- 8W High Power
- High-Quality Full-Duplex Audio Transmission
- Mesh Network
- ESD Protection & hardware / Software watchdog
- Professional Heat Dissipation Design With Overall System Cooling

Product Specification

Catalogue

Note: Revision History

Revision	Date	Comment
V1.0	2024-12	First release

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1. Description

SA628F39 is an 8W high-power, full-duplex wireless data and Audio module. Users can read and configure the module's internal parameters through a USB serial interface, along with a user-friendly PC interface, and control its transmission and reception functions. Data transmission and reception can be directly performed through the serial port, enabling full-duplex wireless data communication with mesh functionality.

SA628F39 features multiple safety mechanisms, including reverse polarity protection, overcurrent and overvoltage protection, and anti-freeze protection, ensuring stable operation in various complex environments. Users only need to connect the power supply, speaker, and microphone to easily achieve remote wireless digital voice transmission. The module is simple to operate and quick to deploy.

SA628F39 supports multi-channel concurrent reception and Mesh self-organizing network functionality. It also supports over-the-air (OTA) upgrades or serial upgrades.

SA628F39 module is designed with efficient heat dissipation and a thermally conductive base to ensure stability and reliability during high-power operation.

SA628F39 is manufactured and tested using lead-free processes and complies with RoHS and Reach standards.

2. Features

- Frequency Band UHF 400-480MHz
- USB Interface
- Echo cancellation function
- ESD protection and watchdog
- Line In + Mic input
- Line Out + SPK dual output
- Mesh Network, Concurrent reception
- OTA &Serial upgrade
- 8-Channels Full-Duplex Data/voice Communication
- 5-level VoC adjust
- Professional heat dissipation design, overall system cooling
- 8km transmission distance in the open area

3. Applications

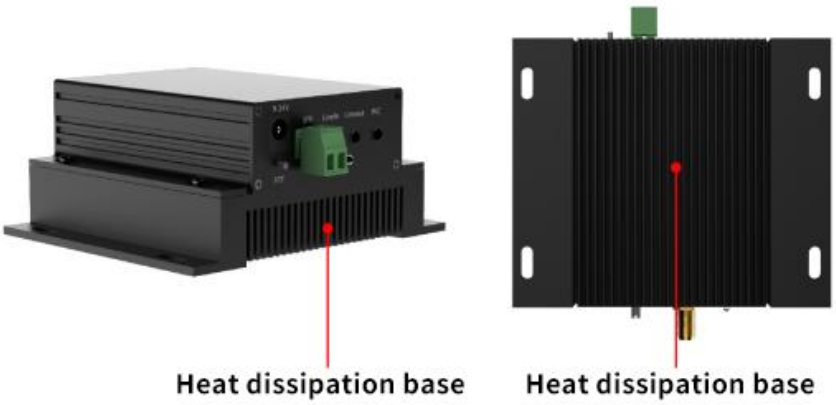
- Fire emergency communication
- Metro,Tunnel communication
- Riding intercom system
- Building and residential security system
- High-quality full duplex walkie talkie
- Security intercom system for special scenarios
- Special job assignment walkie talkie

4. Electrical Characteristics

Parameters	Condition	Min.	Typ.	Max.	Unit
Power Supply		9	12	25	V
Working temperature		-40	25	70	℃
Current consumption					
RX Current	@No audio output, 12V		70		mA
TX current(High power)	@12V 39dBm, 2-person communication		1200		mA
RF Parameters					
Operating frequency	UHF	400		470	MHz
Default shipping frequency	UHF (1MHz interval)	440.125		455.125	MHz
Transmit power	@12v,440MHz	38	39	40	dBm
Adjustable transmit power range	@12v,440MHz	30		40	dBm
Bandwidth（BW)			500		KHz
Audio parameters					
Modulation sensitivity			10	200	mV
Receive signal-to-noise ratio(SNR)			80		dB
Frequency response		60		3800	Hz
Voice output（line out)	Load 16 Ω			40	mW
Voice output power（SPK+,SPK-)	Load 8 Ω			2000	mW
Delay parameters	2channels		80		ms
	3channels		120		ms
	4channels		160		ms
	6channels		240		ms
	8channels		320		ms

