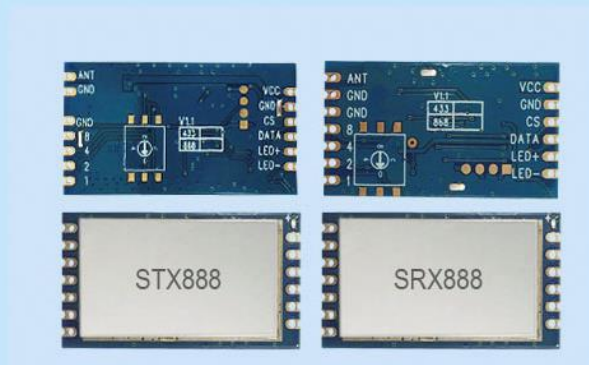


wireless signal replication module

Product Specification



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Remark : History

Version	Time	Modify
V1.0	2020-4	First release

1. Description

This is a wireless signal replication module that can remotely output any same waveform.

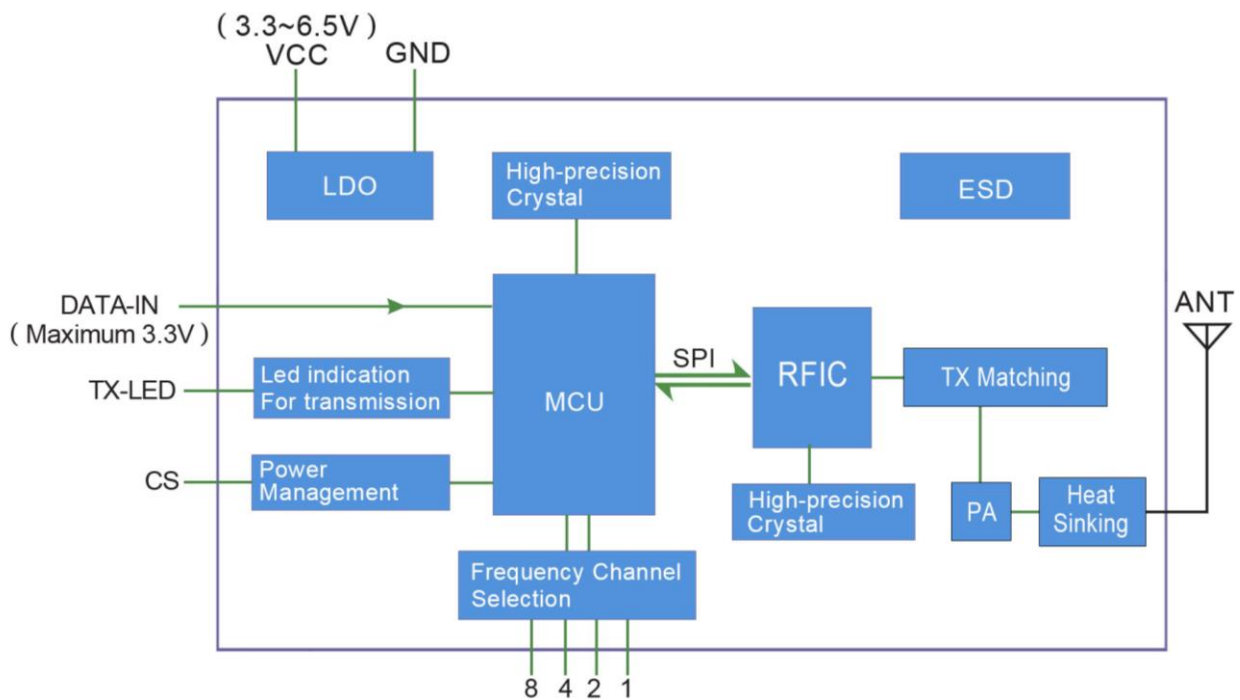
The module can transmit any digital waveform (such as pulse or serial waveform...) with a frequency below 9.6KHz. The module group is composed of a transmitting module (STX888) and a receiving module (SRX888). The waveform input to the DATA pin of the transmitting module will be output on the DATA pin of the receiving module.

