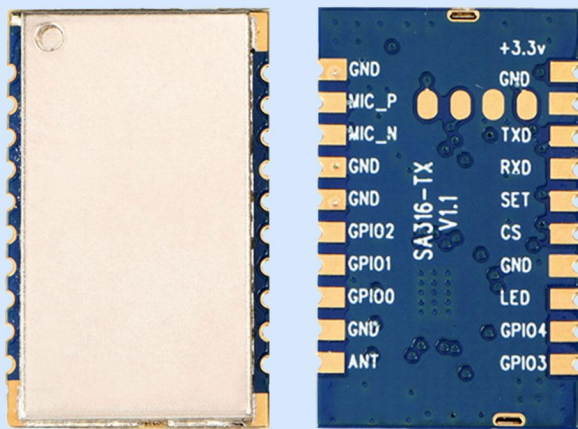
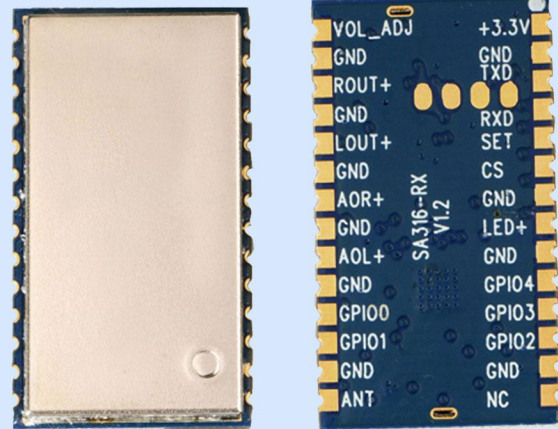


High Fidelity Wireless Audio Module

Product Specification



SA316-TX



SA316-RX

Catalogue

1. Overview.....	3
2. Features.....	3
3. Applications.....	3
4. Typical application circuit.....	3
5. Electrical Characteristics.....	4
6. Typical application circuit.....	5
7. Pin definition.....	6
8. Mechanical size (unit: mm).....	8
Appendix: Furnace temperature curve diagram.....	9

Note: Revision History

Revision	Date	Comment
V1.0	2021-7	First release

1. Overview

SA316 series products are divided into transmitter module SA316-TX and receiver module SA316-RX. This series of solutions adopts wireless high-quality voice transmission chip to design, it can support external PCM / IIS dual-mode digital audio interface, and the module is The customer provides a standardized serial interface. The user can quickly and easily set the module's transceiver frequency, sound size, microphone gain and other parameters through the serial port command, which is widely used in occasions that require relatively high sound quality.

