



FIVE FUN AND SIMPLE CIRCUITS TO BUILD WITH ELECTRONICS

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WWW.BUILD-ELECTRONIC-CIRCUITS.COM

Thanks for downloading this booklet with five simple and fun circuits to build with electronics. In the following pages you will be presented with five circuits that you can build and have fun with.

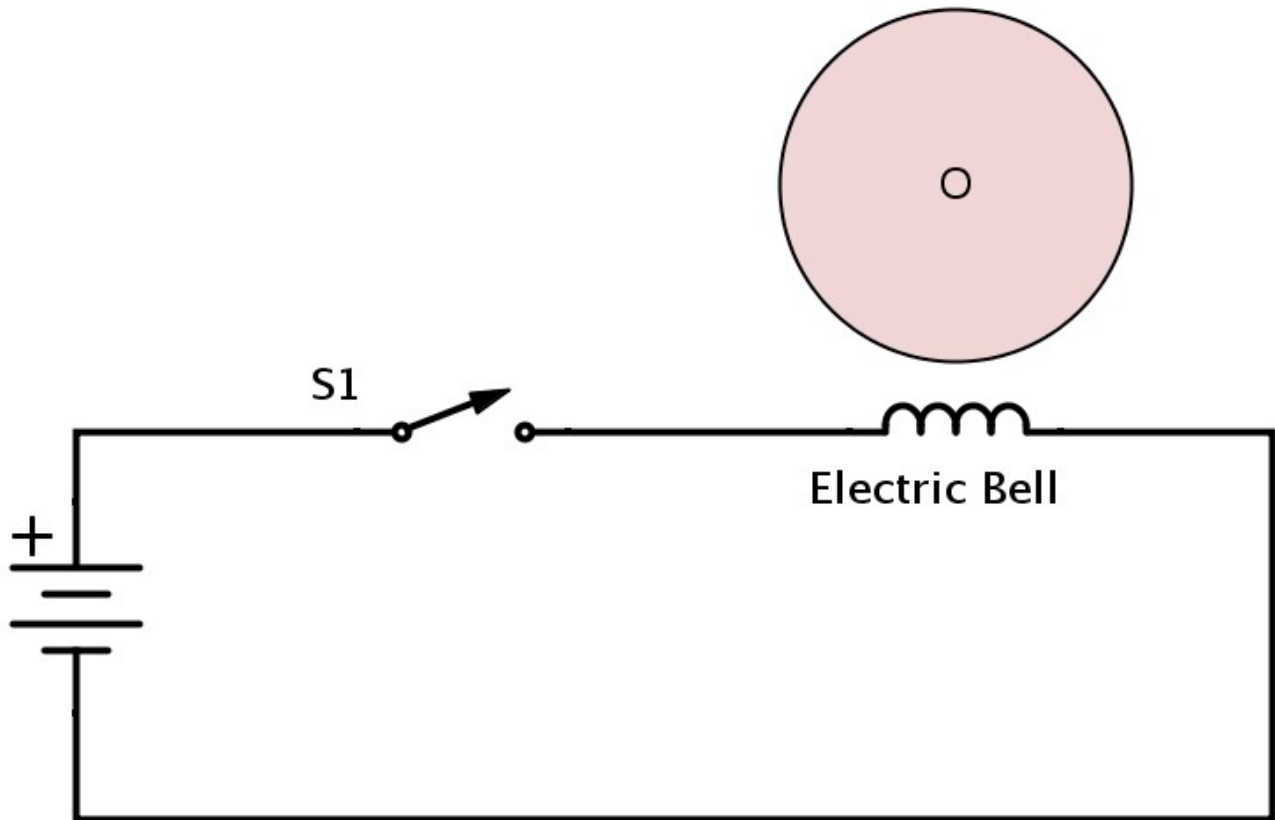
If you are not quite sure how to build these circuits, I recommend checking out my eBook called «Getting Started With Electronics» where you'll learn the practical skills necessary to build your own circuits. More info here:

<http://www.build-electronic-circuits.com/getting-started-ebook-link>

In the section after the circuits, I've added some resources. There you'll find out where you can get your hands on components and where to learn more electronics.

Now, let's get cracking!

Simple door bell



Let's start off with a super simple circuit.

This is a very very very simple doorbell circuit. All you need is a battery, a doorbell switch and an electric bell. Electric bells aren't that common anymore, but you can find at at for example ebay.com or maybe your local old-school hardware store.

