



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

E10-433MS1W Datasheet v1.0

Introduction

E10-433MS1W



E10-433MS1W is a SMD wireless transceiver module, operates at 433MHz with 1W transmitting power. SPI interface, with 26M crystal oscillator and LNA.

E10-433MS1W is based on original imported RF SI4463 from Silicon Labs in USA. Module features stable performance, long transmitting distance and strong penetration and diffraction ability. With high receiving sensitivity, good anti-interference ability and low-power development.

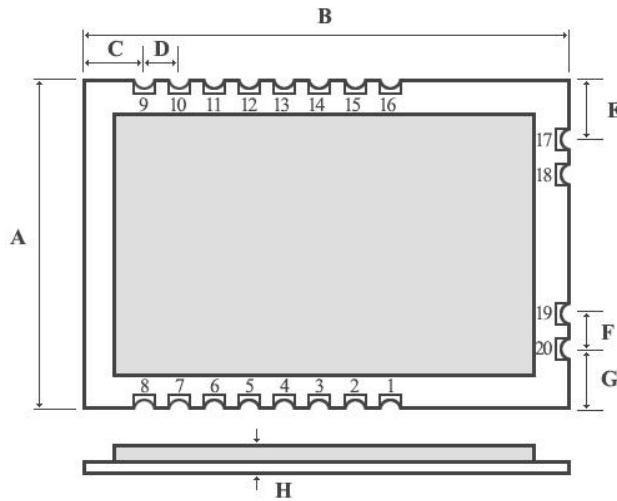
Electrical parameter

E10-433MS1W

No.	Parameter item	Parameter details	Parameter details
1	RF IC	SI4463	Silicon Labs
2	Size	25 * 37mm	Without antenna
3	Weight	5g	Without antenna
4	Frequency Band	425 ~ 525MHz	26M crystal oscillator
5	PCB	4-layer	Impedance-matching, lead-free
6	Connector	2 * 8 * 1.27mm	SMD
7	Supply voltage	3.3 ~ 5.5V DC	4.75~5.25V are recommended.
8	Communication level	0.7VCC ~ 3.6VDC	VCC refers to the supply voltage
9	Operation Range	5000m	Open area; 30dBm; Antenna gain: 5dBi; Height: 2m; Air data rate: 1kbps
10	Transmitting power	Maximum 30dbm	About 1W
11	Air data rate	0.123kbps ~ 1Mbps	Low speed is recommended
12	Sleep current	5uA	
13	Transmitting current	660mA@30dBm	The proposed power supply capacity is greater than 1.5A.
14	Receiving current	17mA	Average value
15	Communication interface	SPI	Max air data rate 10Mbps
16	Transmitting length	1~64 bytes	For one package
17	Receiving length	1~64 bytes	For one package
18	RSSI support	Usable	Find more details on <SI4463 Datasheet>
19	Antenna type	1 * 2 - 2.54mm	50Ω impedance
20	Operating temperature	-40 ~ +85°C	Industrial-grade
21	Operating humidity	10% ~ 90%	Relative humidity, without condensation
22	Storage temperature	-40 ~ +125°C,	Industrial-grade
23	Sensitivity	-126dBm@1kbps	Find more details on <SI4463 Datasheet>

Pin definition

E10-433MS1W



Units: mm

	MIN	MAX
A	25.0	25.1
B	37.0	37.1
C	3.50	3.51
D	2.54	2.54
E	3.50	3.51
F	2.54	2.54
G	3.50	3.51
H	4.85	4.90

Pin No.	Pin item	Pin direction	Pin application
1	GND		Ground
2	SDN	Input	The module working enable control the pin, its low level when working (See SI4463 manual for more details)
3	GPIO3	Output	GPIO of SI4463
4	GPIO2	Output	GPIO of SI4463
5	nSEL	Input	SPI Chip select
6	MOSI	Input	SPI master input slave output
7	MISO	Output	SPI master output slave input
8	ENT	Input	Clock enable(high-level effective)
9	SCK	Output	SPI master input slave output
10	IRQ	Output	Interrupt request
11	GPIO1	Output	Output pin
12	GPIO0	Output	Output pin
13	VCC		Power supply 3.3V~5.5V DC (Recommend 4.75~5.25V)
14	GND		Ground
15	ENP	Input	PA power enable (High-level effective)
16	GND		Ground
17	GND		Ground
18	GND		Ground
19	GND		Ground
20	ANT		Antenna
★ Find more details on 《SI4463 Datasheet》 from Silicon Labs. ★			