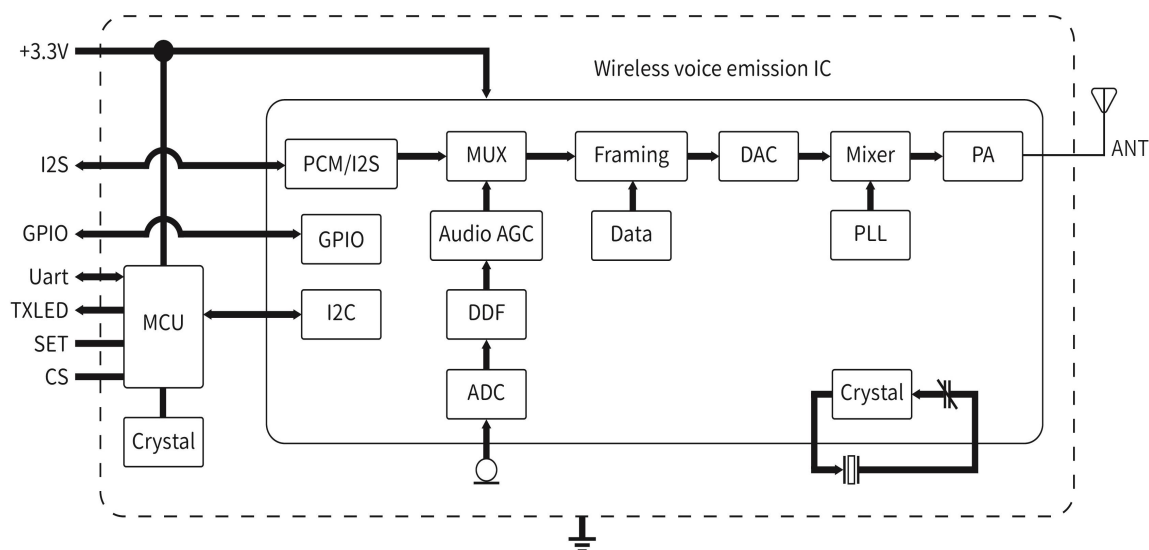
2. Features

- UHF frequency band: 868 MHz
- UHF frequency band: 500~980 MHz
- VHF frequency band: 160~270 MHz
- The transmission distance is 200 meters in the open area
- Receiving sensitivity: -96 dBm
- Audio signal to noise ratio: 96 dB
- Frequency response: 20 Hz-20 KHz
- The delay from microphone input to audio output is less than 3ms
- Digital modulation method: pi/4 DQPSK
- Occupied bandwidth: <300 KHz
- Transmission rate 204.8 Ksps
- Sampling rate: 48 KHz

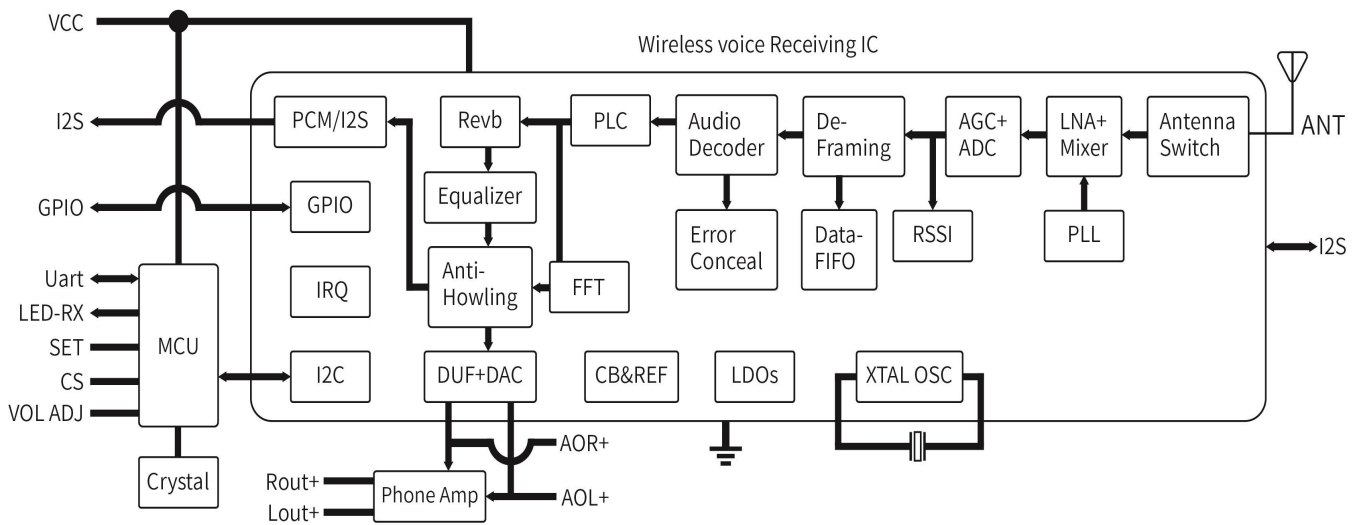
3. Applications

- Wired speakers become wireless speakers
- wireless microphone
- Wireless Headphones
- High-quality wireless audio transmission

