CircuitPet Anatomy Guide

CircuitPet's anatomy

Explore the board

Welcome to CircuitPet's anatomy guide!

Whether you have already assembled your CircuitPet or not, this will be a helpful guide where you'll learn a bit more about the soldered components, small connections, and drivers.

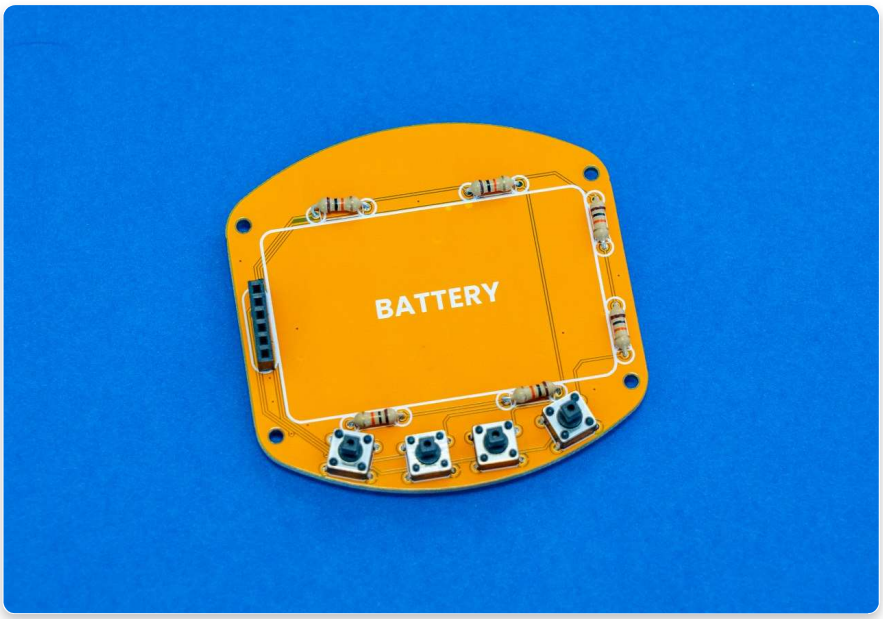
We'll start with bigger components and cover smaller components later in the guide.

Exploring the boards

Starting with anything else but the PCB and display board itself would be wrong. Therefore, we present to you the stars of the night...

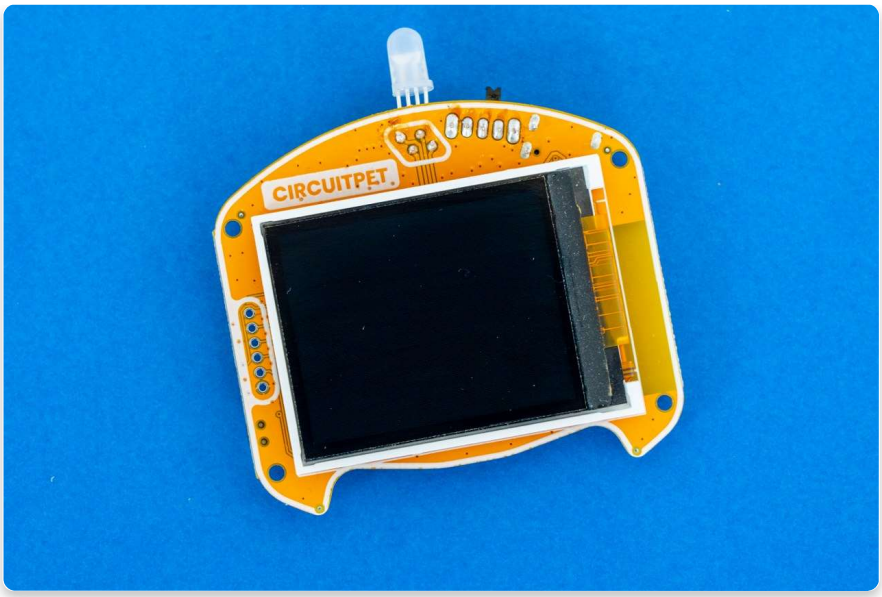
PCB stands for a printed circuit board. This fiberglass board has copper traces, protective paint, and insulating material.

