

CIR-KIT™
BREADBOARD BUNDLE

SILICON FUZZ

BUILD GUIDE

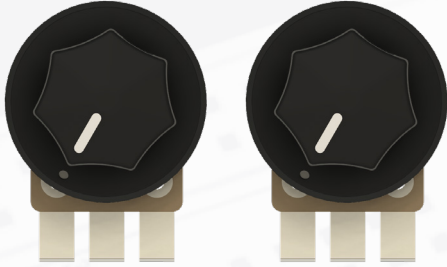


DIY

BY COPPER SOUND PEDALS

INCLUDED COMPONENTS

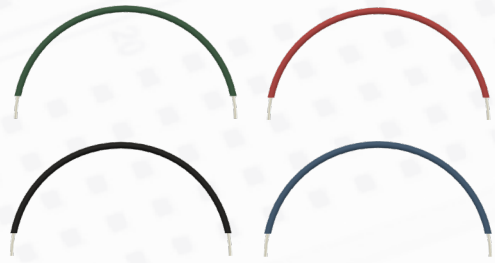
Potentiometers



B1K
x1

A100K
x1

Precut Wire



1.5" Red, Black, Green, Blue
x40

Transistors & Capacitors



Transistor
2n5088
x2



Film Caps
(various)
x2



Ceramic Cap
100p
x1

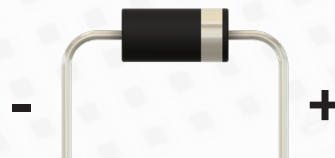


Electrolytic Cap
(various)
x3

Resistors & Diodes

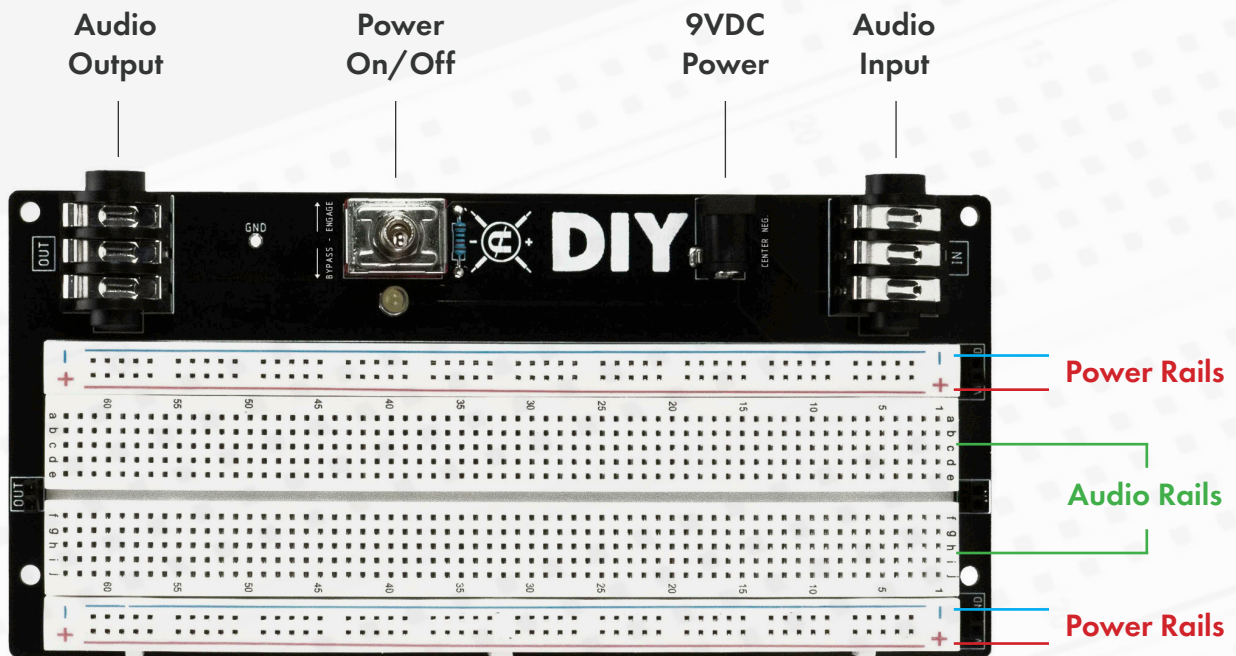


Resistors
(various)
x5



Diode
1n4001
x1

BREADBOARD FLOW

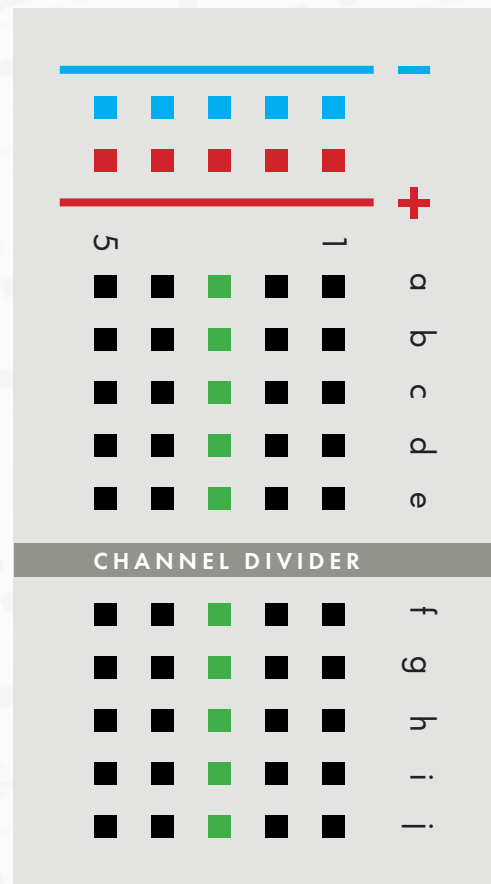


Power rails flow horizontally.

The **negative** rail will connect to the pin header marked **GND**, and the **positive** rail will connect to the pin header marked **VCC**.

Audio rails flow vertically.

Channels **a-e** are connected, and channels **f-j** are connected.



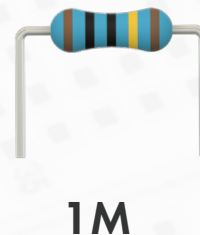
