DESCRIPTION

JC210SP package is a novel and unique FM AM two band radio. The FM band adopts CD9088 chip, which is packaged with SMT chip. The receiving frequency range is 76-108mhz. It can not only receive FM radio, but also receive audio signals from campus radio and some TV stations

The amplitude modulation band adopts direct amplifier integrated circuit ta7642, and the receiving frequency range is 525-1605khz. It has the advantages of simple circuit, high assembly success rate and good selectivity;

Power amplifier circuit uses tda2822, which has the advantages of big sound and good sound quality.

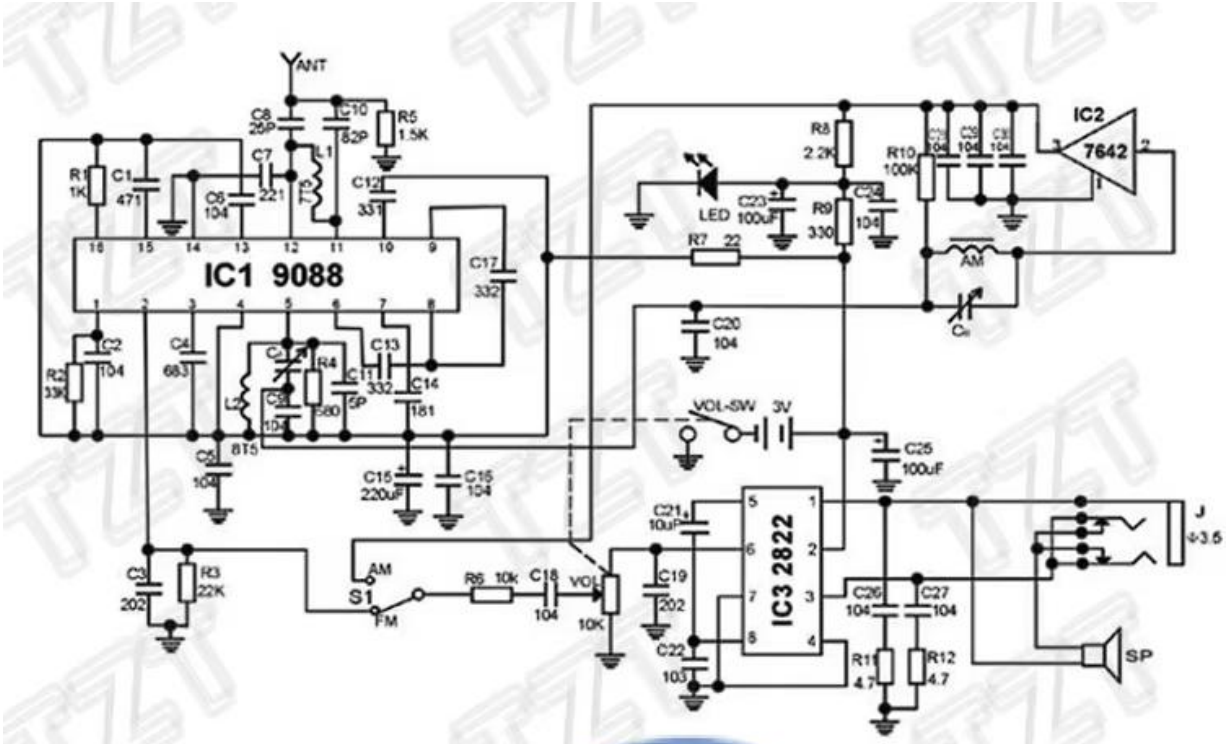
This kit is powered by 3V power supply, that is, it is equipped with 2 No. 5 batteries.

Each set is provided with information (circuit working principle, circuit diagram, production and debugging, printed circuit, component list)

CIRCUIT PRINCIPLE DIAGRAM

CD9088 is a dedicated single-chip FM radio chip. Its peripheral circuit is simple. It has a phase-locked loop system with an intermediate frequency of 70kHz. The selectivity is realized by an active RC filter. The mute circuit can suppress non intermediate frequency signals and weak intermediate frequency signals. Its features are as follows: it contains all functional circuits from RF input to audio output of mono radio, mute circuit, automatic frequency control system, which can be used for mechanical tuning, power polarity protection, and working power supply voltage as low as 1.8V.

The FM signal enters the 11 and 12 pin mixing circuit of IC1 through the input circuit of C8, C10 and L1 through the rod antenna. The local oscillator circuit uses variable capacitors Ca, L2 and other elements, which can realize manual tuning. FM broadcast signal and lo circuit signal are mixed in IC1 to generate 70kHz IF signal. After internal if amplification and if limiter, they are sent to frequency discriminator to detect audio signal. After internal loop filtering, audio signal is output by 2 pins. In the circuit, R2 and C2 are the squelch circuit, C4 connected with 3 pins is the filter capacitor of audio loop, C13 connected with 6 and 8 pins is the if feedback capacitor, C14 connected with 7 pins is the low-pass capacitor, C17 connected with 8 and 9 pins is the if coupling capacitor, C12 connected with 10 pins is the low-pass capacitor of limiting amplifier, and C6 connected with 13 pins is the offset voltage capacitor of limiter. The 2-pin output audio signal is coupled to the 7-pin input of the power amplifier IC tda2822 through R6 and C18. After the internal power amplification of IC3 (TDA2822), the 1-pin and 3-pin output amplified audio signal to drive the speaker to work. The on-off potentiometer Vol in the circuit is used to control the power on and off, and control the volume.



