

electro:kit

EK-1 CW practice oscillator

The practice oscillator is useful for practicing Morse code (CW) transmission. The oscillator generates a sound tone when the Morse key is held down. The tone is adjustable between approx 600-2000 Hz. The oscillator is powered by a 9V battery and is equipped with an on-board loudspeaker, but also has a connector for earphones.

Connections:

KEY	6.3mm mono-connector for Morse key
JP1	2.54mm pin header for alternative connection of Morse key (not included)
SPKR	External speaker (not included) – if used do not fit on-board speaker.
PHONE	6.3mm stereo connector for headphone 3.5mm stereo connector for headphone (optional)

Controls:

VOLUME	adjust sound volume
PITCH	adjust tone frequency

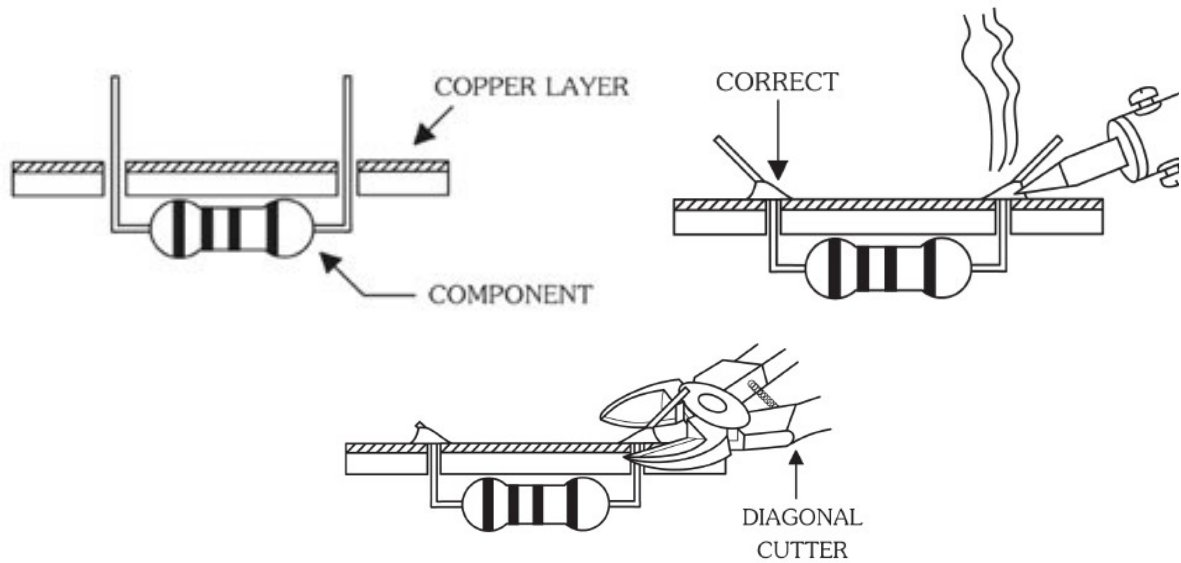
Parts list

Start by checking the inventory. Make sure all parts are included.

<u>Item</u>	<u>Qty</u>	<u>Position</u>
Printed Circuit Board	1 pc	
Battery connector 9V	1 pc	BATTERY
Batter holder clip	1 pc	
Screw M3x8	1 pc	
Nut M3	1 pc	
Speaker 8 ohm ø21mm	1 pc	SPKR
IC NE555P	1 pc	IC1
IC-socket 8-pin	1 pc	
Resistor 2,2 kohm (red-red-red-gold)	1 pc	R1
Resistor 22 kohm (red-red-orange-gold)	1 pc	R2
Ceramic Capacitor 22 nF (223)	1 pc	C1
Electrolytic Capacitor 22uF 50V	1 pc	C2
Potentiometer 500 ohm	1 pc	VOLUME
Potentiometer 100 kohm	1 pc	PITCH
PCB Connector 6.3 mm 3-pole	1 pc	PHONE (a)
PCB Connector 3.5 mm 3-pole	1 pc	PHONE (b) only fit one of a or b
PCB Connector 6.3 mm 2-pole	1 pc	KEY
Plug 6.3 mm 2-pole	1 pc	for connecting the Morse key

Circuit board assembly

All components are placed on the top-side (component side) of the PCB. This is the side with white text printed on it. The legs of the components are pushed through the holes in the PCB, and soldered on the bottom side (solder side). Excessive leg length is trimmed away with a diagonal cutter. A suitable soldering iron is 25-50W with a fine tip.