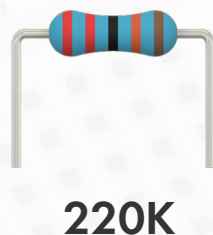
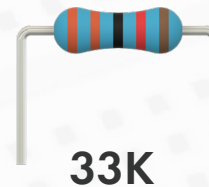
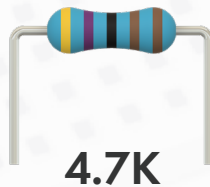
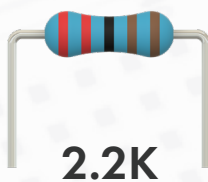
READING RESISTORS

Reading resistors may seem intimidating, but it's a very important aspect of breadboarding and is actually very easy! To determine the resistor value, follow the table and colors below. To ensure you are reading the correct value, keep in mind that the tolerance band is always found on the far right.



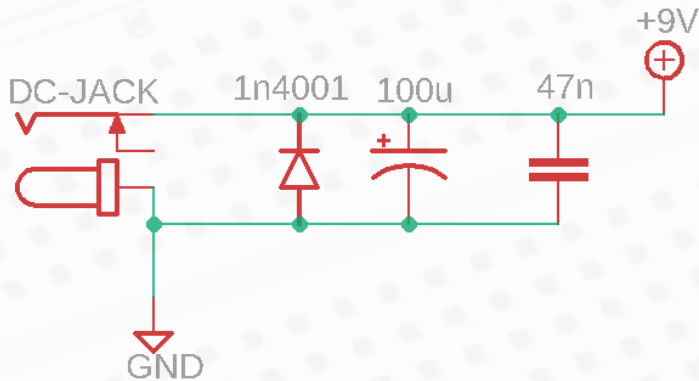
COLOR	1ST BAND	2ND BAND	3RD BAND	DECIMAL MULTIPLIER		TOLERANCE	
BLACK	0	0	0	1	1		
BROWN	1	1	1	10	10	±	1%
RED	2	2	2	100	100	±	2%
ORANGE	3	3	3	1K	1,000		
YELLOW	4	4	4	10K	10,000		
GREEN	5	5	5	100K	100,000		
BLUE	6	6	6	1M	1,000,000		
VIOLET	7	7	7	10M	10,000,000		
GRAY	8	8	8		100,000,000		
WHITE	9	9	9		1,000,000,000		
GOLD					0.1	±	5%

Shown below are the resistors and values that we'll be using in this build.



