

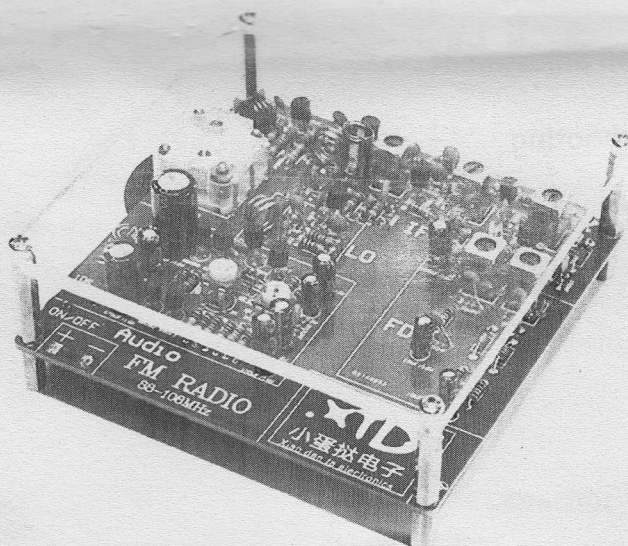


小蛋挞电子
Xiao dan ta electronics

XDT-FM Radio

小蛋挞FM全分立调频收音机

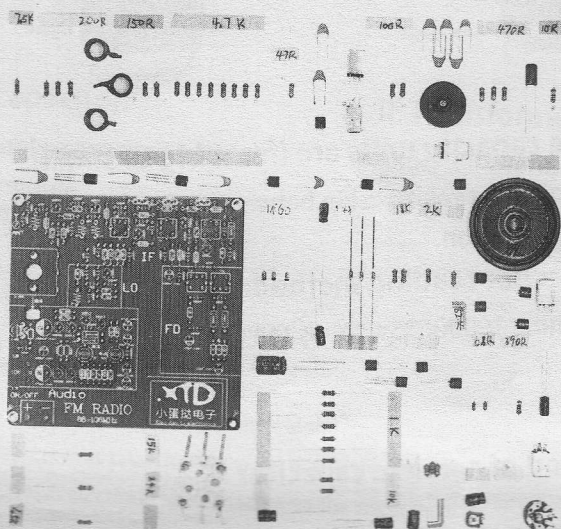
Installation Instruction



XDT Electronic Technology Co. Ltd.

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A. Components

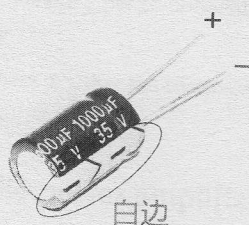


Capacitors



Ceramic capacitor

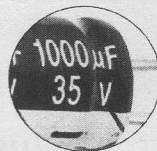
It is not divided direction.



Electrolytic capacitor

This is have direction. Generally, the white edge above the capacitor is the negative pole, or the long pin is positive, and the short pin is negative.

1. Conversion of capacitance units



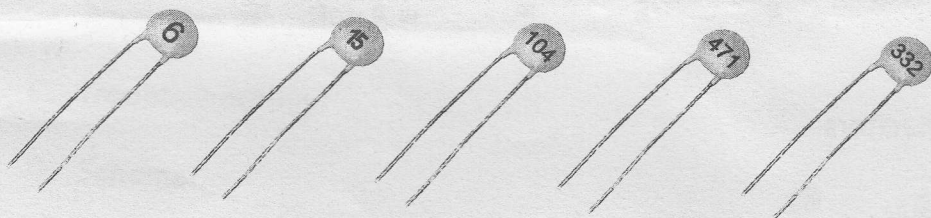
The capacitance capacity units are (from big to small):

F, mF, uF, nF, pF, The relationship between them is 1000 times, $1000\text{pF} = 1\text{NF}$, $1000\text{nF} = 1\text{uF}$ and so on.

Electrolytic capacitor reading method:

As shown in the figure, 1000uf 35v, this is the value of the solution capacitance at this point.

2. Reading method of ceramic capacitor



Ceramic capacitors are generally marked in pF units. Some capacitors have 1, 2, or 3 digits. If only 1 or 2 digits can be read directly, 3 digits need to be expressed in scientific notation.

