

The Pixie "micro-power Telegraph transceiver kit instructions

This is a very small volume of a simple 40 meter band micro-power amplitude telegraph transceiver, 9V square battery or external 7-12V DC power supply. This machine was first popular in foreign countries, after the introduction of domestic enthusiasts, and gave it a Chinese name ---- "Pixie".

A brief introduction

Key Indicators

Power supply: 9V-12V (Recommended 9V laminated battery)

Antenna: 50 ohm, unbalanced

Frequency range: transmitter local oscillator frequency: 7023kHz; receive local oscillator frequency: about 7023-7026KHz

Headphones: low-impedance headphones (recommended SONY, aiwa high sensitivity Walkman headset)

Transmit power: 0.8W (using a 9V power supply), 1.2W (12V power supply)

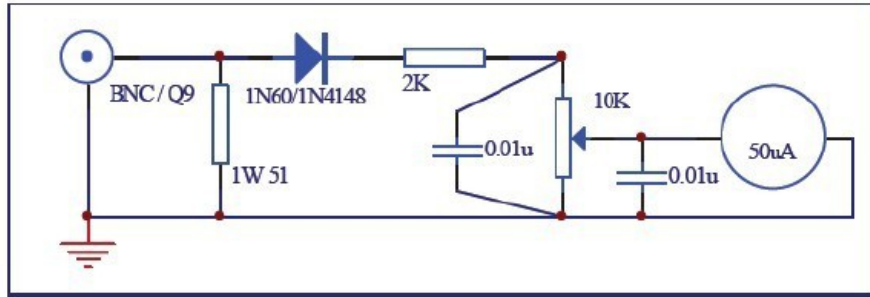
Suppress spurious (harmonic):-20dB

Circuit schematic

See the last page of the document accompanying drawings, Q1 and surrounding components constituting a typical Colpitts oscillator and keeps oscillating (the oscillation signal leaks around 1mW) when receiving the local oscillator signal is directly coupled through a capacitor to Q2. Emission state (the key is pressed), Q2 as a class C amplifier, the amplified signal via 0.01uF capacitor coupled to a pi-type low-pass filter, and then sent to the antenna; reception state (key release), Q1 element around the beat oscillator (BFO), D2 coupled with high voltage and reduce capacitive pressure is increased with the ends of the DC, the local oscillation frequency can be increased to approximately 0-3KHz 7.023MHz reception signal can be easily carried out bats frequency. Q2 is biased in the non-linear region (think transistor is nothing more than two back-to-back second diode incorrect), the signal received by the antenna with the BFO signal mixer, mixing the audio signal obtained after the 0.1uF capacitor coupling posed to the LM386 audio power amplifier, the audio signal amplified by the 10uF capacitor across the LM386 5 feet straight evacuation headphones. The key control not only the LM386-off of the power supply is switched D2 varactor bias, so that the capacity of the type of state change.

Debugging method

The end of welding should check whether there is a short circuit, and if not, with 9V laminated battery connected to the headset, not to take the antenna, under normal circumstances should hear a slight "rustling" sound, connected to the antenna noise increases or you can hear some signal, the whole current of less than 10mA. This receiver should be normal.



(High-frequency power meter circuit diagram with 1W 50 ohm dummy load)

And then connected to the high-frequency power meter with a dummy load reference circuit diagram (above), the "KEY" at both ends of the short-circuited, the headphones should be quick and silent, high-frequency power meter output. Transmit state machine current 40-100mA. The launch 0.5 meters in the next put a shortwave / medium wave radio, check all the receive frequency range, in addition to the carrier frequency and multiplier should not hear the other signal generated by the "shoes". For any other signal (howling), indicating the presence of high-frequency instabilities. Schedule gives a DC reference voltage of each of the main elements of the transmitting and receiving state.

表: Q1、Q2、U1 各引脚在发射与接收状态下的直流参考电压 (单位: V)

管脚	Q1 (9018)			Q2 (8050)			U1 (LM386)							
	e	b	c	e	b	c	1	2	3	4	5	6	7	8
接收	4.0	2.2	9.0	9.1	9.1	9.0	1.3	0	0	0	2.5	4.9	2.5	1.3
发射	3.2	2.3	7.4	0	0	7.4	-	-	-	-	-	0.6	-	-

The absence of a simple high-frequency power meter, optional two machines on the hair, such as can normally receive another keying signal, that is, to determine the initial machine properly. Never without a dummy load or antenna to transmit signals directly to avoid damage to the circuit!

