

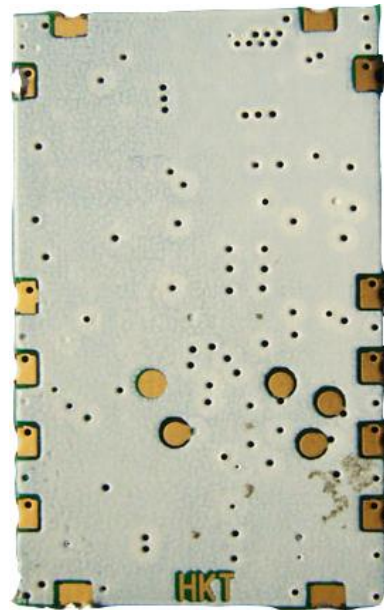


SR_FRS_0W5

wireless intercoms & data transfer
module

DATA SHEET

1. Product picture.



DATE: 2013-01-15



2. Product Outline

The **SR_FRS_0W5** is a wireless voice intercom and data transfer module with high cost performance, it built-in high performance RF trans_receive chip , microprocessor, RF amplifier. The external controller can set the module parameter by the RS232 interface. The only several external components (Antenna, Mic, Amplifier) can compose a whole Frs or Data Frs

The module key performance is very small size:15mm X 25mm , it can be used for mobile phone and other device that have the stricit room requirement.

3. Product performance

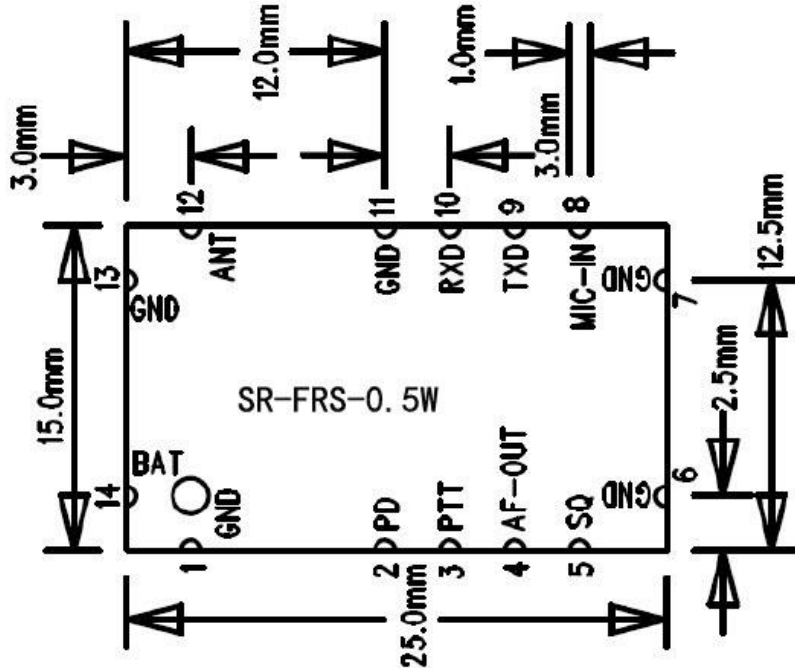
- ◆ FM demodulation technique Based on digital signal processing technology;
- ◆ Frequency Range: 136~174MHZ, 400~470MHZ;
- ◆ Frequency step: 5K/6.25K/12.5K/25K;
- ◆ RF Output Power: 500mW
- ◆ voice encryption (scrambling): 8 method.
- ◆ Voice Compression- Expansion ;
- ◆ SMS Receive /Transformer, The wireless Baut : 1200;
- ◆ CTCSS (38 group) + CDCSS (83 group) ;
- ◆ Automatic elimination tail ;
- ◆ Volume adjustable (1-9) ;
- ◆ Vox level adjustable (0-8) ;
- ◆ SQ level adjustable (0-9) ;
- ◆ MIC sencitivity level adjustable (1-8)
- ◆ The ultra low power dispation in Sleep Mode (0.1uA) ;
- ◆ Power supply : DC 3.3~5.0V
- ◆ Ultra small size: 15*25*3.0MM;
- ◆ Communication distance: more than 3 KM in empty field.

Applications:

- portable intercom and paging systems;
- wireless data transmission;
- mobile phones and other embedded in radio functions product .



