

SA828 All-in-One walkie-talkie module

1. Description

SA828 is an all-in-one professional walkie-talkie module in small size. It is very easy to use with powerful function. This module has full function of a professional walkie-talkie and can talk with any analog walkie-talkie in the market. With the small size, it can be easily embedded into instrument, portable and handheld device. SA828 works well in the hot/cold environment with the KDS 1PPM TCXO. The features of excellent antenna match network, good RF amplifier, high RF sensitivity allow its communication easily to achieve over 3Km in open area.

Rotary switch for channel selection, EEPROM, Audio Amplifier, RF Amplifier, PTT key, Antenna socket are all included in such a small size module. Besides, all parameters (CTCSS, CDCSS, SQ, Predefined channels etc) can be easily modified either by PC software or command using UART interface. With the embedded audio volume turning circuit, user can only solder a variable resistor on Pin16, Pin17 to adjust the volume steplessly.

There are two frequency bands of SA828: SA828-U and SA828-V. The only difference is the frequency range. The others are same, including module size, interface, software protocol, etc. The two modules' frequency ranges are:

SA828-U: U band, 400

-- 480MHz

SA828-V: V

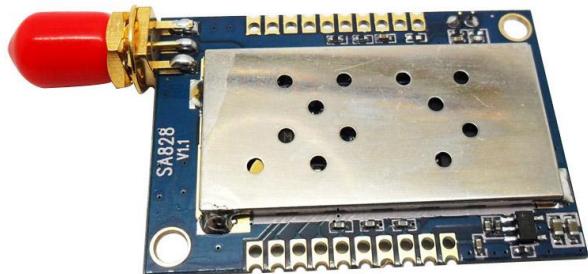
band, 134 -- 174MHz

Super Easy Use & Powerful Function!

Power Supply

+ => Powerful Walkie Talkie

Speaker



* Rotary Switch/Vox/EEPROM/Audio Amplifier/

RF Amplifier/PPT Key/Antenna Socket

* CTCSS/CDCSS/SQ/Predefine 16 Channels/

PC Software/UART Interface

2. Features

- Frequency range: 400~480MHz /134~174MHz
- Solely TX and RX frequency
- 12.5/25KHz bandwidth selection
- 1W Output Power
- 3~5Km distance in open aera
- High Sensitivity: -124dBm
- High Integrated with ultra small size
- 166 CDCSS, 38 CTCSS
- 8 SQ
- High / low output power selection (500mW-1W)
- Embedded EEPROM, data saved even power off
- 1ppm TCXO

3. Application:

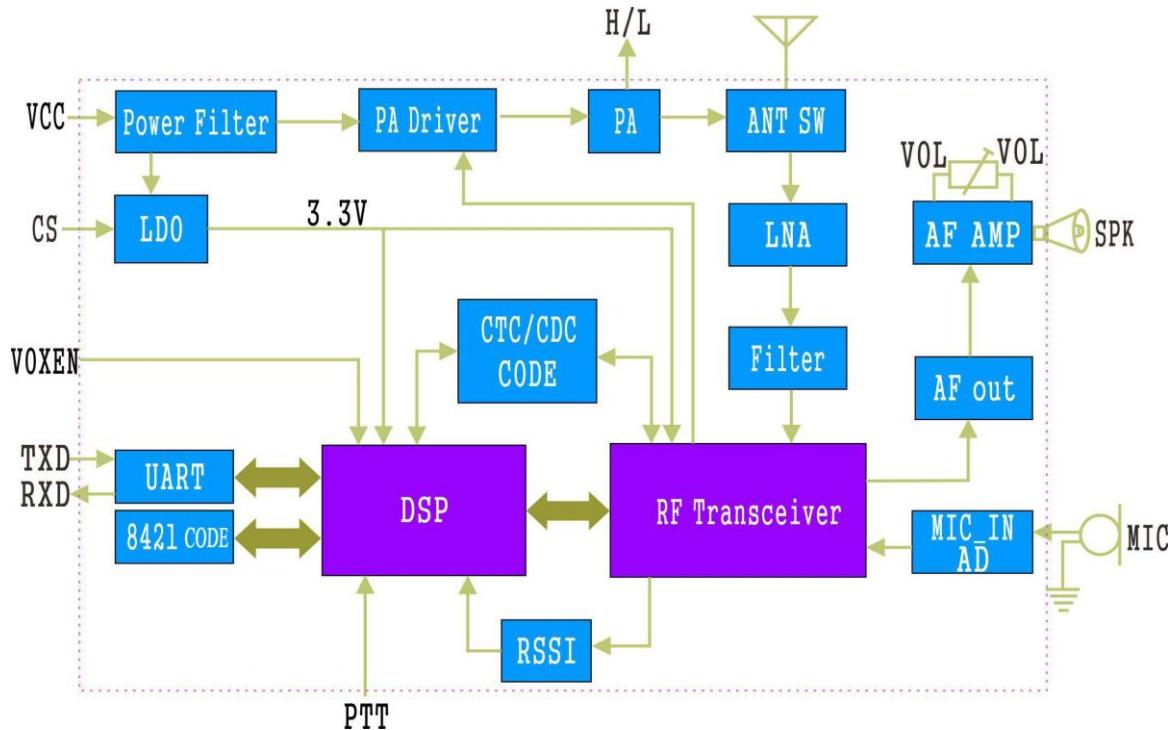
- Small size walkie-talkie
- Pocket / handheld device
- Security system
- Instrument
- Outdoor sport product
- Audio tracking and control system