The principle circuit diagram of JC210SP FM and AM radio

COMPONENT LIST

NO.	Name	Symbol	Specifications	Number
1	Resistance	R11,R12	4.7Ω	2
2		R4	680Ω	1
3		R11,R12	1K	1
4		R5	1.5K	1
5		R8	3.3K	1
6		R3	22K	1
7		R2	33K	1
8		R10	100K	1
9		R7	22Ω	1
10		R9	330Ω	1
11		R6	10K	1
12	Ceramic chip capacitor	C11	5P	1
13		C8	25P	1
14		C10	82P	1
15		C14	181P	1
16		C7	221P	1
17		C12	331P	1
18		C1	471P	1
19		C3,C19	202P	2
20		C17,C13	332P	2
21		C22	103	1
22		C4	683	1
23		C2,C5,C9,C16,C18,C20,C24	104	7
24		C6,C26,C27,C28,C29,C30	104	6

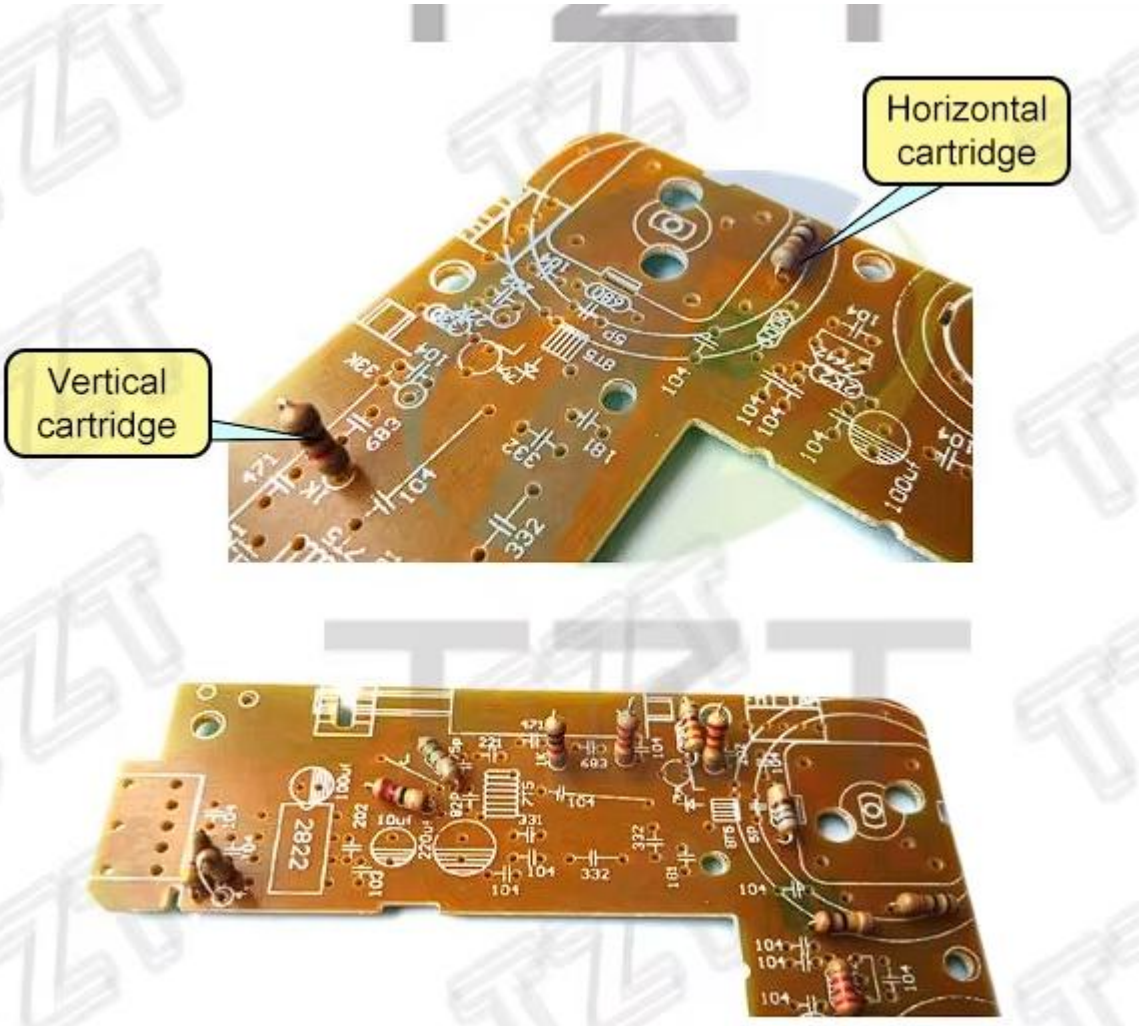
25	Jump wire	J	Component leg	1
26	Electrolytic capacitor	C21	10uF	1
27		C23,C25	100uF	2
28		C15	220uF	1
29	coil	L1	7T5	1
30		L2	8T5	1
31	Switch	S1	2P2T (Shank height 3mm)	1
32	Chip integrated circuit	IC1	CD9088	1
33	Plug in integrated circuit	IC2	CD7642	1
34		IC3	TDA2822	1
35	Single variable capacitor	CA,CB	CBM-444	1
36	Earphone socket		3.5mm	1
37	Pin potentiometer	VOL	10K	1
38	Magnetic rod and coil		3*8*40	One each
39	Battery chip		Positive pole Negative pole Conjoined piece	One each
40	Antenna			1
41	Circuit board			1
42	Screw	Fixed variable capacitor cover	PM1.7*5	1
43		Fixed potentiometer dial	PM1.7*3	1
44		Fixed machine board	PA1.7*4	1
45		Fixed bottom shell	PA1.7*5	1
46		Fixed bottom shell	PA1.7*7	3
47		Fixed antenna	PA2*3	1
48	Speaker		Φ40	1

49	Wire	Negative plate	30mm	1
50		Antenna lead, positive lead	60mm	2
51		Speaker lead	60mm	2
52	LED		Φ3 red	1
53	Dial、bracket			1
54	Pointer、push button			1
55	Shell、label			1 set
56	Instructions			1

WELDING RESISTOR (12 IN TOTAL)

