E200-900A17S User Manual

900MHz Wireless Audio Module



Chengdu Ebyte Electronic Technology Co.,Ltd.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

CONTENTS

DISCLAIMER AND COPYRIGHT NOTICE 2
1. OVERVIEW 3
1.1 INTRODUCTION 3
1.2 FEATURES 3
1.3 APPLICATION 3
2. SPECIFICATION AND PARAMETER 4
2.1 RF PARAMETER 4
2.2 ELECTRIC PARAMETER 4
2.3 HARDWARE PARAMETER 5
3 SIZE AND PIN DEFINITION 5
4 RECOMMENDED CIRCUIT DIAGRAM 7
5 CHANNEL CODE VALUE TABLE 7
6 WORKING MODE 8
7 COMMAND AND FACTORY PARAMETER 8
7.1 COMMAND FORMAT 8
7.2 FACTORY DEFAULT PARAMETER 8
8 HARDWARE DESIGN 9
9 FAQ 10
9.1 COMMUNICATION RANGE IS TOO SHORT 10
9.2 MODULE IS EASY TO DAMAGE 10
9.3 POOR SOUND QUALITY 10
10 PRODUCTION GUIDANCE 11
10.1 REFLOW SOLDERING TEMPERATURE 11
10.2 REFLOW SOLDERING CURVE 11
11 E220 SERIES 12
12 ANTENNA GUIDANCE 12
13 PACKAGE FOR BATCH ORDER 12
REVISION HISTORY 13
ABOUT US ..... 错误！未定义书签。

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Disclaimer and Copyright Notice

The information contained herein, including the URLs for reference, is subject to change without prior notice. This document is provided "as is" without any warranties, including but not limited to warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranties implied by proposals, specifications, or samples mentioned elsewhere. The company shall not be liable for any claims, including liabilities arising from the use of information in this document that may infringe upon any patent rights. No intellectual property license, either express or implied, is granted herein by estoppel or otherwise.

All test data stated in this document are obtained by Ebyte Laboratory, and actual results may vary slightly.

All trade names, trademarks and registered trademarks mentioned herein are the property of their respective owners.

This product is strictly prohibited from being used in military applications and life safety-related scenarios. The user shall bear full responsibility for any unauthorized use.

Chengdu Ebyte Electronic Technology Co., Ltd. reserves the right of final interpretation.

Notice :

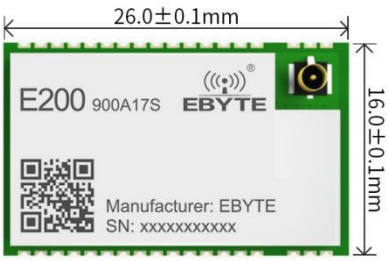
The content of this manual may be modified due to product version upgrades or other reasons. Chengdu Ebyte Electronic Technology Co., Ltd. reserves the right to revise the contents of this manual without prior notice. This manual is intended solely for operational guidance. While every effort has been made to ensure the accuracy of the information herein, the company does not warrant that the content is entirely error-free. All statements, information and recommendations contained in this manual shall not constitute any express or implied warranties whatsoever.

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1. Overview

1.1 Introduction



E200-900A17S is a new wireless audio transmission module with integrated transceiver. It features small size and convenient use. It works in the (863-928MHz) band (default 863.275MHz), adopts hardware I/O to select channels, supports MIC input and speaker output, compatible with 3.3V and 5V power supply voltage.

E200-900A17S integrates a microphone (Microphone) and a speaker (Speaker) PA amplifier, directly connecting the microphone without an external amplifier, and the audio output can directly drive 250mW/8ohm speakers. The RF part provides a sensitivity of up to -98dBm, which greatly improves the wireless distance.

1.2 Features

- Supports one-to-multiple broadcast transmission;
- Under ideal conditions, the communication distance is up to 300m;
- Control the working channel through the channel pin (restart takes effect), easy to use;
- The master-slave mode can be switched in real time, more flexible;
- 3.0~5.5V power supply, best performance can be guaranteed when it is over 3.3V;
- Industrial standard design, good for long-term use at -40 ~ +85 ℃;
- Dual antennas are optional (IPEX/stamp hole), convenient for secondary development and integration.

