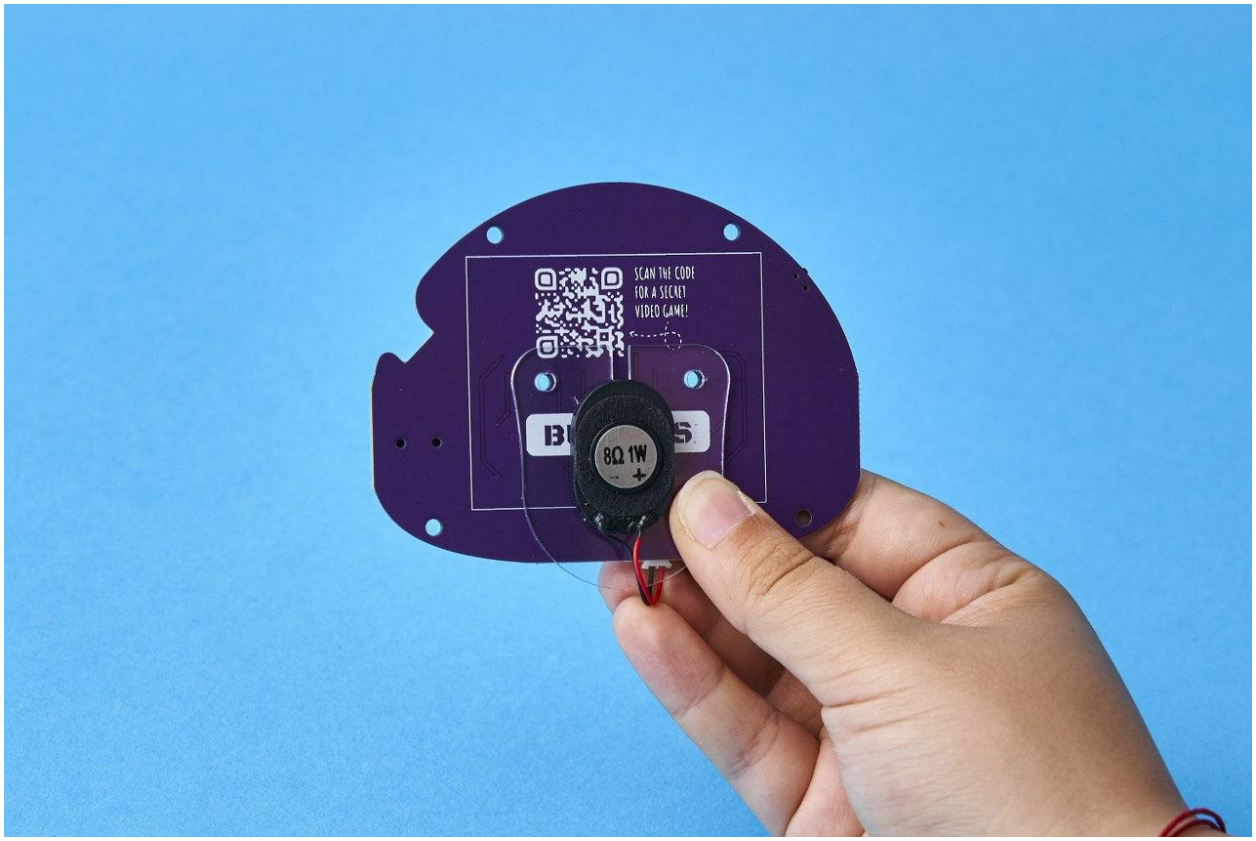
Electronics 101

Let's learn something about the components you've got!

1. Circuit board

The purple head-shaped thingy you've gotten in your kit is called a circuit board.
Professionals call this a printed circuit board or PCB.
A PCB is a laminated sandwich structure of conductive and insulating layers.



What does it do?
Your circuit board has two functions:

- It holds all the electronic components in place.
- It provides electrical connections between the electronic components.