4. Specification:

| Parameter | Test condition | Min. | Typ | Max. | Unit |
|--------------------------------|----------------|------|-----|------|------|
| Operating voltage range | -- | 3.3 | 4.2 | 5.5 | V |
| Operating temperature range | -- | -30 | 25 | 70 | °C |
| Power consumption | | | | | |
| Sleeping Current | -- | -- | ≤3 | | uA |
| RX current | -- | -- | 60 | | mA |
| TX current (high output power) | -- | -- | 650 | 750 | mA |
| TX current (low output power) | -- | -- | 450 | 550 | mA |
| TX frequency parameter | | | | | |
| Operating frequency range | SA828-U | 400 | -- | 480 | MHz |
| | SA828-V | 134 | -- | 174 | MHz |

| | | | | | |
|--------------------------------|------------------------------------|----|--------|----|-----|
| TX current (high output power) | @VCC=4.0V | 28 | 29.5 | 31 | dBm |
| | | 25 | 26.5 | 27 | dBm |
| Audio distortion | @1.5Khz/2.5KHZ Frequency deviation | -- | 2 | 5 | % |
| Adjacent Channel Ratio | @12.5K offset | -- | -60dBc | | dBm |
| RX frequency parameter | | | | | |
| RX sensitivity | 13 dBm output audio SNR | -- | -124 | -- | dBm |
| RX SNR | @1.5 KHZ Frequency deviation | 45 | 50 | -- | dB |
| Audio output power | -- | -- | 2 | -- | W |
| Audio output impedance | -- | -- | 8 | -- | OHm |

5. Internal diagram:



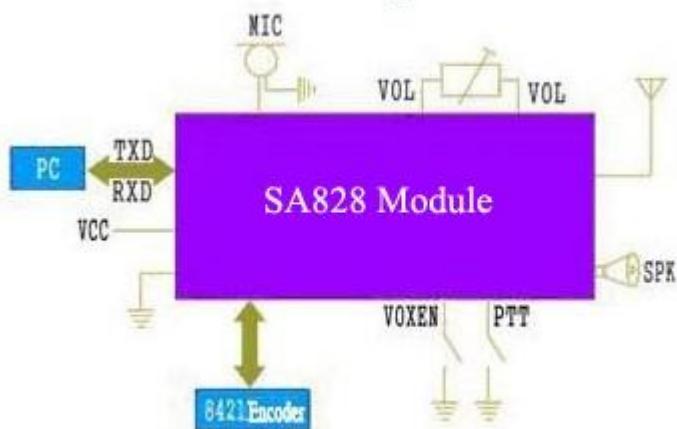
6. Typical application schematic:



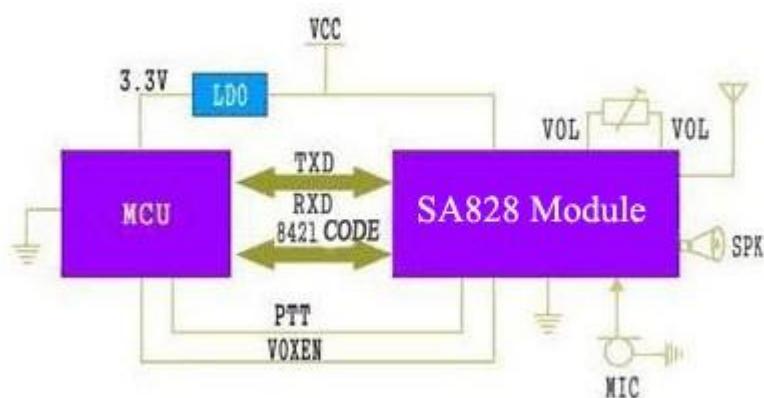
Simple Circuit

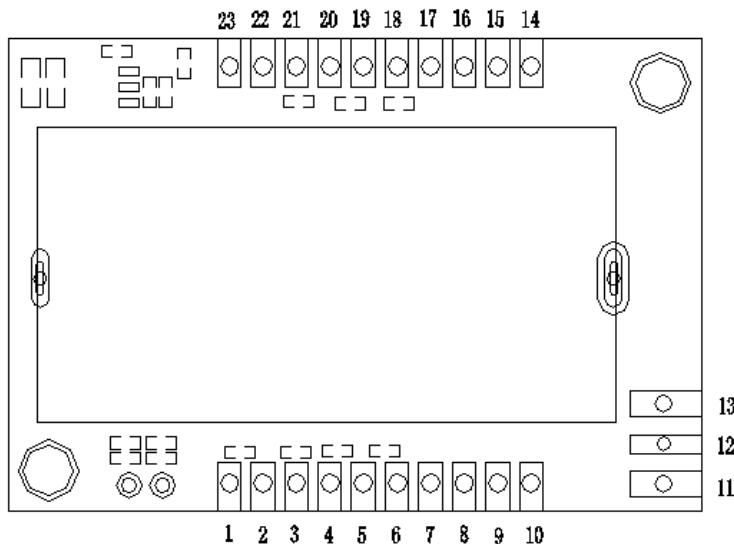


Standard Schematics



Customized schematics



7. Pin out definition:


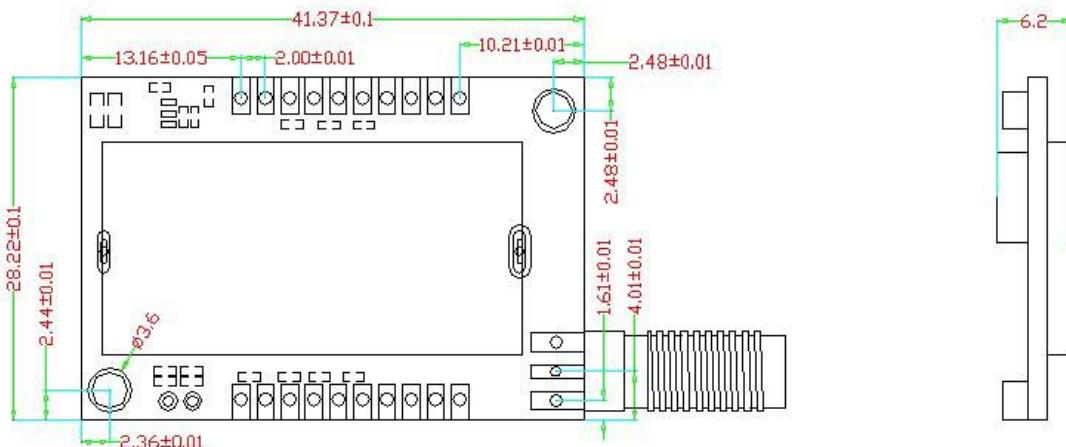
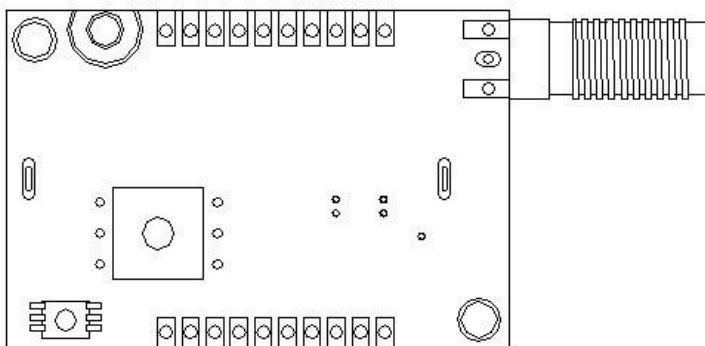
| Pin No. | Pin Name | Description |
|----------------|-----------------|---|
| 1 | MIC+ | External microphone positive |
| 2 | MIC- | External microphone cathode |
| 3 | VOX EN | VOX enable , 0: enable VOX; leave open or 1 to disable VOX |
| 4 | 1 | 8421 Encoder for 16 Frequency channels, The 1 st digit of the code, leave open or high level represent the digit “0”. Connect to ground or low level represent digit “1”. |
| 5 | 2 | 8421 Encoder for 16 Frequency channels, The 2nd digit of the code, leave open or high level represent the digit “0”. Connect to ground or low level represent digit “2”. |
| 6 | 8 | 8421 Encoder for 16 Frequency channels, The 4th digit of the code, leave open or high level represent the digit “0”. Connect to ground or low level represent digit “8” |
| 7 | 4 | 8421 Encoder for 16 Frequency channels, The 3rd digit of the code, leave open or high level represent the digit “0”. Connect to ground or low level represent digit “4” |
| 8 | H/L | high/low output power control; Leave open for high output power, low level to low output power. (Please kindly note: this pin can NOT be connected to VDD or high level of CMOS output) |
| 9,10,11,13,21 | GND | Exposed ground pad |
| 14,15 | SPK | 8 ohm /2W loudspeaker connection |
| 16,17 | VOL | Connect with Resistor to adjust the volume of the speaker, normally using 100K ohm rotary resistor to adjust the volume steplessly. |
| 18 | RXD | RXD of the module for UART, connect to TXD outside of the module |
| 19 | TXD | TXD of the module for UART, connect to RXD outside of the module |
| 20 | PTT | PTT of the walkie-talkie module, leave open or “1” is Rx, “0”is TX.. |
| 22 | VCC | External and Positive supply 3.3~5V. |
| 23 | CS | Leave Open or 1 for normal working, 0 is for sleeping mode |

8. Parameter setup:

User can use our specified PC software to modify all the parameters easily. Below is the PC configuration diagram.



9. Mechanical dimension:



10. Communication protocol

The parameters of SA828 can be modified with standard UART interface. The interface voltage is TTL 3.3V. User can contact your sales engineer for detailed communication protocol.