

Sonic Invasion Basic Theremin Kit



Please make sure all the components are present–see table below:

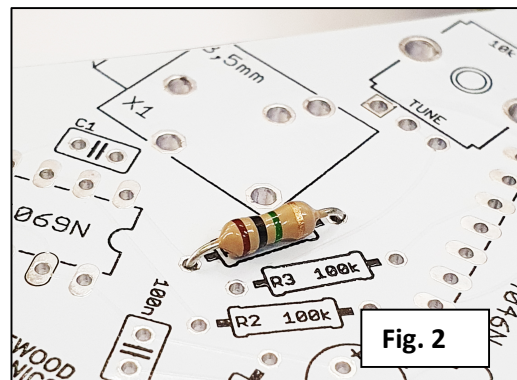
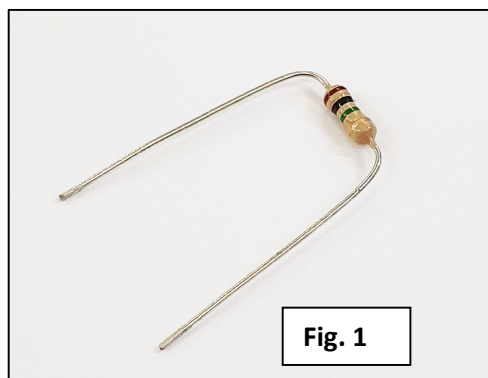
Designation	Description	Part#	Quantity
R1	1M Ω ¼ W carbon resistor (Brown, Black, Green, Gold)	Q1M0	1
R2, R3	100k Ω ¼ W carbon resistor (Brown, Black, Yellow, Gold)	Q100K	2
R4	100 Ω ¼ W carbon resistor (Brown, Black, Brown, Gold)	Q100R	1
VOL	100k Ω 9mm potentiometer	SVN100K	1
TUNE	10k Ω 9mm potentiometer	SVN10K	1
C1, C4	Ceramic capacitors (see step 9)	CER27P, CER47P	2 Each
C2	100 μ F 16V Electrolytic capacitor	100H16	1
C3	100nF Multilayer ceramic capacitor (104)	CZF100N	1
C5	1 μ F Multilayer ceramic capacitor (105)	CZF1U0	1
IC1	CD4069 Hex inverters	CD4069	1
IC2	CD4046 Phase-locked loop	CD4046	1
X1	3.5mm stereo jack socket	7CD	1
N/A	16 pin IC socket	SDL16	1
N/A	14 pin IC socket	SDL14	1
N/A	PP3 Battery snap	PP3H	1
N/A	2 Pin header socket	HSW2	2
N/A	20mm M3 bolt	30P16H	2
N/A	M3 nut	30NH	2
N/A	PCB	CKTHPCB	1

Tools Required:

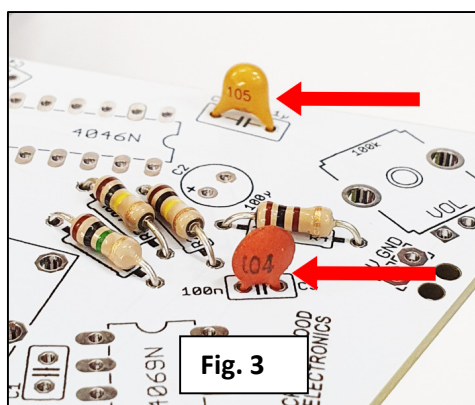
Soldering iron – 15W or higher
Good quality electronics solder
Side cutters/snippers

Assembly Instructions

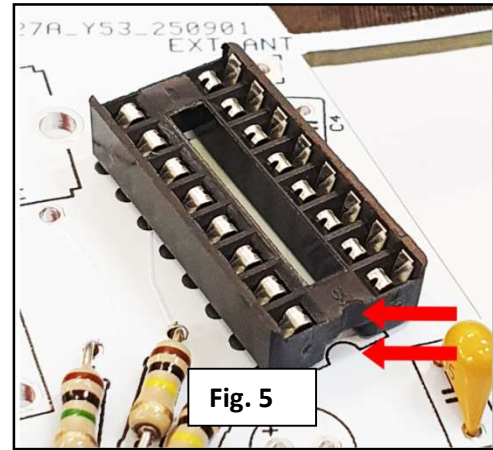
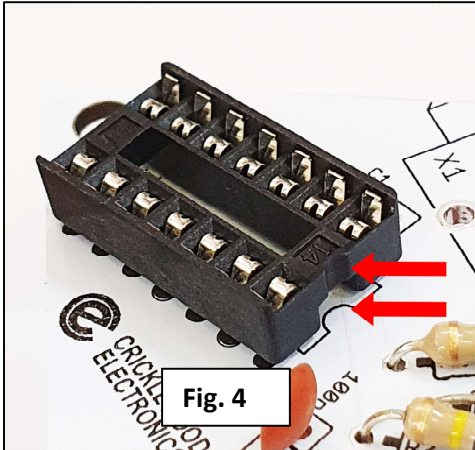
Step 1) Bend the resistor leads and mount them on the PCB (Fig. 1 & Fig. 2), then solder the leads on the opposite side of the board. The resistors can be placed either way around – they do not have a polarity. The colour bands correspond to the values marked on the PCB – see the components list above.