Shell selection and installation

Beautiful metal casing not only shoes considerably, and can effectively shield near interference. Optional shell a lot, for example, metal cans, aluminum boxes, medical elongated aluminum case. To pay attention in the choice of the box open as convenient as possible, because the battery run out need to be replaced.

Recommendation for use

The confidential achieve better results, set up the antenna performance can not be less than the total length of the half-wave horizontal dipole antenna, in conjunction with the use of Simple Balun, (the antenna should be as far away as possible from sources of interference, such as fluorescent lamps, computer monitors, switching power supplies and other equipment , as far as possible with a coaxial cable as a feeder to reduce the possible receiving interference), using the highly sensitive Walkman headphones, as far as possible the small morning radio interference

(especially weekends and holidays in the morning) or late at night to listen to the SSB signal and CW signal at the best possible sound (tone).

The list of components

1/4W 固定电阻		电解电容	
R1	47K	CP1	100uF /16V
R2	33K	CP2、CP3、CP4	10uF /16V
R3	1K	晶体管	
R4	470欧	D1、D2	1N4001
R5	10K	D3	1N4148
R6	100K	Q1	9018
R7	10欧	Q2	8050
可调电阻			
W1	47K (473)		
固定电感			
L1	22uH (色环电感)	集成电路	
L2	1uH (色环电感)	U1	LM386 (DIP8)
L3	100uH (色环电感)	晶体	
电容		Y1	7.023MHz
C1、C10	0.1uF (104)	其他元件	
C2、C4、C8、C11	0.01uF (103)	J1	黑色电源插座
C3、C7	100pF (101)	J2	绿色2P插座 (天线)
C5、C6	470pF (471)	J3	3.5mm 立体声插座 (KEY)
C9	0.047uF (473)	J4	3.5mm 立体声插座 (PHONE)
		PCB电路板×1 片	
另外, 随套件还有一只51 欧姆 1W 的电阻, 用于充当假负载进行测试。			

BOARD ASSEMBLY

Please refer to the map, the height of the device, the first low-high, the first years after the principle followed by the welding device.

The identification of the color ring resistance ceramic capacitors

Color ring resistance, the most common accuracy of 5% and 1% accuracy 5% accuracy for 4 color wheel, 1% accuracy of the five-color rings

Read as follows: general pF capacitance of ceramic capacitors (10R -12 power F) units, some products using direct labeling, such as 1000p, 220p, etc.: more in exponential notation, such as: 102,221 the first two digits are significant figures of capacitance, after a number is followed by adding a zero number, such as 102 valid number is 10,2 indicates that the following Adds 2 0 1000pF; 221 means that the effective mathematical 2,1 followed by putting 1 0, i.e. 220pF.

Marked 62 62pF marked 102, 1000pF

The polarity of the electrolytic capacitor

Electrolytic capacitor positive and negative polarity, insert the PCB board installation, make sure that the positive and negative corresponding correct, do not install the wrong.

电阻色环对照表

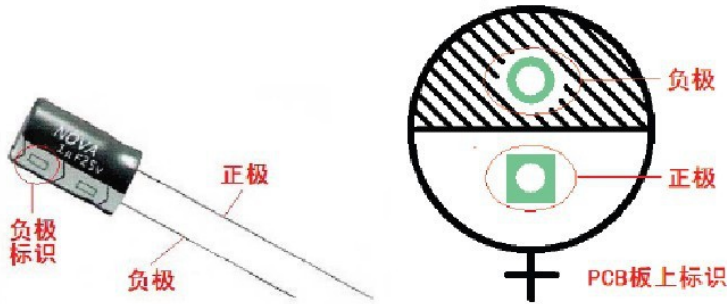
四环	五环	六环	温度系数 PPM/°C
			100 50 15 25 10 5 1
10K 0.5% 470K 1% 2.2K 0.1% 150PF			误差 %
			+1% +2% +0.5 +0.25 +0.1 +0.05 ±5 ±10
			乘数 (W)
			1 10 10 ² 10 ³ 10 ⁴ 10 ⁵ 10 ⁶ 10 ⁷ 10 ⁸ 10 ⁹ 10 ⁻¹ 10 ⁻²
			代表数值
			0 1 2 3 4 5 6 7 8 9
			黑色 棕色 红色 橙色 黄色 绿色 蓝色 紫色 灰色 白色 金色 银白色



