

Technical Description

The brief circuit description is listed as below:

- 1) U1 acts as MCU (LT6800).
- 2) Y101 is 12MHz crystal oscillator providing clock for U1.

Antenna Type: Internal antenna

Antenna Gain: 0dBi

Nominal rated field strength: 87.0dB μ V/m at 3m

Maximum allowed field strength of production tolerance: +/- 3dB

Operating Frequency: 2405-2465MHz with 1MHz channel spacing.

LT6800

2.4G SOC chip

芯片特点

- . including rf front end and digital baseband soc chip solutions.
- . very low power consumption
- . support SOP16 encapsulation
- . support single panel
- . effective distance of 250 meters
- . support 33 mm wire antenna
- . nine custom pin function
- . hardware 16-bit timer
- . 2 kw OTP program memory
- . low voltage reset and check the Settings
- . support innovation encapsulates SDIP16

典型应用

- . remote control car
- . remote control door
- .wireless doorbell
- .remote control lamp

芯片简介

LT6800 is a low cost, high integration of the 2.4 GHz wireless transceiver chip, SOC integration on the transmitter, receiver, frequency synthesizers, GFSK modems and low power consumption MCU. Transmitter power adjustable support, adopting digital receiver extension communication mechanism, under the condition of complex environment and strong interference, can achieve excellent transceiver performance. Peripheral circuit is simple, just a few peripheral passive devices. LT6800 GFSK signal transmission, the transmission power can go to the biggest 6 DBM. USES low intermediate frequency receiver structure, receiving sensitivity can reach - 96 DBM. Digital channel energy detection can monitor channel quality at any time.

MCU on low power consumption, can wake up, there are 2 kw OTP

Program space, the use of assembly language, and at the same time provide a complete simulation and burn

And convenience for the customers.

In order to improve the battery life, chip in every link of reducing power

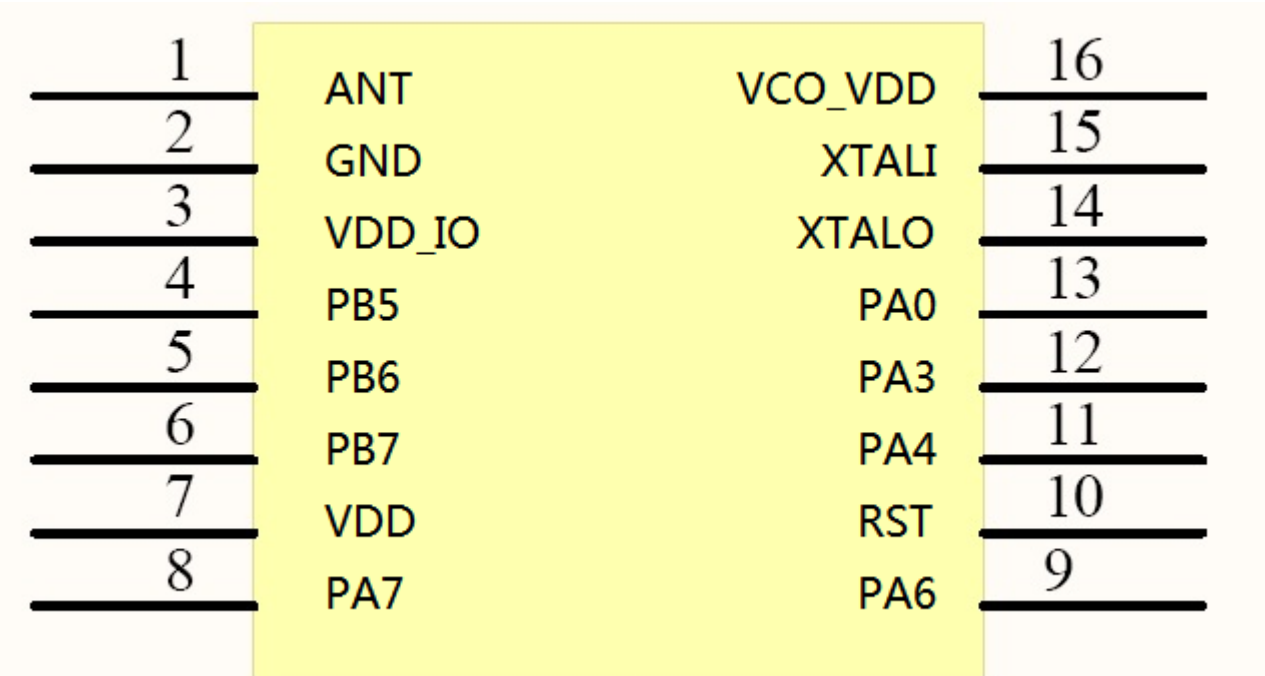
Consumption, chips minimum operating voltage to 2.2 V.