1.3 Application

- Smart home;
- Wireless alarm security system;
- Wireless audio transmission;
- Intelligent voice system;

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2. Specification and parameter

2.1 RF parameter

RF parameter	Value	Remarks
Working frequency	863MHz～928MHz	Support ISM band
Transmit power	16.5dBm～17.5dBm	The software is adjustable, and users need to develop their own settings
Receive sensitivity	-98dBm	Air rate 500kbps
Modulation	FSK	Modulation technology
Blocking power	15dBm	The probability of burning at close range is small
Bit depth (bit)	8bit	default 8-bit
Audio sampling rate	8kHz~32kHz	default 8-kHz
Reference distance	300m	Clear and open, antenna gain 5dBi, antenna height 2.5 meters, air rate 500kbps

2.2 Electric parameter

Main parameter		Performance			Remarks
		Min.	Typ.	Max.	
Working voltage (V)		2.3	3.3	5.5	≥5V can guarantee the output power, more than 5.5V will permanently burn the module
I/O voltage		-0.3	-	3.6	Exceeding 3.6V may permanently damage the module I/O
Communication level (V)		-0.3	3.3	3.6	Risk of burnout when using 5V level
Working temperature (℃)		-40	-	+85	Industrial grade design
Power consumption	TX current（mA）	98	100	Instantaneous power consumption, average current: 35mA	Instantaneous power consumption, average current: 35mA
	RX current（mA）	44	45	Output connection 8ohm, 250mW speaker, maximum volume 185mA	Output connection 8ohm, 250mW speaker, maximum volume 185mA

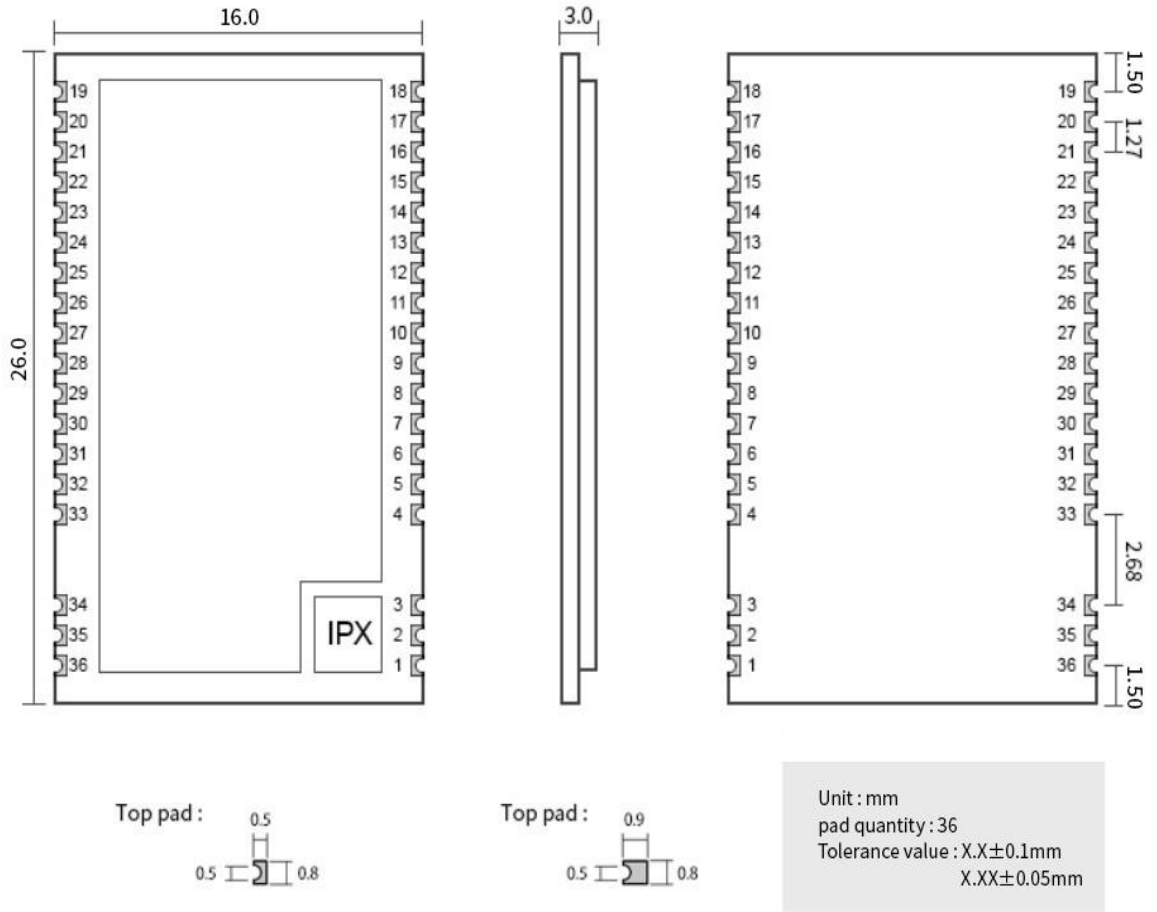
Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.3 Hardware parameter