4. Package and Size

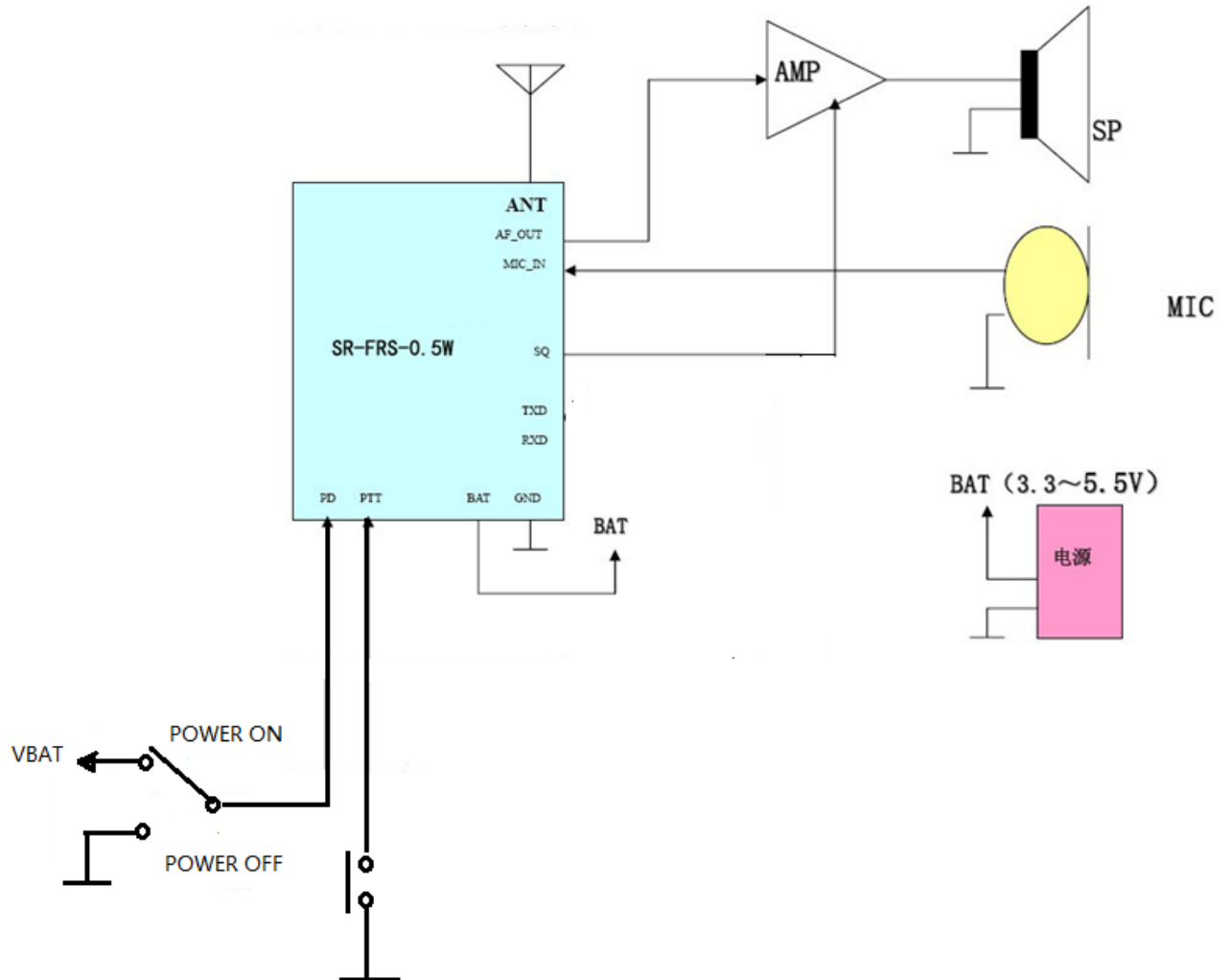


Pin name	Pin numer	Description
GND	1	Gnd
PD	2	Sleep enable 0:Sleep ; 1: Run
PTT	3	Transmit/Receive control 1: receive ; 0: transmit
AF_OUT	4	Audio output
SQ	5	Squelch controll 0: actived
GND	6	GND
GND	7	GND
MIC_IN	8	Microphone input
RXD	9	UART - RXD
TXD	10	UART - TXD
GND	11	GND
ANT	12	Antenna
GND	13	Power Gnd
BAT	14	Power supply (DC 3.3-5.5V)

