QUASAR KIT No. 1123 - MORSE CODE GENERATOR with BUZZER

General Description

This is a very simple circuit, suitable for beginners in electronics, which when it is connected to a suitable Morse key will produce a tone every time the key is depressed thus helping the user practice in the use of the Morse code. The circuit is basically an oscillator built around a single IC, the well known NE555 and it can also be used as a warning buzzer or a simple tone generator. The pitch of the produced tone is adjustable.

Technical Specifications – Characteristics

Working voltage: 9-12 V DC
Current: 100 mA max

How it Works

The circuit is built around a single IC the NE555 which is used as a multivibrator. The frequency at which the oscillator will operate is determined by the setting of VR1 and the value of C3 and it is adjustable between 250 Hz and 16 KHz. The output is taken through the capacitor C1 to a small speaker having an internal resistance of 8 or 16 ohm and a power rating of 0.3 - 0.5 Watts. The circuit works off a miniature 9 V battery. The Morse key is connected in series with the power supply (as an ON - OFF) switch and whenever it is depressed a tone is heard from the speaker which lasts for as long as the key contacts are closed.

General Soldering Advice

First of all let us consider a few basics in building electronic circuits on a printed circuit board. The board is made of an insulating material clad with a thin layer of conductive copper that is shaped in such a way as to form the necessary conductive paths called tracks (or traces) between the various components of the circuit. The use of a properly designed printed circuit board is very desirable as it speeds construction up considerably and reduces the possibility of making errors. Quasar Electronics Kit boards also come pre-drilled and with the outline of the components and their identification printed on the component side to make construction easier.

Soldering components to the board is the only way to build your circuit and doing this properly is the key to success. The work is not difficult and if you stick to a few rules you should have no problems. The soldering iron must be designed for electronic use and its power should not exceed 25 Watts. The tip should be fine and must be kept clean at all times by wiping the hot tip on a damp sponge to remove residues that tend to accumulate.

DO NOT file or sandpaper a dirty or worn out tip. If the tip cannot be cleaned, replace it. There are many different types of solder in the market and you should choose a good quality one that contains the necessary flux in its core, to assure a perfect joint every time.

Use a good quality lead-free multicore flux solder designed for electronics. DO NOT use additional soldering flux. Additional flux can cause many problems and is one of the main causes of circuit malfunction.

In order to solder a component correctly you should do the following:

- If component leads look dirty or tarnished clean them with emery paper.
- Bend component leads at the correct distance from the component's body and insert the component in its place on the board.
- Take the hot iron and place its tip on the component lead while holding the end of the solder wire at the point where the lead emerges from the board. The iron tip must touch the lead slightly above the PCB.
- When the solder starts to melt, the flux boils and flows out of the solder. Wait until the solder flows evenly over the pad around the hole. The whole operation should not take more than 5 seconds. Remove the iron and leave the solder to cool naturally without blowing on it or moving the board. A correctly soldered joint will have a bright metallic finish and its edges should end smoothly on the lead and board pad. If the solder looks dull, cracked, or has the shape of a blob then you have made a dry joint and you should remove the solder (with a pump or desoldering braid) and redo it.
- Take care not to overheat the tracks as it is very easy to lift them from the board and break them.
- Make sure that you do not use more solder than necessary as you are running the risk of short-circuiting adjacent tracks on the board, especially if they are very close together.
- When you finish your work cut off the excess component leads about 1mm above the solder mound.

Construction

The circuit is easy to build and makes a good introduction to electronics and soldering. Please read the instructions through once before you commence soldering.

Components should be added in ascending height order. Start with the 3 resistors. Check the colour coding in the parts list below so you get them in the correct positions. Resistors can go either way round.

Next as the switch and the IC socket, making sure that the notch on the socket and the PCB overlay match. Now add capacitors C2 and C3 (again these can go either way round).

If you do not wish to use an external speaker you can fit the buzzer supplied instead. If it has a + sign on the body make sure it is inserted to the end marked "+" on the board.

Now add VR1. We normally supply a 10mm vertical trimmer. It is mounted in the 3 holes nearest the Quasar logo. The extra holes can be used to mount an alternative potentiometer of your own preference if desired.

Next add the capacitor C1. This is an electrolytic capacitor so it MUST be inserted with the correct polarity. There is a "+" sign on the board. Make sure you put the longer of the two components legs into this hole (with a square pad). You will also see that the body is marked with the minus sign on the other side.

Add the battery connector last. Pass the wires up through the plain holes next to the solder pads first (the square pad is for the positive red lead).

Your final job is to carefully insert the IC making sure the notch is the same end as the one on the board. Be careful not to bend the legs as you push it in.

Operation

Adjust VR1 so the arrow is pointing up. Connect the battery and press the push switch. You should hear the buzzer. Adjust the output frequency to suit your personal preference using trimmer VR1.