STEP 1 | POWER FILTERING

Power filtering helps to filter unwanted noise from power supplies, while preventing incorrect polarity from damaging the circuit. Ensure that polarized components (diode + electrolytic capacitor) are inserted correctly. In the schematic below, the power shows 9V, whereas the breadboard shows VCC. Please note that for the majority of pedal circuits, these terms are interchangeable.



1.5" Red
x1



1.5" Black
x1



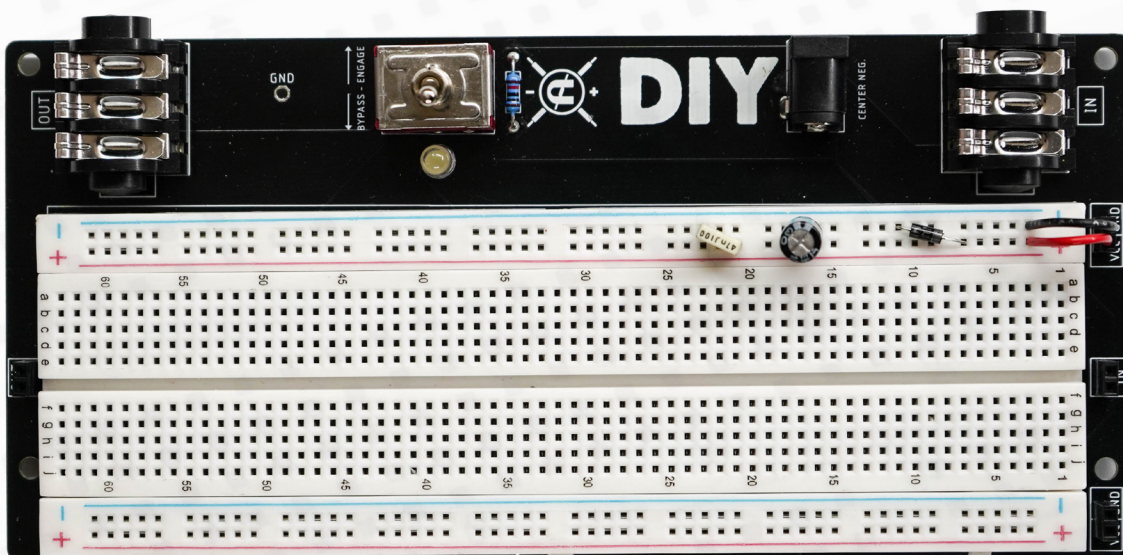
1N4001
x1



100u
x1

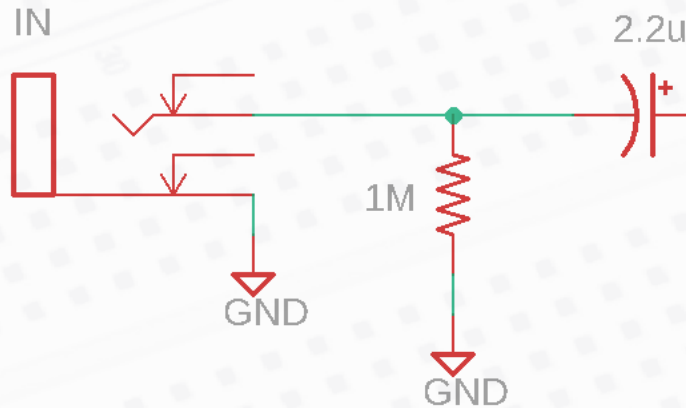


47n
x1

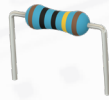


STEP TWO | INPUT

The input capacitor blocks AC signal, while setting the amount of low frequency audio allowed into the circuit. The pull down resistor prevents popping from the switch.



