SSCPO
Super Simple Code Practice Oscillator

A Beginner's Electronics Kit

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Congratulations on purchasing a SSCPO. As the name implies, this is a simple, easy-to assemble kit, intended for first time kit builders and young hobbyists. This kit is an ideal project for Boy Scouts as a requirement for the Electronics Merit Badge, or for STEM groups wishing an introduction to electronic construction.

Supplies Needed:
Phillips Screwdriver
Diagonal Cutters
Soldering Iron and Solder
Sandpaper or Emery Board
9 volt battery

Obtain all supplies before beginning. Open the bag of parts, and inventory the contents against the parts list at the end of the instruction manual. If you are short any parts, contact the kitter listed on the 4SQRP.com web page for this kit.

Qty	Type	Description	Marking	√
2	Capacitor	0.1uF	104	
2	Resistor	15k	Brown-Green-Orange	
2	Resistor	470	Yellow-Violet-Brown	
2	Transistor	2N2222A	2N2222A	
2	Screw	6-32 x 3/8"		
4	Screw	6-32 x 1/4"		
1	Screw	8-82 x 3/8"		
6	Nut	6-32 hex		
1	Knob	-		
2	Spacer	#6 x 1/8"		
1	9v battery clip	male		
1	9v battery clip	female		
4	feet	adhesive rubber		
1	speaker	8 ohms, 0.5W		
1	PC board	-		

Once the kit has been inventoried, the assembly can begin.

☐ First take the PC board, and snap off the section at the right side of the board. The section has been grooved, so it breaks off readily.

☐ Next, take sandpaper or an emery board, and smooth off the rough edges where the boards were separated.

SPEAKER

☐ The first Item to mount on the board is the speaker. Flip the board so that the component side is down. Take the four 6-32 x 1/4" screws and insert them through the component side of the board so that they face upward. Take the speaker, and place it against the board so that the two solder terminals are facing the front toward the two round solder pads on the board.

☐ Attach the nuts to the screws, and finger-tighten the four nuts until they are contacting against the speaker. Using the Philips screwdriver, snug down the screws.

SOLDERING

Because of the simplicity of this kit, it will have appeal as a first project for beginning kit-builders. For those with little or no experience with soldering, there are a few things to keep in mind before starting.

It is recommended that a low wattage, 20 to 30 watt, pencil-tip soldering iron be used. Only rosin-core solder may be used, as acid core plumbers solder will corrode the board and components. Either lead-free or tin-lead solder may be used, though the builder should be aware of the potential toxicity of lead-based solders. It is important to wash hands after working with lead-based solder to avoid absorbing any into your body.

Soldering is not hard if the proper procedure is followed. The soldering iron is to be used to heat up the PC pad and component lead, and the solder applied to the pad, where it melts and flows into the hole. Do not melt the solder onto the tip of the iron and then attempt to dab it onto the joint – a defective connection will result! After soldering, check the top (component side) of the board, to be sure the solder has filed the hole completely, and wicked up around the component lead. Re-heat and apply more solder if necessary.

BATTERY CLIPS

☐ Plug in your soldering iron and let it reach working temperature.

☐ Take your 9v battery, and hold it so that the terminals are to the left, and the smaller positive terminal is furthest from you. Snap on the battery clips, and insert the clips into the board. Be certain that the positive polarity clip is inserted into the position marked '+'.

☐ Solder the battery clips into place, and then remove the battery. By soldering the clips into place while attached to the battery, we make sure that their spacing is correct.

☐ Locate the two 15k resistors. Their color code is 'brown-green-orange'. Bend the leads at right angles to the body, and insert into their locations on the board. Turn the board over, and spread the leads slightly so that they don't fall out of the board when it is flipped over.

☐ Solder the resistors into place, and then clip the leads close to the board. Save two of the snipped off leads.

☐ Repeat with the 470 ohm resistors (yellow-violet-brown).

☐ Repeat with the 0.1uF capacitors (marked 104).

☐ Locate the two metal can transistors, labeled 2N2222A. Notice there is a small tab on one side of the can. This must be lined up with the the transistor outline printed on the board, and the transistor legs inserted through the holes. Position the transistors so that they are spaced up off the board

approximately 1/16" of an inch. Spread the legs slightly on the bottom side of the board to hold them in place. Solder and clip their leads.

☐ Find the 8-32 x 3/8" screw, which is a larger diameter than the rest of the screws. Pass it through the silvered side of the narrow strip of PCB, and tighten it into the knob.

☐ Find the two 6-32 x 3/8" screws, the aluminum spacers, and two nuts. Insert the screws through the red side of the narrow PCB strip, and slide the spacers over the other side. Insert the screws through the two holes at the upper right corner of the board, and tighten the nuts on the screws on the bottom side of the board.

☐ Take two of the clipped off resistor leads, and solder them to the speaker terminals. Clip the lengths to end at the midpoint of the solder pads. Solder them down to the solder pads.

☐ Install the four adhesive rubber feet to the bottom corners of the board

☐ Install the battery – you are finished!

If the screw for the knob contacts the main PCB, the tone will sound continuously. You can slightly bend the key lever PCB upward until it no longer contacts the board.