E.g:

$6 = 6\text{pF}$, $15 = 15\text{pF}$

Composed of 3 numbers, take 104 as an example (below):

$10 \times 10^4 = 10 \times 10000 = 1000000\text{pF} = 100\text{nF} = 0.1\text{uF}$

E.g 471:

$47 \times 10^1 = 47 \times 10 = 470\text{pF} = 0.47\text{nF} = 0.00047\text{uF}$

Resistance

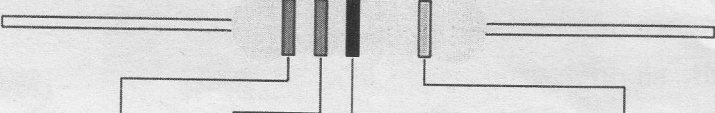
1、Resistance unit conversion (large to small):

MΩ、KΩ、Ω, The relationship between them is 1000 times,

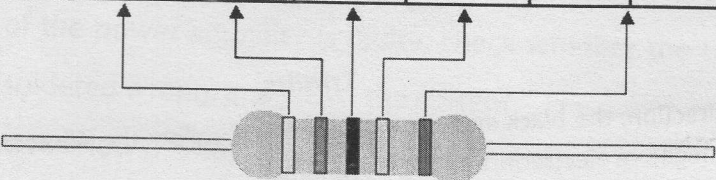
1000Ω=1KΩ、1000KΩ=1MΩ And so on.

2. Reading method of color ring resistance

数值的读取方法



Color	1 st ring	2 nd ring	3 rd ring	Times	Tolerance
颜色	每一段	第二段	第三段	乘数	误差
Black	0	0	0	1	
Brown	1	1	1	10	± 1% F
Red	2	2	2	100	± 2% G
Orange	3	3	3	1K	
Yellow	4	4	4	10K	
Green	5	5	5	100K	± 0.5% D
Blue	6	6	6	1M	± 0.25% C
Purple	7	7	7	10M	± 0.10% B
Grey	8	8	8		± 0.05% A
White	9	9	9		
Golden				0.1	± 5% J
Silver				0.01	± 10% K
None					± 20% M



注：图片来源百度，该图为黑白图，因电阻读数时需通过电阻色环颜色来获取，可网上下载彩色图。

黑	棕	红	橙	黄	绿	蓝	紫
0	1	2	3	4	5	6	7
*1	*10	*100	*1000	*10000	*100000	*1000000	*10000000

5 color circle resistance, the first 3 color circles represent the digital resistance value, the fourth color circle represents the scientific counting method, and the fifth color circle represents the error.

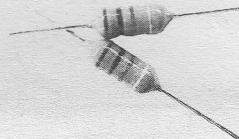
For example, in the figure above, the first color ring is yellow = 4, the second color ring is purple = 7, the third color ring is black = 0, and 470 is obtained, and the

Inductance

1. Inductance unit conversion (large to small):

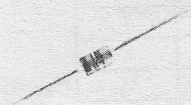
H、mH、uH、nh, The relationship between them is 1000 times

1000nH=1uH=0.001mH And so on



Black	Brown	Red	Orange	Yellow	Green	Blue	Purple
黑	棕	红	橙	黄	绿	蓝	紫
0	1	2	3	4	5	6	7
*1	*10	*100	*1000	*10000	*100000	*1000000	*10000000

Various components



Diode:

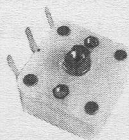
There is a direction, the black end represents the negative electrode, and the model number is written on the component, which can be read directly



Triode:

Directional, follow the silk screen for welding.

The model number is written on the transistor and can be read directly



Adjustable capacitor:

Double adjustable capacitor with ground in the middle
Follow the silk screen for welding.

IF Transformer:

Color, T1 orange, T2, 3 blue, T4 brown, T5 black

B、Install process

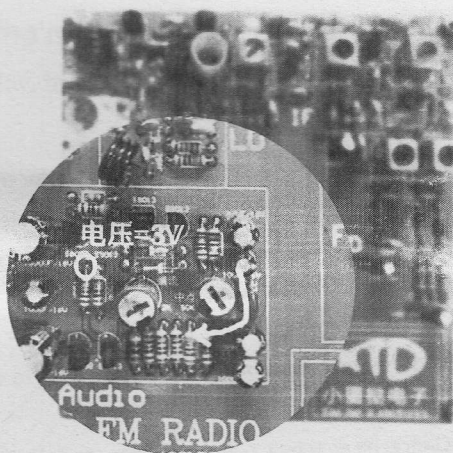
Welding process:

1. Welding resistance, no direction, pay attention to the color circle.
2. Welding capacitors, ceramic capacitors have no direction, electrolytic capacitors have different directions, and the negative electrode has a shadow on the silk screen.
3. 7PF capacitors at the local oscillator are replaced with 6PF, 25PF capacitors are replaced with 22PF, and 224 is replaced with 104.
4. Welding the diode, there is direction, the diode black wire to silk screen white wire.
5. Weld the triode and follow the silk screen.
6. Welding inductance, no direction, pay attention to the color circle.
7. Weld the inductor coil, pay attention to use a knife to remove the paint of the enameled wire, the local oscillator is 3 turns, the receiving 4 turns, and the filtering 3 turns.
8. During welding, pay attention to the colors, T1 orange, T2, 3 blue, T4 brown, T5 black.
9. Weld the variable capacitor and volume switch, and fix the fixing screws.
10. Complete other components, and carefully check whether there are any false or missing solder joints.
11. Check whether the components are soldered incorrectly, and whether the capacitors and diodes are soldered correctly.