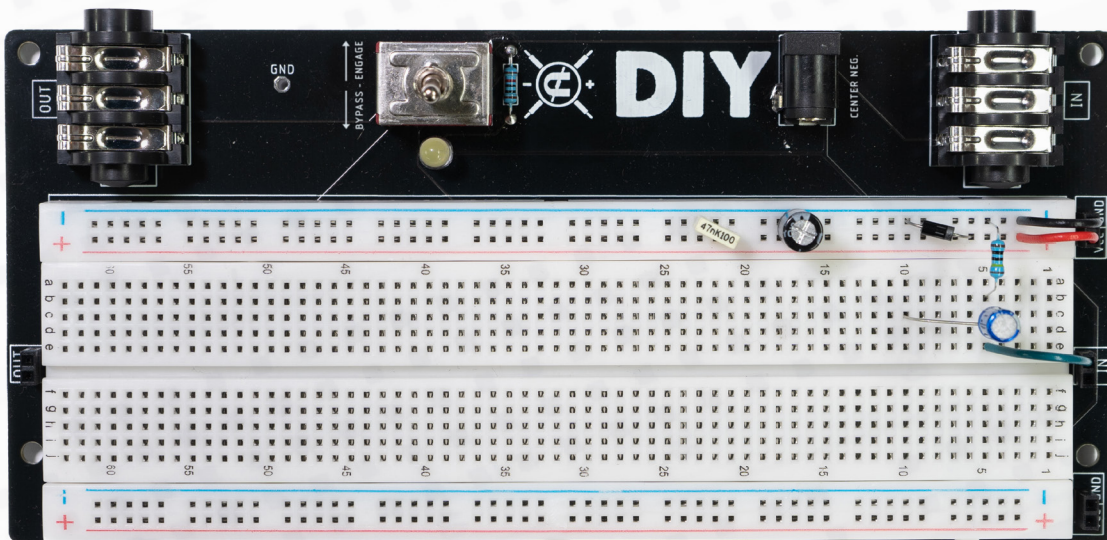
1.5" Green
x1



1M
x1

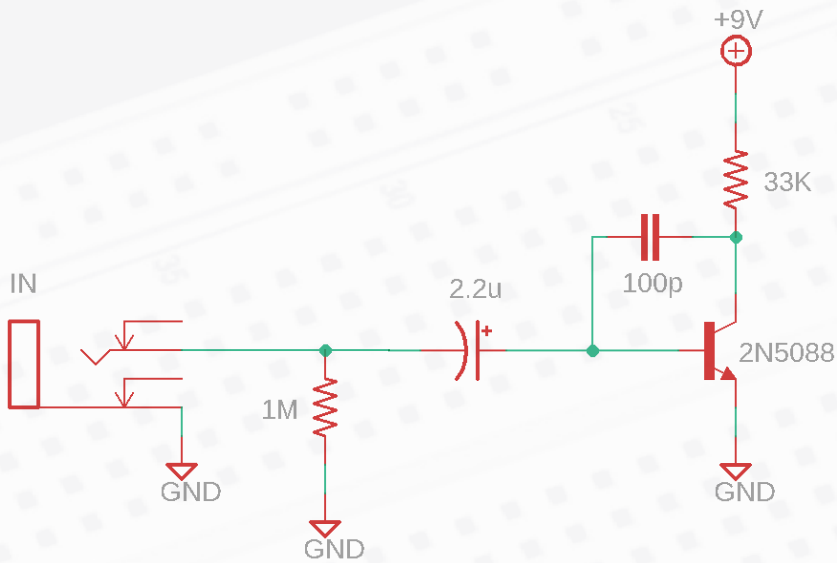


2.2u
x1

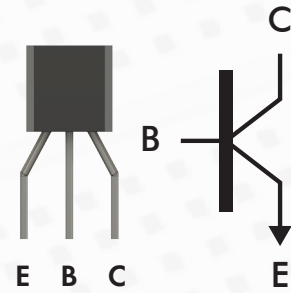


STEP THREE | GAIN STAGE 1

Signal enters the first transistor, and is amplified, based on the value of the bias resistor.