Hardware parameter	Value	Remarks
Packaging method	SMD	-
Interface	Stamp hole	Spacing 1.27mm
Communication Interface	UART	TTL level(reserved)
Audio Interface	DAC	Analog Signal Output
Dimensions	16*26 mm	--
Product Weight	/	-
RF interface	IPEX/Stamp hole	Equivalent impedance is about 50Ω

3 Size and pin definition



Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

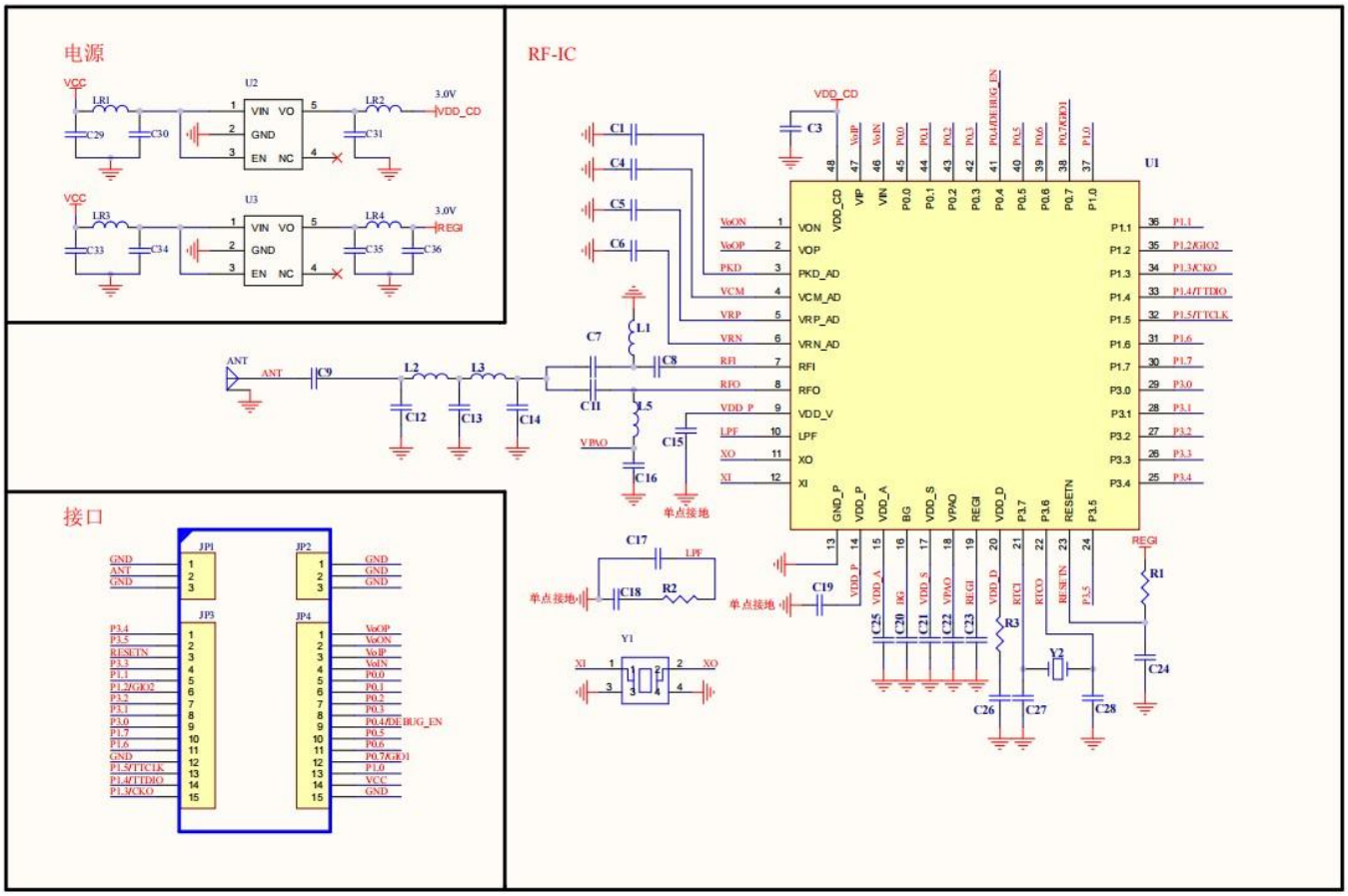
Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