2. Feature

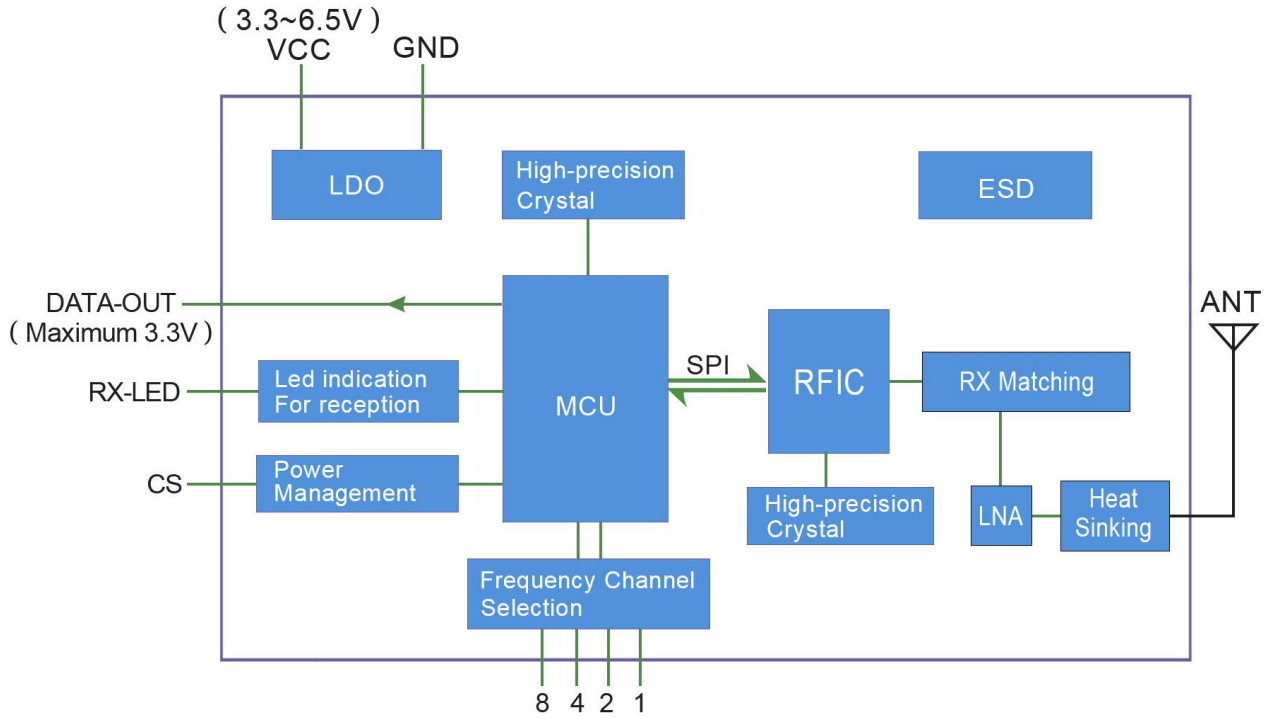
- Arbitrary waveform transmission
- Low signal distortion
- Simple to use, without any setting and programming
- Long-distance communication (open > 500M)
 - ★ Can customize more power, longer distance
- Software and hardware multiple protection, can work stably in complex environment
- Small delay (4ms)
- 16 frequency channels are optional to prevent wireless signal conflict
- GFSK modulation, strong anti-interference ability
- Transmit and receive ultra-low power consumption
- Industrial grade application (-40~+ 85 °C)

3. Block Diagram

➤ Transmitter Block Diagram



➤ Receiver Block Diagram



4. Electrical Specifications

➤ STX888 Electrical Specifications (Supply Voltage: 5V, 25 °C)

Parameter	Min.	Typ.	Max	Unit	Conditions
Operation conditions					
Supply Voltage	3.3	5.0	6.5	V	
Operating Temperature Range	-40	25	+85	°C	
Current consumption					
TX current		370		mA	@27dBm
Standby Current		< 10		mA	Standby, no transmission
Sleep Current		< 10		uA	
RF parameters					
Frequency Range	428.92	433.92	443.92	MHZ	
RF power	26	27.5	28.5	dBm	@5V
Wake up time	-	4	-	ms	