TRANSISTOR PINOUT



1.5" Green
x1



1.5" Black
x1



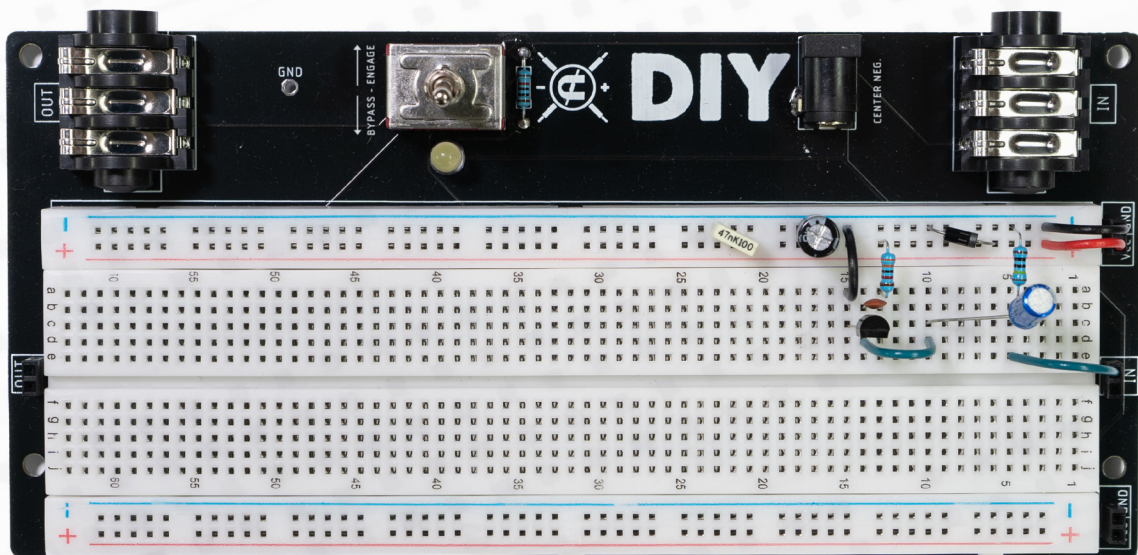
33K
x1



100p
x1

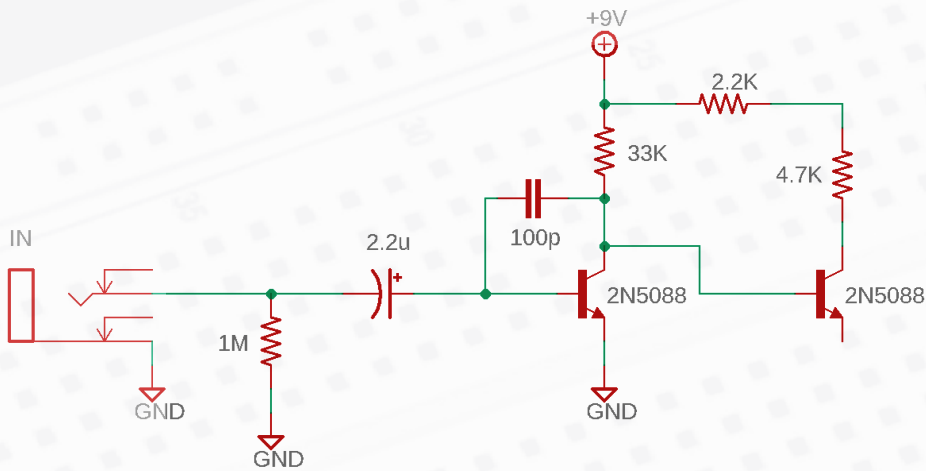


2n5088
x1

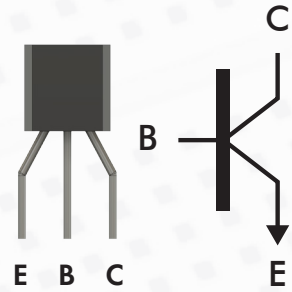


STEP FOUR | GAIN STAGE 2

Signal enters the second transistor, and is further amplified to the point of clipping.