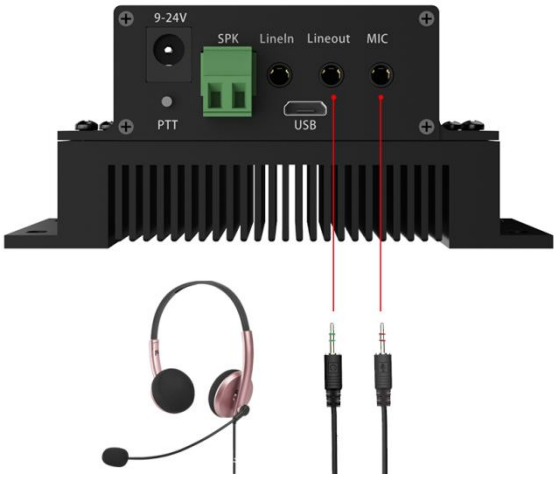
5. Module heat dissipation

In high-power module design, heat dissipation is a critical factor in ensuring stable operation and extending the lifespan of the device. The SA628F39 module features an efficient heat dissipation structure with optimized internal heat distribution. Coupled with a high thermal conductivity base design, it quickly transfers the heat generated inside the module to external cooling devices, effectively improving heat dissipation efficiency and ensuring the module's stability and reliability during continuous high-power operation.



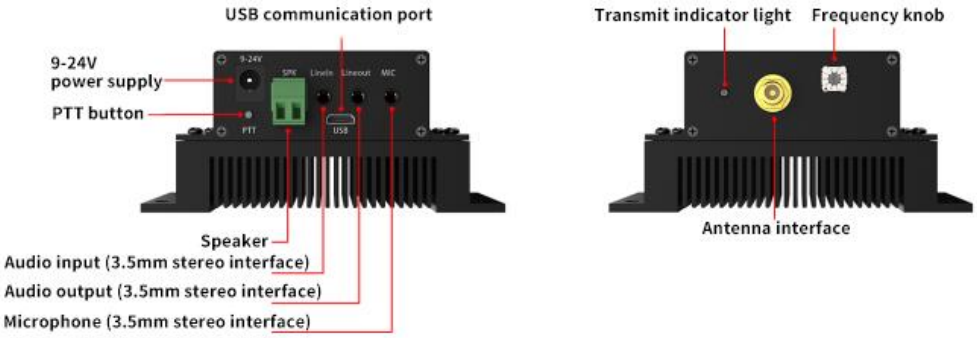
6. Typical Applications

Headphone connected



Microhpone Connected

7. Module Labeling



Note:

1. If the module is connected to a computer to modify parameters, the 9-24V power supply should not be connected externally; it should only be powered via USB. Otherwise, the PC software will not be able to connect to the module.
2. When modifying parameters via USB, the module's transmission power is very low. It cannot transmit at high power and can only be used for short-range communication. The default channel is 1, and the frequency adjustment knob is not functional.
3. The SPK can be connected to a 4-8 ohm, 2-5W speaker. We provide a standard speaker.
4. The signal level of the audio input should not exceed 2V Vpp, as higher levels may cause audio distortion.
5. The MIC input should not use a regular unshielded microphone, as it may cause interference. A shielded microphone recommended by our company should be used.