No.	Name	Direction	Function
2	ANT	-	Antenna
6	REST	Input	Module reset pin, active low;
11	TXD	Output	TTL serial port output, currently only reading the module version is available, can be floating when not using;
12	RXD	Input	TTL serial port input, currently only reading the module version is available can be floating when not using;
16	TTCLK	-	Debug clock pin, can be floating when not using;
17	TTDIO	-	Debug data pins, can be floating when not using;
20	VCC	Power supply	Positive reference of module power supply, voltage range: 2.3~5.5V DC, 3.3V or 5V is recommended;
23	Mode	Input	The transceiver mode control pin of the module, low-level transmit mode, high-level receive mode, cannot be left floating;
25	Debug_EN	-	Debug control pin, enter program programming mode for low-level module, can be floating when not using;
26	CH3	Input	Channel 3, combined with CH0, CH1, CH2 to select 16 working channels, see the channel table for details;
27	CH2	Input	Channel 2, combined with CH0, CH1, CH2 to select 16 working channels, see the channel table for details;
28	CH1	Input	Channel 1, combined with CH0, CH1, CH2 to select 16 working channels, see the channel table for details;
29	CH0	Input	Channel 0, combined with CH0, CH1, CH2 to select 16 working channels, see the channel table for details;
30	VOIN	Input	Audio input is negative, please refer to the recommended circuit for hardware design;
31	VOIP	Input	The audio input is positive, please refer to the recommended circuit for hardware design;
32	VOON	Output	Audio output is negative, see the recommended circuit for hardware design;
33	VOOP	Output	The audio output is positive, please refer to the recommended circuit for hardware design;
1、3、15、19、34、35、36	GND	Power supply	Module ground
4、5、7、8、9、10、13、14、18、21、22、24	NC	-	

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4 Recommended circuit diagram



Note: See Chapter 8 for details on hardware design considerations.

5 Channel code value table

The E200-900A17S switches the Channel through different combinations of high and low levels of the four pins of CH0~CH3. The low level is represented by "0", and the high level is represented by "1". The frequency correspondence table is as follows:

CH3	CH2	CH1	CH0	**Channel**	Frequency（MHZ）
0	0	0	0	Channel 0	863.275
0	0	0	1	Channel 1	863.79
0	0	1	0	Channel 2	864.295
0	0	1	1	Channel 3	864.795
0	1	0	0	Channel 4	868.115
0	1	0	1	Channel 5	903.205
0	1	1	0	Channel 6	906.045
0	1	1	1	Channel 7	908.075
1	0	0	0	Channel 8	910.13
1	0	0	1	Channel 9	912.18

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1	0	1	0	Channel 10	914.216
1	0	1	1	Channel 11	915.231
1	1	0	0	Channel 12	917.281
1	1	0	1	Channel 13	921.126
1	1	1	0	Channel 14	923.171
1	1	1	1	Channel15	926.006

Note: After switching channels, a restart is required to take effect.