TRANSISTOR PINOUT



1.5" Green
x4



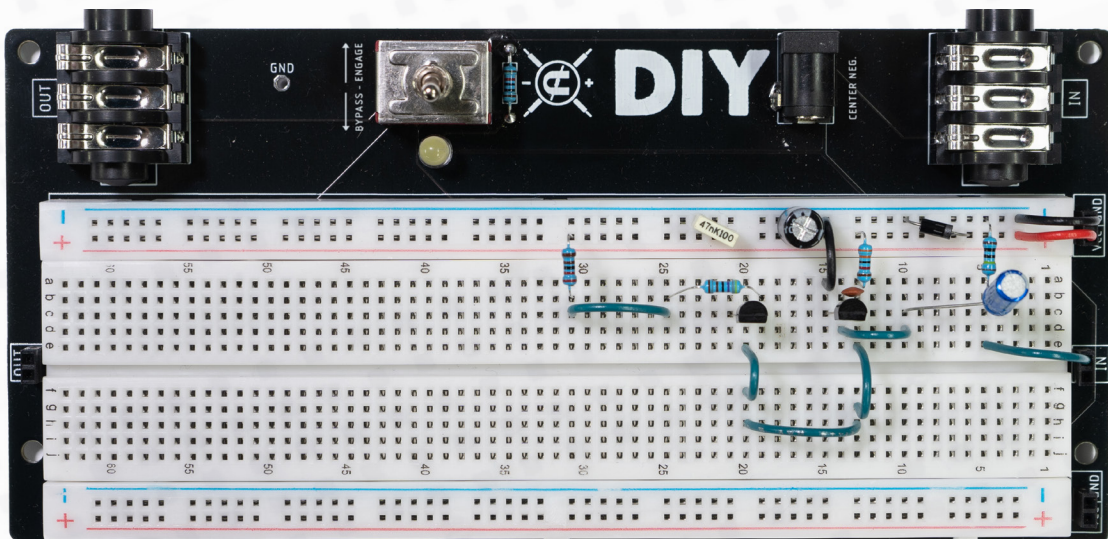
2.2K
x1



4.7K
x1

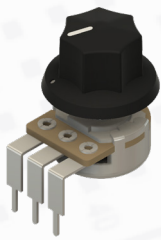
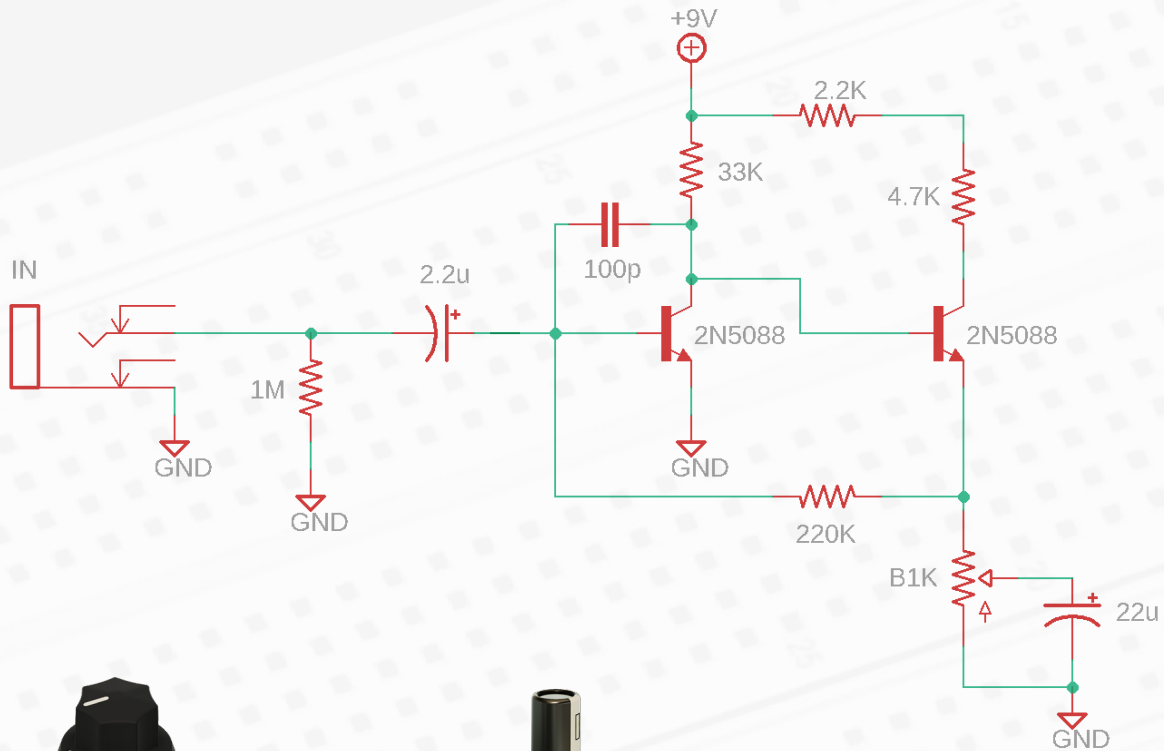


2n5088
x1



STEP FIVE | FUZZ CONTROL

The 220K resistor completes a feedback loop from transistor 2 to transistor 1, and the B1K potentiometer varies the bias on transistor 2, changing the fuzz characteristics.



