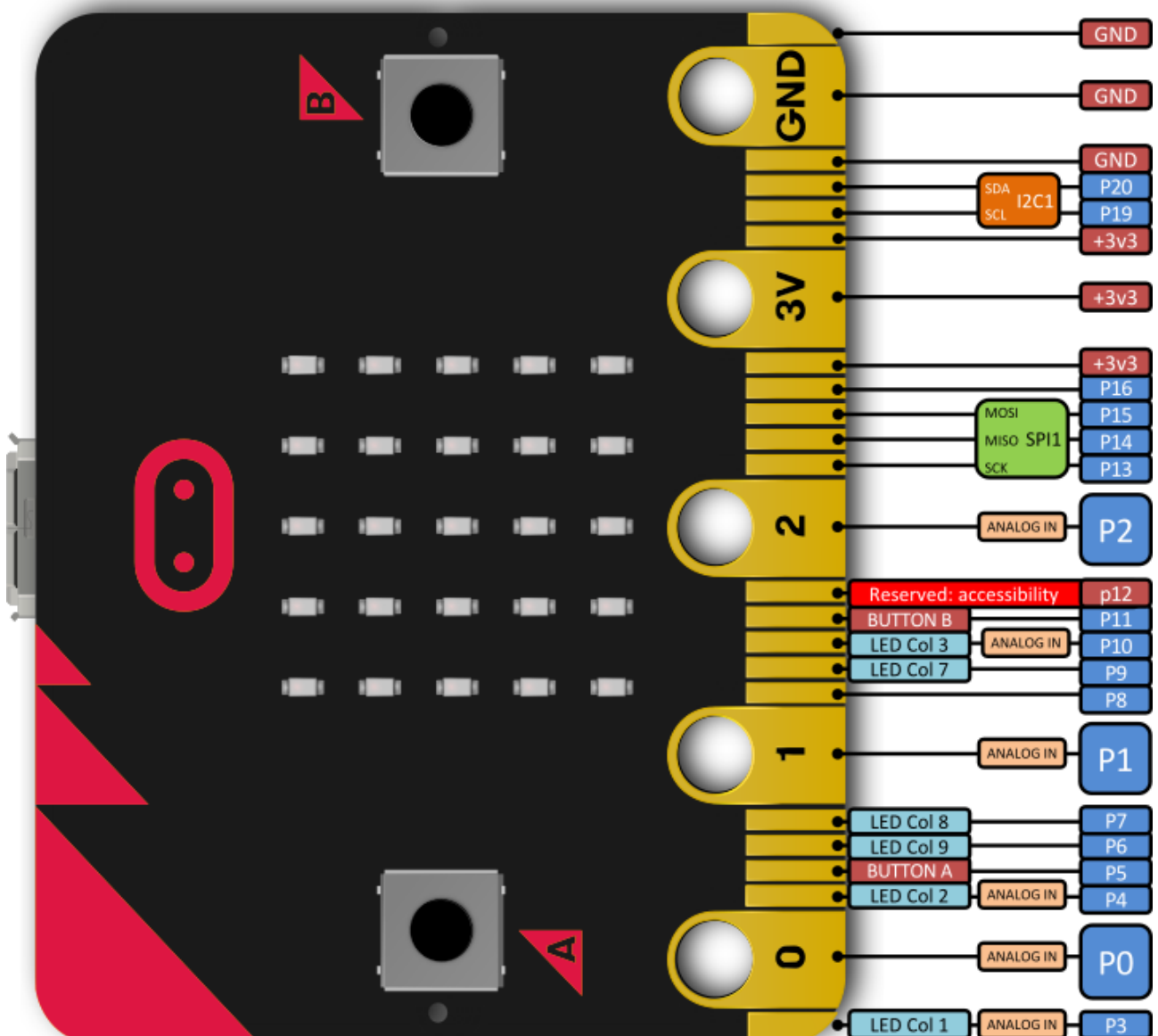


Electronics Engineer!

Hi, I'm an crazy electronics engineer that likes to zap Veronica. Today I will be explaining how to turn Veronica's pen into an electric one that shocks you. Off with the jokes, I will be teaching electronics basics. I like electronics because i can make whatever pops into my head as quick as possible. The basics are: heat aka my wires burn all the time. Resistors are small to very big components that limit current flow by emitting it off as heat. Think of it as a big water pipe that flows into a tiny water pipe. It will flow much slower. The resistor is just that. The coloured bands indicate the resistance in Ohms (Ω) . Leds (Light emitting diodes) must be driven with resistors based on their operating voltage. For example, a red led running on 5 volts must be driven on 220 Ohm resistor. To calculate this amount, Subtract the forward voltage from the supply voltage. Divide this result by the current you have selected. Then pick the closest standard resistor value, preferably a higher value. Calculate the resistor's required power rating by squaring the current and multiplying by the resistance. So far, we have covered leds and resistors. Now onto inductive loads! Inductive loads are pretty much coils of copper or 'shorts' that make any power supply hate you. This is because coils are just wires that generate a magnetic field. They are pretty much just short circuits. Connect it to a micro bit. Boom. Micro bit dead. Well, that is sarcastic. It wont really kill it, It will just draw all the current away and leave the micro bit with no current. You are prob wondering to yourself, what's a micro bit? Well a micro bit is a type of microcontroller. A microcontroller is like a mini computer, but there is pretty much nothing. A micro bit has 2 buttons (4 touch, 2 physical). A micro bit also has a led matrix display that can be used to display things.

Figure 1



As you can see in figure 1, a micro bit is very simple... well that is until you look at the back! The micro bit uses makecode.microbit.org and uses python, javascript and blocks to code. The code is uploaded via webusb. The micro bit has built in radio, bluetooth, compass, accelerometer and for the v2 speaker. 2 micro bits can communicate with each other using radio. Next component, inputs. A simple input is made using 2 spoons and some wires. When the 2 spoons touch, you can make stuff light up or do anything! This is combined into very small scale, as big as your baby teeth. The power of electronics is amazing and you can do ANYTHING with them! Bonus: did you know that some electronic pumps need to be primed (filled with water) before they will work?

Credits: Anthony - writer, Anthony - explainer Anthony - website owner Anthony - website cdn