4. Typical application circuit



SA316-TX block diagram



SA316-RX block diagram

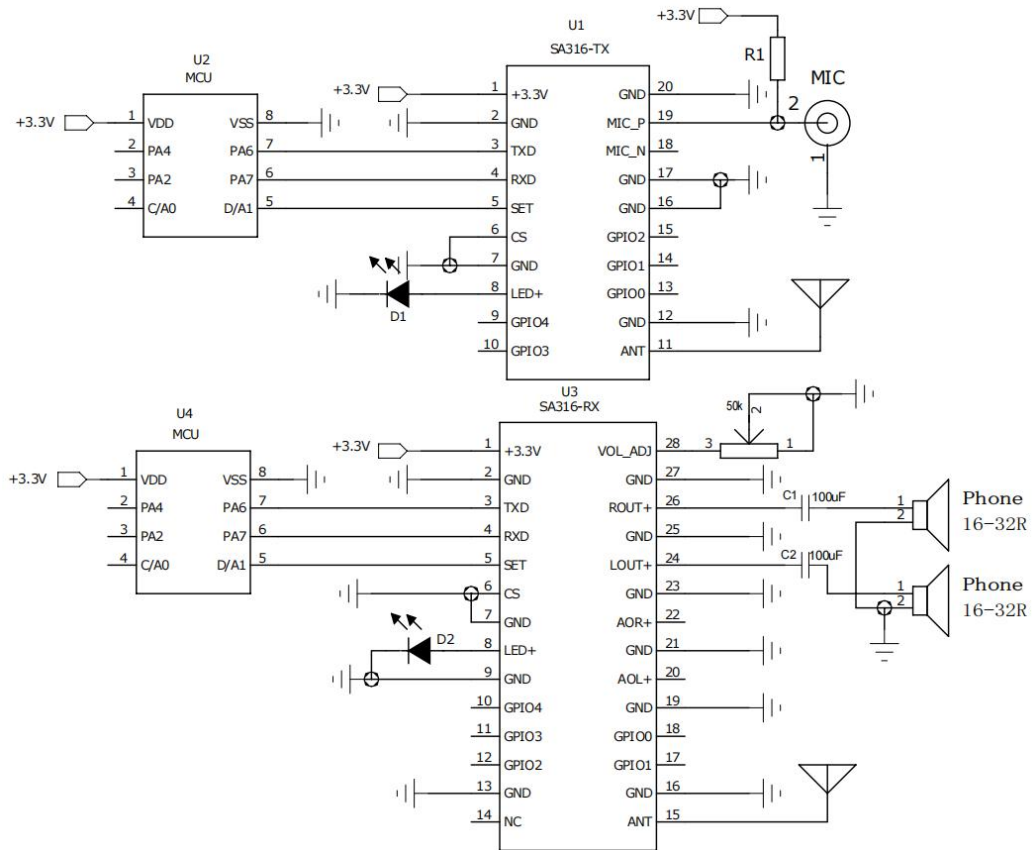
5. Electrical Characteristics

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Operating voltage range		2.8	3.3	3.6	V
Range of working temperature		-20	25	60	°C
Operating frequency range		852.02		867.02	MHz
Audio transmission and reception delay			4		ms
Serial port baud rate			9600		bps
Current consumption					
Sleep current (SA316-RX)			<0.4		mA
Sleep current (SA316-TX)			<0.4		mA
Receive current (SA316-RX)	@VCC=3.3V		< 115		mA
Emission current (SA316-TX)			< 150		mA
Transmit parameter					
Transmit power	@VCC=3.3V	0	10		dBm
Emission bandwidth (BW)			300		KHz
Adjacent channel power ratio (ACPR)	@600KHz		-60		dBc
Maximum microphone input voltage			0.3	1.5	Vrms
Audio frequency response range		20		20k	Hz
Receive parameters					
Receiving sensitivity			-96		dBm