6 Working mode

The module has two working modes, which are set by the pin Mode; the details are shown in the following table:

Mode(TX/RX)	Mode	Description	Remarks
TX mode	0	The module is in the transmitting state, and the signal input by the audio input interface is sent wirelessly;	The transmission can be switched in real time
RX mode	1	The module is in the receiving state, and the wirelessly received signal is output through the audio output interface;	The transmission can be switched in real time

7 Command and factory parameter

7.1 Command format

The module supports software version reading, and can be read through the serial port in the transceiver mode (when reading, only 9600, 8N1 formats are supported):

No.	Command format	Description
1	Read software version	Command：C3 C3 C3 Respond：E200-900A17S(Vx.x) For example: TX：C3 C3 C3(HEX) Return：E200-900A17S(V1.0)

7.2 Factory default parameter

	Factory default info：E200-900A17S				
Model No.	Frequency	Air data rate	Baud rate	UART format	TX power
E200-900A17S	863.275MHz	500kbps	9600bps	8N1	17.5dbm

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

8 Hardware design

- It is recommended to use a DC stabilized power supply. The power supply ripple factor is as small as possible, and the module needs to be reliably grounded.;
- Please pay attention to the correct connection of the positive and negative poles of the power supply. Reverse connection may cause permanent damage to the module;
- Please check the power supply to ensure it is within the recommended voltage otherwise when it exceeds the maximum value the module will be permanently damaged;
- Please check the stability of the power supply, the voltage can not be fluctuated frequently;
- When designing the power supply circuit for the module, it is often recommended to reserve more than 30% of the margin, so the whole machine is beneficial for long-term stable operation.;
- The module should be as far away as possible from the power supply, transformers, high-frequency wiring and other parts with large electromagnetic interference.;
- High-frequency digital routing, high-frequency analog routing, and power routing must be avoided under the module. If it is necessary to pass through the module, assume that the module is soldered to the Top Layer, and the copper is spread on the Top Layer of the module contact part(well grounded), it must be close to the digital part of the module and routed in the Bottom Layer;
- Assuming the module is soldered or placed over the Top Layer, it is wrong to randomly route over the Bottom Layer or other layers, which will affect the module's spurs and receiving sensitivity to varying degrees;
- It is assumed that there are devices with large electromagnetic interference around the module that will greatly affect the performance. It is recommended to keep them away from the module according to the strength of the interference. If necessary, appropriate isolation and shielding can be done;
- Assume that there are traces with large electromagnetic interference (high-frequency digital, high-frequency analog, power traces) around the module that will greatly affect the performance of the module. It is recommended to stay away from the module according to the strength of the interference.If necessary, appropriate isolation and shielding can be done.
- If the communication line uses a 5V level, a 1k-5.1k resistor must be connected in series (not recommended, there is still a risk of damage);
- Try to stay away from some physical layers such as TTL protocol at 2.4GHz , for example: USB3.0;
- The mounting structure of antenna has a great influence on the performance of the module. It is necessary to ensure that the antenna is exposed, preferably vertically upward. When the module is mounted inside the case, use a good antenna extension cable to extend the antenna to the outside;
- The antenna must not be installed inside the metal case, which will cause the transmission distance to be greatly weakened.

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

9 FAQ

9.1 Communication range is too short

- The communication distance will be affected when obstacle exists.
- Data lose rate will be affected by temperature, humidity and co-channel interference.
- The ground will absorb and reflect wireless radio wave, so the performance will be poor when testing near ground.
- Sea water has great ability in absorbing wireless radio wave, so performance will be poor when testing near the sea.
- The signal will be affected when the antenna is near metal object or put in a metal case.
- Power register was set incorrectly, air data rate is set as too high (the higher the air data rate, the shorter the distance).
- The power supply low voltage under room temperature is lower than 2.5V, the lower the voltage, the lower the transmitting power.
- Due to antenna quality or poor matching between antenna and module.

9.2 Module is easy to damage

- Please check the power supply source, ensure it is in right range, voltage higher than max value will damage the module.
- Please check the stability of power source, the voltage cannot fluctuate too much.
- Please make sure antistatic measure are taken when installing and using, high frequency devices have electrostatic susceptibility.
- Please ensure the humidity is within limited range, some parts are sensitive to humidity.
- Please avoid using modules under too high or too low temperature.