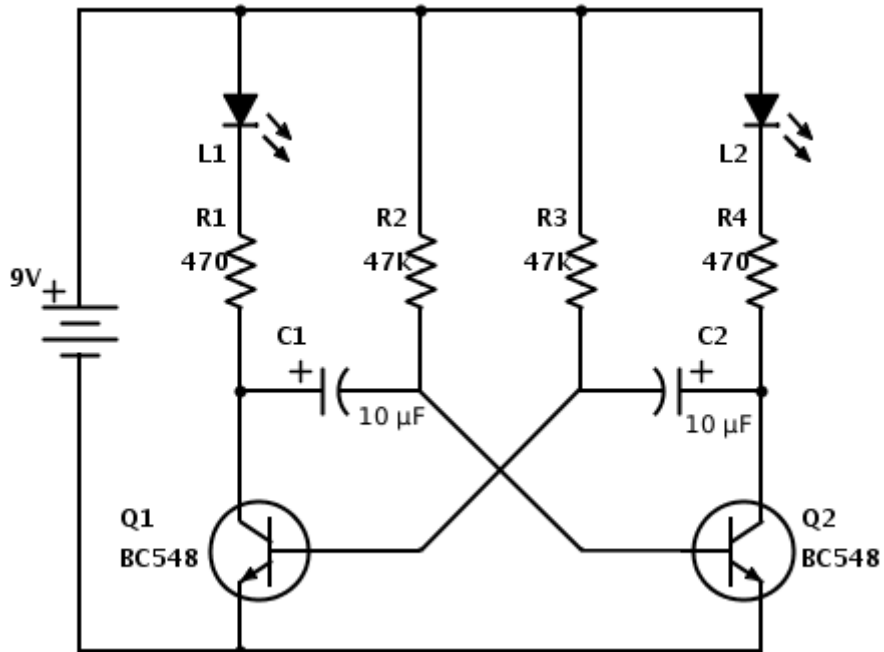
The switch is the actual doorbell button you place outside your door. Any common doorbell button should work. Choose a battery that matches your electric bell.

When someone pushes the doorbell button, the bell starts ringing.

Parts list:

Part	Value	Description
S1		Doorbell switch
Battery		Battery voltage must match bell
Electric bell		Bell must work with DC voltages

Blinking light



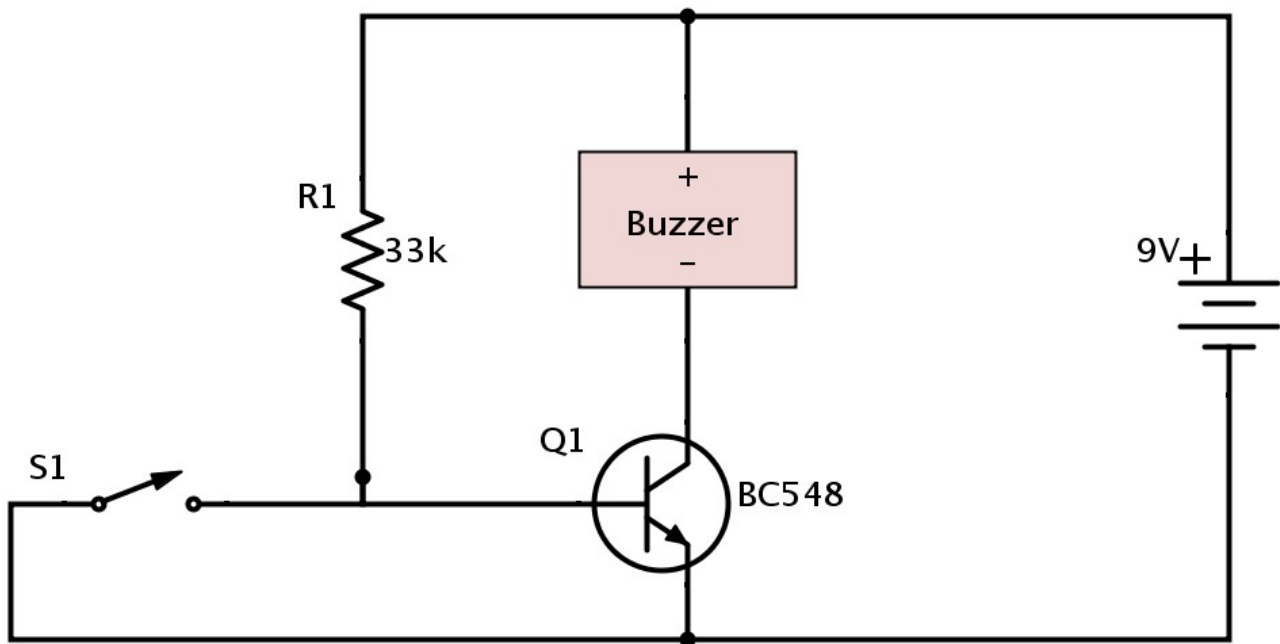
This circuit flashes two Light-emitting Diodes (LED). The speed of the flashing is determined by the capacitors C1 and C2. A simple build, that produces a fun result. A very common mistake to watch out for is to not get the resistor values switched up. If you put the 47k resistor where the 470 resistor is suppose to be, and vice versa, the circuit won't work.