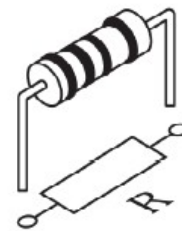
Resistors

The ohm value of the resistor is indicated by colored rings around the resistor. Check against the parts list that you are putting the right resistor in the right position.

Start by fitting R1. Bend the legs on both sides of the body so the legs can be pushed through the holes in the PCB.

Fit R2 in the same way.

Solder them on the bottom side.

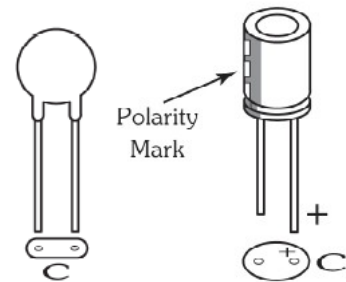


Capacitors

Fit C1. It has straight legs that go straight through the holes.

Fit C2. Since this is an electrolytic capacitor it must be polarized correctly (turned in the right direction). The long leg is + and the short leg is -. There is also a broad line on one side of the body also indicating -.

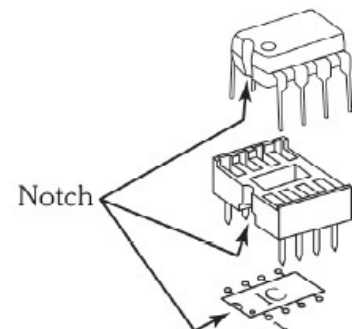
Solder them on the bottom side.

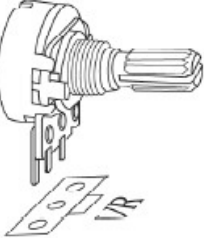
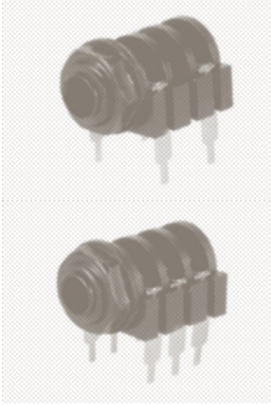




Integrated circuit

Start by fitting the socket for the IC. Note the notch on one short side and place the socket as indicated by the print on the PCB. Solder it on the bottom side.

Place the IC in the socket. Also here note the notch – or in some cases a dot on the IC. The notch or dot goes the same direction as the notch on the socket and PCB.



<p>Potentiometers</p> <p>Fit the potentiometer for PITCH. The axis should point out from the PCB.</p> <p>Fit the potentiometer for VOLUME the same way.</p> <p>Solder them on the bottom side.</p>	
<p>Connectors</p> <p>Fit the 2-pole KEY connector. The hole must be directed out from the board.</p> <p>Fit the 3-pole PHONE connector the same way. Note that you have a choice of either fitting the 6.3mm or the 3.5 mm connector, depending on what phones you will be using. (Only one of the connectors can be fitted at one time.)</p>	
<p>Loudspeaker</p> <p>Start by soldering some short leads, eg cut-offs from the resistors, to the speakers terminals. Place the speaker in the circle marked SPKR on the PCB and push the two wires through the holes in the PCB. Solder them on the bottom side.</p>	
<p>Battery holder</p> <p>Start by connecting the battery connector. Red wire is + and black is -. Solder them through the corresponding holes marked 9V</p> <p>Fit the battery holder clip in the rectangle marked BATTERY. Fasten it with the screw and nut through the hole in the PCB.</p>	

