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Chengdu Ebyte Electronic Technology Co.,Ltd.

E19-433MS1W Datasheet v1.0

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1. Introduction



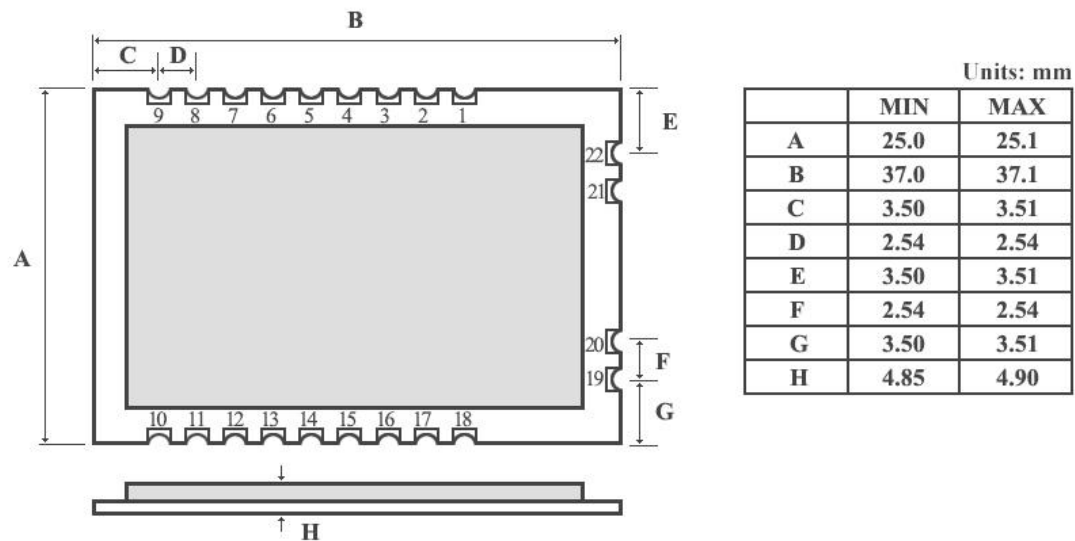
E19-433MS1W is based on originally imported RFIC SX1278 from SEMTECH, adopts LoRa spread spectrum technology, which means the transmitting distance is much longer, Besides, the power density is more concentrated and anti-interference performance is better.

E19-433MS1W is a hardware platform, not-programmed, users need to carry out a secondary development.

2. Electrical parameter

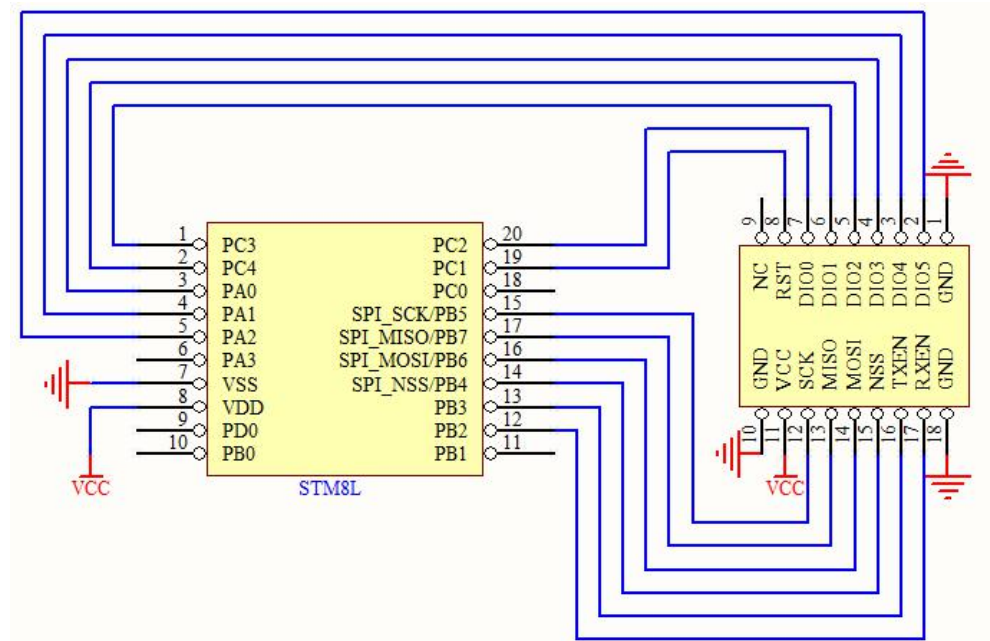
No.	Parameter item	Parameter details	Parameter details
1	RF IC	SX1278	SEMTECH
2	Size	25 * 37mm	-
3	Weight	5g	Average weight
4	Frequency Band	410~441MHz	Adjustable by configuration software. 32MHz crystal oscillator.
5	PCB	4-layer	Impedance-matching, lead-free,SMT
6	Connector	2 * 9 * 1.27mm	SMD
7	Supply voltage	4.75 ~ 5.5V DC	The voltage higher than 6V is forbidden
8	Communication level	0.7VCC ~ 5VDC	VCC refers to the supply voltage
9	Operation Range	10000m	Clear and open area, 30dBm , antenna gain: 5dBi , height: 12m , Air data rate: 300bps, Coding rate 4/5 , spread factor 12
10	Transmitting power	Maximum 30dbm	1W
11	Air data rate	0.018k ~ 37.5kbps	LoRa Mode, find more on SX1278 datasheet
12	Sleep current	1uA(Max)	Sleep mode
13	Transmitting current	720mA@30dBm	The proposed power supply capacity is greater than 250mA.
14	Receiving current	20mA BW = 500KHz	LoRa Mode, the receiving current is different with different BW.
15	Communication interface	SPI	Data rate: up to 10Mbps
16	Transmitting length	256 bytes	FIFO
17	Receiving length	256 bytes	FIFO
18	RSSI support	Available	Please find more on SX1278 datasheet
19	Antenna type	Stamp hole	50 Ω characteristic impedance
20	Operating temperature	-40 ~ +85°C	-
21	Operating humidity	10% ~ 90%	Relative humidity, without condensation
22	Storage temperature	-40 ~ +125°C	-
23	Sensitivity	-138dBm@300bps	With LNA