Audio power amplifier adjustment:

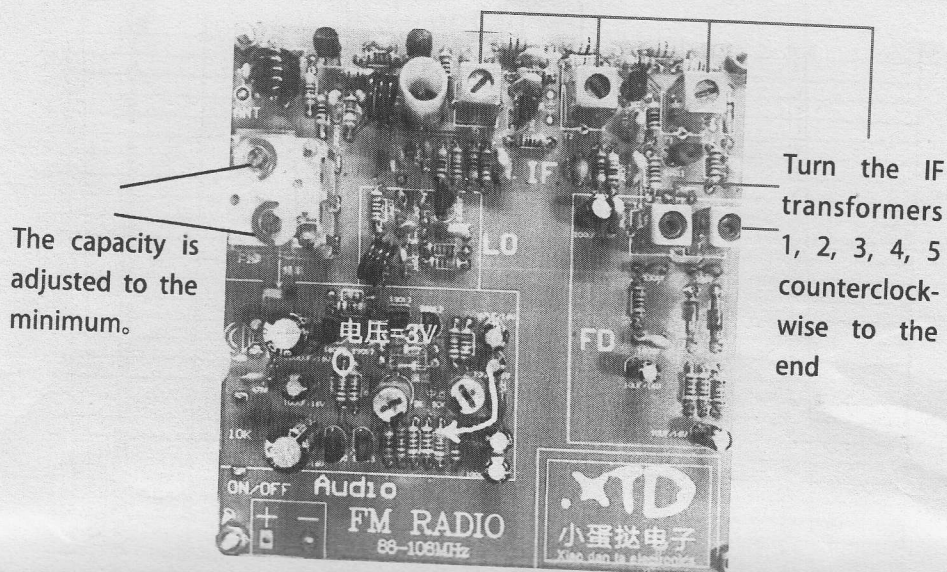
1. Find a 6V-9V linear power supply, a 9V battery is also available, you cannot use a switching power supply, there will be interference.

2. Turn the 10K volume potentiometer clockwise to the end. Turn off the radio first.
3. Adjust the 2K bias current potentiometer and twist it counterclockwise to the end (very important !!!)
4. Connect the power and turn on the 10K volume knob.
5. Adjust the 50K midpoint potentiometer, and test above the 150R resistor on the left. If the voltage is about half of the input voltage, enter 6V. The voltage at this point is 3V and the voltage is 9V.
6. Turn off the volume to the minimum, slowly adjust the 2K bias current potentiometer clockwise, look at the ammeter, the whole machine is probably About 10-15ma is the best.



Reception adjustment:

1. Turn midweek 1, 2, 3, 4, 5 to the end counterclockwise; adjust the capacitance to the minimum.
2. Weld the antenna and horn before turning on the power.
2. Turn the tuning knob and hear a radio station faintly. Tune him to the clearest and the loudest voice.
3. The above 123456 can be adjusted in several places. Adjust in numerical order, repeatedly adjust to the maximum and clearest voice.
4. No. 6 adjusts the frequency range. The radio has just be en installed. The frequency range of the reception may be high or low. Adjust this capacitor to adjust the reception range to the 88-108MHz broadcast frequency band.
5. Advanced adjustment: Adjust the frequency of LO to make this machine work at 30MHz to 200MHz, and can receive FM signals in this frequency band.



Manufacture complete! Enjoy the wonderful radio

C. Troubleshooting Q & A

Q1: Short circuit or high current when power on.

A1: Check whether the resistance is welded incorrectly, whether the capacitor is reversed, and whether the transistor is welded incorrectly.