It's not really important what transistor you use. As long as it's a general purpose NPN transistor. PNP will not work.

Parts list:

Part	Value	Note
R1, R4	470	
R2, R3	47k	
C1, C2	10 μ F	
Q1, Q2	BC548	Can be any general-purpose NPN transistor
L1, L2	LED	Standard light-emitting diode
Battery	9V	

Alarm circuit



Secure your stuff with this simple burglar alarm circuit.

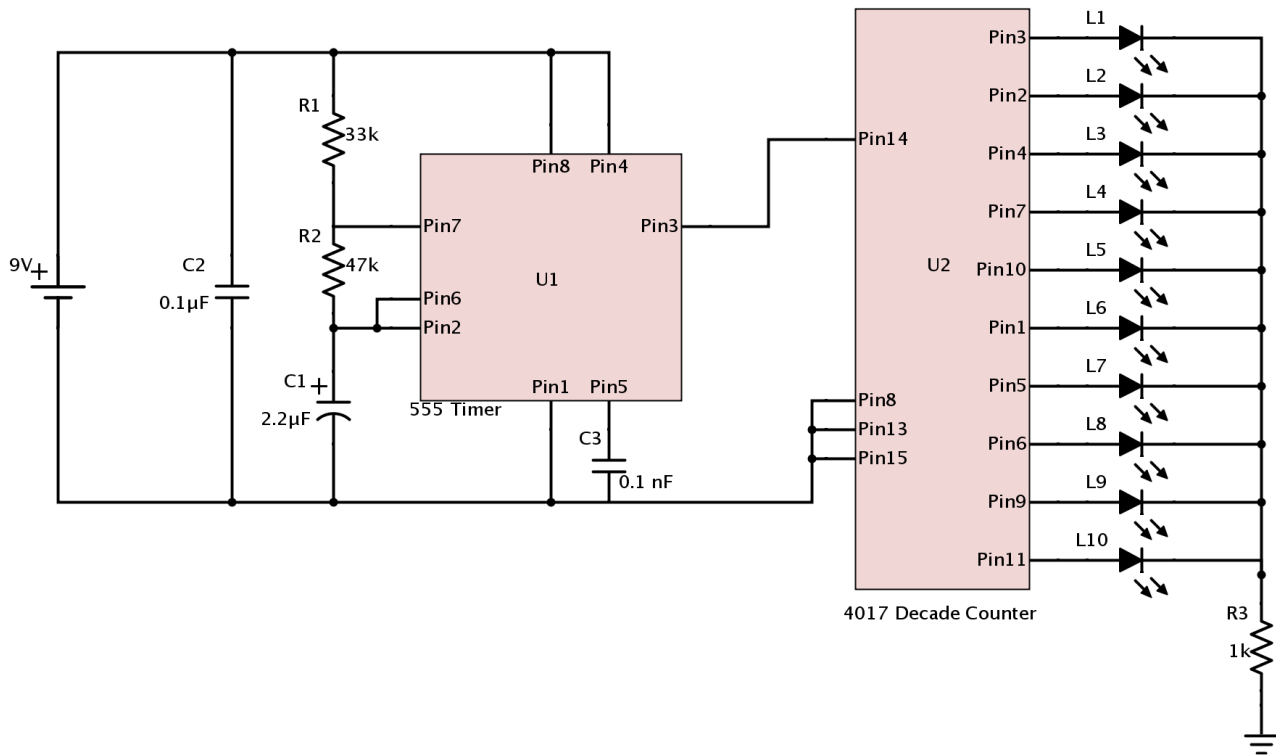
Here is a fun circuit that can also be very useful. In this circuit, you will need a buzzer. That's a component that makes a buzzing sound when you connect it to a battery. The circuit is designed so that the buzzer will start making sound when the switch opens.