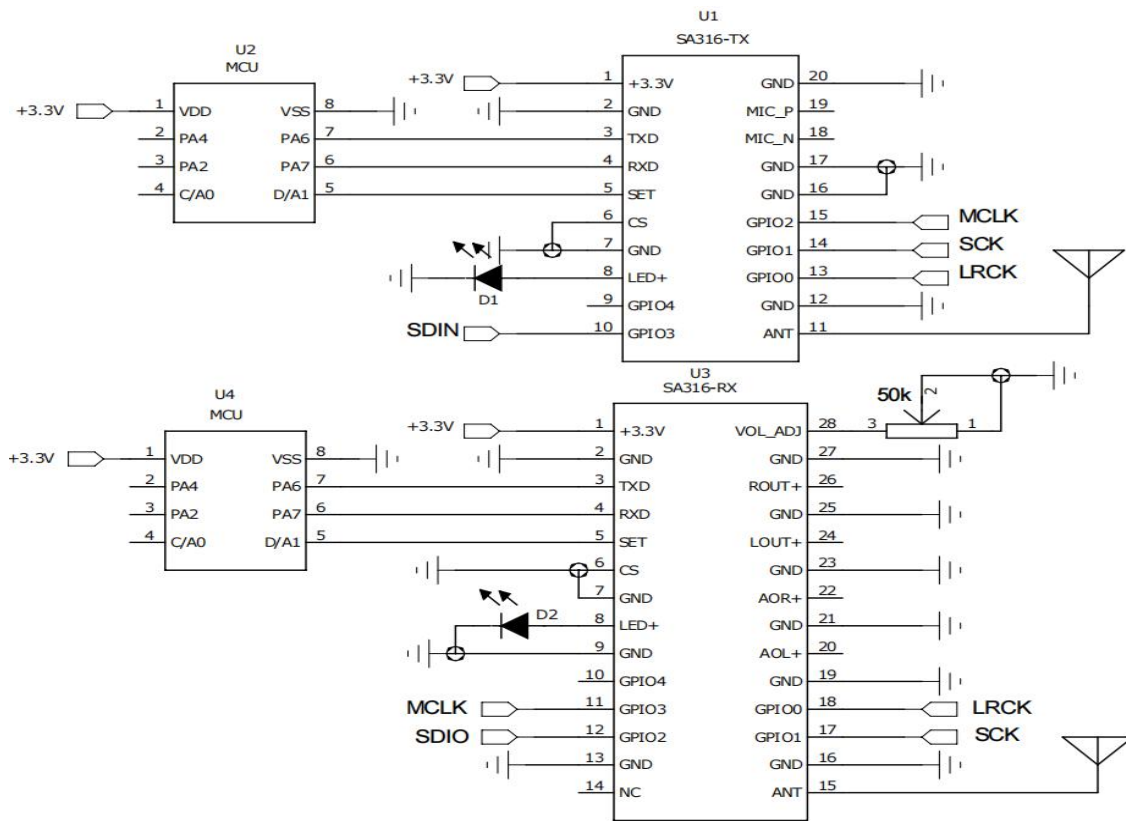
Audio output amplitude (differential)		400		mVrms
Audio output drive resistance		600		Ohm
Signal to Noise Ratio (SNR)	@1KHz, Vmic=-30dBv	96		dB
Total harmonic distortion (THD)	@48K sampling rate, Vmic=-30dBv	0.03		%

6. Typical application circuit

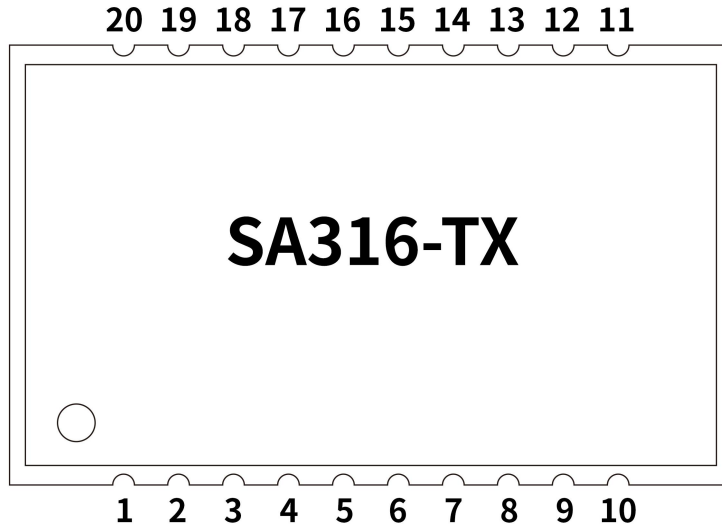
- Analog input and analog output application circuit