Because of the circuit board, all electronic components can work together as a team.

What are those tiny lines on my circuit board?

They allow electrical charges to flow between components. This way, electronic components are powered, and they can do clever stuff using electricity.

What is my circuit board made of?

Circuit boards are usually made out of fiberglass-reinforced epoxy-laminated sheets.

These are also referred to as “FR4” sheets.

The FR4 sheets are used as the insulating non-conductive material, and copper is used as a conductive material.

If material is conductive, it conducts electricity; electrical charge can flow through that material easily.

FR4 and copper are both sandwiched together in thin sheets, and that’s how you get a circuit board.

Where are PCBs used?

They’re used everywhere!

In your phone, in your laptop, in your refrigerator, air conditioner. Basically, every electronic device you use has a unique printed circuit board that makes it work.

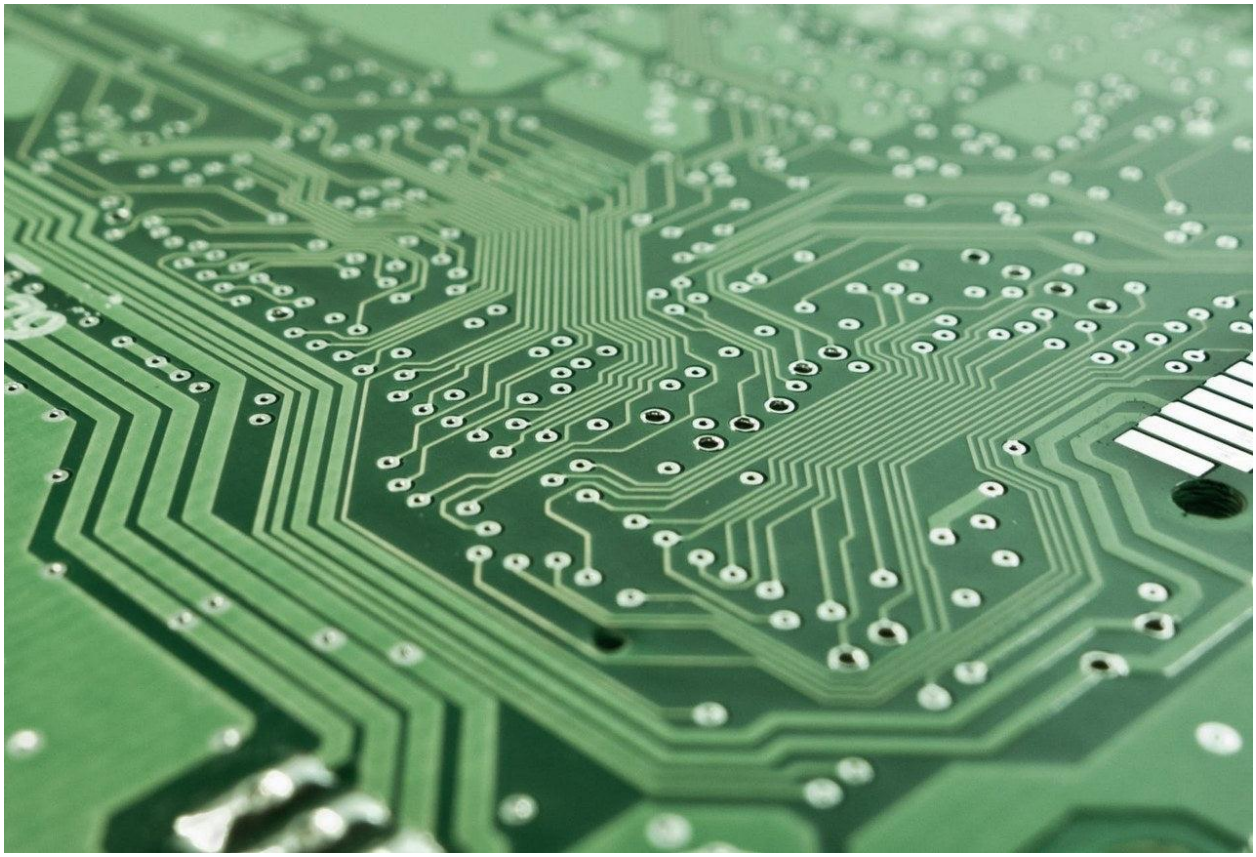
Did you know?