Inspection

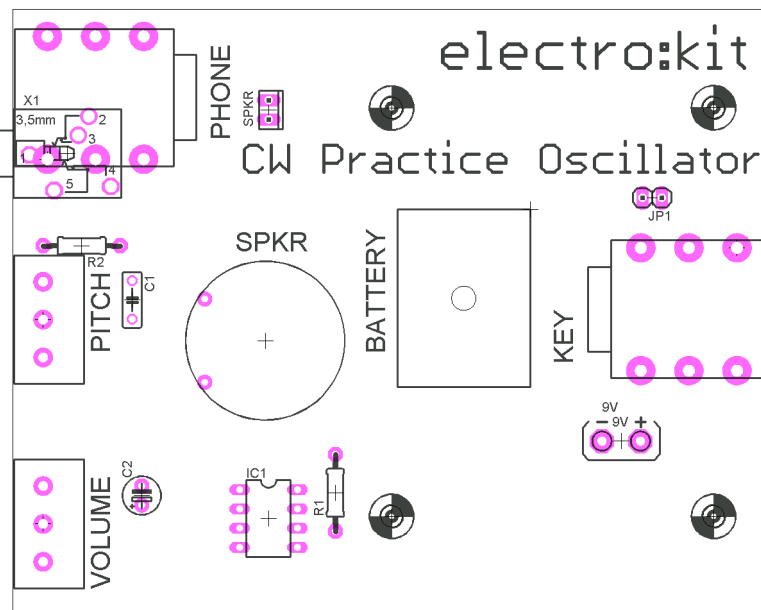
Inspect your oscillator board. Check that all components are placed in the right position, that the soldering are of good quality, and that there are no solder joints to adjacent solder points.

Test

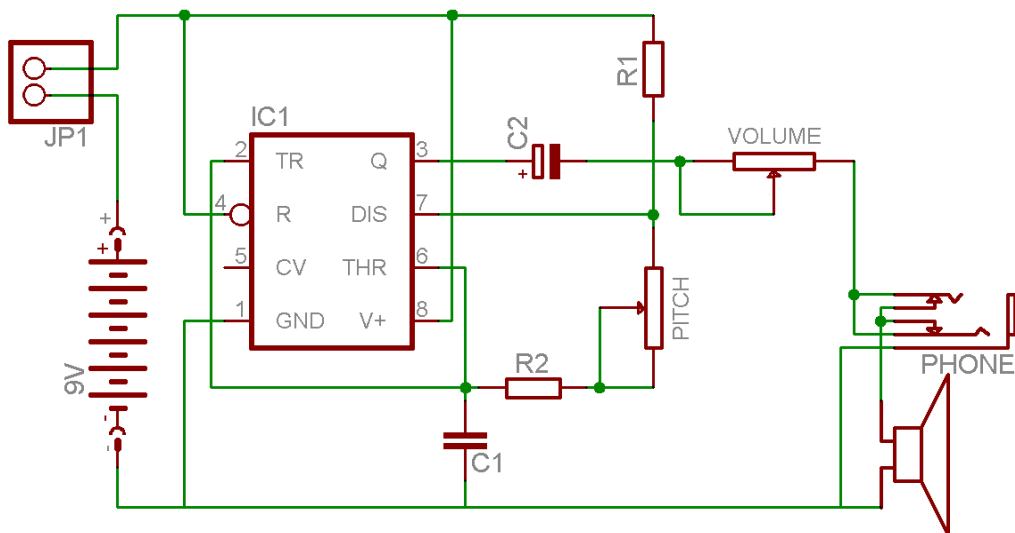
Connect a 9V battery to the battery connector and place it in the battery holder.

Connect a Morse key the KEY connector. A tone should now be heard through the loudspeaker when the key is pressed down. Adjust the sound volume with VOLUME and the tone frequency with PITCH.

Enjoy your practice!



PCB component side



Schematic diagram

Manufacturer:

electro:kit

Electrokit Sweden AB
www.electrokit.se

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