➤ **SRX888 Electrical Specifications (Supply Voltage: 5V, 25 °C)**

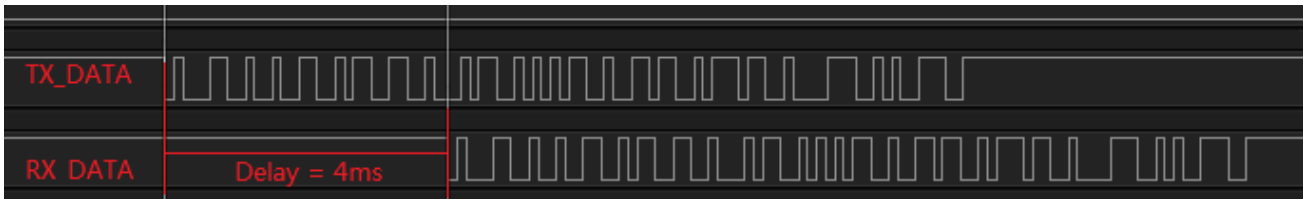
Parameter	Min.	Typ.	Max	Unit	Conditions
Operation conditions					
Supply Voltage	3.3	5.0	6.5	V	
Operating Temperature Range	-40	25	+85	°C	
Current consumption					
RX Current		< 31		mA	
Sleep Current		< 10		uA	
RF parameters					
Frequency Range	428.92	433.92	443.92	MHZ	
Wake up time	-	4	-	ms	

★Note: Although the power supply of the transmitting module and the receiving module is 5V, the IO level of the module is 3.3V TTL, and the level compatibility should be considered when using.

5. Function Description

➤ **Time Delay**

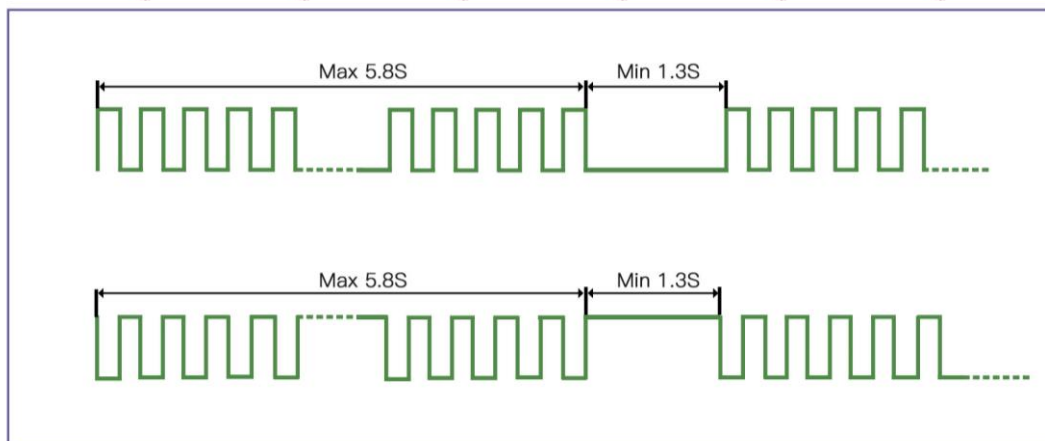
The delay time between the original waveform and the reception waveform is 4ms, as below:



Schematic diagram of the delay of sending and receiving waveform

➤ **Waveform length limitation and interval**

The total length of the transmission waveform of a single data packet cannot exceed 5.8s, and the interval between the transmitted signal packet and the packet cannot be less than 1.3s.



➤ Output waveform tolerance

The maximum tolerance of the pulse width between the output waveform and the original waveform is: 0.026ms (26us)

➤ Working mode

The transmitting module and receiving module have two modes: sleep mode and working mode.

CS = 0, sleep, current 5uA, the module takes 4ms from sleep to wake up.

CS = 1 or floating, working mode. The module switches from working mode to sleep less than 10uS.

When the transmitting module is in the normal working mode, when there is a level change on the DATA pin, it will trigger wireless transmission, and the transmitting module enters the transmitting state, otherwise it is in the standby state.

➤ Transmit / receive status indication

The transmitting module (STX888) has a red LED light, and the receiving module (SRX888) has a blue LED light, which is used to indicate the transmission status and reception status. When the transmitter is transmitting, the red LED lights up; when the receiving module receives the correct data, the blue LED lights up.