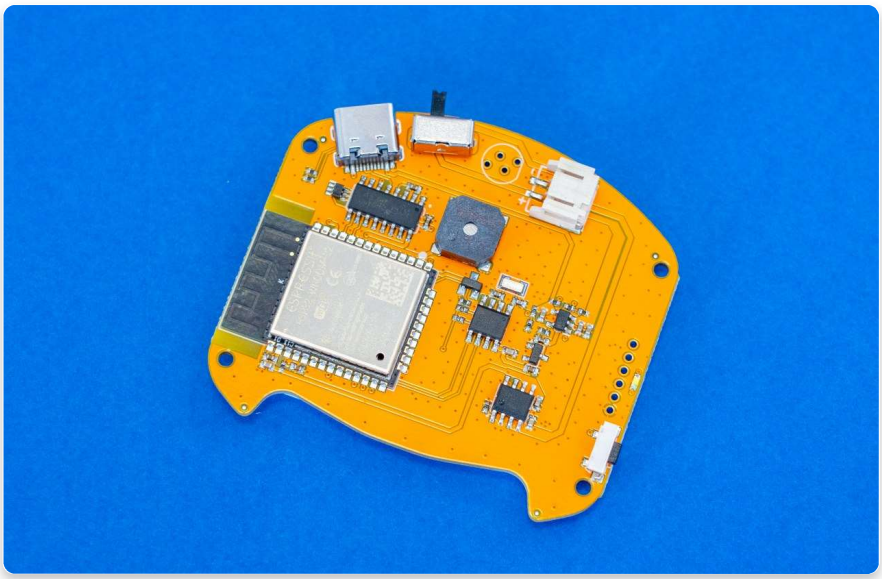
Thanks to all the copper lead on the board, all the connected or soldered components can communicate with each other.



Just like with other CircuitMess devices like Nibble or Spencer, we want our components not only to work wonders but to look cool as well! Therefore, we designed some pretty fun patterns you can see on the board.

Display board





ESP-WROOM-32

This microcontroller runs everything, and you could say that this is CircuitPet's brain. ESP-WROOM-32 is a powerful module mainly used for sound encoding and streaming music. It is reasonably priced considering all its abilities.

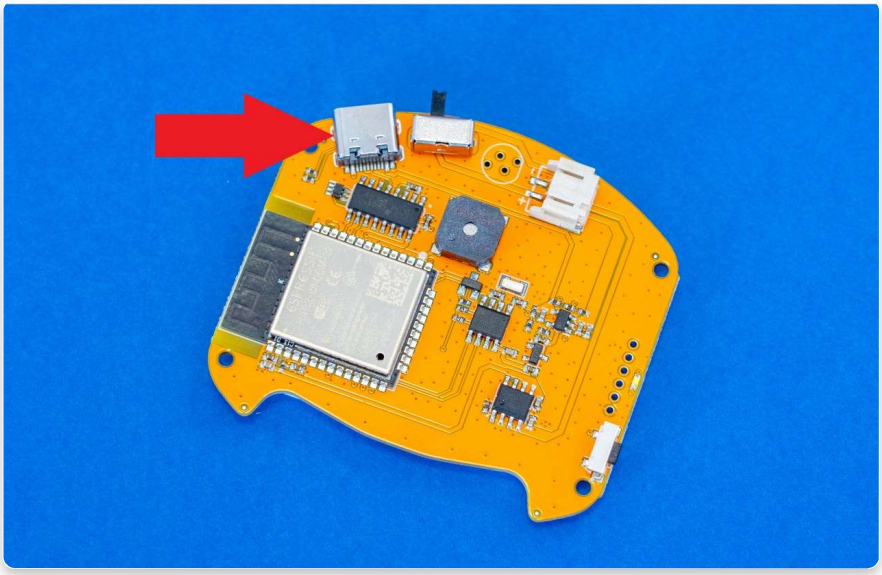
Apart from being famous for sound encoding, ESP-WROOM-32 also controls sliders, encoders, pushbuttons, and LEDs.

Due to its complexity and sensitivity, this module is already connected to CircuitPet's main board.

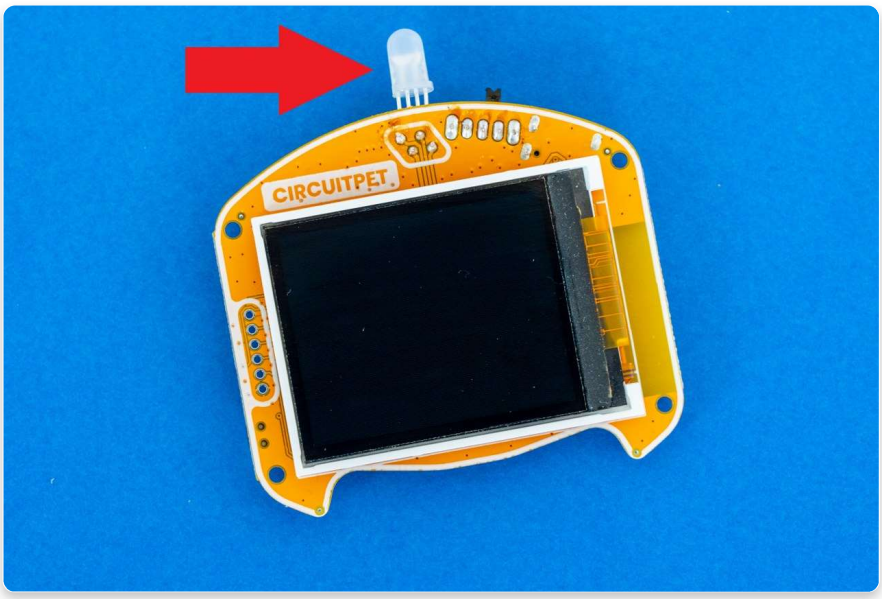
- ESP-WROOM-32 data sheet

USB-C connector

This connector on the top left side of the board is used to connect CircuitPet to the computer and charge its battery. Once you connect it to your PC, you'll be able to program it in CircuitBlocks - a graphical programming interface that helps newbies get into embedded programming.



