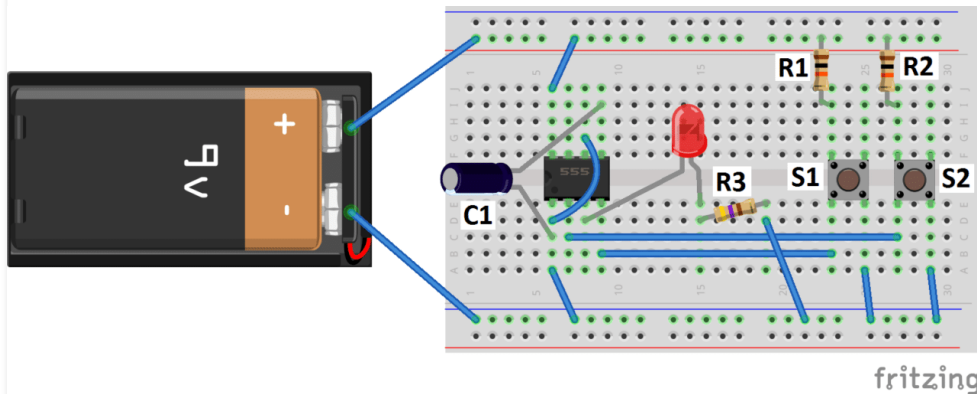


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BISTABLE MODE

Posted by Scott Campbell | DIY Electronics | 8



This is part 2 of a series of articles on the 555 timer. If you haven't already, you may want to read part 1, [555 Timer Basics – Monostable Mode](#) first, to see the layout and functions of each pin.

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BISTABLE MODE OF THE 555 TIMER

The **555 timer** in bistable mode is also known as a flip-flop circuit. A flip-flop circuit alternates between two stable states, in this case the output of electrical current from the output pin. Unlike the monostable mode and astable modes, bistable mode doesn't need a resistor and capacitor to set the timing of the circuit. In fact there is no timing in this circuit. There are only two stable states (on and off) controlled directly by the trigger pin and reset pin.

BONUS: I made a quick start guide for this tutorial that you can [download](#) and go back to later if you can't set this up right now. It includes all of the wiring diagrams and instructions you need to get started.

HOW BISTABLE MODE WORKS

I'll demonstrate the bistable mode of the 555 timer with an LED and push buttons connected to the trigger pin and reset pin. Pressing the trigger button once will make the LED turn on and stay on. Pressing the reset button will make the LED turn off and stay off.



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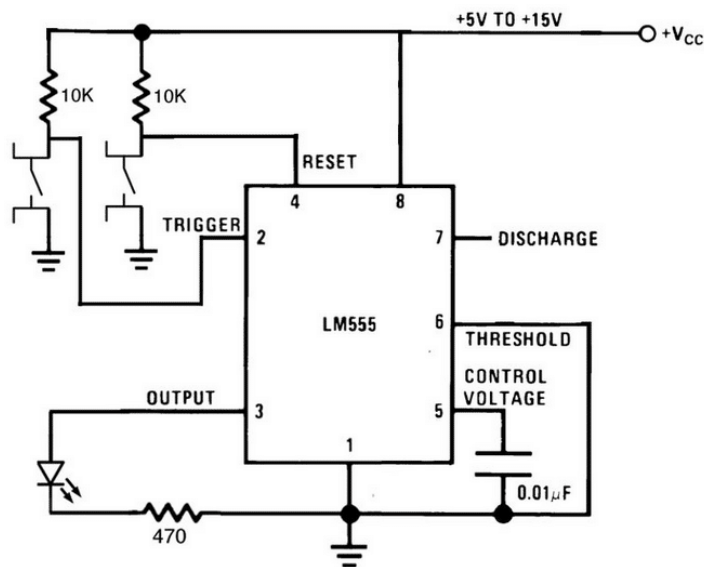
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Pressing the trigger button allows current to flow from V_{CC} to ground, which causes the voltage at the trigger pin to drop. As we saw in the [monostable mode article](#), when the trigger pin is at a low voltage, the output gets switched on and the LED lights up. The output stays on until the voltage at the threshold pin goes above $\frac{2}{3} V_{CC}$. Since the threshold pin is wired to ground in this circuit, it never reaches $\frac{2}{3} V_{CC}$, so the output stays on indefinitely.

Now if the reset button is pressed, the voltage at the reset pin flows to ground and the pin goes low. When the reset pin goes low, the output is switched off.

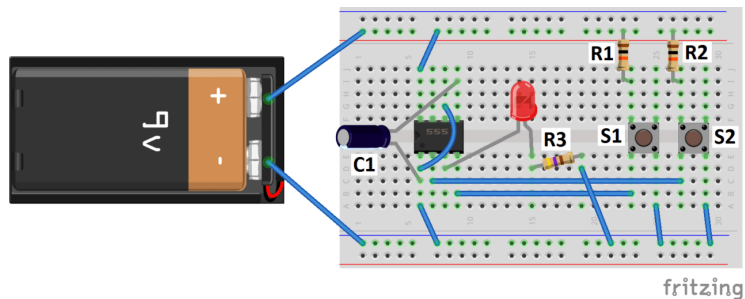
You can see a demonstration of the 555 timer in bistable mode here:

The 555 Timer in Bistable Mode



EXAMPLE BISTABLE MODE CIRCUIT

To observe the 555 timer in bistable mode, wire up a circuit like this:



- R1: 10K Ohm
- R2: 10K Ohm
- R3: 470 Ohm
- C1: 0.01 μ F
- S1: Reset Button
- S2: Trigger Button

Now, press the trigger button (S2) once, and the LED should turn on and stay on. Pressing the reset button (S1) will turn the LED off. The [Engineer's Mini Notebook: Timer, Op Amp, and Optoelectronic Circuits & Projects](#) might be a good resource for you if you are looking for interesting 555 timer circuits and OpAmp circuits. This book has about everything you need to know about the 555 timer.

Click here to go on to part 3, [555 Timer Basics – Astable Mode](#)