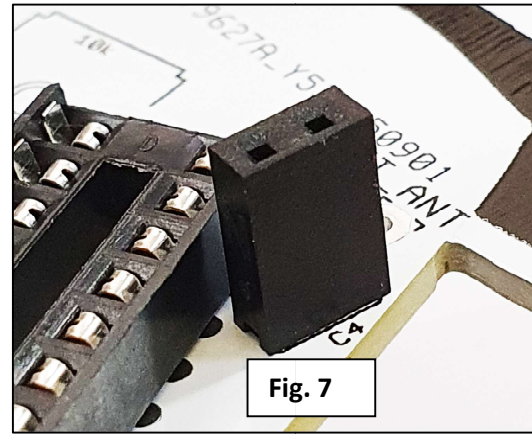
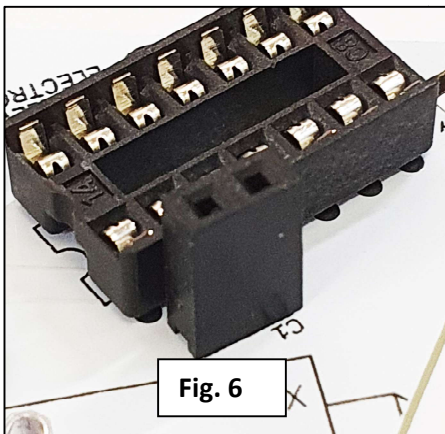
Step 2) Place and solder the 100nF (marked **104**) and 1 μ F (marked **105**) ceramic capacitors (Fig. 3). Like the resistors, the ceramic capacitors have no polarity and can therefore be placed either way around.



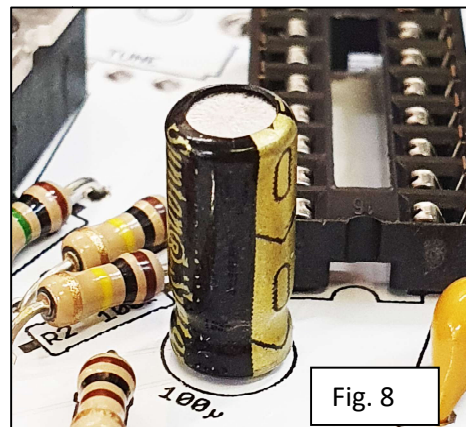
Step 3) Place the IC sockets as marked on the PCB. Note the notch at one end of the sockets – this notch has to match the notch printed on the PCB (Fig. 4 & Fig. 5). Insert the IC in the socket, making sure the notches match up. The pins of the IC might have to be bent in slightly inwards to fit in the socket.



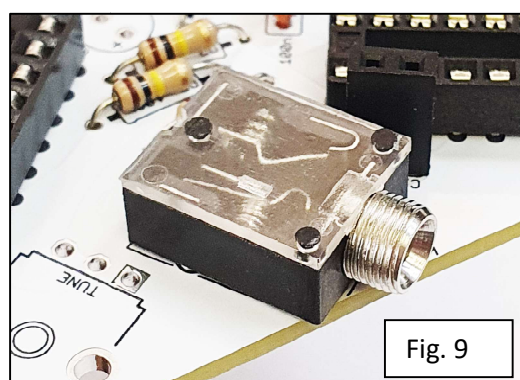
Step 4) Place the two header sockets on the pads marked C1 and C4 (fig. 6 & fig. 7) and solder them in. They can be placed either way around.



Step 5) Place and solder the cylindrical electrolytic capacitor (Fig. 8). Note that this capacitor is polarized and therefore the long lead has to be soldered to the pad marked with a "+"



Step 6) Solder the 3.5mm jack socket on the PCB as shown in Fig.9. Bend the pins slightly so the socket fits flush with the board.



Step 6) Place the two potentiometers on the PCB and solder all the pins. Notice the value written on the potentiometers and the PCB and match them up. The two pins on either side of the potentiometers are for stability – they are not electrically connected to the circuit and therefore require only a small amount of solder.

