

FCC ID: YG8CE-701

Technical Description

CE-701 SMS SENDER

Remove the screws on the battery door by a screwdriver and open it, then place 4 x 1.5V AAA batteries into the battery compartment, then close the battery door and tighten the screws. Press in and hold the “ON/OFF” button in 2 to 3 seconds and release, then the time 12:00 shows on the screen (time setting please refer to the user manual), now the equipment is powered on. Every equipment has own ID number.

The EUT is operating single frequency of 49.860 MHz

The equipment stays in the receiving mode when it is on. The input RF signals via the antenna is amplified by the triode(Q1、Q2), then is led to RF demodulator、IF AMP、radio detector、data limiter and noise suppressor etc., which are composed of IC1 and crystal XL, and then signals are decoded by UI: CPU. If the signals are sent to the correct ID number, the equipment rings, and the text sent from the other equipment shows on the screen, for example: “HOW ARE YOU”. Meanwhile, the receiver will send a back ring to the sender telling it has received the text.

Sending of SMS Message: Press “send” after turn on the equipment, the screen shows “TO”, and then enter the receiver’s ID

number, and input the message text, now press "ENT" button, the numeral signal leads to the oscillating circuit, modulator which are composed of IC1 and Crystal XL, then is amplified by Q4, and is finally transmitted via the antenna. If the message text is sent successfully, the sender's equipment rings (the receiver rings too) when the screen show "SENT". Now sending is finished.

CWF49F1

1. GENERAL DESCRIPTION

CWF49F1 is a highly integrated CMOS RF IC provided 49MHz FM/FSK half-duplex transceiver for low cost short distance FM communication. The chip is designed to provide a fully function FM/FSK transceiver which includes microphone amplifier, frequency modulator, VCO, RF amplifier, low noise amplifier, mixer, IF amplifier, frequency demodulator, and data slicer. The user only has to add one 14.31818MHz crystal, 455k IF filter, and a few RC elements to complete one transceiver. It provides 4 channels operation via three pins CHS2, CHS1, CHS0. The customer may choose any 4 channels combination from an internal PLL frequency synthesizer with metal code option.

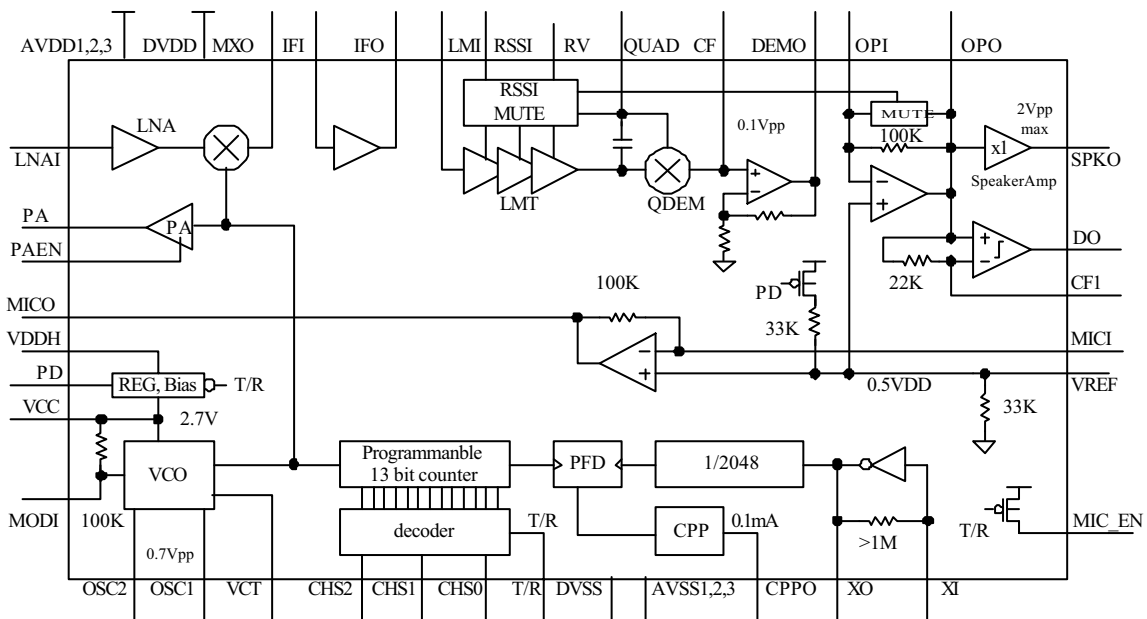
2. FEATURES

- Half Duplex Transceiver
- Operation Voltage: 2.4V~3.6V
- Low Current Consumption: TX:15mA; RX: 3mA.
- Single Chip FM/FSK Transceiver.
- 4 Channels Selectable via 3 Pins, Other channels can be obtained by metal code option.
- Built-in Microphone Amplifier.
- Built-in Speaker Driver
- Built-in Voltage Regulator
- Push-to-talk Function
- Squelch Function
- Chip Power Down Function
- 10mW RF Output. 1mW can be obtained by metal code option.
- Full ESD Protection

3. APPLICATION FIELD

- Short Distance Voice/Data Communication.
- Radio Control Car, Toy.
- Walkie-talkie.

