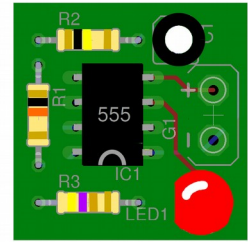# NE555 LED Flasher Kit Instructions

## 1: Introduction

Thank you for purchasing a Hackaday NE555 LED Flasher kit. This kit once assembled gives you a sub-inch-square PCB with a red LED that flashes when the board is connected to a 9V battery. It is based around the iconic NE555 timer integrated circuit, which is wired in an astable configuration.

## 2: Building your NE555 LED Flasher

### 2.1: You Will Need

**A soldering iron.** A standard fine tipped iron suitable for use with conventional 0.1" pitch through-hole components.  It is recommended that you use a temperature controlled iron at a suitable temperature for your solder, if you have one.

**Decent quality solder, with a flux core.**  Any decent quality flux cored solder designed for electronic use should be suitable for assembling this kit. Solder intended for plumbing may not be suitable.

**A set of side cutters.** Once you have soldered the discrete components to the board, you will need to clip off the protruding wires.

It is assumed that you will already have the necessary skills to solder this kit. If however you are not happy with through-hole electronic soldering, there are plenty of soldering tutorials available online though your favourite search engine.

### 2.2 Construction details

### 2.3.1: Identifying the components

Some components such as the battery connector, the LED, and the PCB should be easy to identify.

The NE555 timer IC has an eight pin dual-in-line package as shown on the left, with two rows of four pins in a 0.1" spacing.

The resistors are superficially similar to each other, as small cylindrical components with coloured bands and a wire protruding from each end. The coloured bands denote their values, you should look for a yellow-violet-brown sequence to denote the 470R resistor R3, brown-black-yellow for the 100k resistor R2, and brown-black-orange for the 10k resistor R1.
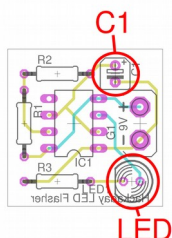
The electrolytic capacitor C1 is another small cylindrical component, this time a little larger radius than the resistors and with two wires protruding from the same end. You should find its value – 10uF – written on its side.

### 2.3.2: NE555 LED Flasher construction step-by-step

You should now be ready to build your LED flasher. Here follows a step-by-step progression through the assembly process, in a recommended order. This order is not compulsory, however it has been chosen to ensure that smaller components are fitted before larger components that may make them difficult to reach for soldering. It is **strongly recommended** that you only unpack one component at a time: that which you are currently installing.
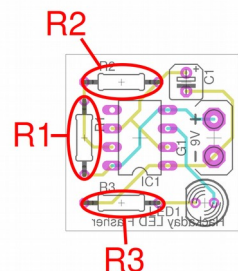
**Step 1: Resistors**
Start with the three resistors, taking acre to identify each one by its coloured bands. R1 is a 10k resistor, with brown-black-orange bands, R2 is a 100k resistor with brown-black-yellow bands, and R3 is a 470R resistor with yellow-violet-brown bands.
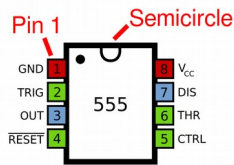
**Step 2: Capacitor C1, and the LED**
Both of these components are polarised, they must be placed on the board in a particular orientation. Capacitor C1 has a negative and positive lead, the negative is identified by a shorter wire and a band on the side of the component. The positive wire should go in the hole marked with a **+** sign.
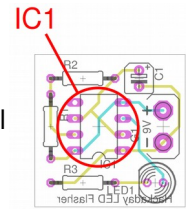
The LED cathode is identified by a shorter wire and a flat spot on the LED rim that corresponds with a flat on its outline printed on the board. The cathode wire should go in the hole closest to R3 on the board.
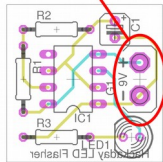
### Step 3: The NE555, IC1



The NE555 timer chip should now be soldered in its space at the centre of the board. Pin 1 should be identified by a semicircular recess in one end of its plastic package, with the semicircle at the top pin 1 will be on the left. The PCB has an outline of IC1 with a semicircle printed on it, this should be aligned with the semicircle on the package.

### Step 4: The battery connector



The battery connector is a plastic clip to fit a PP3 style 9v battery, with a red wire and a black wire to connect to the PCB. The ends of the wires should already have had their insulation removed, so you can solder them directly to the board. The red wire should go to the hole marked with a **+** symbol while the black wire should go to one marked with a **-**.
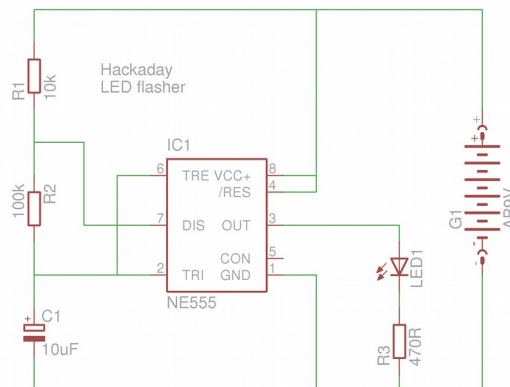
## 2.4 Before you use it

You should now have a completed NE555 LED Flasher PCB. Congratulations! Before you connect the battery to it though, complete a close visual inspection of it under a magnifier. Pay close attention to any solder bridges that may have formed between adjacent pads. Remove any surplus solder or solder bridges with desoldering braid.

This step is **very important** because any short circuits will at the very least flatten your battery, and at worst could damage the components.. **If that happens it is your responsibility as the builder of the board**. It is better to have to rework or desolder something than to damage it.

# 3: Using your NE555 LED Flasher

If you now connect a PP3 battery to the clip, you should be rewarded by the sight of a flashing red LED. You can keep it as a novelty, use it as a warning light, or find a creative use for it as a Christmas decoration or similar.

## Appendix 1: Circuit diagram



This document is a set of instructions for a very simple kit used as an example piece for an article on kit marketing published on Hackaday.com.