Chip encapsulation using SOP16 foot, comply with RoHS standard.

Chip support SDIP16 encapsulation, simple peripheral, zero patch.

PRELIMINARY

1. Encapsulation pin order:



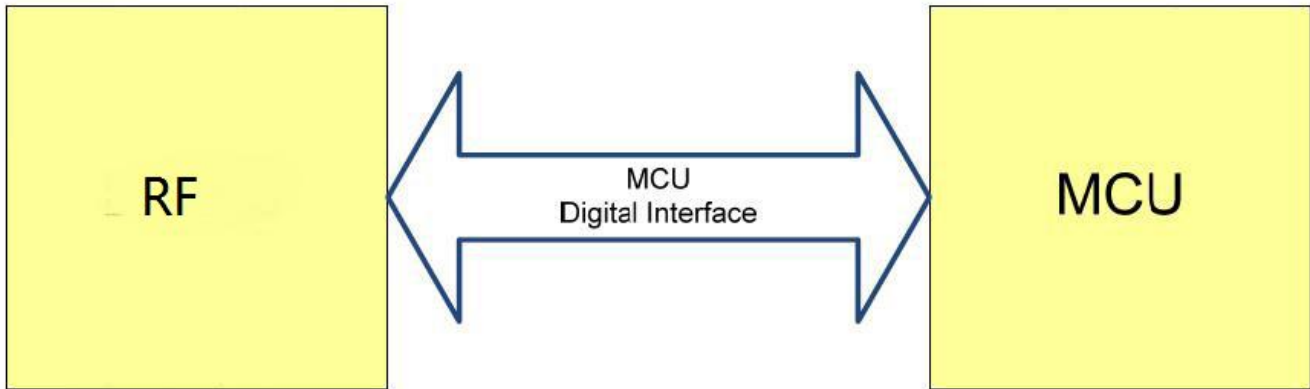
2. The pin description

Pin No	Pin Name	Type	Description
1	ANT	Balanced RF	Rf input/output
2	GND	GND	to
3	VDD_IO	Power	The power supply
4	PB5	I/O	A custom function
5	PB6	I/O	A custom function
6	PB7	I/O	A custom function
7	VDD	Power	The power supply
8	PA7	I/O	A custom function
9	PA6	I/O (W)	A custom function (Burning feet)
10	RST/PA5	I/O (W)	A custom function (Burning feet)
11	PA4	I/O (W)	A custom function (Burning feet)
12	PA3	I/O (W)	A custom function(烧录脚)

PRELIMINARY

13	PA0	I/O	A custom function
14	XTALO	A O	Crystal oscillator output pin
15	XTALI	A I	Crystal oscillator input
16	VCO_VDD	Power	The power supply

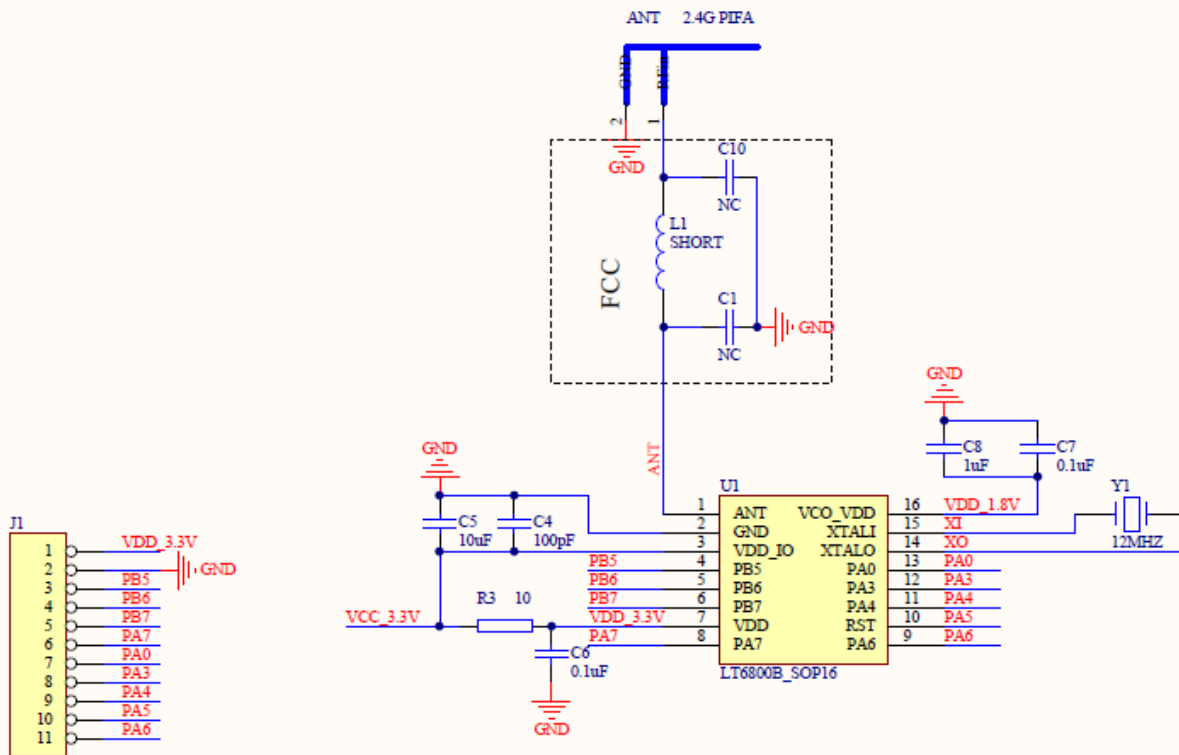
3. The digital interface between each other