R1:1KΩ	R2:33KΩ	R3:22KΩ	R4:680Ω
R5:1.5KΩ	R6:10KΩ	R7:22Ω	R8:2.2KΩ (3.3K)
R9:330Ω	R10:100KΩ	R11:4.7Ω	R12:4.7Ω

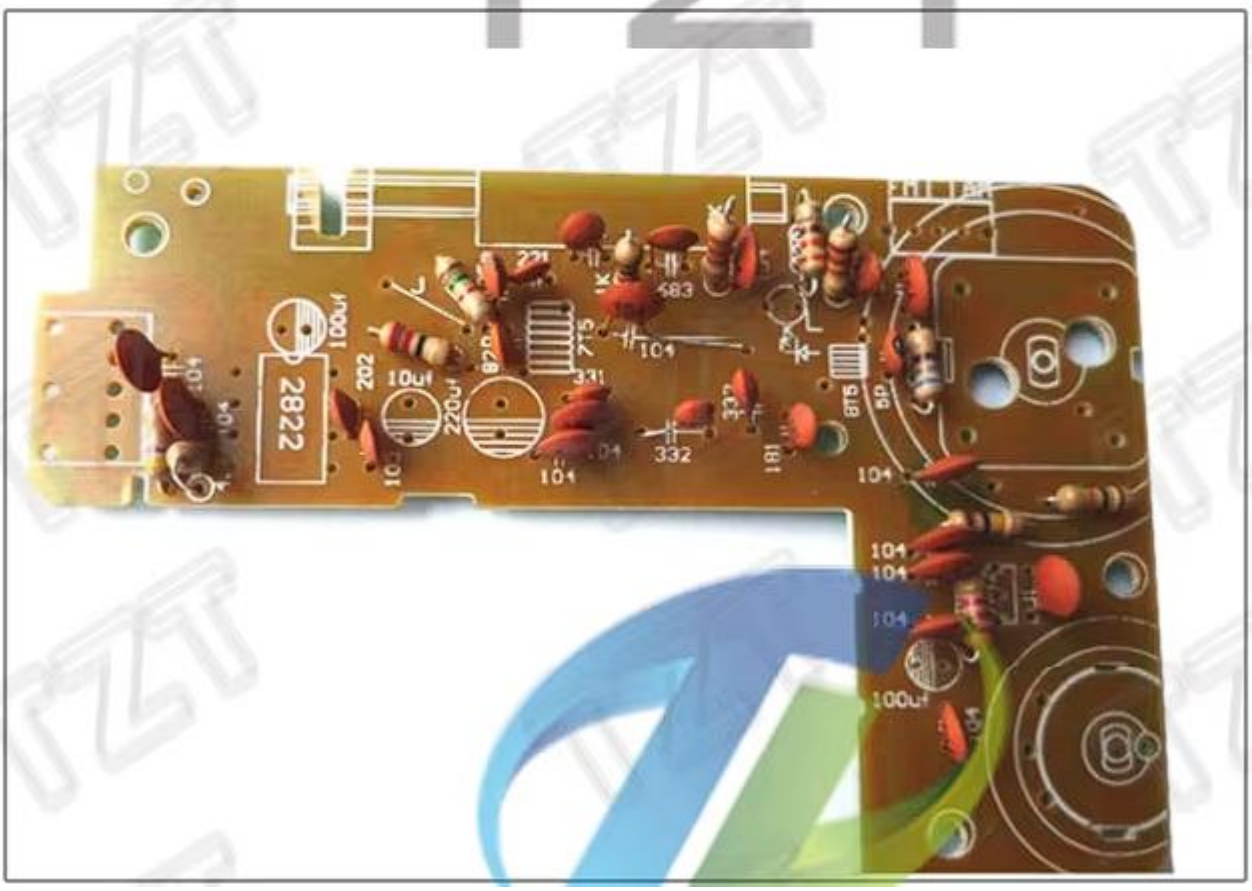
There are vertical and horizontal types of plug-in anode due to different hole spacing.



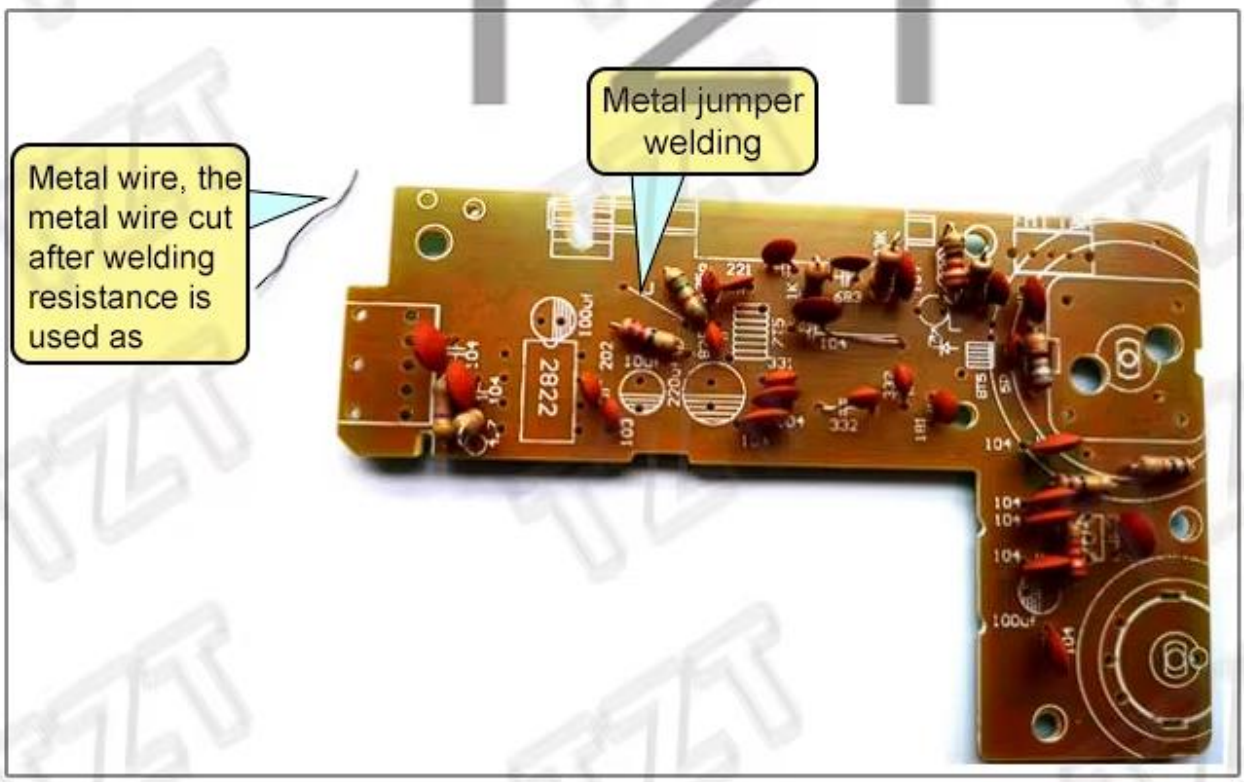
Schematic diagram of resistor welding completion

WELDED CERAMIC CAPACITOR (26 PIECES IN TOTAL)