9.3 Poor sound quality

- If the power supply ripple is too large, be sure to reduce the power supply ripple, add decoupling capacitors, and add EMC filter circuits;
- The audio input wiring is unreasonable, and it needs to be deferentially designed and as close as possible to the module pins;
- The audio input wiring is unreasonable, and it needs to be deferentially designed and as close as possible to the module pins;
- There may be co-frequency signal interference nearby, modify the module Channel to use;

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

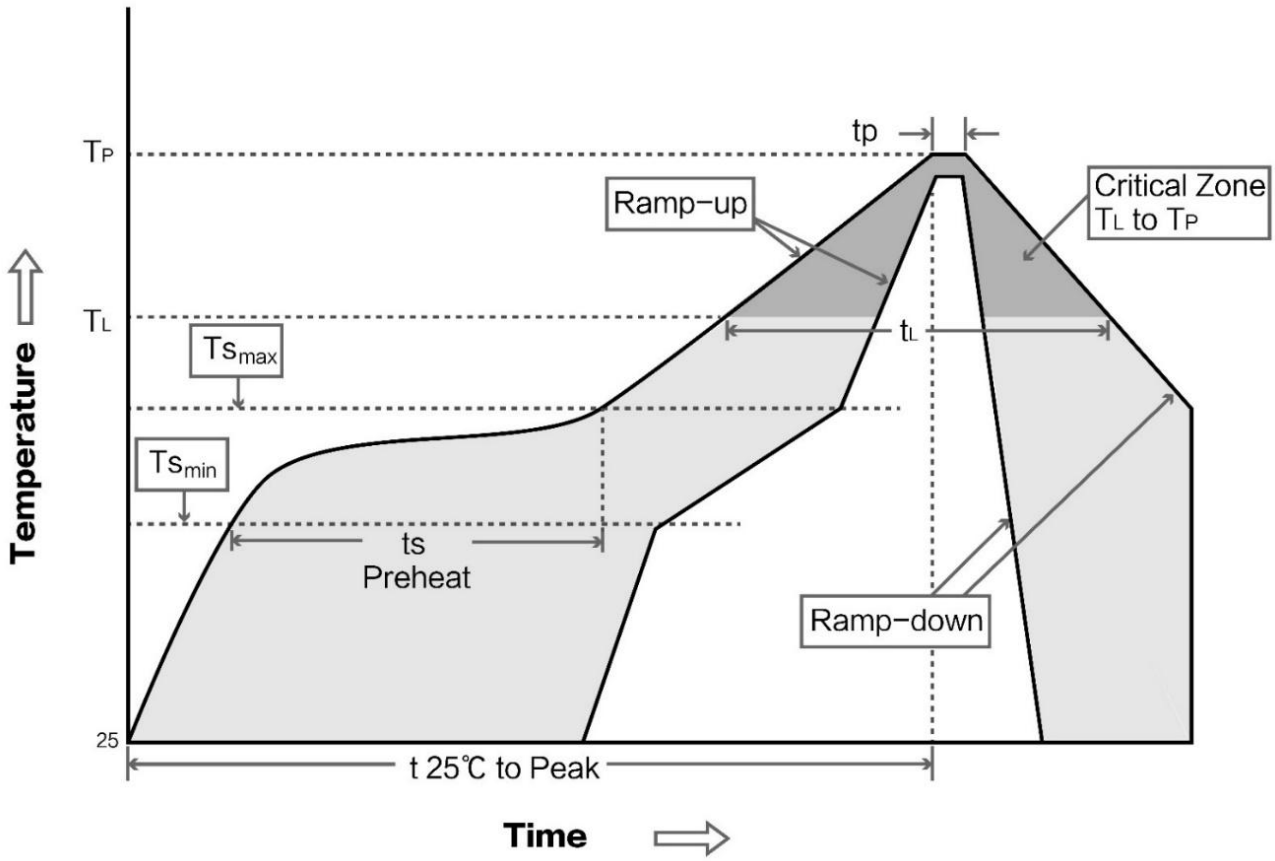
Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