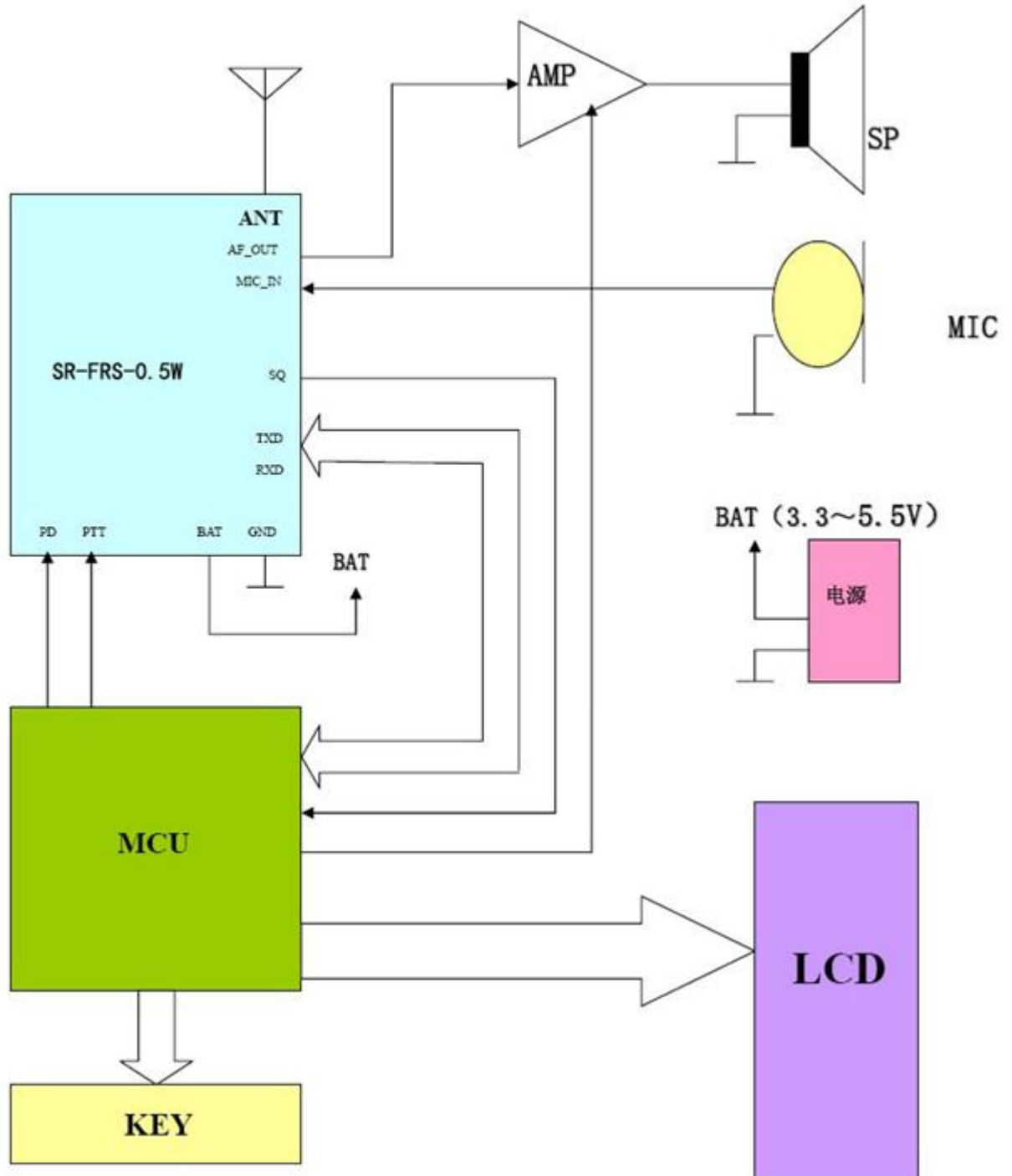


5. Typical application Block diagram

5.1 Without MCU, it works alone.



5.2 With MCU



6. Electrical Characteristics

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◆ DC Electrical Characteristics (Recommended)