A PCB is one of the most important inventions of the last 100 years.

Space travel wouldn’t be possible without them.

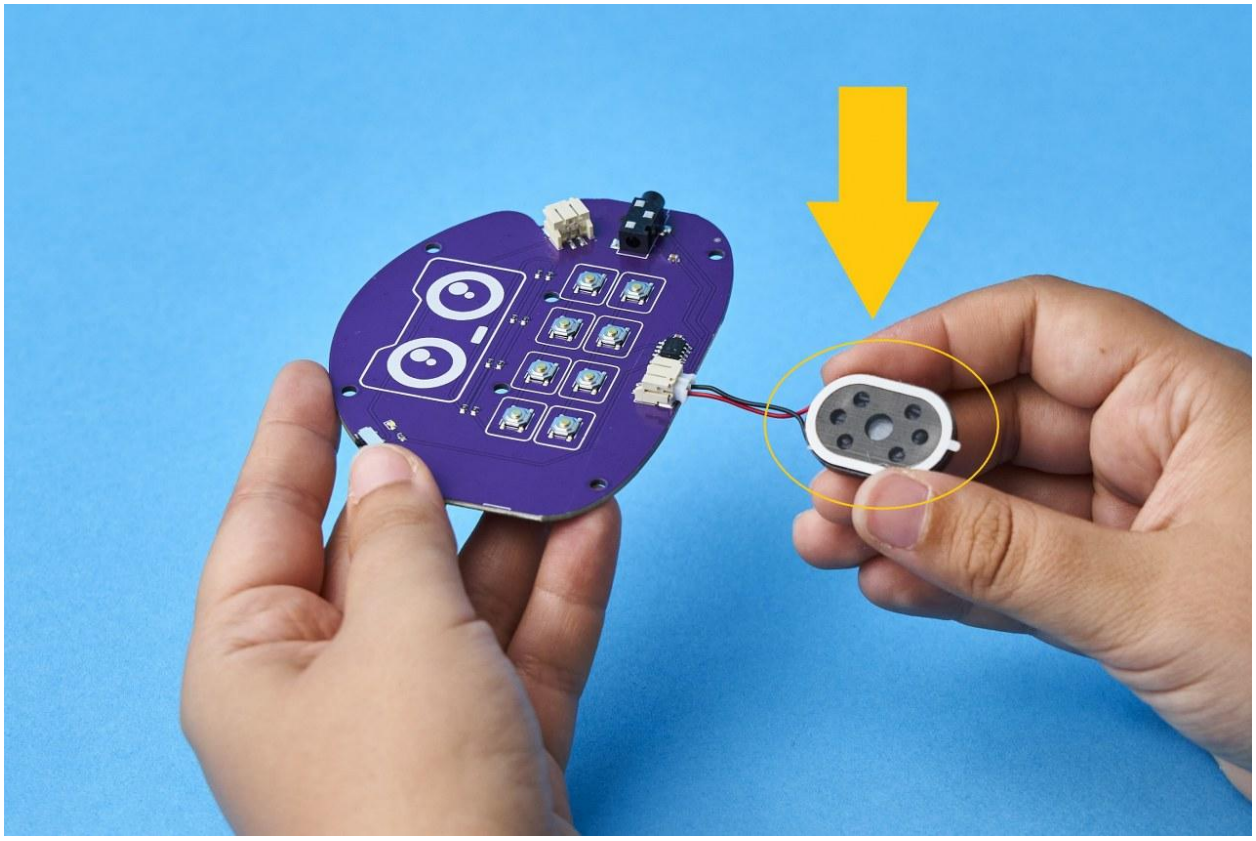
PCBs were invented by Paul Eisler.