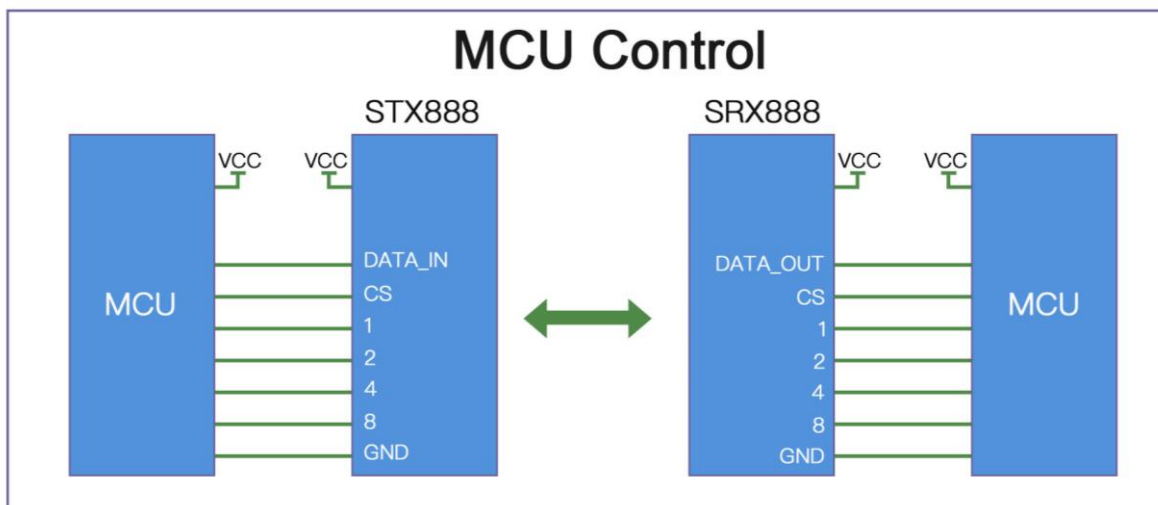
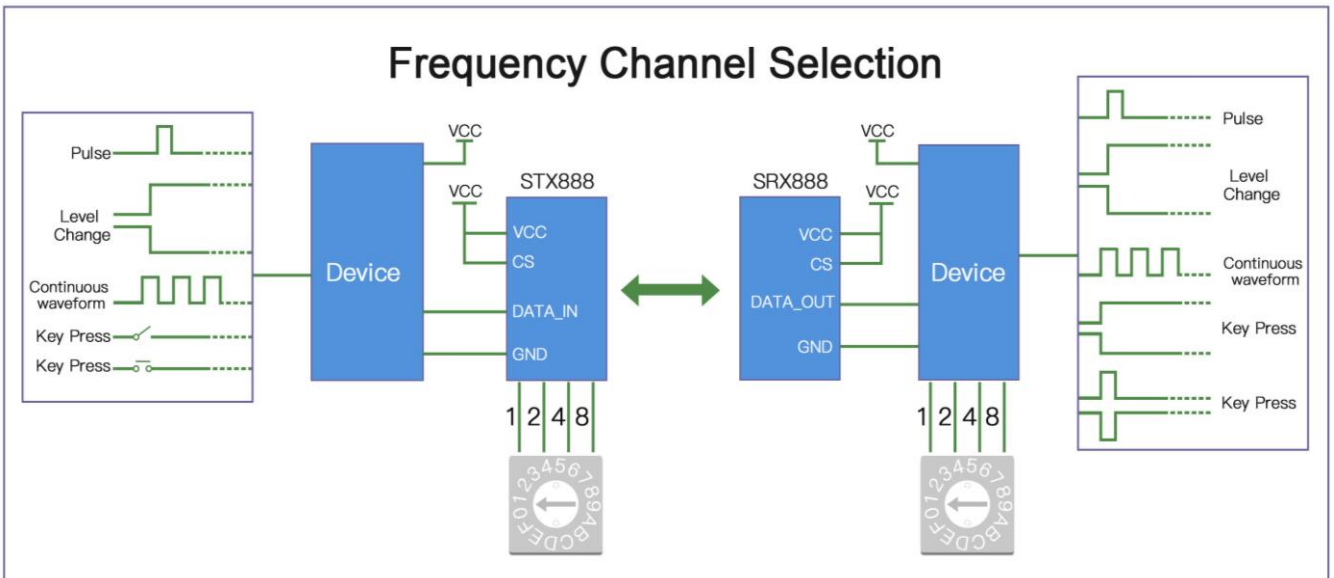
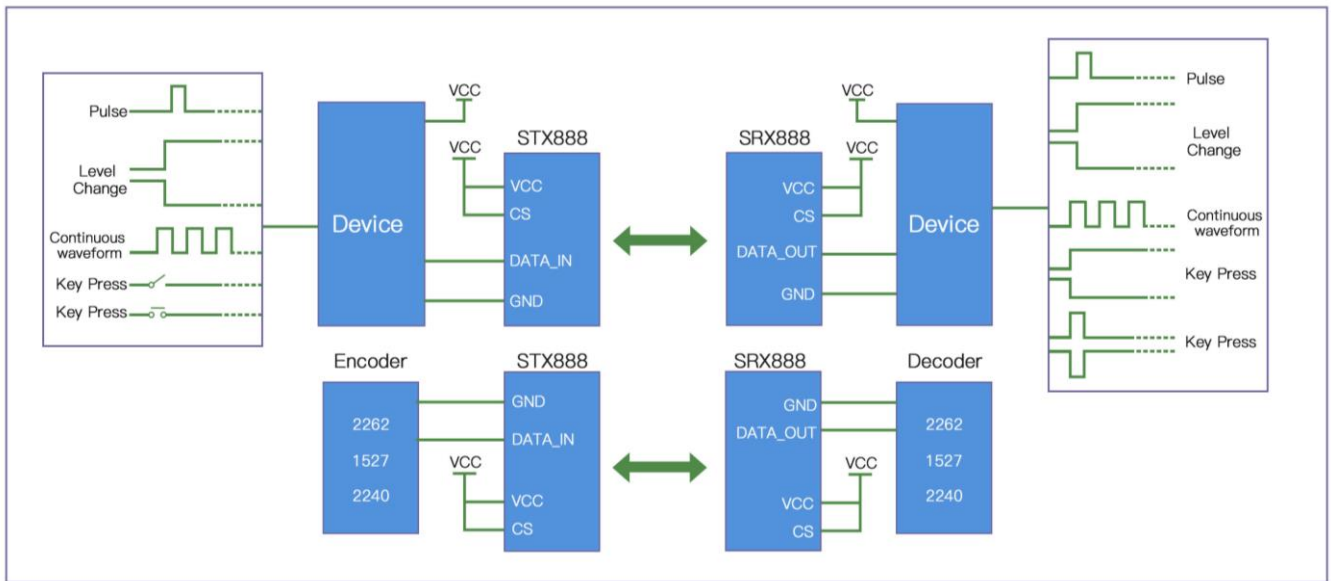
The LED + and LED- pins on the module can be used for external LED lights, and LED + is connected to the positive pole and the LED- to the negative pole of the external LED.