When the RST_n is low, will close chip, current < 1 ua, the value of the digital part can be lost. If you want to keep digital register values, can enter the sleep mode. When the RST_n is high, will open chip, register will restore reset value	BnPwR		PB3	Function of the foot
SPI: SPI data output pin I2C: input data output	SPI_MISO	↔	PB2	Function of the foot
SPI: SPI data input I2C: set the I2C address an A4	SPI_MOSI	↔	PB1	Function of the foot
SPI/I2C clock input	SPI_CLK	↔	PB0	Function of the foot
SPI_SS 0, enabling SPI signals, low level effectively, also can make the chip into sleep mode	SPI_SS		PB4	Function of the foot

4. LT6800 SOP16 circuit diagram

PRELIMINARY



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5, Limit

Table 1. 极限值

Parameter	Symbol	MIN	TYP	MAX	Unit
Working temperature.	T_{OP}	-5		+80	°C
Storage temperature.	$T_{STORAGE}$	-55		+125	°C
Working voltage	V_{IN_MAX}			+3.7	VDC
1.8 V voltage	VDD_MAX			+2.5	
I0voltage	V_{OTHER}	-0.3		+3.7	VDC
Input rf signal strength	P_{IN}			+10	dBm

Notes:

1. Limit said chip beyond this work conditions, could be damaged. Normal function of chip in the proposal within the scope of work values.
2. The chip of electrostatic sensitive, during transportation and storage, it is best to use anti-static equipment, welding by machine or hand to have a good grounding

6, Electrical characteristics

Table 2.

The electrical characteristics

The following electrical characteristics are in $T_A = 25\text{ C}$, $LDO_VDD = VDD_IO = 3.3\text{ VDC}$ conditions.

Parameter	Symbol	MIN	TYP	MAX	Units	Test Condition and Notes
Working voltage						
Dc voltage		2.1		3.6	VDC`	
Working current						
TXWorking current	IDD_TXH		3		mA	
RXWorking current	IDD_RX		5		mA	
Idle modeWorking current	IDD_IDLE		1		mA	
Digital input						
High level voltage	VIH	0.8 VDD_IN		1.2 VDD_IN	V	
Low level voltage	VIL	0		0.8	V	
Input capacitance	C_IN			10	pF	
The input leakage	I_LEAK_IN			10	uA	
Digital output						
High level voltage	VOH	0.8 VDD_IN		VDD_IN	V	
Low level voltage	VOL			0.4	V	
Output capacitance	C_OUT			10	pF	
Output leakage	I_LEAK_OUT			10	uA	
Transceiver features						
Working frequency	F_OP		2450		MHz	
The antenna ports differences($Z_0=50\Omega$)	VSWR_I		<2:1		VSWR	Receive mode.
	VSWR_O		<2:1		VSWR	Transmit mode.