He invented it in the 1930s, but the predecessors of modern-day PCBs have been around since the age of gramophones and vacuum tube radios, just in a somewhat different form.



2. Speaker

You want to be able to hear the music coming from Buttons, and that would not be possible without this speaker.

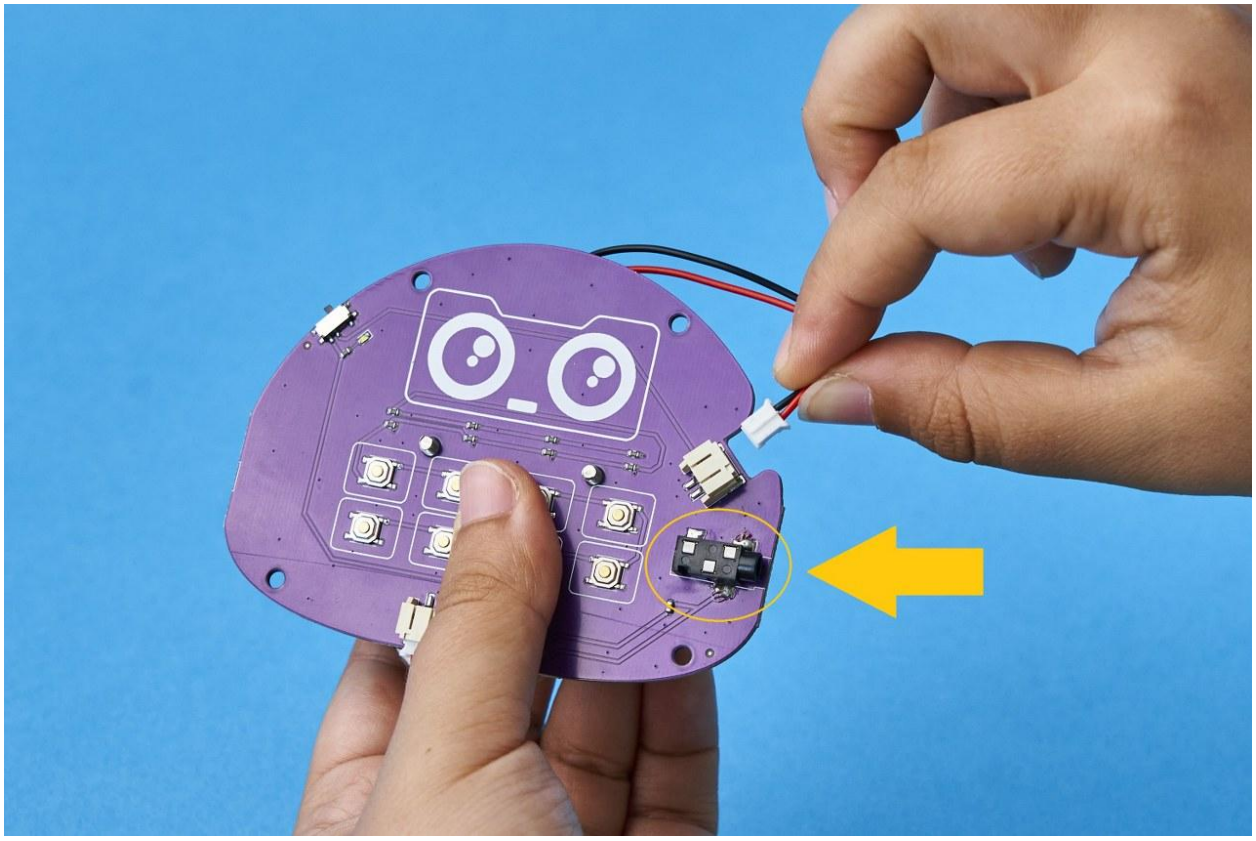