➤ Frequency channel selection

The working frequency of STX888 and SRX888 must be consistent before use. A rotary switch can be soldered on the board to select the channel. The frequency channel is selected by the 4 pins (D8, D4, D2, D1), shown as below.

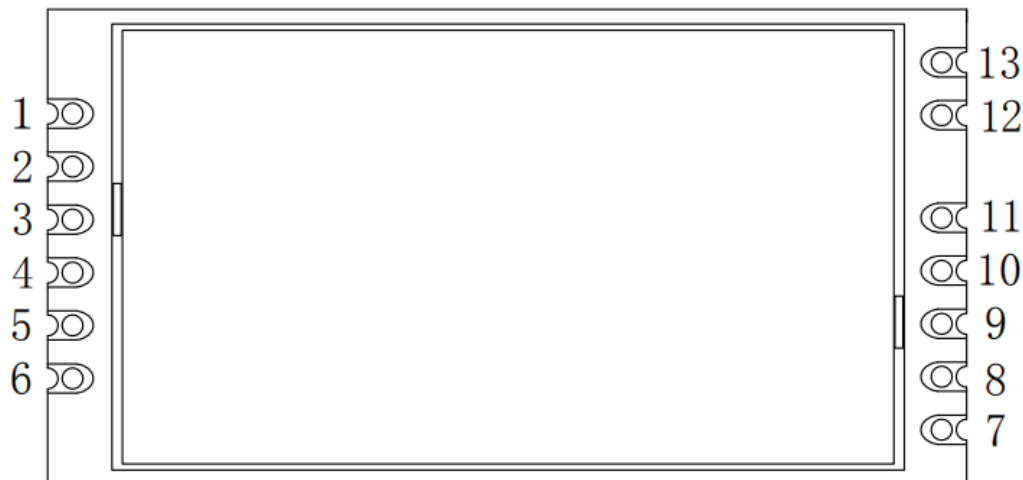
D8	D4	D2	D1	CH
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
				...
1	1	1	1	15