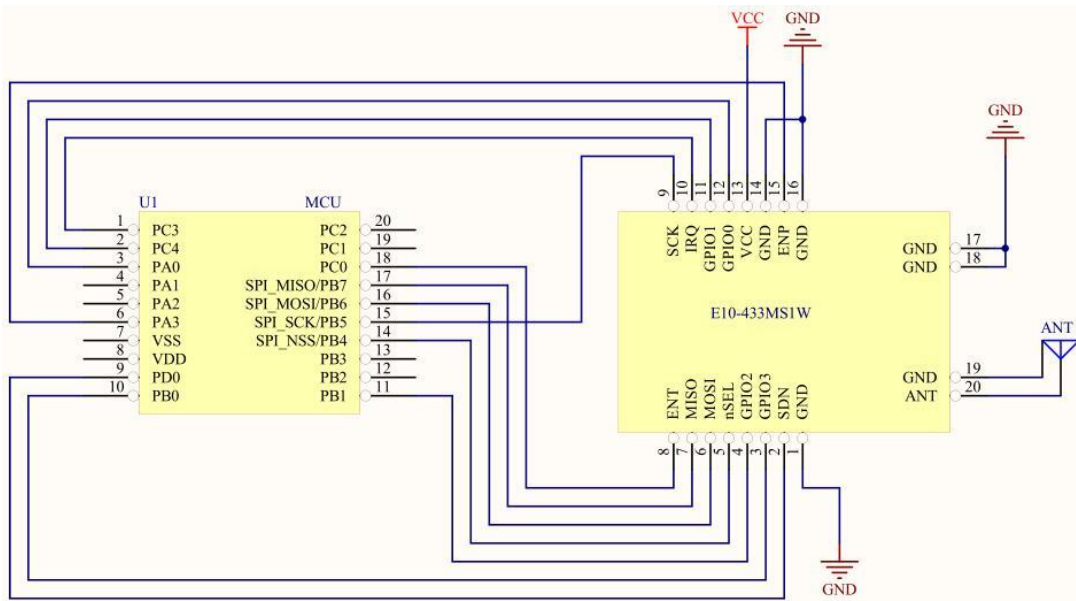
Notes

E10-433MS1W

No.	Item	Attention
1	Static electricity	Please try not to touch the electronic components with bare hands.
2	Welding	When welding, soldering iron needs grounding. The producer needs to wear cable electrostatic bracelet which is grounding when mass production.
3	Power supply	Power quality has a great impact on the performance of the module, please make sure the power supply has small ripple and avoid the frequent and large jitter. π filter is recommended(Ceramic capacitor // tantalum capacitor + inductance).
4	Ground	Single-point grounding is recommended. 0 ohm resistor or 10mH inductance are recommended.
5	Antenna	How to install antenna has a great impact on the performance of the module, please make sure the antenna is exposed and vertical upward. It will lead to the transmitting distance greatly weakened if the antenna installs in the interior of housing. When the module is installed in the interior of the housing, high-quality antenna extension line can be used to extend the antenna to the outside of the housing.

Usage

E10-433MS1W



No.	Brief introduction of connection between module and MCU (STM8L)
1	GPIO0\GPIO1 is general purpose I/O, can be configured into multiple functions, please check SI4463 manual for more details. Floating is allowed.
2	It is possible to get the interrupt status through SPI, floating is allowed. It is recommended to Connect to the external interrupt pin of MCU.
3	Make sure the grounding is good, with low power supply ripple, also should increase filter capacitor and as close as possible to VCC and GND pin.

Software programming**E10-433MS1W**

No.	Note
1	SPI communication rate should not be set too high, usually around 1Mbps.
2	Please refer to the part of "Operating Modes and timing" for SI4463's state transition, the state transitions of TX and RX have to pass "Ready", it cannot switch directly
3	The register configuration can be reinitialized to obtain higher stability when the chip is invalid

FAQ**E10-433MS1W****★ Operation Range is too short to reach the ideal distance**

1	Barrier	It has deep influence on the operation range when there are barriers. The degree of attenuation is inconsistent in different environment.
2	Interference resource	Temperature, humidity, same frequency interference can increase the packet loss rate of the communication.
3	Metal	Metal objects around the antenna, or antenna placed inside metal case, will lead to the signal attenuation badly.
4	Parameter values	Wrong parameter setting. Setting the air data rate too high, which lead to the shorter distance.
5	Low voltage	When the voltage below 4.75V, the lower the voltage is, the lower the transmitting power can be.
6	Control terminal	Make sure the SPDT power switch use correctly. GPIO2 is low and GPIO3 is high when transmitting; GPIO2 is high and GPIO3 is low when receiving; External control is available when internal control of GPIO3 and GPIO2 are released.

★ Easy to be damaged when the module is heating

1	Supply voltage	Make sure the supply voltage is within 3.3v ~ 5.5v. Notes: the voltage higher than 5.5V is forbidden.
2	Stability	Please check the stability of power supply, avoid power ripple.
3	Anti-static	Please try not to touch the electronic components with bare hands. Those high-frequency devices are very easy damaged.

About us**E10-433MS1W**

Chengdu Ebyte Electronic Technology Co., Ltd is a high-tech company, focus on wireless transmission. Our company owns a number of independent research & development products and obtain unanimously approved customers. With powerful R&D team, our company can provide customers with perfect After-sales service and technical assistance



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