C1: 471	C2:104	C3:202	C4: 683	C5:104	C6:104
C7:221	C8:25P	C9:104	C10:82P	C11:5P	C12:331
C13:332	C14:181	C16:104	C17:332	C18:104	C19:202
C20:104	C22:103	C24:104	C26:104	C27:104	C28:104
C29:104	C30:104				



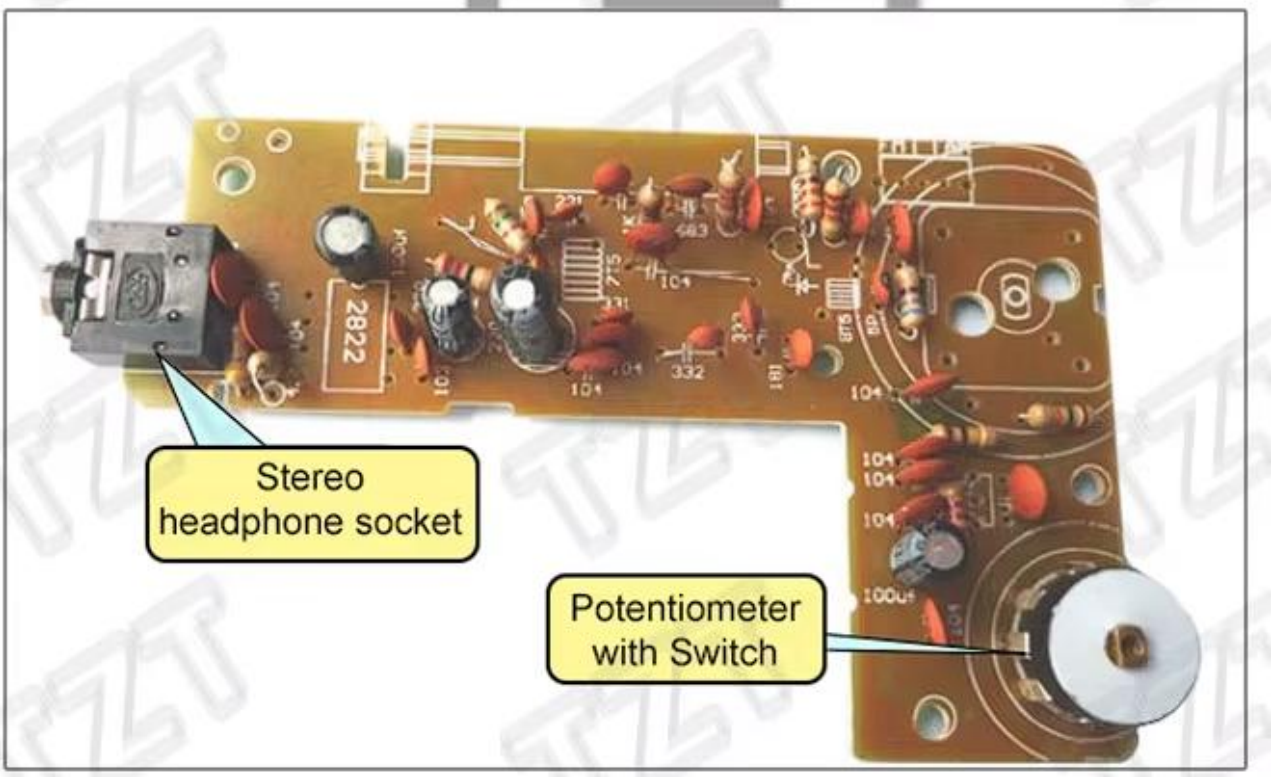
WELDING METAL JUMPER (J)



WELDING ELECTROLYTIC CAPACITORS (4 IN TOTAL)

C15:220uF C21:10uF C23:100uF C25:100uF

WELDING HEADPHONE SOCKET AND POTENTIOMETER



WELDING SINGLE VARIABLE CAPACITOR
(PAY ATTENTION TO DIRECTIVITY)