6. Typical applications



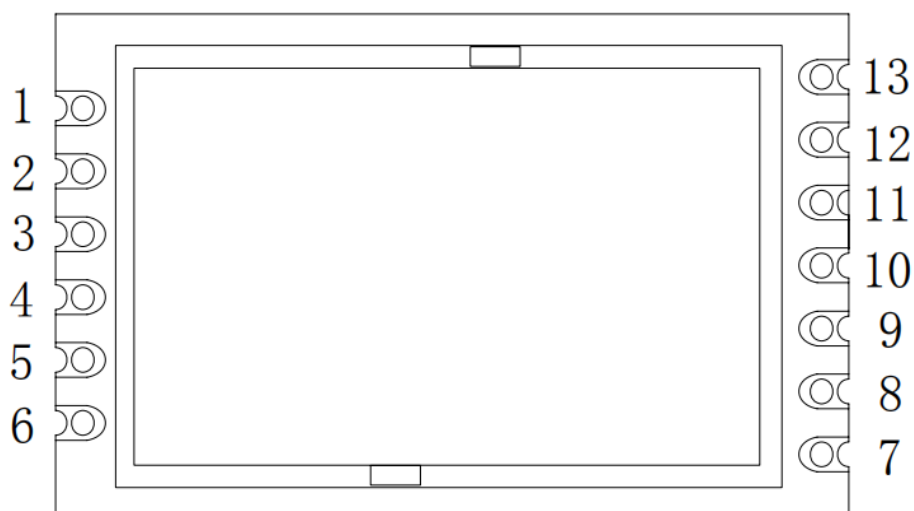
7. Pin Definitions

➤ STX888 Pin Definitions



Pin Number	Pin Definitions	Inout/Output	Pin Description
1	VCC		Positive Power supply
2	GND		Power ground
3	CS	I	Module enable (pull down to sleep, pull up or float to work)
4	DATA	I	Data input pin
5	LED+	O	connect to positive pole of LED
6	LED-	O	connect to negative pole of LED (internal 1K resistor in series)
7	D1	I	Frequency channel selection
8	D2		
9	D4		
10	D8		
11	GND		Power ground
12	GND		Antenna ground
13	ANT		Connect with 50 ohm coaxial antenna