- IIS input and output application circuit

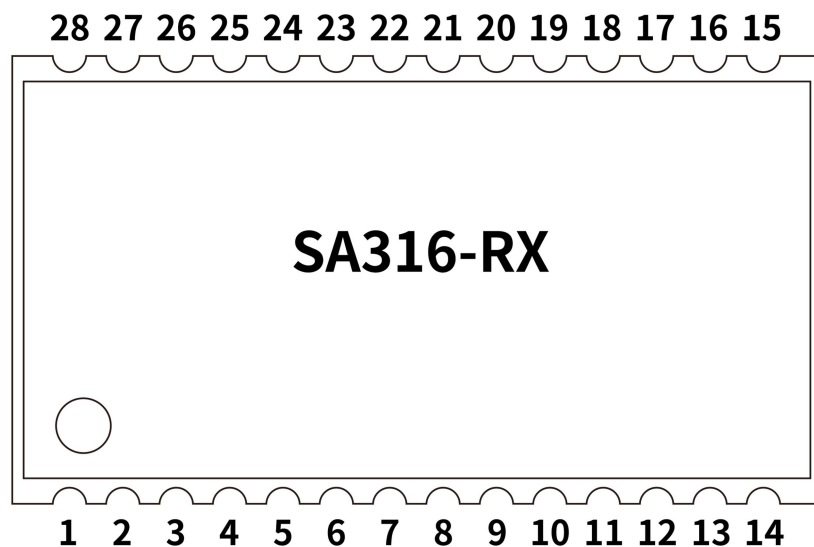


7. Pin definition



Pin NO.	Pin name	I/O	Level standard	Description
1	VCC		+3.3V	Positive power input (2.8V-3.6V, typical 3.3V)
2、7、12、16、17、20	GND		0V	Connect to the negative pole of the power supply
3	TXD	O	0-3.3V	Serial data output
4	RXD	I	0-3.3V	Serial data input

5	SET	I	0-3.3V	Function temporarily reserved
6	CS	I	0-3.3V	Module sleep pin (low level work, high level sleep)
8	LED	O	0-3.3V	Output indicator, output high when transmitting signal, output low when not transmitting signal
9	GPIO4	I/O	0-3.3V	GPIO4 with internal audio chip
10	GPIO3	I/O	0-3.3V	GPIO3 of internal audio chip, can be configured as SDIN when using I2S mode
11	ANT	O		RF signal output, connect with 50 ohm antenna
13	GPIO0	I/O	0-3.3V	GPIO0 of internal audio chip, when using I2S mode, it can be configured as LRCK
14	GPIO1	I/O	0-3.3V	GPIO1 of internal audio chip can be configured as SCK when using I2S mode
15	GPIO2	I/O	0-3.3V	GPIO2 of internal audio chip, when using I2S mode, it can be configured as MCLK
18	MIC_N	I		Microphone input negative terminal, can be left floating
19	MIC_P	I		Microphone input positive terminal, (the best signal is less than 300mVrms)