10 Production guidance

10.1 Reflow soldering temperature

Profile Feature	Sn-Pb Assembly	Pb-Free Assembly
Solder Paste	Sn63/Pb37	Sn96.5/Ag3/Cu0.5
Preheat Temperature min （Tsmin）	100℃	150℃
Preheat temperature max (Tsmax)	150℃	200℃
Preheat Time (Tsmin to Tsmax)(ts)	60-120 sec	60-120 sec
Average ramp-up rate(Tsmax to Tp)	3℃/second max	3℃/second max
Liquidous Temperature (TL)	183℃	217℃
Time（tL）Maintained Above（TL）	60-90 sec	30-90 sec
Peak temperature（Tp）	220-235℃	230-250℃
Aveage ramp-down rate（Tp to Tsmax）	6℃/second max	6℃/second max
Time 25℃ to peak temperature	6 minutes max	8 minutes max

10.2 Reflow soldering curve



Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

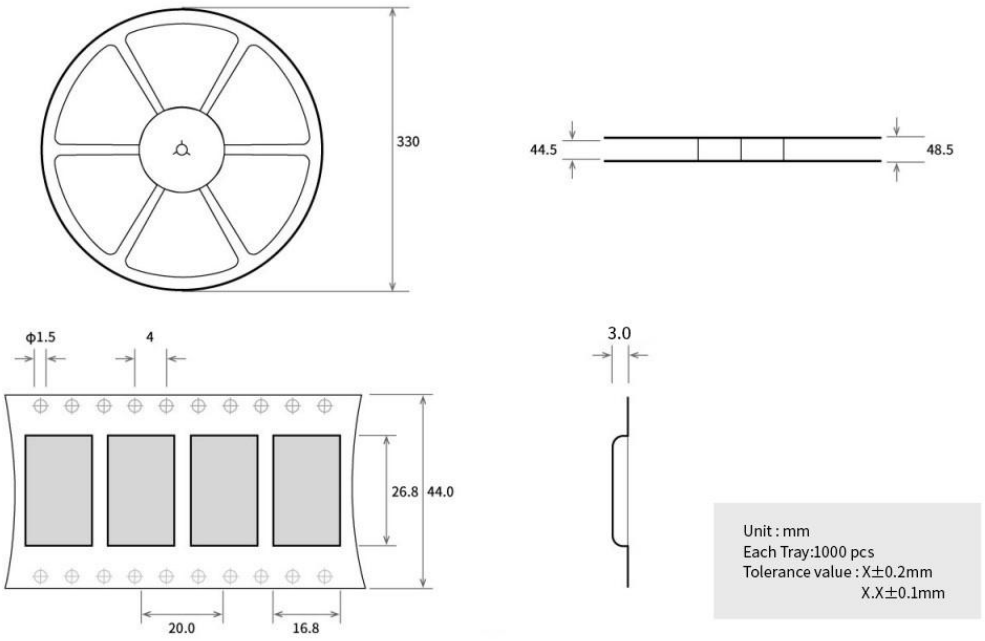
11 E220 series

Model No.	Frequency Hz	TX power dBm	Distance km	Package	Size mm	Communication interface
E200-470A17S	470.033M-512.273M	17.5	0.3	SMD	16*26	Analog/TTL

12 Antenna guidance

Model No.	Type	Frequency Hz	Interface	Gain dBi	Height mm	Cable cm	Function feature
TX868-JZLW-5	Rubber antenna	868MHz	IPEX-1	3.0	165mm	-	Ultra-short straight, omnidirectional antenna
TX915-JZLW-15	Rubber antenna	915MHz	IPEX-1	3.0	165mm	-	Ultra-short straight, omnidirectional antenna

13 Package for batch order



Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Revision history

Version	Date	Description	Issued by
1.0	2020-06-16	Initial version	
1.1	2020-07-21	Format correction	Ren
1.2	2022-09-06	Content correction	Hao
1.3	2026-07-01	Revise sampling rate description;	Lei

About us

Technical support: support@cdebyte.com

Documents and RF Setting download link: www.cdebyte.com

Thank you for using Ebyte products! Please contact us with any questions or suggestions: info@cdebyte.com

---

Phone: +86 028-61399028

Web: www.cdebyte.com

Address: B5 Mould Park, 199# Xiqu Ave, High-tech District, Sichuan, China

Chengdu Ebyte Electronic Technology Co.,Ltd.

Copyright ©2012–2026，Chengdu Ebyte Electronic Technology Co.,Ltd

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000