

Oreo Ringer: Build Document

Carcharias Effects

August 2020

1. About This Circuit

The **Oreo Ringer PCB** started out as a simple clean octave-up based on Dan Armstrong's famous Green Ringer. I originally built one for my good friend Yonatan, who tried it out but was unsatisfied that the octave was not that obvious. He also complained about a loss of gain when the pedal was on. So I did what I had to do as a pedal builder, and went straight to the lab for some good old R&D, while also thumbing deeply through the stompbox forums.

A few simple mods and some splicing and dicing later, and I realized that I actually had a suped-up octave-up that can reach fuzz capabilities! You **could** just use it to hone in on that clean octave above your tonic, exaggerating some great harmonics generated by your favorite Fuzz Face.

But why stop there? I say, **let's blow shit up** with the **Gain** knob, pushing the original schematic's intentions way out of balance and making that octave not only obvious, but overt, even obnoxious. And that **gain loss**, which was a common symptom of clones of the original circuit, was now eradicated with the help of a healthy volume booster. Now you've got plenty of headroom to give that octave-up some real personality. Go ahead, push it further to those weirdo fuzz tones without losing any gain.

If I had to name-drop the tones that this Oreo Ringer PCB circuit reminds me of, I would have to go with the songs that I most frequently use to test this circuit: "Cosmik Debris," "Purple Haze," and "Icky Thump."

This circuit slightly diverges from other circuits I normally make, because I would have to say that it most obviously works as intended with guitar signals. Bassists would certainly benefit from the same type of snarl as it does from other [octave-up effects](#) like, say, the [Foxy Tone Machine](#). But honestly, though, that octave can be achieved on any piece of wood I've tried above the 12th fret. So have a ball.

Note that this is the price only for the circuit board. You will need to source your own parts.

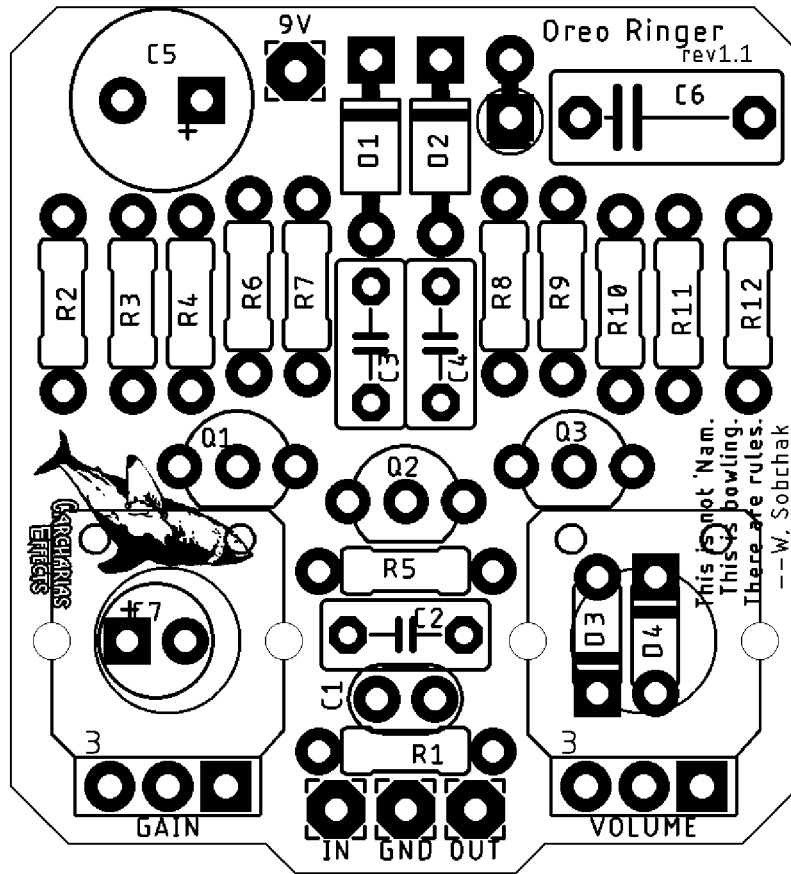
2. Controls

The following are the standard external controls for this pedal:

- **Gain** — Controls the amount of gain in the circuit, taking it from a more clean octave up (CCW) to a more nasally, distorted tone (CW).
- **Volume** — Controls the level of the circuit's output volume boost.