SOLDER CHIP INTEGRATED CIRCUIT CD9088CB

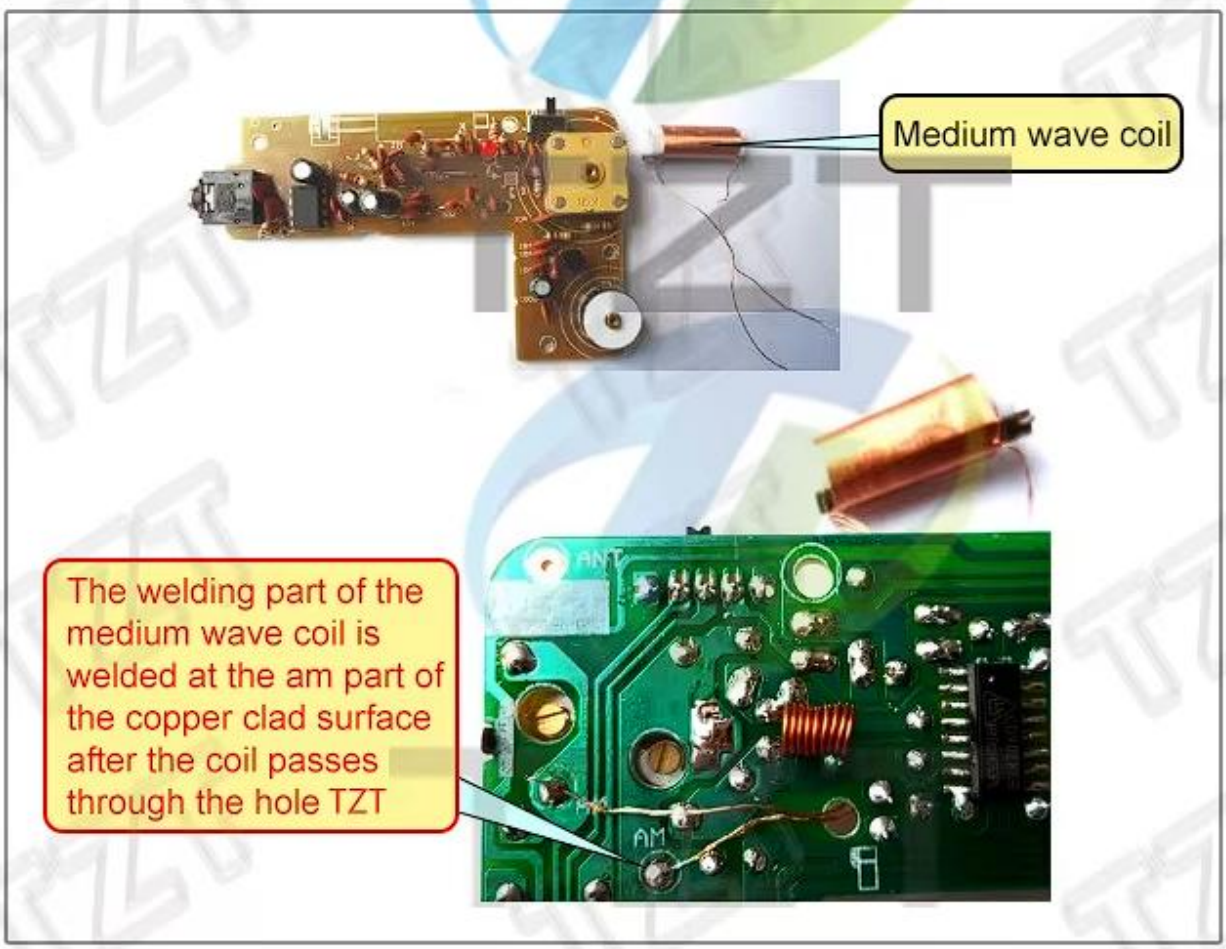
Chip integrated circuit CD9088CB

When soldering a chip integrated circuit, first align the feet of the integrated circuit with the welding surface, and then fix the two feet of the integrated circuit with solder.

Solder integrated circuits with "tin feeding method", holding solder in one hand and electric soldering iron in the other. Prevent short circuit.