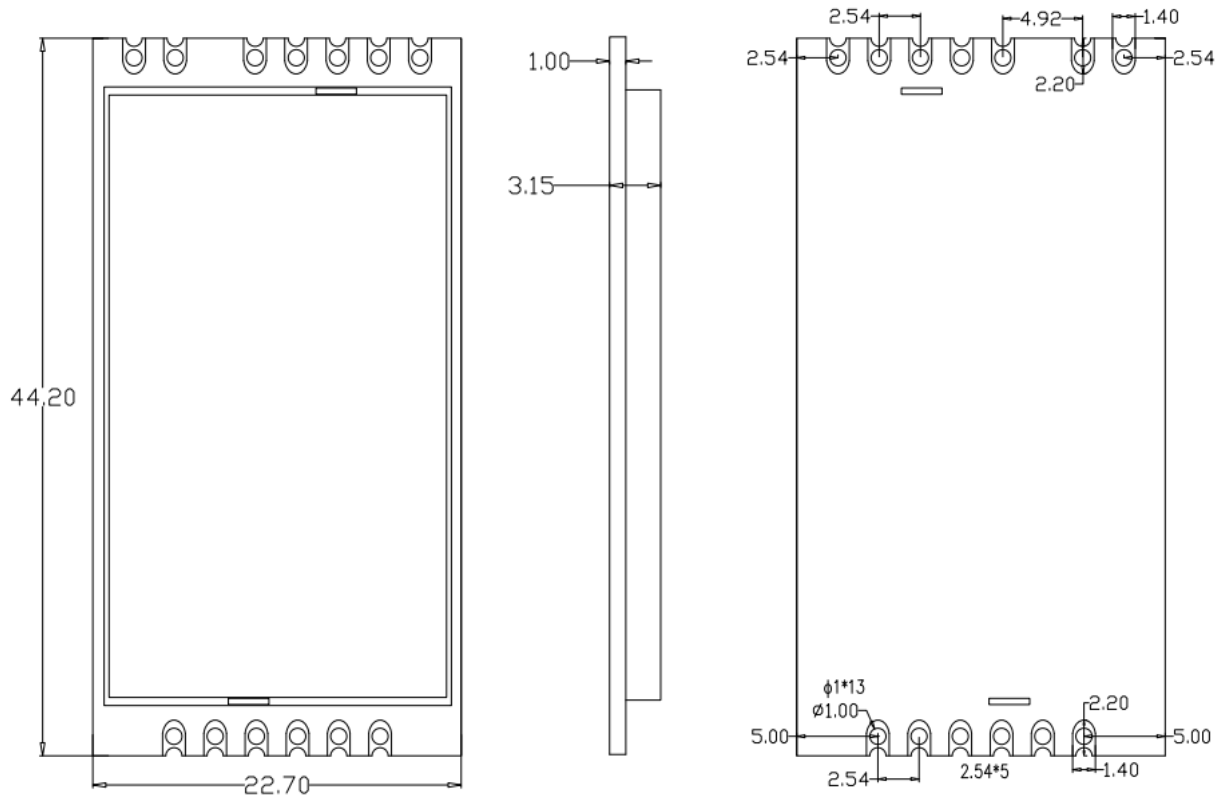
➤ SRX888 Pin Definitions



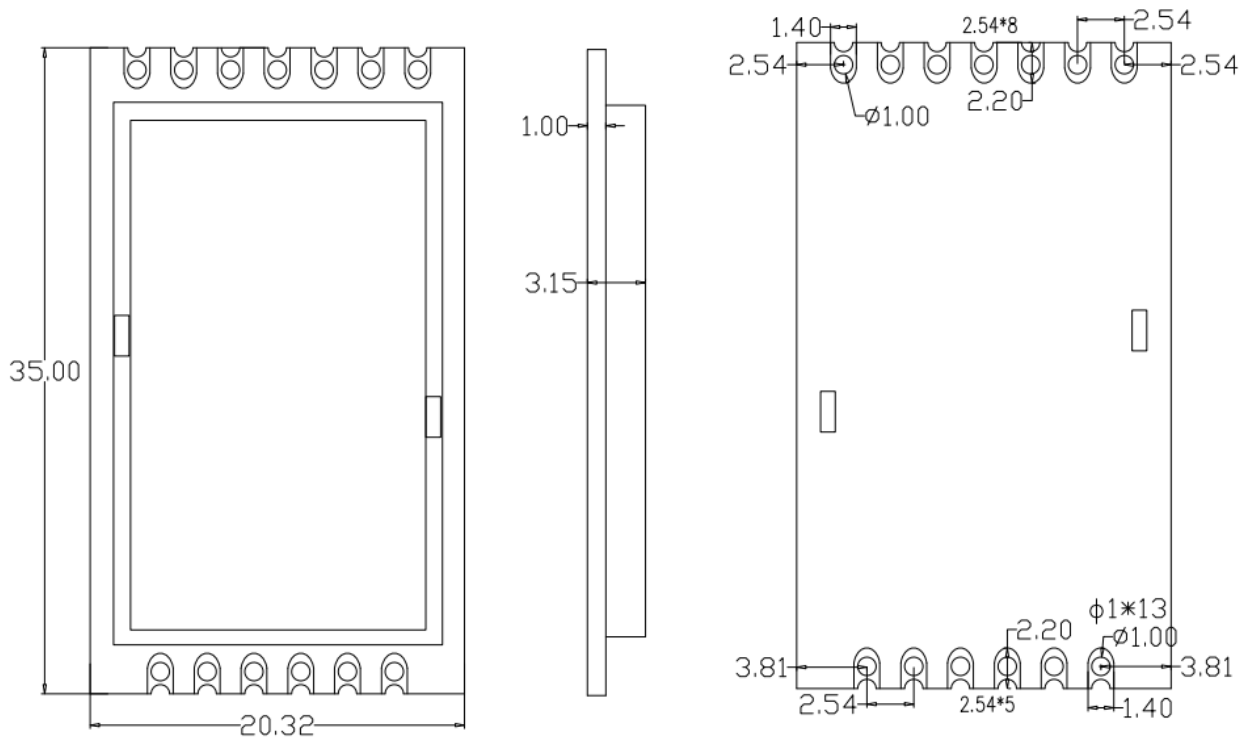
Pin Number	Pin Definitions	Inout/Output	Pin Description
1	VCC		Positive Power supply
2	GND		Power ground
3	CS	I	Module enable (low level sleep, sleep current is less than 5uA, default high level)
4	DATA	O	Data input pin
5	LED+	O	Connect to positive pole of LED
6	LED-	I	Connect to negative pole of LED (internal 1K resistor in series)
7	D1	I	Frequency channel selection
8	D2		
9	D4		
10	D8		
11	GND		Power ground
12	GND		Antenna ground
13	ANT		Connect with 50 ohm coaxial antenna