3. Headphone jack

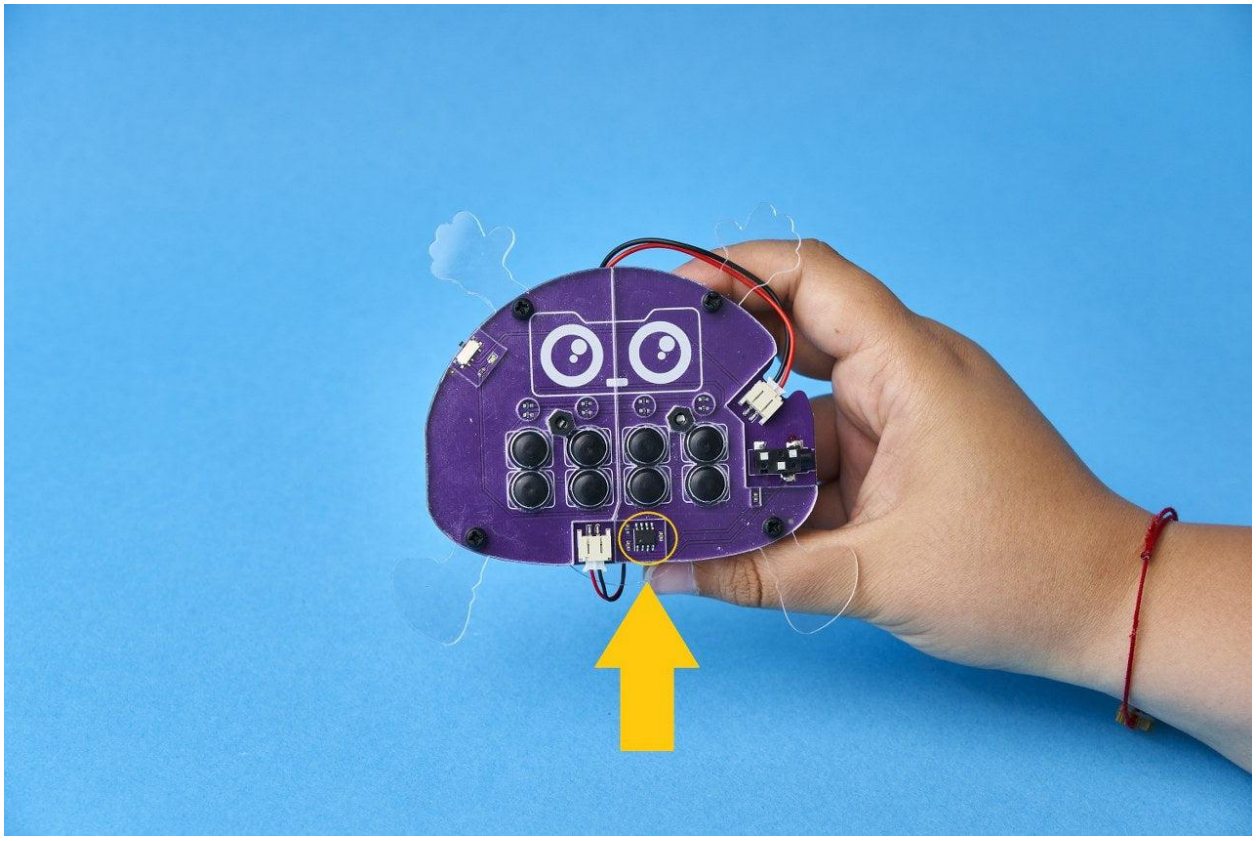
This is a headphone jack for standard headphones/earphones.

Sorry - no wireless headphones here!

Once you start making music on your Buttons, you can plug in the headphones, and the sound will automatically transfer from the speakers to the headphones.