WELDING INDUCTOR COIL 7T5, 8T5

WELDING MEDIUM WAVE COIL

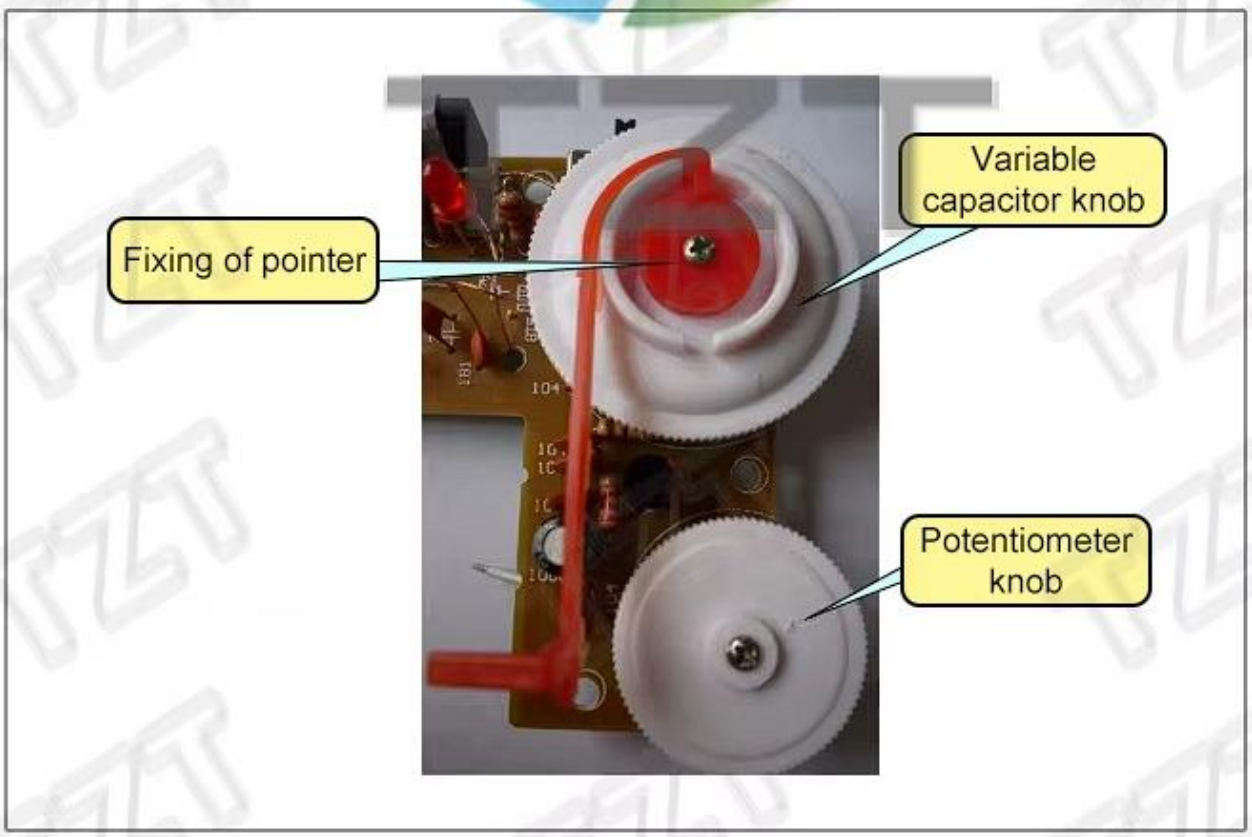


THE BRACKET IS FIXED ON THE CIRCUIT BOARD AND THE COIL IS FIXED ON THE MAGNETIC ROD

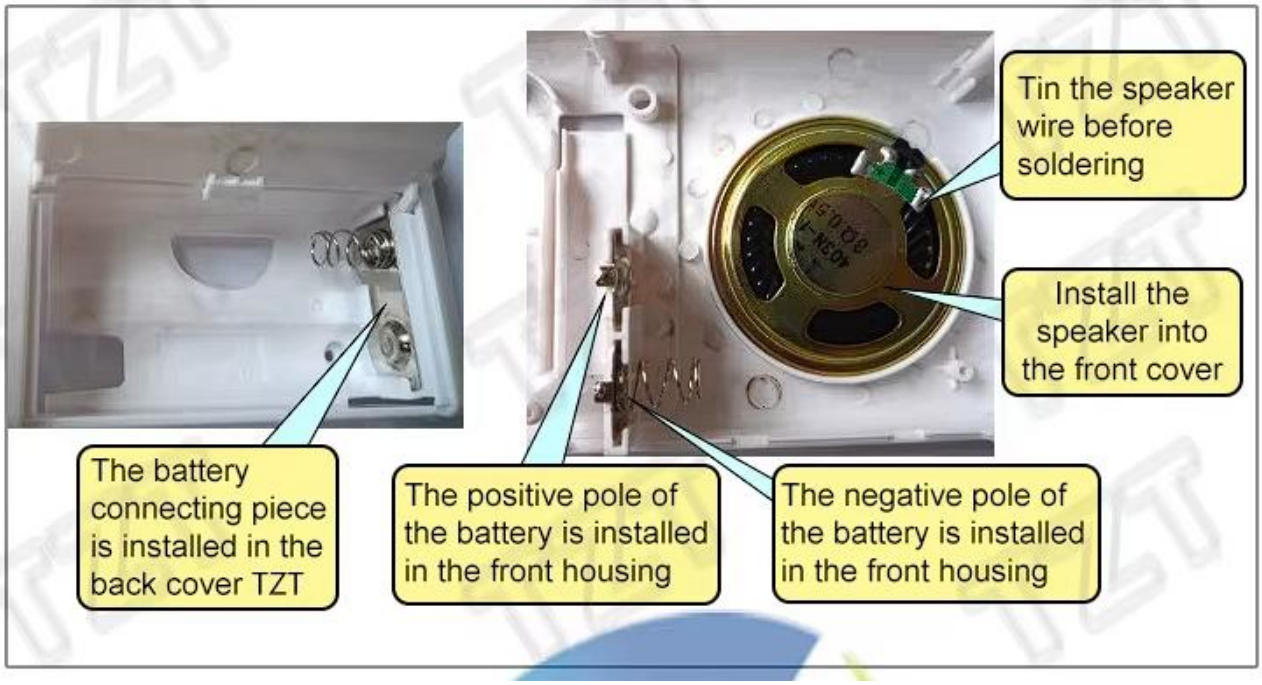
SOLDERING LOUDSPEAKER AND BATTERY POSITIVE AND NEGATIVE WIRES (4 PIECES)