Name	comment	Min	Typical	Max	unit
BAT	Power supply	3.3	4.0	4.5	V
Tamb	Ambient temperature	-20	27	60	° C
	Internal Initialize Time when power on	400	500		ms
	CMOS low level	0		0.6	V
	CMOS high level	2.4		3.0	V

◆ DC Electrical Characteristics (Maximum)

symbol	description	Min	Typical	Max	unit
VBAT	Power supply	3.3	4.2	5.0	V
Tamb	Ambient temperature	-30		85	° C
I _{IN}	I/O input current ⁽¹⁾	-5		5	mA
V _{IN}	I/O input voltage ⁽¹⁾	-0.3		3.3	V

◆ Power Characteristics

(Test condition: BAT = 4.0V , T_A = -25 ° C)

Work mode	description	Test condition	Typical	unit
Continuous Receive		Input 450.050MHz, RF level -47dBm, AF=1KHz, MOD=1.5KHz	65	mA
Continuous Transmit		Input 1KHz Modulated signal	330	MA

Receive Squelch power Save mode	The receiver is in power save state with standby condition.		12	mA
Deep sleep (PDN Is low)	Both the receiver and transmitter are all power off.	Within 500ms finish the power on process, switch to continuous receive/transmit mode.	0.1	uA

◆ Overall electrical performance specifications

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Frequency Range (MHz)	136-174MHz, 400-470MHz
Channel spacing (KHz)	25 / 12.5KHz
Antenna Impedance (Ω)	50
Operating temperature ($^{\circ}\text{C}$)	-20~+60
Frequency Stability (ppm)	± 2.5

◆ Receive Feature

(unless special comment, Test condition VBAT = 4.0 V, TA = -25 $^{\circ}$ C)

符号	description	Test condition	Min	Typical	Max	unit
Sensitivity	Reference sensitivity	12dB信呐	-120	-122		dBm
	Squelch Sensitivity	Adjustable by software		-120		
	Received SNR	1.5KHz Deviation	52	55		dB
	Adjacent Channel Selectivity	12.5KHz Channel spacing	55	60		dB
	Intermodulation Immunity	12.5KHz Channel spacing	55	60		dB
	Spurious response rejection	12.5KHz Channel spacing	52	55		dB
AF OUT	Audio Output (RMS)	Fo=1KHz Adjustable by software		150	150	MV
	Audio output distortion	Fo=1KHz		1	3	%
	Audio response	300HZ		+2		
		500HZ		+4		
		1000HZ		0		
		2500Hz		-7		
		3000HZ		-13		

◆ Transmit Feature

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(unless special comment, Test condition VBAT = 4.0 V, TA = -25° C)

symbol	description	Test condition	Min	Typical	Max	unit
P _{OUT}	Output Power		350	400	500	MW
	Transmit current			300	350	MA
	Maximum modulation frequency deviation limit	Narrow Band Wide Band			2.5 5.0	KHZ KHZ
	Modulation sensitivity	Adjustable by software	5	7	12	MV
	Audio modulation distortion			1	3	%
	Modulation characteristics	300HZ 500HZ 1000HZ 2500HZ 3000HZ	-10 -6 0 5 6			DB DB DB DB DB
SNR	S/N		40	42	45	dB
	Carrier suppression			-60		dBc
	IM3 Suppression			-60		dBc
	Adjacent Channel Power	12.5KHz offset		-65		dBc
	Stray radiation			-36		dBc

7. Serial communication protocol

SR-FRS-0W5 module has the AT instruction interface, the AT instruction can be used to communicate with or control the module; the AT instruction covered all the inquiry and control command; For detail please refer our company 《SR-FRS-0W5 Serial communication protocol》

Please be noted:

- 1、 after the module power on, the module default parameter are as below:
- 2、 GBW=12.5KHZ ,

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TFV=450.050MHZ,

RFV=450.050MHZ,

Transmit CTCSS=01;

Receive CTCSS=01;

SQ=3,

Compression Expansion: Enable

Scrambled: Disable;

2、When module is communicating with other Host by AT command, PTT can't be pulled low.

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