

# squishycircuits®

## SQUISHY SOUND AND SQUISHY RGB LED ARDUINO SHIELD

### SUPPLIES NEEDED:

- Squishy Shield Kit
- Conductive Dough

### TOOLS NEEDED:

- Soldering Iron
- Side Cutters
- Computer
- Arduino
- Alligator Clips

### KIT COMPONENTS:

- (1) Squishy Shield PCB
- (1) Arduino Header Kit
- (1) Red/Green/Blue (RGB) LED
- (1) Buzzer
- (1) Selector Switch
- (1) 150 Ohm Resistor  
(Brown, Green, Brown, Gold)
- (2) 100 Ohm Resistor  
(Brown, Black, Brown, Gold)
- (4) 470 Ohm Resistor  
(Yellow, Purple, Brown, Gold)

## ASSEMBLY INSTRUCTIONS

### STEP 1

When soldering, it is often easiest to start with the lowest components on the printed circuit board (PCB). In this case, the resistors. All values are marked on the PCB and must be correctly placed. Refer to the 'Kit Components' for the color markings on each resistor. Insert them into the proper holes and bend the leads to prevent them from falling out. Flip the board to the back side and solder them into place.

### STEP 2:

Place the selector switch and the headers onto the PCB and use pieces of tape to hold them in place. Solder the back side.

### STEP 3:

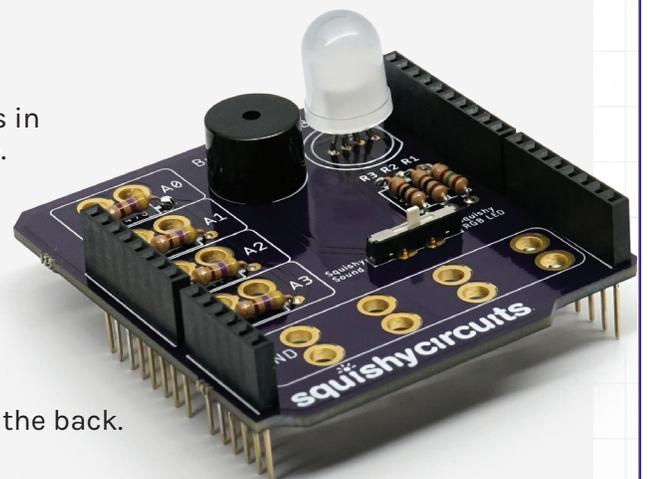
Insert the buzzer onto the PCB. Ensure the pin marked '+' is in the correct hole. Secure with tape and solder the back side.

### STEP 4:

Insert the RGB LED into the PCB. Ensure the longest pin is inserted in the hole labeled 'CC'. Solder the back side.

### STEP 5:

Using a side cutters, carefully cut the excess terminals on the back. **IMPORTANT: DO NOT CUT THE HEADER TERMINALS!**



If you are unfamiliar with Arduino, check out their website at [www.Arduino.cc](http://www.Arduino.cc). This guide does not go into detail about downloading and using their software.

## OPERATING INSTRUCTIONS

### PROGRAM THE ARDUINO

Place the Squishy Shield onto the Arduino. Ensure that all of the pins are in the Arduino headers before pushing down to avoid bending them. Once inserted, plug the Arduino into a computer and open the Arduino software. If you are unfamiliar with this, visit: [www.Arduino.cc](http://www.Arduino.cc)

Program with our sample code: [www.SquishyCircuits.com/SquishyShieldCode.in](http://www.SquishyCircuits.com/SquishyShieldCode.in)

### SQUISHY SOUND

Push the selector switch to 'Squishy Sound' and place a set of alligator clips on the 'GND' and 'A0' connections. Create a conductive dough snake and place paper clips on both ends. Clip the alligator clips to the paper clips. The Arduino will output a tone that is based on the resistance of the dough. The higher the resistance, the higher the pitch.

### SQUISHY RGB LED

Push the selector switch to 'Squishy RGB LED' and place alligator clips on 3 'GND' and 'A1', 'A2', and 'A3' connections. Create 3 dough snakes and place paper clips on both ends. Clip the other ends of the alligator clips to the paper clips. Each dough snake controls the color of one color (red, green, or blue) of the LED based on the resistance of the dough. The higher the resistance, the dimmer the LED brightness.

NOTE: Squishy Sound dough must be disconnected or it may not function correctly.

### GET CREATIVE!

Try changing the code to:

- Increase or decrease the Squishy Sound pitch.
- Blink the LED at different speeds based on the dough's resistance.
- Create a dough 'piano' and map out different pitches at different locations on the dough. Use the Serial Monitor to help.
- And more! The possibilities are endless! When the selector is 'Off' you can use the 'A0' - 'A3' and 'GND' connections and add your own output devices to the headers!