WELDING AND FIXING OF ANTENNA

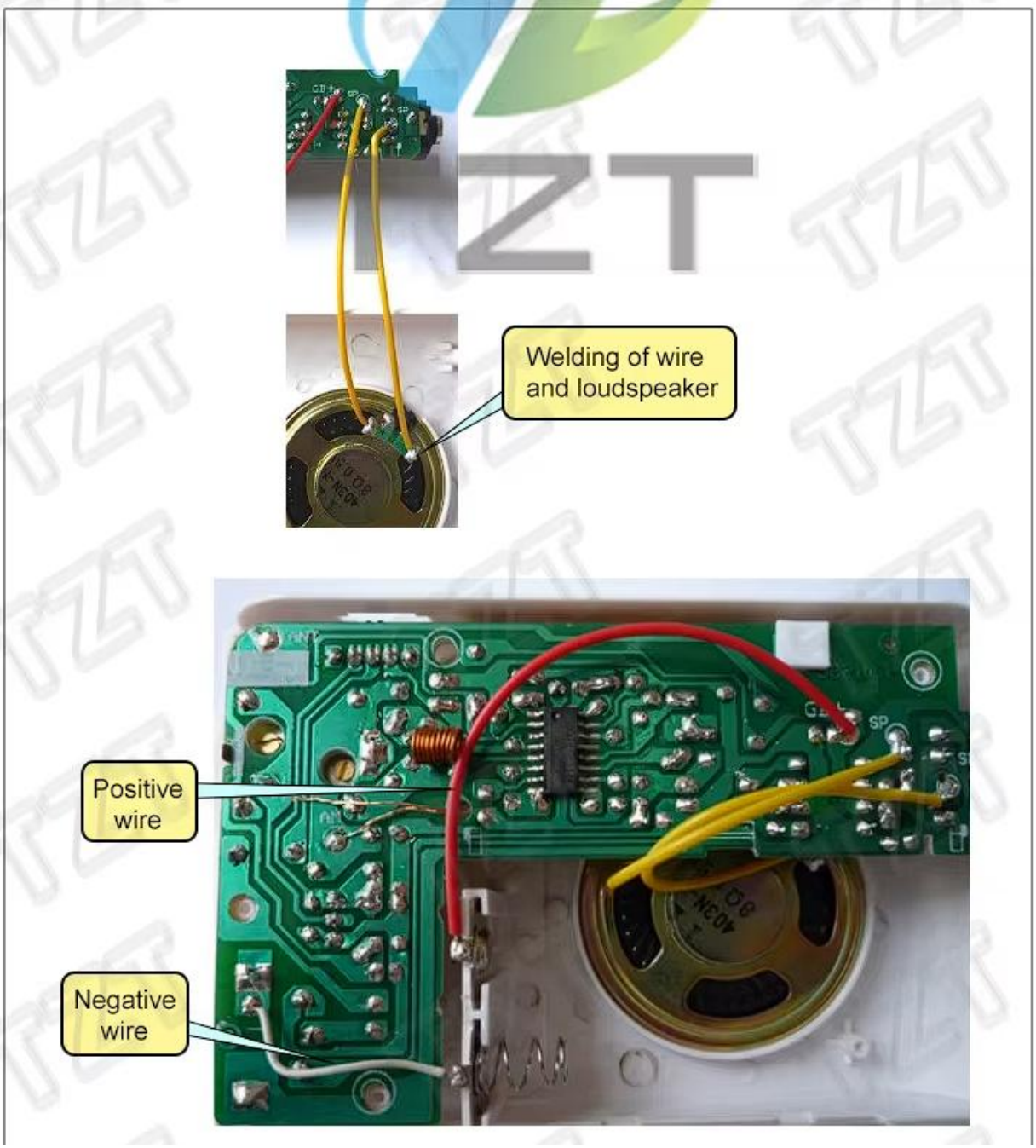
TWO KNOBS AND THE FIXING OF THE POINTER

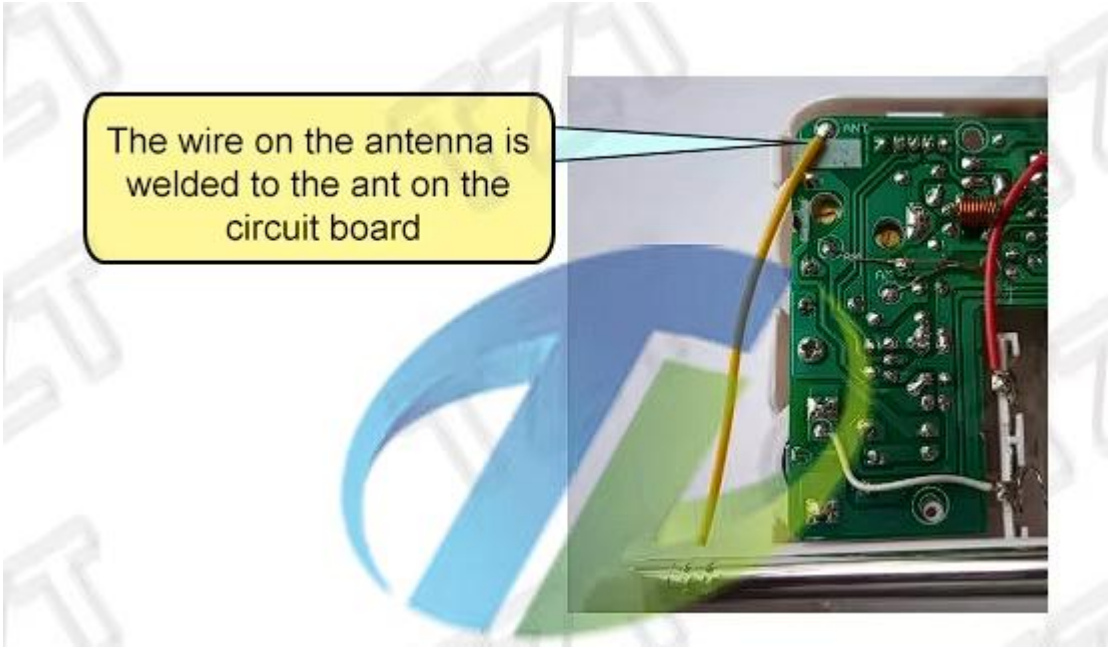


INSTALLATION OF BATTERY AND LOUDSPEAKER



WIRE CONNECTION BETWEEN LOUDSPEAKER AND CIRCUIT BOARD




The wire on the antenna is welded to the ant on the circuit board
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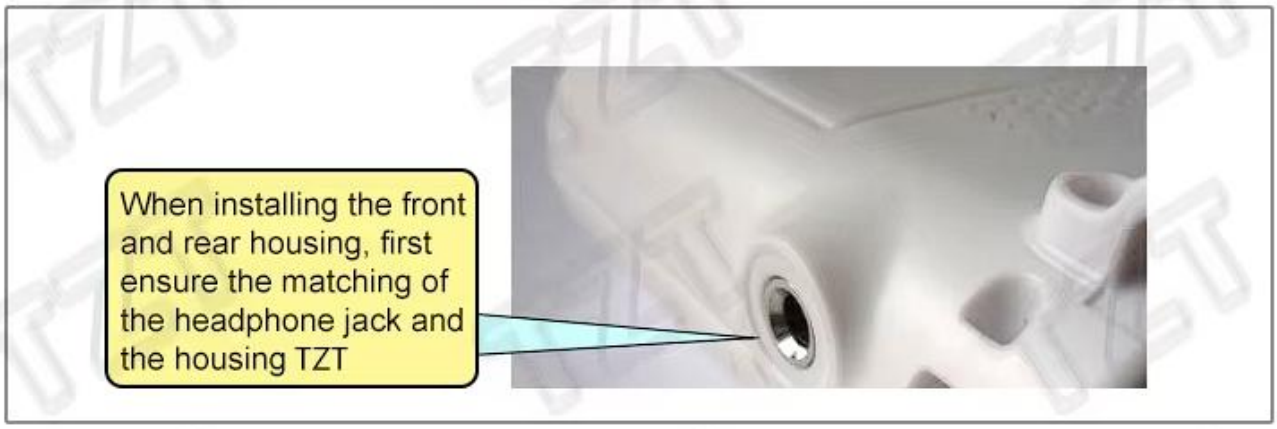
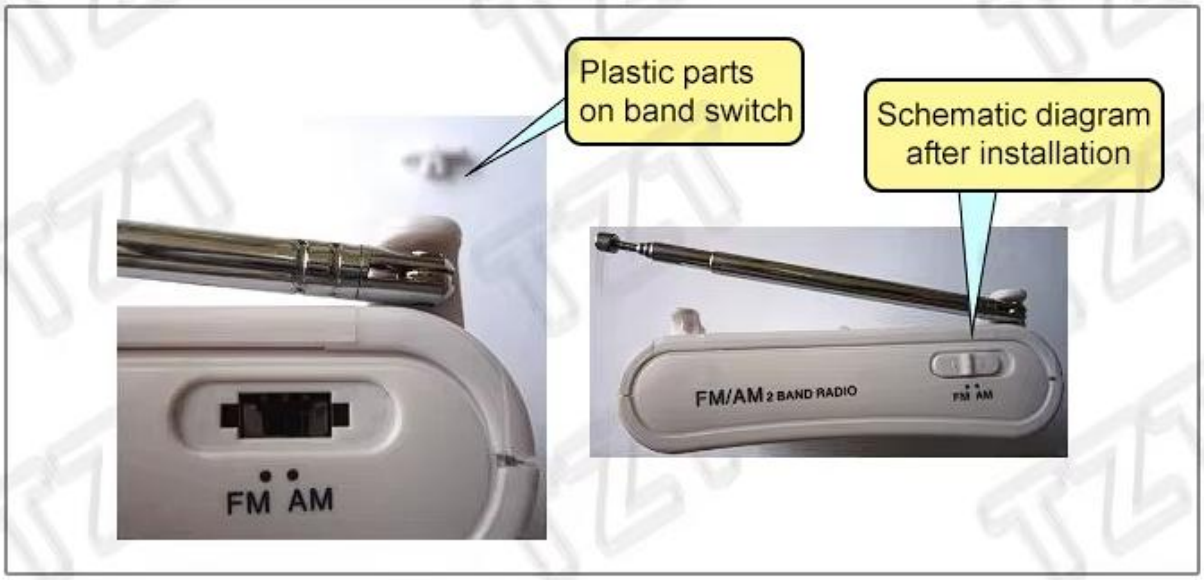
MATCHING OF EARPHONE JACK AND CASE