3. Pin definition



Pin No.	Pin item	Pin direction	Pin application
1	GND		Ground
2	DIO5	Input/Output	Configurable IO port (Please find more on SX1278 datasheet)
3	DIO4	Input/Output	Configurable IO port (Please find more on SX1278 datasheet)
4	DIO3	Input/Output	Configurable IO port (Please find more on SX1278 datasheet)
5	DIO2	Input/Output	Configurable IO port (Please find more on SX1278 datasheet)
6	DIO1	Input/Output	Configurable IO port (Please find more on SX1278 datasheet)
7	DIO0	Input/Output	Configurable IO port (Please find more on SX1278 datasheet)
8	RST	Input	Reset
9	NC		Not connect.
10	GND		Ground
11	VCC		Power supply 4.75~5.5V DC
12	SCK	Input	SPI clock
13	MISO	Output	Master input slave output
14	MOSI	Input	Master output slave input
15	NSS	Input	Chip select
16	TXEN	Input	Radio frequency switch control, make sure the TXEN pin is in high level, RXEN pin is in low level when transmitting.
17	RXEN	Input	Radio frequency switch control, Make sure the RXEN pin is in high level ,TXEN pin is in low level when receiving.
18	GND		Ground
19	ANT		Antenna
20	GND		Ground
21	GND		Ground

4. Usage



No.	Brief introduction of connection between module and MCU (STM8L)
1	DIO0、DIO1、DIO2、DIO3、DIO4、DIO5 are general I/O port, can be configured into multiple functions. Please check SX1278 datasheet for more details. Floating is allowed.
2	RST, TXEN, RXEN pin must be connected, in which RST control the reset of chip, TXEN, RXEN pin control RF switch.
3	Make sure the grounding is ok, with low power supply ripple, also should increase filter capacitor and as close as possible to VCC and GND pin.

5. Software programming

No.	Note
1	SPI communication rate should not be set too high, usually around 1Mbps.
2	Make sure the TXEN pin is in high level, RXEN pin is in low level when transmitting; Make sure the RXEN pin is in high level, TXEN pin is in low level when receiving; Make sure the TXEN、RXEN is in low level before power-down
3	The register configuration can be reinitialized to obtain higher stability when the chip is invalid

6. E19 Series

Model	IC	Frequency Hz	Power dBm	Distance km	Package	ANT
E19-433MS100	SX1278	433M	20	5.0	SMD	Stamp hole
E19-433MS1W	SX1278	433M	30	10.0	SMD	Stamp hole
E19-915MS100	SX1276	915M	20	5.0	SMD	Stamp hole
E19-915MS1W	SX1276	915M	30	10.0	SMD	Stamp hole/IPX
E19-868MS100	SX1276	868M	20	5.0	SMD	Stamp hole
E19-868MS1W	SX1276	868M	30	10.0	SMD	Stamp hole/IPX

7. About us



Chengdu Ebyte Electronic Technology Co., Ltd., a high-tech company focusing on application of Internet of Things, owns a number of independently researched and developed products and obtains unanimous approvals from customers. With a powerful R&D team, perfect after-sales system, our company provides perfect solutions and technical assistance, shortens R&D period, reduces R&D cost and provides a strong platform for brand new ideas about product R&D.

Our products have been widely applied in various fields, such as consumer electronics, industrial control, healthcare, security alarm, field acquisition, smart home, expressway, property management, water and electricity meter reading, power monitoring, etc.