You can make a switch out of wires and tin foil for example. Put some tin foil on your door and some in the door frame. And make sure they are touching when the door is closed. Then when the door opens, your switch will open and sound the alarm.

Parts list:

Part	Value	Note
R1	33k	
Q1	BC548	Any general purpose NPN transistor will work
S1		Make your own with wires and tin foil
Buzzer		Must work with 9V
Battery	9V	

LED chaser

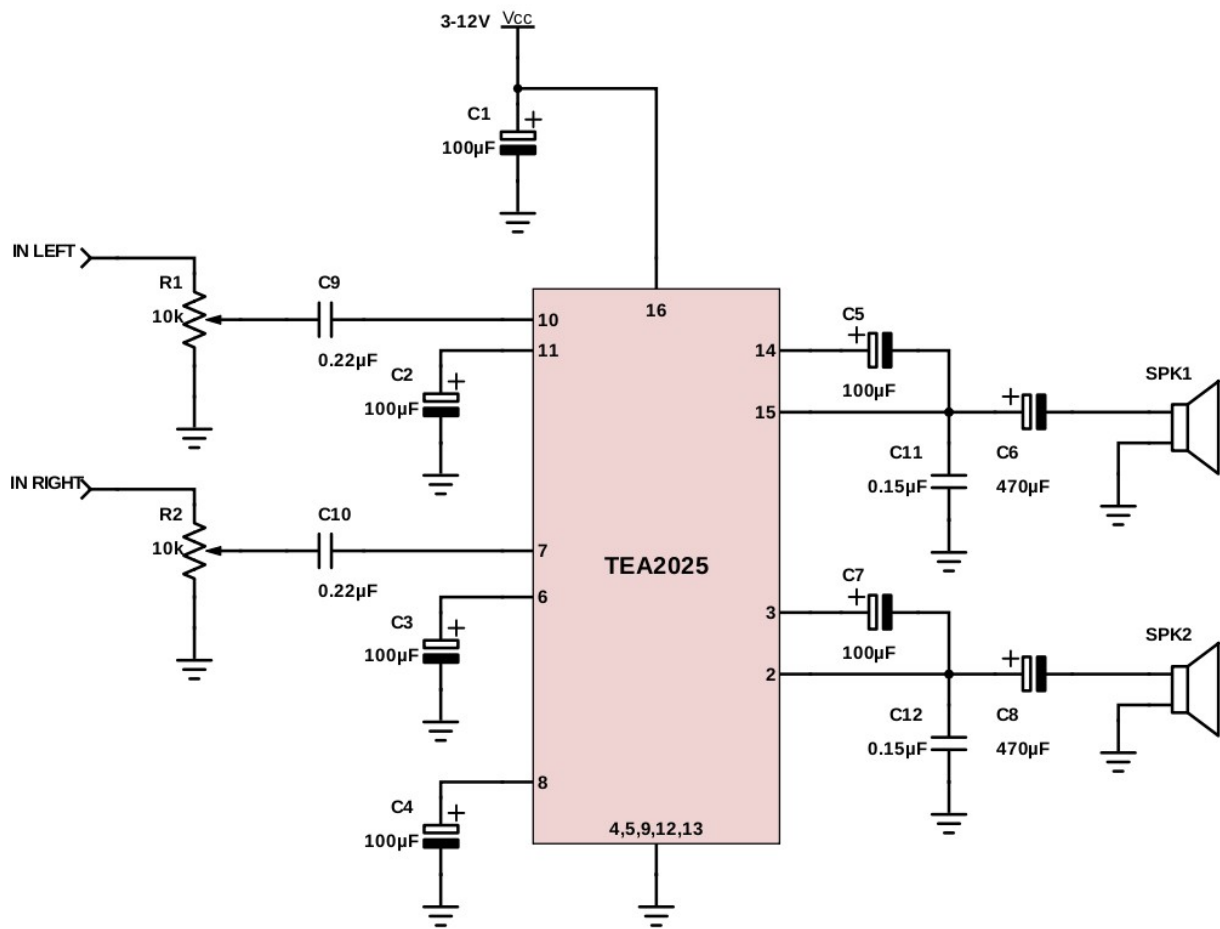


This circuit is a fun light-project where you have 10 lights «running» after each other. The 555 timer makes a signal that the 4017 chip counts. For every count, a new output goes high, and thereby turns on the LED connected to it. R1, R2 and C1 is responsible for the timing. Change one of the values, and the running speed of the lights will change.