标示62,即62pF



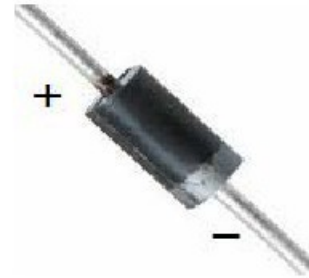
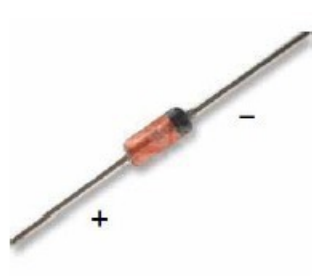
标示102,即1000pF



IC 的识别



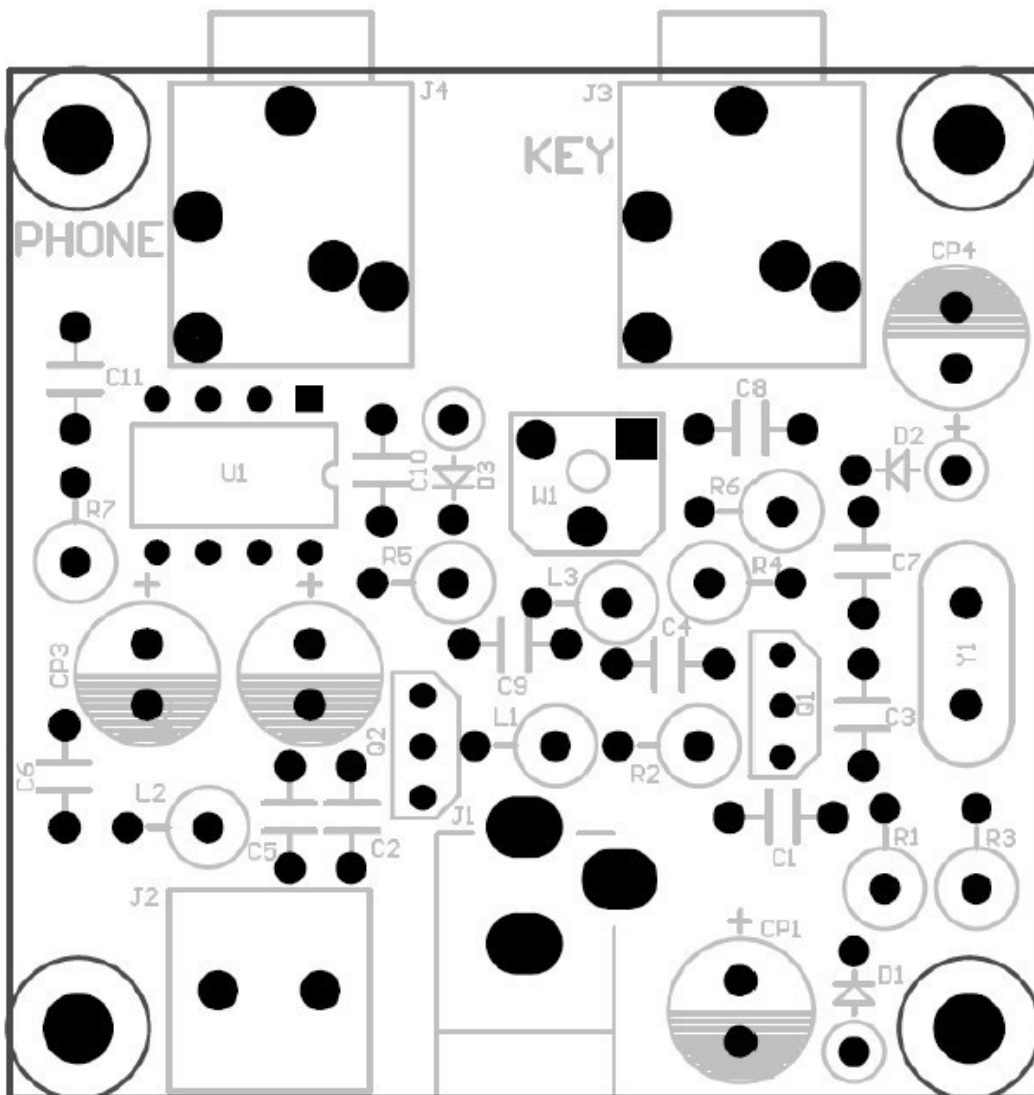
8 脚直插芯片管脚排列



9018、8050 的管脚排列 1n4148 的+-极性 1n4001 的+-极性

PCB board power input and antenna interface is divided into two PCB version

1)



2)