B1K
x1



220K
x1



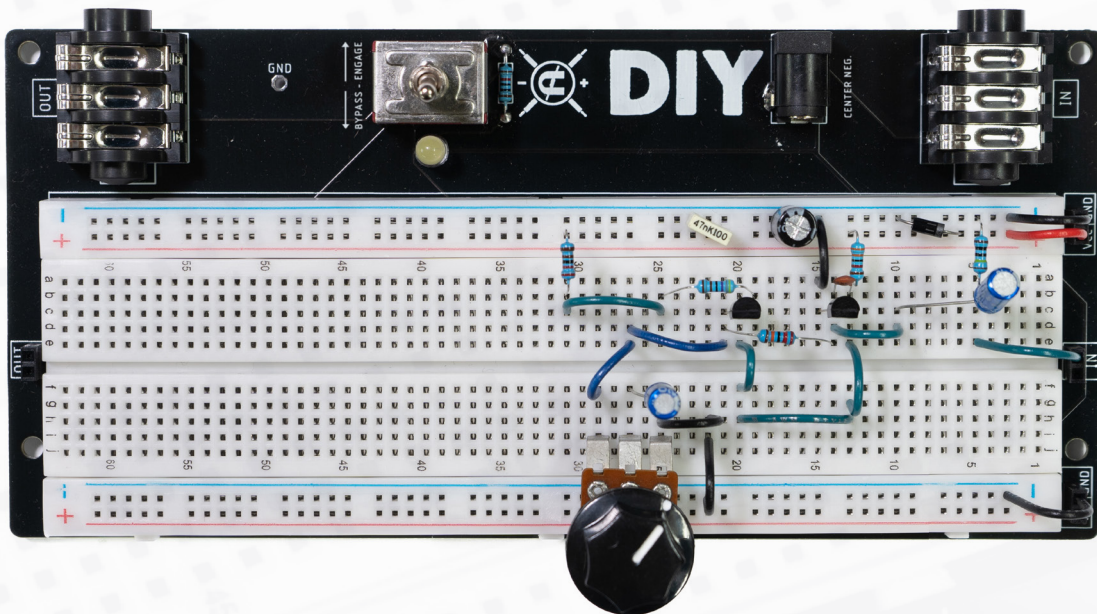
22u
x1



1.5" Black
x3

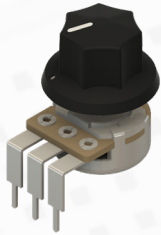
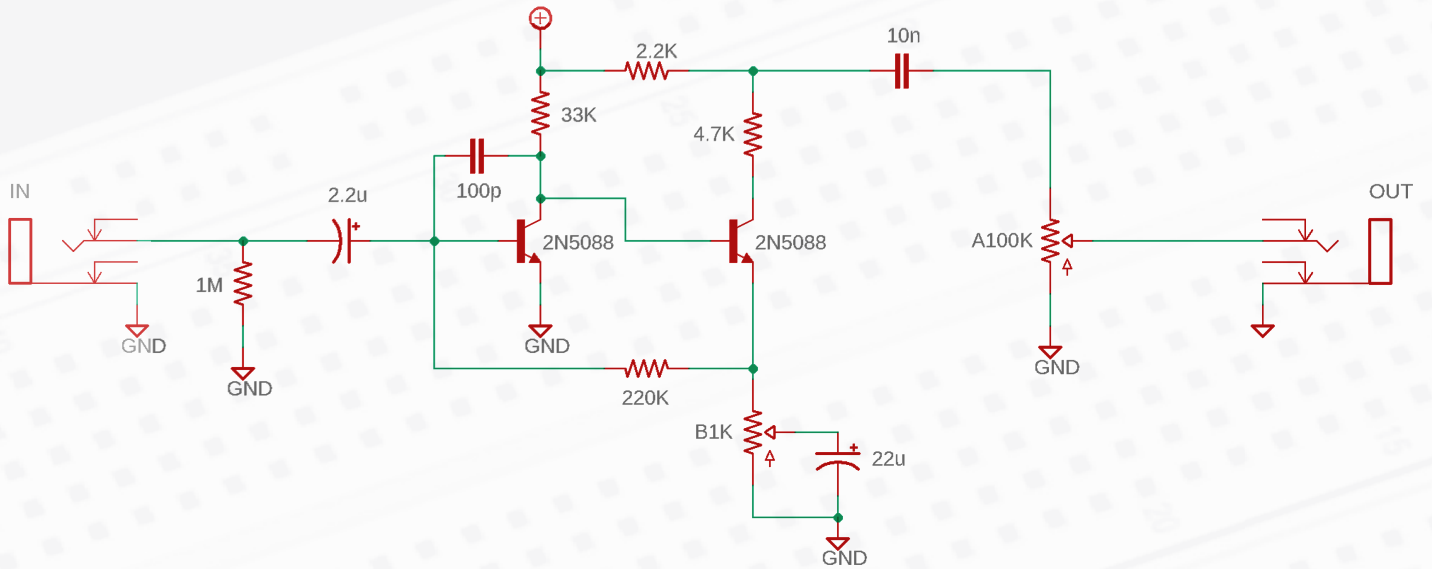