RGB LED



What do LEDs do?

LED stands for light-emitting diodes.

LEDs convert electrical energy into visible light.

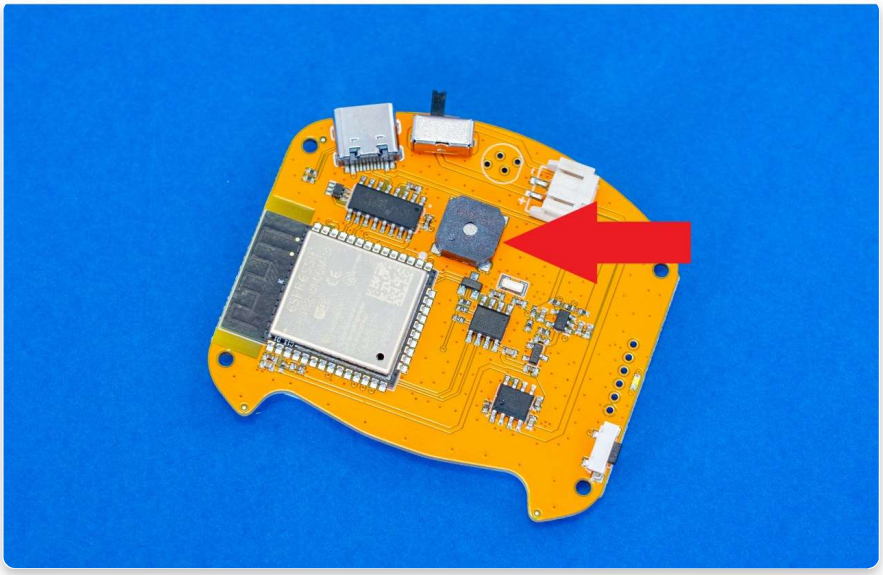
RGB in the name stands for Red, Green, and Blue.
This means that these particular light-emitting diodes can light up in three different colors.

These LEDs are very special because they have a tiny **built-in color-changing chip.**

Buzzer

A buzzer is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric.

The main function of the buzzer is to convert the signal from audio to sound; typically, they are used in alarm devices, timers, etc.

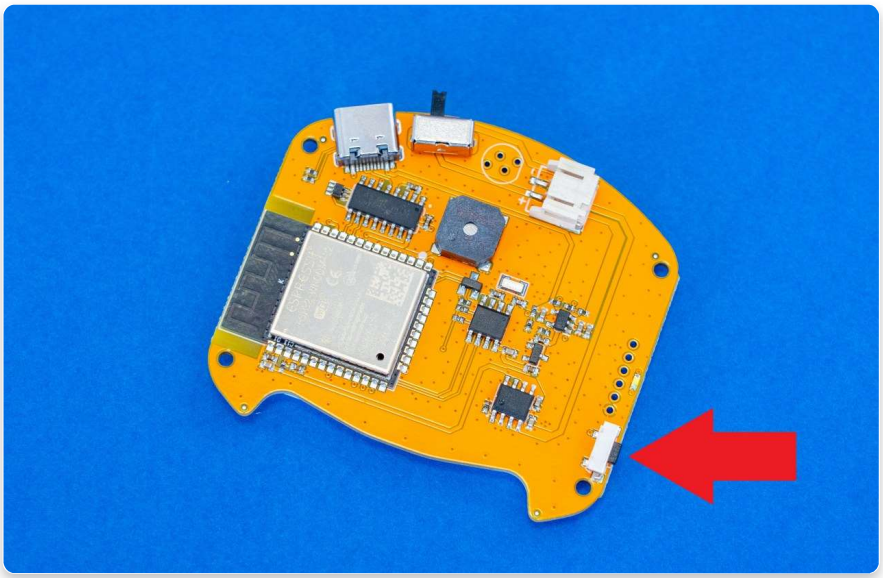


JST-2P connector

This connector is used for manually connecting the battery to the display board.

Reset button

This one's pretty self-explanatory - the reset button is used for resetting the whole device. You can find this useful in case something gets frozen (which is hopefully never).



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Blocks... and more blocks

CircuitPet's block diagram

This is CircuitPet's block diagram. Take a look at the scheme below and feel free to investigate in detail.

It shows how the components like EPS-WROOM-32, display, buzzer, and pushbuttons are connected. It also explains how different inputs are accepted and processed by different drivers and how they affect the outputs.