4. The 555 Timer IC

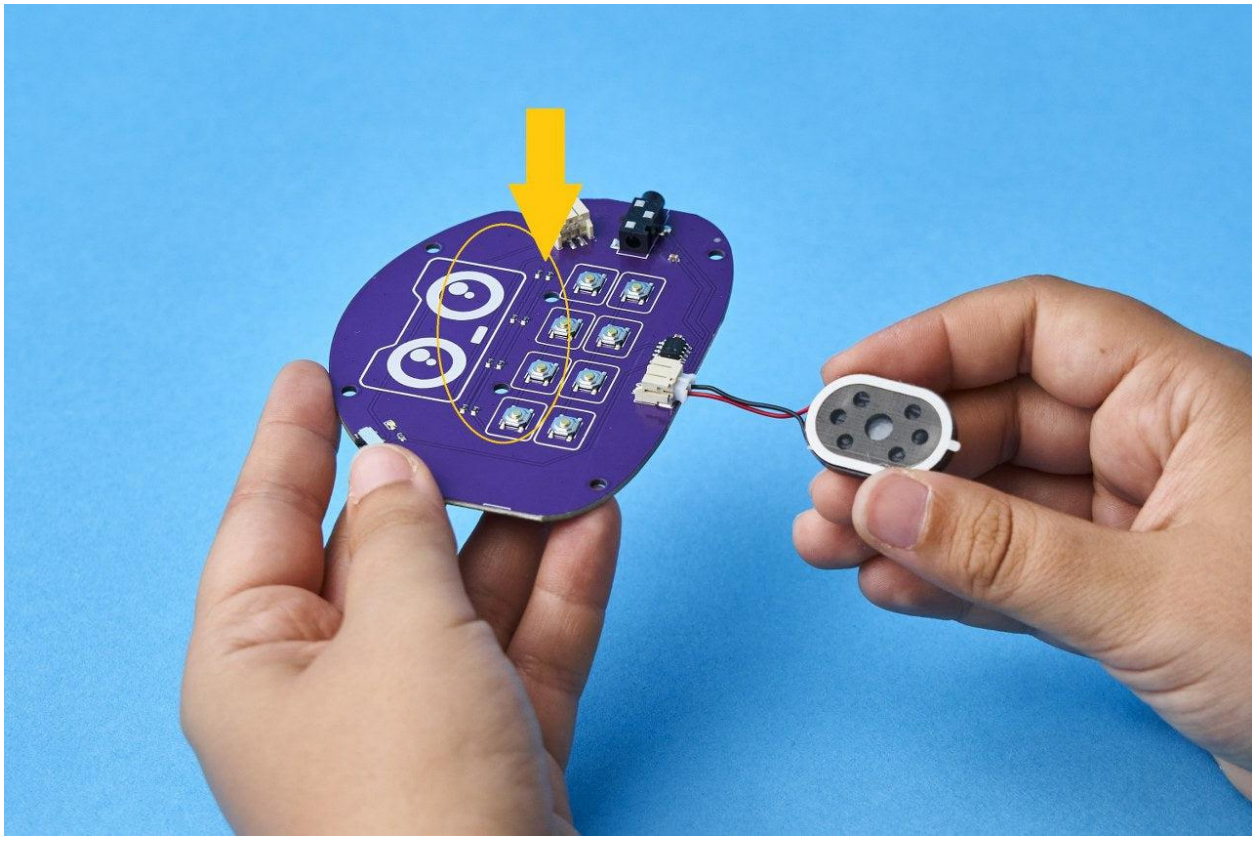


This component is used in a variety of applications from timing and oscillation circuits to pulse generation and control systems.

One of the key features of the 555 timer IC is its ability to generate precise and stable time delays.

5. Resistors

These resistors don't look like the ones you saw on our previous Wacky Robots.



Resistors are the little dots above the pushbuttons.

They are linked to the pushbuttons and the oscillator. Because each resistor has a different resistance, pressing each button produces a different sound.