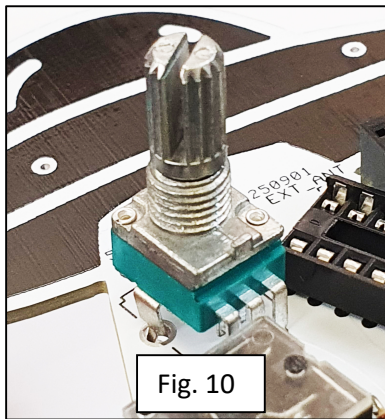


Fig. 10

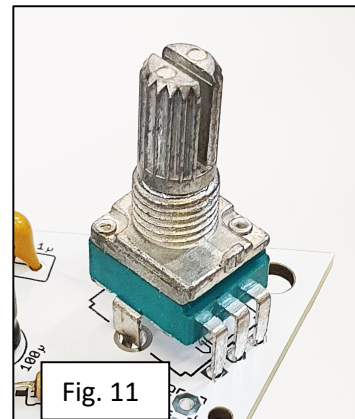


Fig. 11

Step 7) Solder the battery snap leads to the pads as shown below. Ensure that the red wire is soldered to the pad marked "9V" and the black wire to "GND".

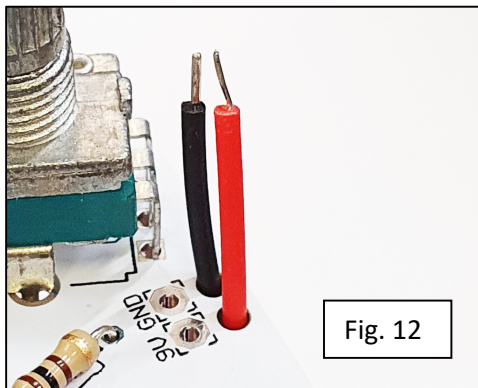


Fig. 12

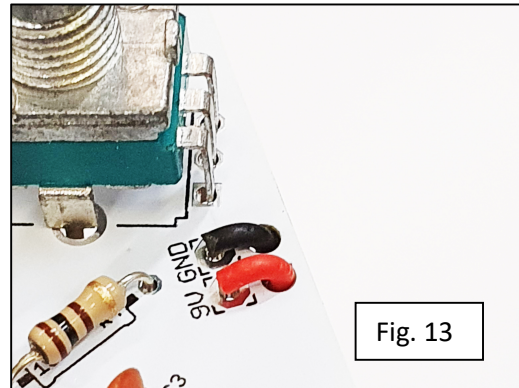


Fig. 13

Step 8) Insert the bolts through the holes at the "bottom" of the PCB and secure them very loosely with the nuts included. The bolts act as stands for the PCB assembly.

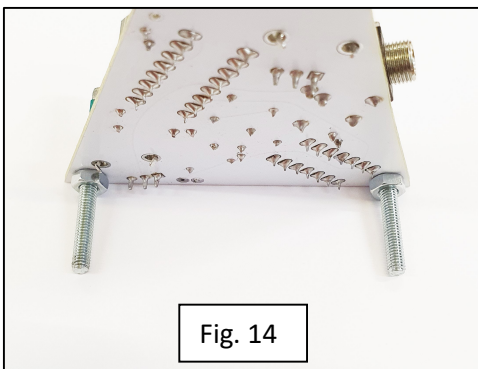


Fig. 14

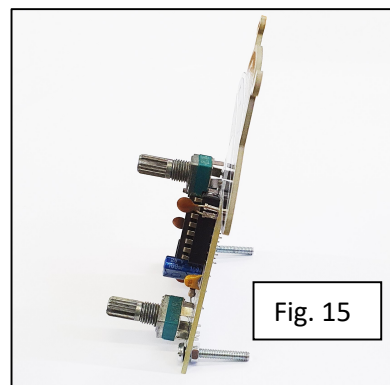


Fig. 15

Step 9) Plug in a pair of capacitors of the same value into the header sockets C1 & C4. Different value capacitors will change the frequency of the oscillator and produce different tones – try various values!

Step 10) (Optional) Solder a wire from the pad marked "ANT" and connect it to a metallic object to act as an external "antenna".

Step 11) Connect the 9V battery to the clip and connect the theremin to an active speaker using the 3.5mm socket. Use the "Tune" potentiometer to tune it to the desired frequency and the "VOL" potentiometer to adjust the output volume.

We hope you enjoyed building the kit. If you have any questions or feedback, do not hesitate to get in touch via email (kits@cricklewoodelectronics.com) or call us on **020 8452 0161**.