8. Mechanical dimensions (Unit:mm)

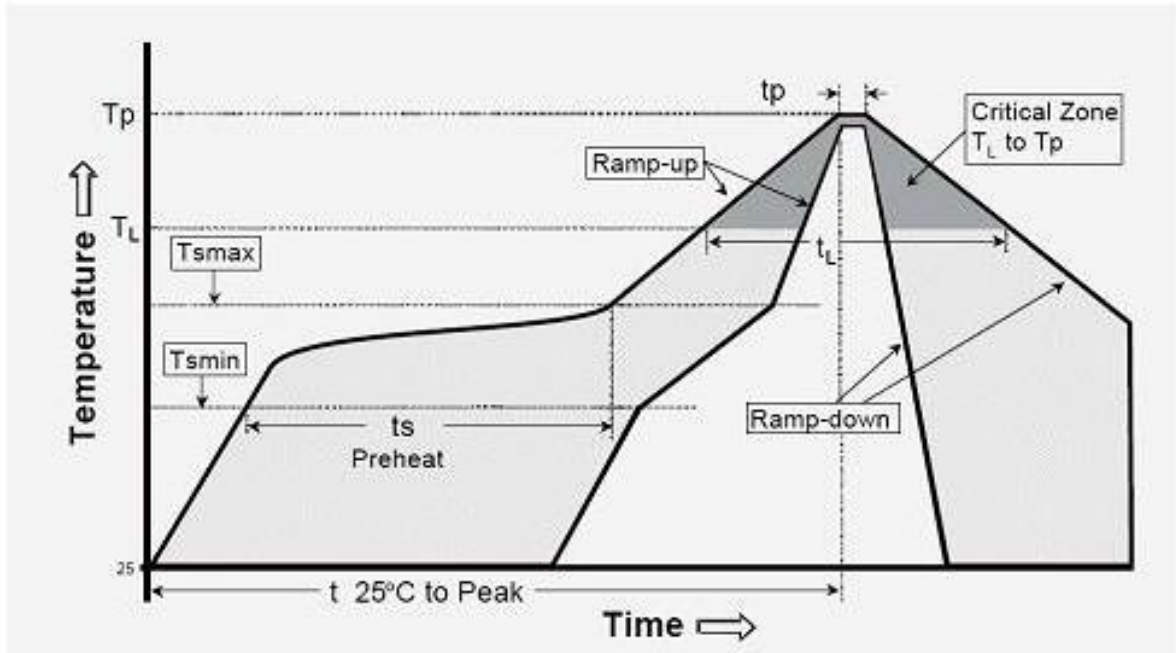
➤ STX888 Mechanical dimensions



➤ SRX888 Mechanical dimensions



Appendix 1: SMD Reflow Chart



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 (T_L to T_p)	3°C/s (max.)
preheat temperature	
- Temperature minimum (T_{smin})	150°C
- Temperature maximum (T_{smax})	200°C
- preheat time (t_s)	60~180s
Average ramp-up rate (T_{smax} to T_p)	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