PRELIMINARY

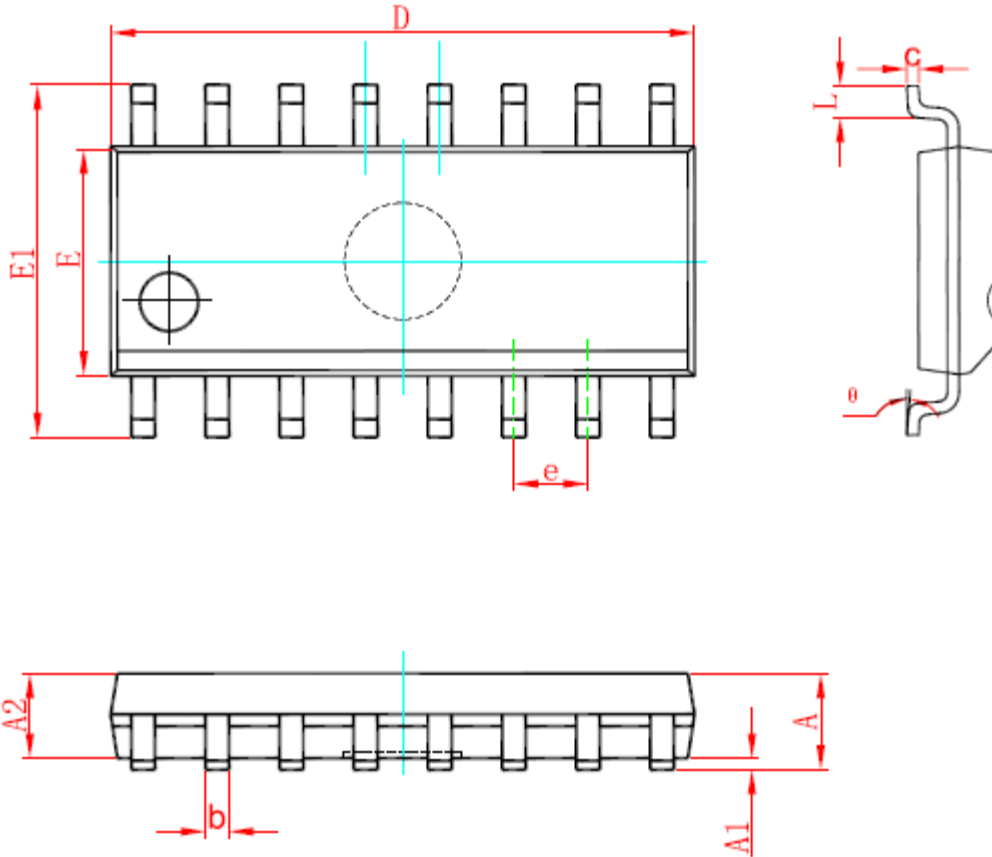
Parameter	Symbol	MIN	TYP	MAX	Unis	Test Condition and Notes
Receive Section						Measured using 50 Ohm balun. For BER ≤ 0.1%:
Receiving sensitivity			-87		dBm	1Mbps
			-90		dBm	250Kbps
			-93		dBm	125Kbps
			-96		dBm	62.5Kbps
Maximum input power		-20	1		dBm	
Data rate	Ts		1		us	
Anti-interference characteristics						For BER ≤ 0.1%
The same frequency interference	CI_cochannel		+9		dB	-60 dBm desired signal.
1MHZ adjacent signal interference	CI_1		+6		dB	-60 dBm desired signal.
2MHZ adjacent signal interference	CI_2		-12		dB	-60 dBm desired signal.
3MHZ adjacent signal interference	CI_3		-24		dB	-67 dBm desired signal.
Out-of-band interference	OBB_1	-10			dBm	30 MHz to 2000 MHz
	OBB_2	-27			dBm	2000 MHz to 2400 MHz
	OBB_3	-27			dBm	2500 MHz to 3000 MHz
	OBB_4	-10			dBm	3000 MHz to 12.75 GHz
Transmit Section						Measured using 50 Ohm balun3:
Transmission power	PAV			6	dBm	
Second harmonic			-50		dBm	Conducted to ANT pin.
Three times harmonic			-50		dBm	Conducted to ANT pin.
Modulation characteristics						
The largest deviation	00001111 pattern	Δf1avg		280		kHz
	01010101 pattern	Δf2max		225		kHz
In-band radiation						
2MHz frequency deviation	IBS_2			-40	dBm	
>3MHz frequency deviation	IBS_3			-60	dBm	
Out-of-band radiation	OBS_O_1		< -60	-36	dBm	30 MHz ~ 1 GHz
	OBS_O_2		-45	-30	dBm	1 GHz ~ 12.75 GHz, excludes desired signal and harmonics.
	OBS_O_3		< -60	-47	dBm	1.8 GHz ~ 1.9 GHz
	OBS_O_4		< -65	-47	dBm	5.15 GHz ~ 5.3 GHz

Note:

1. The test was conducted in 2450 MHz frequency, jamming signal test at 1 MHz intervals. At the same time because of the interference signal harmonic affects performance, so want to good filtering.
2. In some applications, the antenna front will add filter, or limited to the antenna bandwidth effectively.

PRELIMINARY

SOP16 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	9.800	10.200	0.386	0.402
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

PRELIMINARY

SDIP16 PACKAGE OUTLINE DIMENSIONS