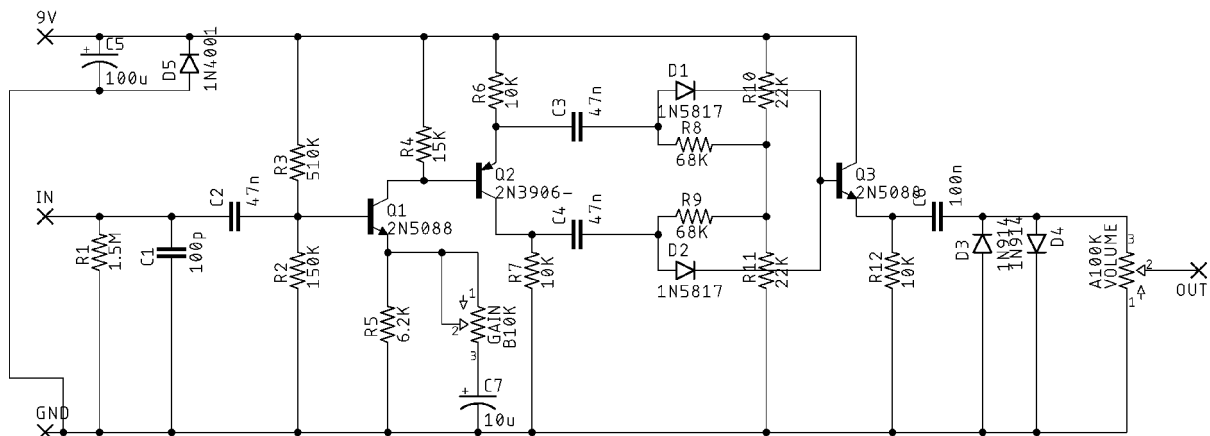
3. Circuit Board

The following is a screen capture of the printed circuit board (PCB):



4. Schematic

The following is a screen capture of this circuit's schematic, which can be used for reference when debugging:



5. Bill of Materials

You will need the following components to complete your build:

Qty	Value	Parts	Description
1	100p	C1	Capacitor - Ceramic
3	47n	C2, C3, C4	Capacitor
1	100u	C5	Capacitor - Electrolytic
1	100n	C6	Capacitor
1	10u	C7	Capacitor - Electrolytic
1	1.5M	R1	Resistor
1	150K	R2	Resistor
1	510K	R3	Resistor
1	15K	R4	Resistor
1	6.2K	R5	Resistor
3	10K	R6, R7, R12	Resistor
2	68K	R8, R9	Resistor
2	22K	R10, R11	Resistor
2	2N5088	Q1, Q3	Transistor (NPN)
1	2N3906	Q2	Transistor (PNP)
2	1N5817	D1, D2	Diode
2	1N914	D3, D4	Diode
1	1N4001	D5	Diode
1	B10K	GAIN	Potentiometer (9mm)
1	A100K	VOLUME	Potentiometer (9mm)

6. Build Notes

The following are a collection of notes, comments, and tips about this circuit.

- As parts of this circuit are based on the Green Ringer, it is important to take the time to measure and match the following pairs of components to get the best results out of the octave up mechanism (they're also in **bold** in the table above to make things a bit easier to read):
 - D1 + D2 (1N5817)
 - C3 + C4 (47n)
 - R6 + R7 (10K)
 - R8 + R9 (68K)
 - R10 + R11 (22K)

You can use a DMM or some other component tester (they can be found pretty cheap online) to measure voltages for the diodes, capacitance for the capacitors, and resistance for the resistors.

The important thing here is that these components are as closely matched to one another as possible, regardless of how exactly they match the specified value. For example, let's say out of all your 22K resistors, the closest two that match both have a value of 20.62K ohms. It is okay to use these, even though neither of them are exactly 22K ohms.

- The circuit fits pretty nicely in a 1590A-style enclosure, particularly if you use 9mm potentiometers to externalize the controls, and measure your other hardware placement carefully. If you don't want to have any externalized controls, i.e., you're the "set-it-and-forget-it" type, then just solder in a top-adjusting, 25-turn cermet trimmer. You can also use 16mm potentiometers, but that will probably mean that they will have to be aligned asymmetrically on the enclosure face.
- Just in case it isn't clear on the PCB (actually, I am certain it isn't), D5 is supposed to be the diode at the top right of the circuit board, just to the right of D2 and to the left of C6. Its cathode is the bottommost (square) pad.

Terms of Use

The printed circuit board (PCB) discussed herein may be used for DIY purposes, such as personal builds or small commercial operations. This PCB may not be resold as part of a commercial kit. Resale from peer to peer is approved.

I do not claim any cloned circuit (whether partially or entirely) as the intellectual property of Carcharias Effects, nor am I in the business of intentionally violating any copyrights. Unless otherwise noted, many of the circuits available on carchariaseffects.com are based on schematics that represent the works of many hardworking people who came before me, who have designed many wondrous and unique electronics for musicians. I am just one guy with a hobby and love for these electronics, and designing and selling these PCB's is simply one way that I can ensure that my hobby continues to be self-sustaining.

Change Log

- **Rev1 (August 19, 2020):** First draft of this document, includes all standard features. This document corresponds to **PCB rev1.1**.

Contact

If you encounter any problems or issues with the PCB, or have any questions or comments, feel free to reach out to me anytime. I will try my best to be as responsive as possible. Here are the best ways to reach me:

- Instagram/Facebook (DM): **Carcharias.Effects**
- Email: carcharias.effects@gmail.com
- Web: www.carchariaseffects.com/contact

I love seeing pictures of other peoples' builds, so feel free to tag me (**carcharias.effects**) on Instagram or Facebook.

Best of luck and happy building!