8. PC Software

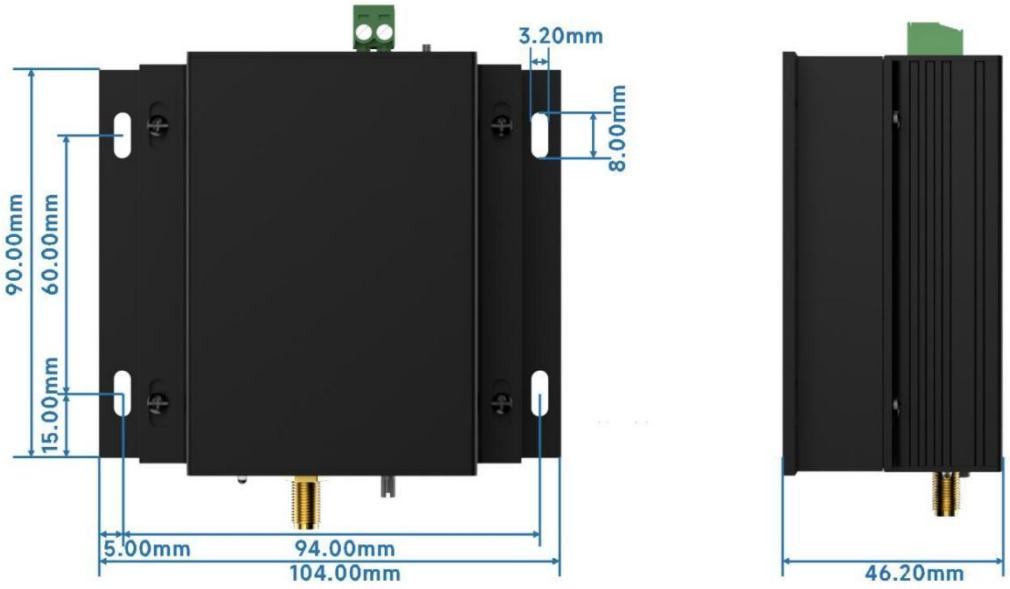
9. Antenna Requirements

module has high power, and using a standard antenna may not yield optimal performance. NiceRF recommends the following two antennas

1. BLG-UHF40

2. SW-UHF390

10. Mechanism Dimension(Unit:mm)

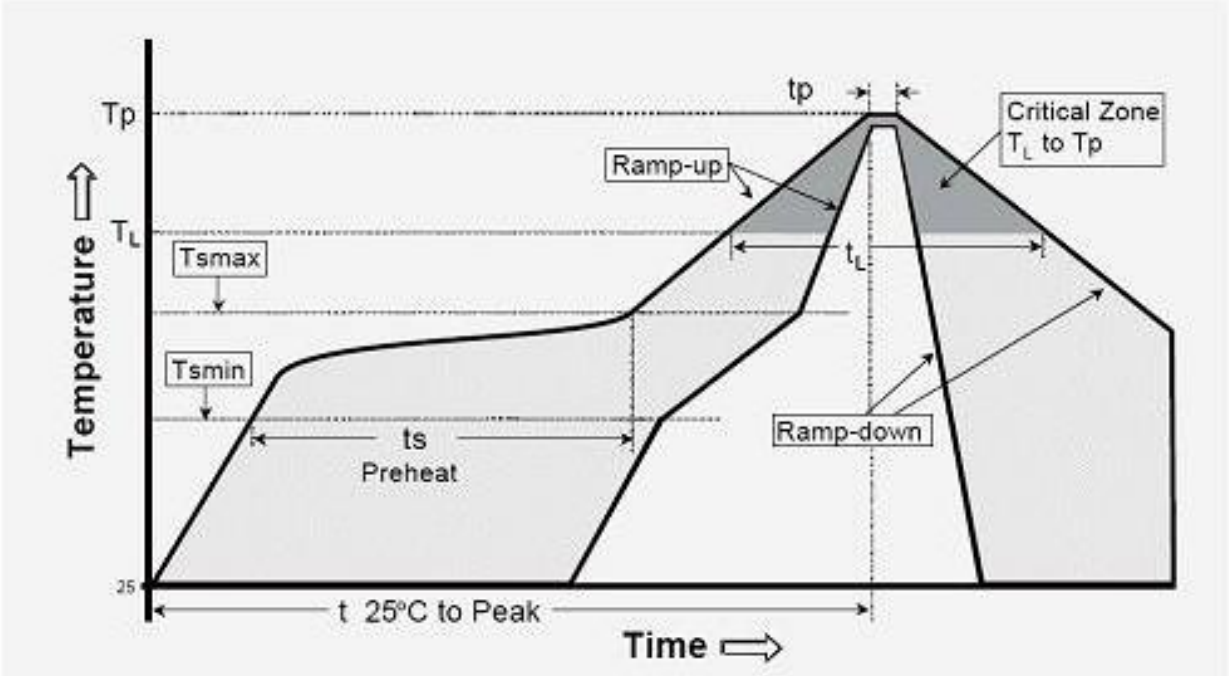


11. Product order information

Product Number	Description
SA628F39-U	Working frequency range400~480MHz

Appendix :SMD Reflow Chart

Below reflow profile is recommended for SMT technology:



IPC/JEDEC J-STD-020B the condition for lead-free reflow soldering	big size components (thickness >=2.5mm)
The ramp-up rate (Tl to Tp)	3℃/s (max.)
preheat temperature - Temperature minimum (Tsmin) - Temperature maximum (Tsmax) - preheat time (ts)	 150℃ 200℃ 60~180s
Average ramp-up rate(Tsmax to Tp)	3℃/s (Max.)
- Liquidous temperature(TL)	217℃
- Time at liquidous(tL)	60~150 second
peak temperature(Tp)	245+/-5℃