Parts list:

Part	Value	Note
R1	33k	
R2	47k	
R3	1k	
C1	0.1 μF	
C2	2.2 μF	
C3	0.1 nF	
L1 to L10	LED	Standard light-emitting diode
U1	555 Timer	
U2	4017 Counter	
Battery	9V	

Portable speakers



www.build-electronic-circuits.com

This is a stereo amplifier circuit that can run on a 9V battery, so that you can bring it to the park. Connect it to your smart phone through the headphone output to play music from your phone. Or connect it to a different music source. It's one of the simplest amplifiers to build that I have ever seen.

Parts list:

Part	Value	Note
TEA2025		Amplifier chip
C1, C2, C3, C4, C5, C7	100 µF	
C6, C8	470 µF	
C9, C10	0.22 µF	
C11, C12	0.15 µF	
R1+R2 (potentiometer)	10k, logarithmic	Dual potentiometer (so you can connect both channels)
SPK1, SPK2	4-8 Ohm	Speakers that can handle minimum 2.5W

Resources

Where to buy components?

Digi-Key

<http://www.digikey.com/>

Digi-Key has a very large selection of electronic components. It is probably the cheapest of the electronic component distributors (but I have not done a detailed comparison). If you know what part you are looking for and what it is called then Digi-Key usually have it.

They have low prices and fast shipping. The downside is that the documentation is not always as good as I want and many products lack pictures. Some components lack datasheets as well, but usually you will find the datasheet online somewhere else with Google.

Farnell

<http://www.farnell.com/>

Farnell's customer service is very good and they have a good free resource for design advice. They have a good selection of electronic components, modules and tools.

The documentation is usually ok but some products lack pictures and datasheet. Their prices are also a bit more expensive than Digi-Key.

Sparkfun

<http://www.sparkfun.com/>

A very good place to find modules and components aimed at hobbyists is Sparkfun. This is my favorite place to "hang out" and just look for cool stuff. They have pictures of all their products (actually I think the reason they started Sparkfun was because other distributors lacked good pictures of the components) and good documentation. Customers can discuss the components and help one another.

They are a bit more expensive than Digi-Key so I usually go there for their custom modules or to find the name of what I am looking for.

Seeed Studio

<http://www.seeedstudio.com/>

Seeed Studio is very similar to Sparkfun both in their selection of products and in their vibe. They make an effort to provide good pictures, tutorials and documentation of the parts. They design a lot of their own modules.

Mouser

<http://www.mouser.com>

Mouser is the distributor I go to when I need a rare part that I cannot find on any of the above online stores. They have a large selection but I find their online store a bit hard to navigate and the documentation is not always in place.

Where to learn more?

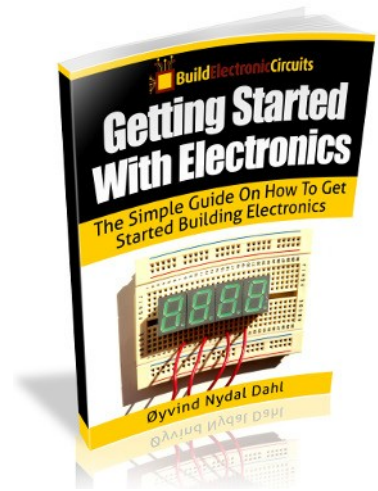
Getting Started With Electronics

If you are just starting out in electronics, I highly recommend you to check out my eBook «Getting Started With Electronics».

This is a short and easy read. You will learn a little bit of the basics of electronics, but most importantly you will learn practical skills to enable you to build things like sirens, blinking lights and music amplifiers.

More information here:

<http://www.build-electronic-circuits.com/getting-started-ebook-link>



Building Advanced Hobby Circuits

If you feel you know the basics, and want to take the next step, then one of the best skills to learn is how to build your own circuit boards. This is one of the main focuses of my video training «Building Advanced Hobby Circuits».

By learning this skill, you will be able to build really cool things like robots, cell phones, quadcopters and a lot of other cool projects.

More information here:

<http://www.build-electronic-circuits.com/building-advanced-hobby-circuits-link>