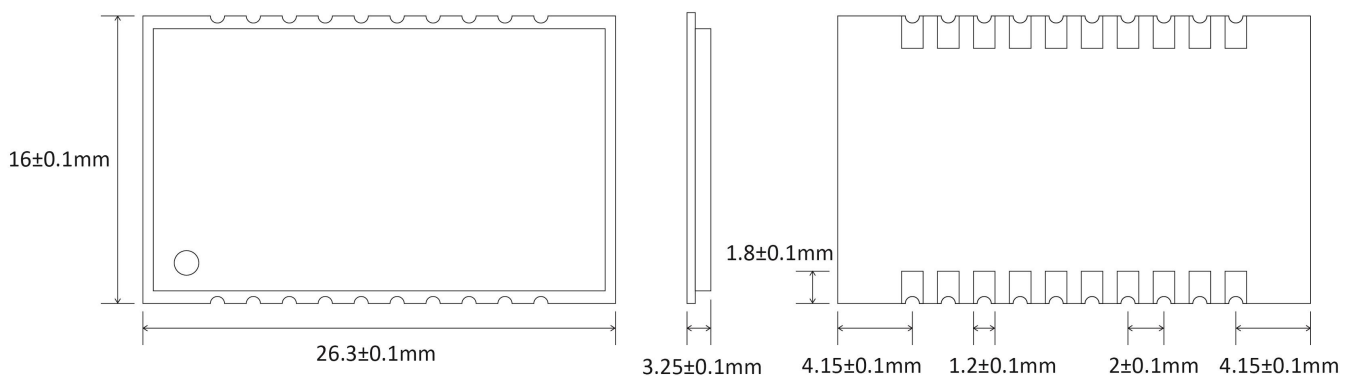


Pin NO.	Pin name	I/O	Level standard	Description
1	VCC		+3.3V	Positive power input (2.8V-3.6V, typical 3.3V)
2, 7, 9,13,16, 19,21,23,25,27	GND		0V	Connect to the negative pole of the power supply
3	TXD	O	0-3.3V	Serial data output
4	RXD	I	0-3.3V	Serial data input
5	SET	I	0-3.3V	Function temporarily reserved

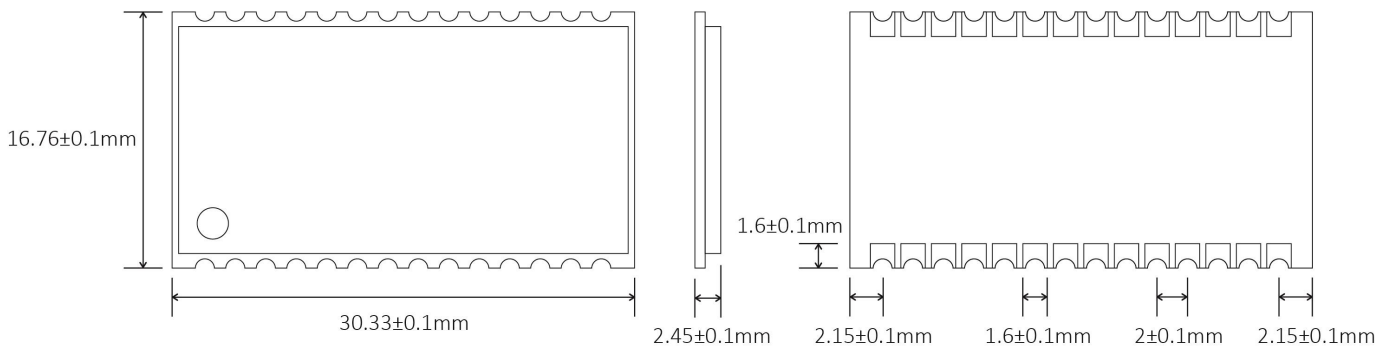
6	CS	I	0-3.3V	Module sleep pin (low level work, high level sleep)
8	LED	O	0-3.3V	Output indication, output high after receiving signal, and low when there is no signal
10	GPIO4	I/O	0-3.3V	GPIO4 with internal audio chip
11	GPIO3	I/O	0-3.3V	The GPIO3 of the internal audio chip can be configured as MCLK when using I2S mode
12	GPIO2	I/O	0-3.3V	GPIO2 of internal audio chip, when using I2S mode, it can be configured as SDIO
15	ANT	I		RF signal input, connect with 50 ohm antenna
17	GPIO1	I/O	0-3.3V	GPIO1 of internal audio chip can be configured as SCK when using I2S mode
18	GPIO0	I/O	0-3.3V	GPIO0 of internal audio chip, when using I2S mode, it can be configured as LRCK
20	AOL+	O		Chip audio output negative terminal (up to 600mVrms)
22	AOR+	O		Chip audio output positive terminal (up to 600mVrms)
24	LOUT+	O		The amplified audio output is the left channel output, which can directly drive the earphone after connecting a 100UF capacitor in series
26	ROUT+	O		The amplified audio output is the right channel output, which can directly drive the earphones after connecting a 100UF capacitor in series
28	VOL_ADJ	I		Volume adjustment pin, external 50K ohm adjustable potentiometer