4. BLOCK DIAGRAM



5. PIN DESCRIPTIONS

PIN No.	Mnemonic	Type	Function Description
1	CHS2		Channel Selection 0. Open is prohibited.
2	CHS1		Channel Selection 1. Open is prohibited.
3	CHS0		Channel Selection 2. Open is prohibited.
4	MICO		MIC Amplifier Output
5	MODI		FM Modulation Input
6	VDDH		Positive Power Supply 3.0V~5.5V for Internal Regulator
7	VCC		Internal 2.7V Regulated Supply for VCO, LNA, Mixer
8	PA		Transmitter Output
9	VEE		Ground for RF Front-end
10	LNAI		Receiver RF Input
11	MIXO		Mixer Output. Ro=1.8K
12	IFI1		1 st IF Amplifier Input, Ri=1.8k
13	IFI0		1 st IF Amplifier Output, Ro=1.8K
14	LMTI		Limit Amplifier Input
15	RSSI		40dB Received Signal Strength Indicator out, 2uA/dB
16	CF		Comparator Input Bias Bypass Capacitor. External 0.1uF Capacitor is recommended.
17	AVSS3		Ground for Speaker Driver
18	SPKO		Speaker Drive Amplifier Output
19	AVDD3		Positive Power Supply for Speaker Driver
20	AVDD2		Positive Power Supply for IF Amplifiers
21	QUAD		Discriminator Input
22	AVSS2		Ground for IF Amplifiers
23	OPO		Audio Amplifier Output
24	OPI		Inverting Input of Audio Amplifier
25	DEMO		FM Demodulation Output
26	CF1		Discriminator Bypass Capacitor
27	VREF		Reference voltage at 0.5VDD, Connect a bypass capacitor to GND.
28	MICI		Inverting Input of MIC Amplifier
29	MICEN		Microphone Enable Pin, Ron<2K.
30	DO		FSK Demodulated Data Output
31	RV	O	Receiving Valid
32	T/R	I	Push-to-talk, Internally Pull Low. “H” = Transmit Mode; “L” = Receive Mode
33	XI	I	14.31818MHz Crystal Oscillator Input
34	XO	O	14.31818MHz Crystal Oscillator Output
35	VDD		Positive Power supply for Digital Circuits
36	VSS		Ground for Digital Circuits
37	CPPO	O	Charge Pump Output.
38	VCT	I	VCO Control Voltage. it works within 0.5V~VDD
39	OSC2	I/O	VCO Tank2
40	OSC1	I/O	VCO Tank1
41	PD	I	Power Down, Internally Pull High. “H” = Chip Power Down; “L” = Chip Enable
42	PAEN	I	Power Amplifier Enable, Internally Pull Low. “H” = PA Enable; “L” = PA Disable

5.1

FUNCTIONAL BLOCK DESCRIPTIONS

The CWF49F1 is a single chip transceiver RF IC which includes frequency synthesizer, voltage control oscillator, RF power amplifier, low noise amplifier, mixer, IF limiting amplifier, FM demodulator, crystal oscillator, microphone amplifier, and speaker driver.

5.2 Power Down Mode

When PD = “H” or floating, the whole chip is in power down mode. All functions are disabled.

5.3 Transmit Mode

When PD = “L” and T/R = “H”. In this mode, microphone amplifier and microphone bias circuit is enabled. The 1/2048 divider generates a 5kHz reference source to PFD. The number of 13-bit counter is defined by decoder which is metal optioned. The VCO will lock at the frequency which is selected by CHS0~CHS2. The signal from MODI modulates VCO to generate FM/FSK signal.

Setting PAEN = “H” turns on the PA and emits RF signal.

5.4 Receive Mod

when PD = “L”, PAEN = “L”, and T/R = “L” or floating. In this mode, The VCO acts as a local oscillator, and the mixer converts RF signal, which is amplified by LNA, to IF (455kHz). External 455kHz-band pass filter is necessary for channel selectivity. RSSI detects the received power and is used for MUTE control. QDEM and an external LC tank converts RF signal to baseband signal. Speaker driver can drive 16-Ohm speaker through a dc blocking capacitor. The comparator is used for data slicer and the DO pin is digital data output.

6. ELECTRICAL SPECIFICATIONS

6.1 Absolute Maximum Ratings

Characteristics	Symbol	Ratings
DC Supply Voltage	VCC_V+	< 3.6V
	VDDH_V+	< 6.0V
Input Voltage Range	V _{IN}	-0.5V to V ₊ + 0.5V
Operating Temperature	T _A	0• •to +60• •
Storage Temperature	T _{STO}	-50• •to +150• •

Note: Stresses beyond those given in the Absolute Maximum Rating table may cause operational errors or damage to the device. For normal operational conditions, see AC/DC Electrical Characteristics.