)
4	GPIO2	Input/Output	Configurable general purpose GPIO port (see SI4432 manual for details)
5	VCC		Power supply, must be between 1.8 ~ 3.6V
6	MISO	exports	Module SPI Data Output Pins
7	MOSI	importation	Module SPI Data Input Pins
8	SCK	importation	Module SPI Clock Pins
9	NSEL	exports	Module chip select pin to start an SPI communication
10	IRQ	exports	Module Interrupt Pins
11	SDN		Module operating enable control pin, operating low (see SI4432 for details)
12	GND		Ground, connected to power reference ground
★ See Silicon Labs' official "SI4432 Datasheet" for details on the module's pin definitions, software drivers, and communication protocols.			

Caution AS4432-SMD

serial number	form	caveat
1	electrostatic protection	High-frequency analog devices are static-sensitive, so please avoid human contact with the electronic components on the module as much as possible (our production process is in accordance with the official IC manufacturer's anti-static protection). (Static electricity standards are enforced).
2	soldered	When soldering, the soldering iron needs to be well grounded, and in mass production, production personnel are required to wear grounded wired electrostatic bracelets.
3	power supply	The power supply quality has a great influence on the module performance, please ensure that the module power supply has a low ripple, and make sure to avoid frequent and large jitter of the power supply. Recommended to use π type filter

		Waveformer (ceramic capacitor//tantalum capacitor + inductor).
4	earth (wire)	The module ground is a single-point ground, with a recommended 0 ohm resistor, or a 10mH inductor, separate from the reference ground of the rest of the circuit.
5	connection with high-ranking officials	The module antenna mounting structure has a large impact on the module performance, be sure to ensure that the antenna is exposed, preferably vertically upward. When the module is mounted inside the chassis, it can be used with a superior antenna. A quality antenna extension cable to extend the antenna to the outside of the case. The antenna must not be mounted inside a metal case, as this will result in a significant reduction in transmission distance.
6	disruptions	If there are other frequency band wireless modules within the same product, it is necessary to reasonably plan the frequency and take shielding and other measures to reduce the impact of harmonic interference and mutual interference.
7	crystal oscillator	If there is a crystal near the circuit board where this module is located, increase the distance from the crystal in a straight line as much as possible.

Typical Circuit AS4432-SMD



AS4432-SMD Connection Diagram with Microcontroller

serial number	Brief connection description between the module and the microcontroller (the above figure takes the STM8L microcontroller as an example)
1	GPIO0\GPIO1\GPIO2\GPIO3 are general-purpose I/O ports that can be configured for a variety of functions, see the SI4432 manual. Can be suspended if not in use.
2	IRQ pin, can also not be connected, can be used SPI query to obtain the interrupt status, but recommended to connect the use of microcontroller external interrupt.
3	Pay attention to good grounding, there is a large area to lay the ground, the power supply ripple is small, you should increase the filtering capacitance and as close as possible to the module VCC and GND pins.

Software Programming AS4432-SMD

serial number	Programming Notes
1	The SPI communication rate should not be set too high, usually 1Mbps is recommended.
2	For the state transitions of the SI4432, please refer to the datasheet "Operating Modes and Timing" section for TX and RX state transitions. Must be Ready, not directly switched.
3	The register configuration can be reinitialized when the chip is idle for greater stability.

Series AS11-S433

Module Model	RF chip	seal inside	carrier frequency Hz	firing power dBm	communication distance km	Antenna form
AS4432-SMD	SI4432	chip	433M	20	1.5	Spring/External

Frequently Asked Questions AS4432-SMD

★ The communication distance is very close, not at all the ideal distance		
1	hindrance	When there is a straight-line communication barrier, the communication distance is attenuated accordingly.
2	source of interference	Temperature, humidity, same-frequency interference, will lead to communication packet loss rate increase. (Seawater absorbs radio waves, so the effect of testing on the seashore is poor)
3	metal object	Signal attenuation can be very severe with metal objects near the antenna, or when placed in a metal case.
5	parameter value	The power register is set incorrectly, the air rate is set too high (the higher the air rate, the closer the distance).
6	undervoltage	The lower the voltage, the lower the transmitter power.
★ Modules get hot and are easily damaged		
1	Supply Voltage	Please check the power supply to make sure it is between 1.8V~3.6V, if it exceeds 3.6V, it will cause permanent damage to the module.
2	stability	Please check the stability of the power supply, the voltage should not fluctuate significantly and frequently.
3	antistatic	Please ensure that the installation and use of the process of anti-static operation, high-frequency devices are electrostatic sensitivity.
4	5V level	If 5V levels are used for the communication line, a 1k-5.1k resistor must be connected in series (not recommended, still risk of damage).

About Us AS4432-SMD



Chengdu Zeyao Technology Co., Ltd. is a high-tech company focusing on wireless communication and application, integrating R&D, production, sales and service, specializing in R&D and production of wireless communication products in 2.4G, 433M, 470M, 915M, 169M and other frequency bands. We pay special attention to technological innovation and product quality, and have obtained a number of patents and product certification. In order to save our customers' valuable development time and make our products more stable, our FAE team fully supports us to provide high quality service for every customer. Chengdu Zeyao Technology has a complete and scientific quality management system, adhering to the quality, faith, innovation, beyond the development of the concept of integrity, quality, service and strength to win the recognition of the industry.

Our products have been widely used in consumer electronics, industrial control, medical, security alarm, field collection, smart home, highway, property management, water, electricity and gas meter reading, power monitoring and other applications.

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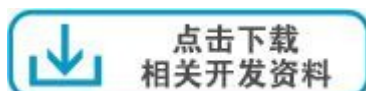
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No. 7 Page 7
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