1.5" Blue
x2



STEP SIX | OUTPUT

The volume knob acts as an attenuator, setting the output volume of the circuit.



A100K
x1



10n
x1



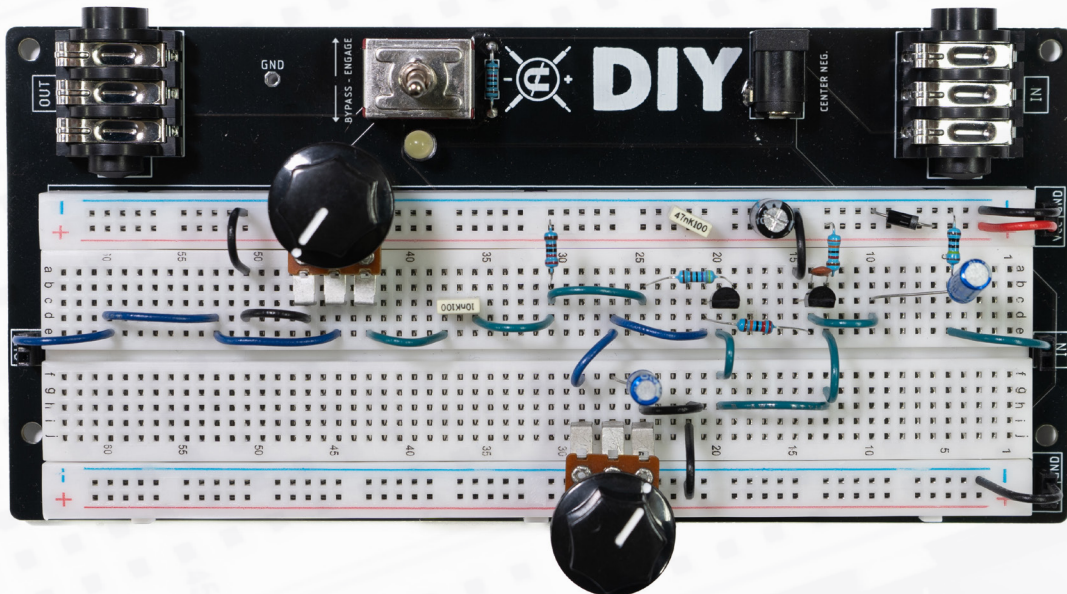
1.5" Green
x2



1.5" Black
x2



1.5" Blue
x3



TROUBLESHOOTING

Not getting power to the Power Rails/LED is not turning on when the toggle switch is set to the 'Engage' position.

Check that the proper connections are being made from the "VCC" & "GND" pin headers to the Power Rails. Pay attention to the orientation of Polarized components (Diodes and Electrolytic Capacitors).

Check the polarity of your power supply. Breadboards require "Center negative" polarity (as is with the power supply shipped with the bundle).

Not getting any effect when the toggle switch is set to the Engage position.

Most common issues will pertain to the proper connections being made. This could be as simple as a component being 1 slot away from the correct Audio Rail.

Check that transistors are in the correct orientation, and not flipped around 180 degrees.

Getting effect when toggle switch is set to Engage, but it doesn't sound as expected.

Check that the transistor is in the correct orientation and not flipped around 180 degrees. Check that the resistors are in the correct place and didn't get swapped with a different value. Pay attention to the orientation of Polarized components (Diodes and Electrolytic Capacitors).

Still stuck? Please reach out to us with any questions you have! We're here to help. Email us at:

diy@coppersoundpedals.com