8. Mechanical size (unit: mm)

➤ SA316-TX

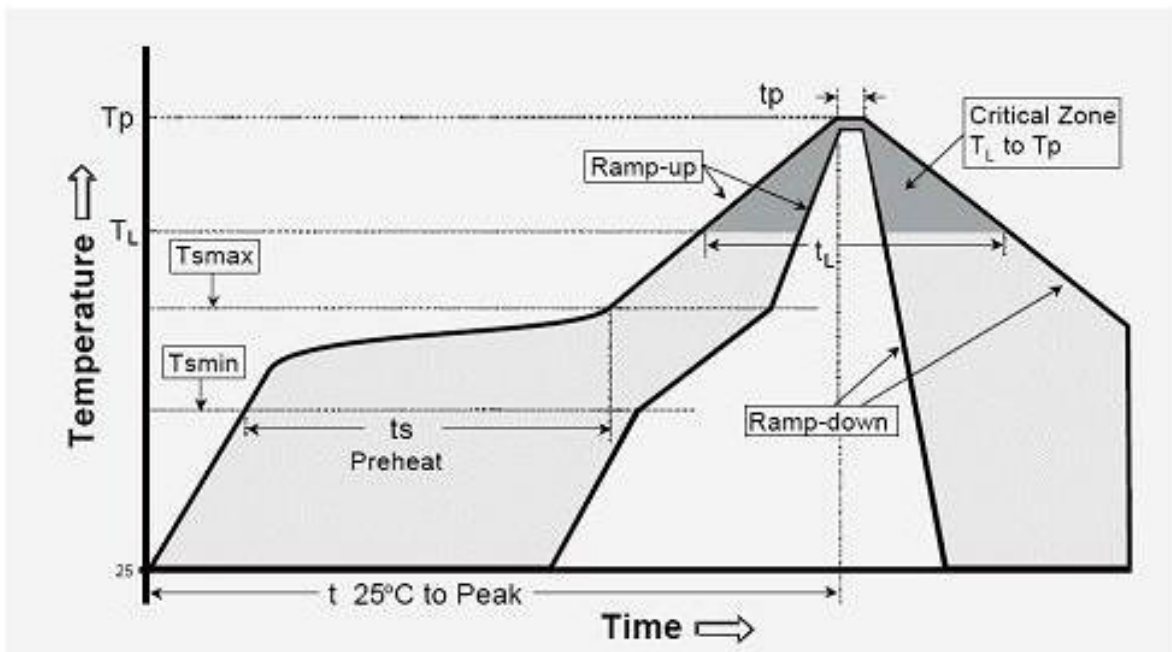


➤ SA316-RX



Appendix: Furnace temperature curve diagram

We recommend you should obey the IPC related standards in setting the reflow profile:



IPC/JEDEC J-STD-020B the condition for lead-free reflow soldering	big size components (thickness $\geq 2.5\text{mm}$)
The ramp-up rate (Tl to Tp)	3°C/s (max.)
preheat temperature	
- Temperature minimum (T _{min})	150°C
- Temperature maximum (T _{max})	200°C
- preheat time (t _s)	60~180s
Average ramp-up rate(T _{max} to Tp)	3°C/s (Max.)
- Liquidous temperature(T _L)	217°C
- Time at liquidous(t _L)	60~150 second
peak temperature(T _p)	245+/-5°C