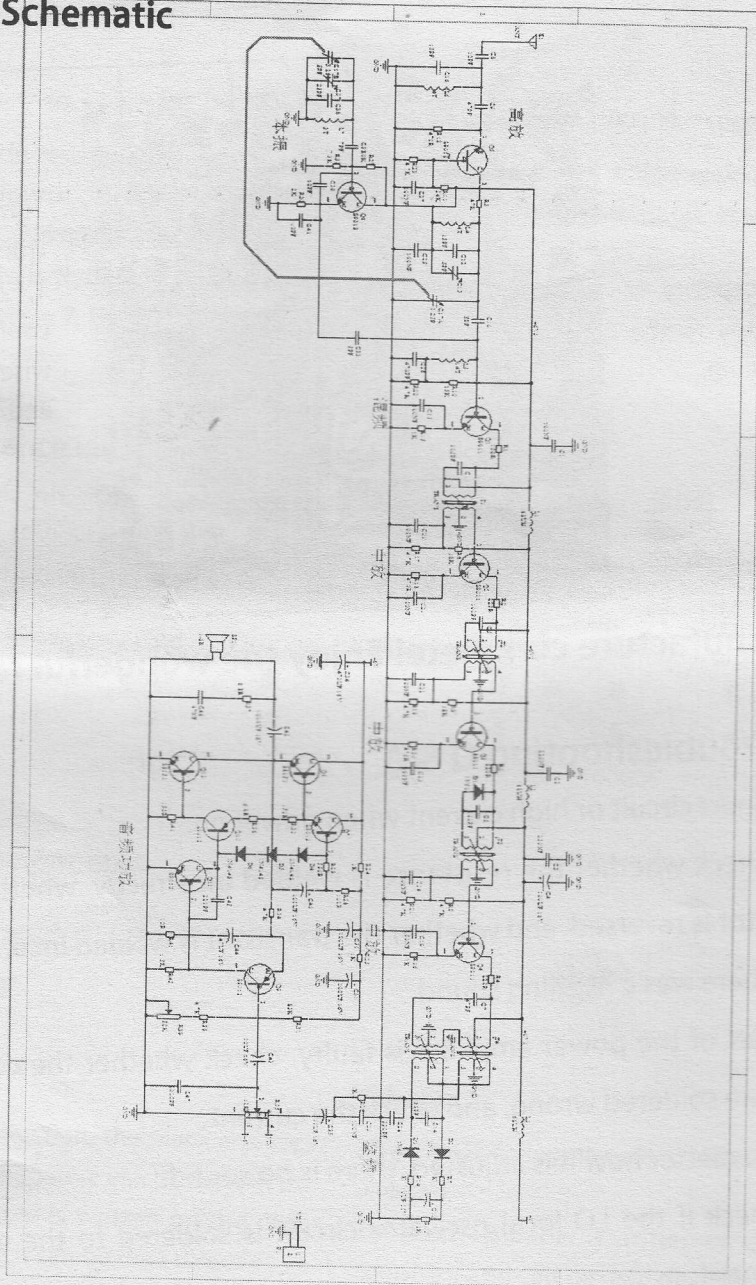
Q2: There was a howling sound.

A2: Part of the power amplifier is faulty, check whether the components are soldered wrong, and check the current.

Q3: No matter how it is adjusted, there is no sound.

A3: Check if the LO local oscillator circuit is soldered to the wrong component;

D、Schematic



E、BOM

序号	名称	描述	数量
1	100NF	直插瓷片电容	11
2	220NF	直插瓷片电容	2
3	47PF	直插瓷片电容	5
4	51PF	直插瓷片电容	1
5	10PF	直插瓷片电容	3
6	5PF	直插瓷片电容	2
7	15PF	直插瓷片电容	2
8	68PF	直插瓷片电容	1
9	470PF	直插瓷片电容	1
10	330PF	直插瓷片电容	1
11	25PF	直插瓷片电容	1
12	220PF	直插瓷片电容	1
13	47NF	直插瓷片电容	1
14	3300PF	直插瓷片电容	1
15	7PF	直插瓷片电容	1
16	10UF/16V	直插电解电容	3
17	100UF/16V	直插电解电容	4
18	470UF/16V	直插电解电容	1
19	1000UF/16V	直插电解电容	1
20	47UF/16V	直插电解电容	1
21	1N60	直插二极管	3
22	1N4148	直插二极管	2
23	68UH	直插电感	3
24	S9011	直插三极管	4
25	S9018	直插三极管	2
26	S9013	直插三极管	2
27	S8050	直插三极管	2
28	S9012	直插三极管	2
29	100R	直插电阻	2
30	220R	直插电阻	3
31	47R	直插电阻	1
32	18K	直插电阻	2
33	1K	直插电阻	7
34	4.7K	直插电阻	8
35	15K	直插电阻	1
36	24K	直插电阻	1
37	10K	直插电阻	2
38	470R	直插电阻	3
39	390R	直插电阻	1
40	7.5K	直插电阻	1
41	82K	直插电阻	1
42	150R	直插电阻	2
43	2K	直插电阻	1
44	6.8R	直插电阻	2
45	10R	直插电阻	1
46	1.5K	直插电阻	1
47	2K	白蓝可调	1
48	50K	白蓝可调	1
49	直径4CM 8欧姆	喇叭	1
50	10K电位器	带开关, 转盘	1
52	TRANS	中周	5
53	223P	空气电容	1
54	L	粗线圈	3
55	L	细线圈	1
56	PCB		1
57	铜杆		4
58	螺丝		4



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