INSTALLATION OF BAND SWITCH AND PLASTIC PARTS



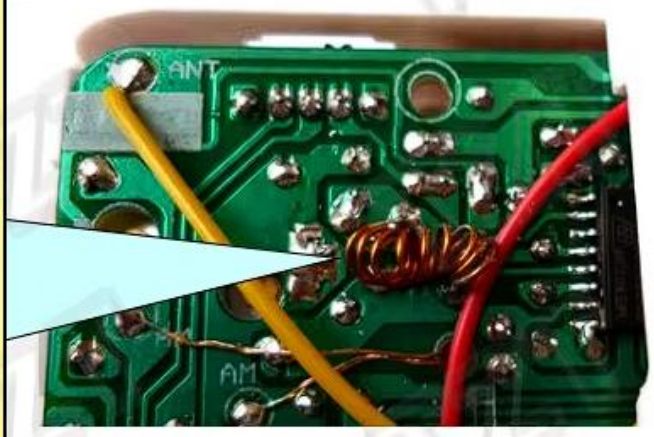
COMMISSIONING AND ASSEMBLY PROCESS

After the circuit is installed, carefully check the circuit installation. After no error is found, put in two No. 5 batteries and test the effect by power on. First dial to the "FM" band. After receiving the FM broadcast, fine tune the coil L2 (8T5) to ensure that the receiving frequency range is 76-108mhz. With a finished FM radio as reference, appropriately open the turn to turn distance can ensure the high-end receiving frequency range; Shortening the turn to turn distance can ensure the low-end receiving frequency range, and repeatedly fine-tuning can ensure the high-end and low-end frequency range. Then dial to "am" band to receive AM broadcast, fine tune the distance between coil and magnetic rod to ensure the receiving effect. We Are The Distributor Of TZT Brand In Hong Kong, China

After successful debugging, fix the circuit board and the front shell with 2 * 5 self tapping screws, and fix the fixing between the back cover and the front cover with 4 self tapping screws. One of the 2 * 5 screws is fixed at the battery box, and the other three long screws are fixed on the box surface.

Debugging of FM band frequency range

FM frequency range: 76-108mhz. Use a finished FM sound recorder for debugging. First ensure the high-end, can receive FM band the most high-end radio signal, and then ensure the low-end. When the coil is opened, the radio station with high frequency can be received. When the coil is locked, the radio station with low frequency can be received. Adjust several times to ensure the frequency range.

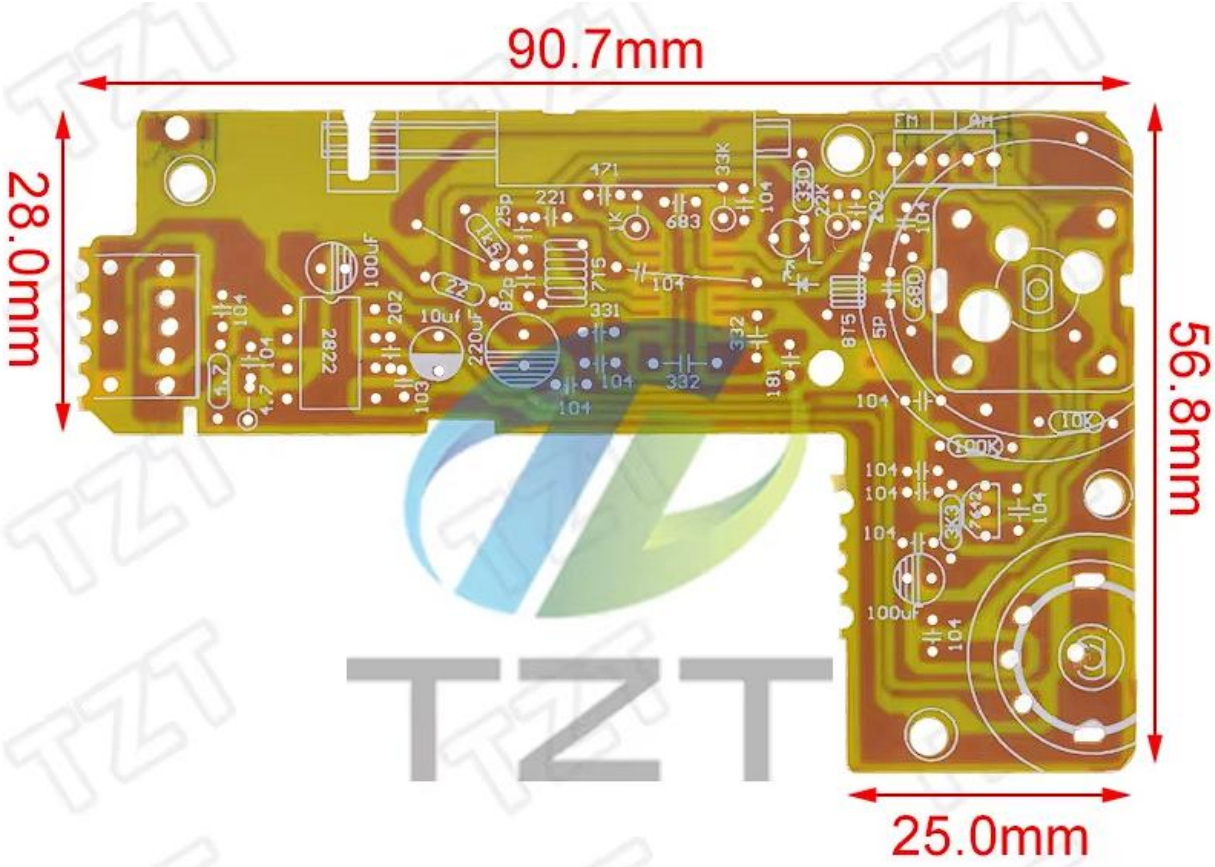


Real picture of screw fixation

Fix the front and back covers with self tapping screws in the battery box

Fix the front and back covers with 3 self tapping screws. Use even force when screwing. Don't screw too tightly.

The actual picture of the lens is pasted on the corresponding part of the surface shell


90.7mm
28.0mm
56.8mm
25.0mm


65.0mm
26.3
mm
100.0mm
FM-TV/AM 2 BAND RADIO
FM-TV AM