Warning

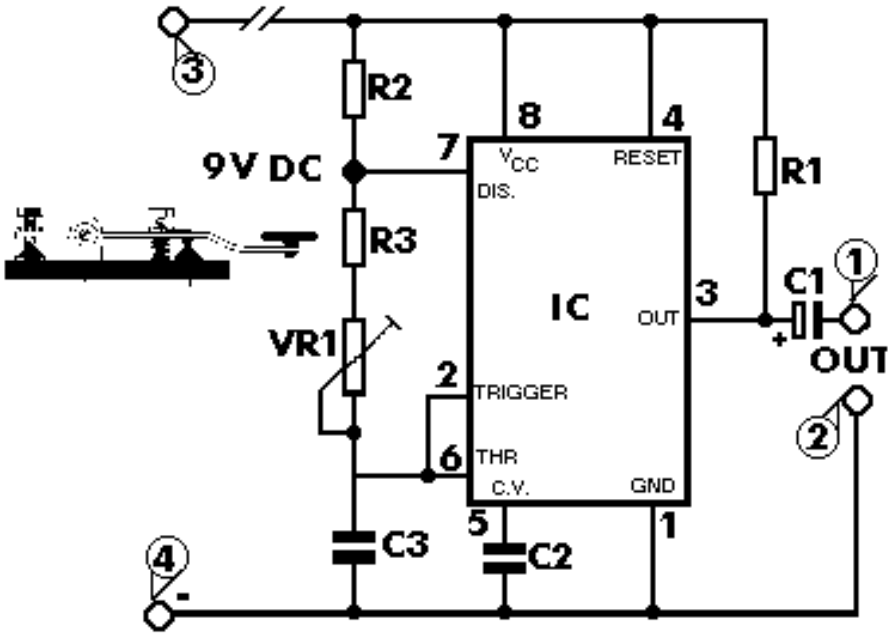
Quasar Electronics kits are sold as standalone training kits. If they are used as part of a larger assembly and any damage is caused, our company bears no responsibility. While using electrical parts, handle power supply and equipment with great care, following safety standards as described by international specs and regulations.

If it does not work

Check your work for possible dry joints, bridges across adjacent tracks or soldering flux residues that usually cause problems.

Check again all the external connections to and from the circuit to see if there is a mistake there.
- See that there are no components missing or inserted in the wrong places.
- Make sure that all the polarised components have been soldered the right way round. - Make sure the supply has the correct voltage and is connected the right way round to your circuit.
- Check your project for faulty or damaged components.

Circuit Diagram



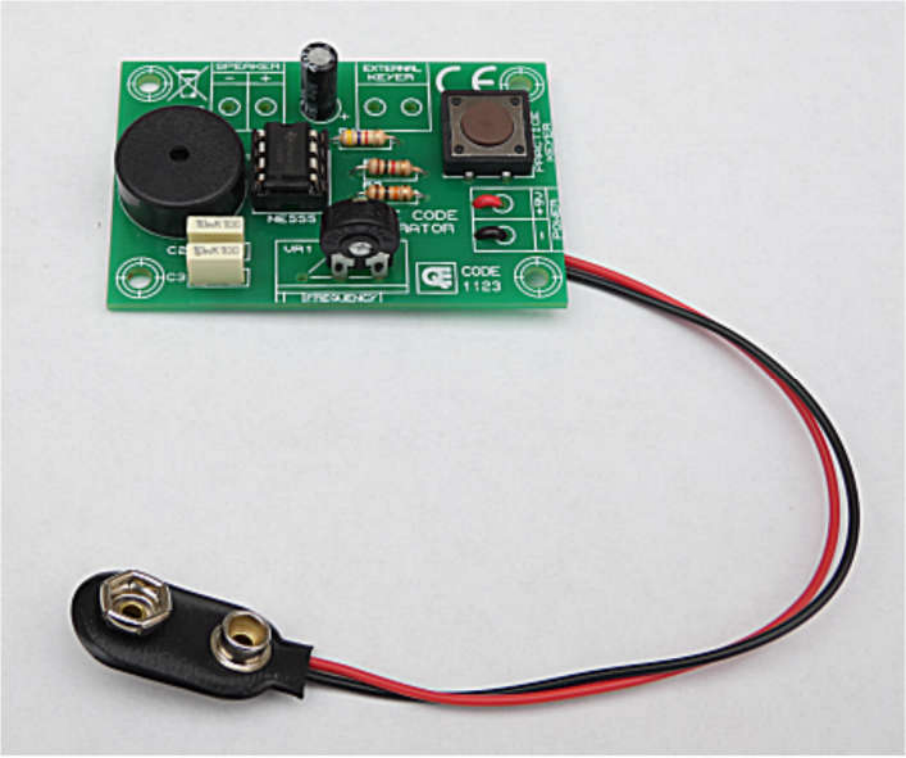
The Keyer shown is not included. We are unable to supply this type of keyer.

1 = SPEAKER + **2 = SPEAKER -** **3 = POWER +9V** **4 = POWER -**

Parts List

All components including printed circuit board, assembly instructions including schematics and detailed parts list are supplied when you purchase the kit.

Optional Extras
The board and battery can be housed in an optional box (our **Order Code BX-G1031**).



Technical Support
For technical support please contact us by email at support@QuasarElectronics.co.uk

Got the Kit Building Bug?
See our other great kits online at quasarelectronics.co.uk