

THE ARCADIIATOR

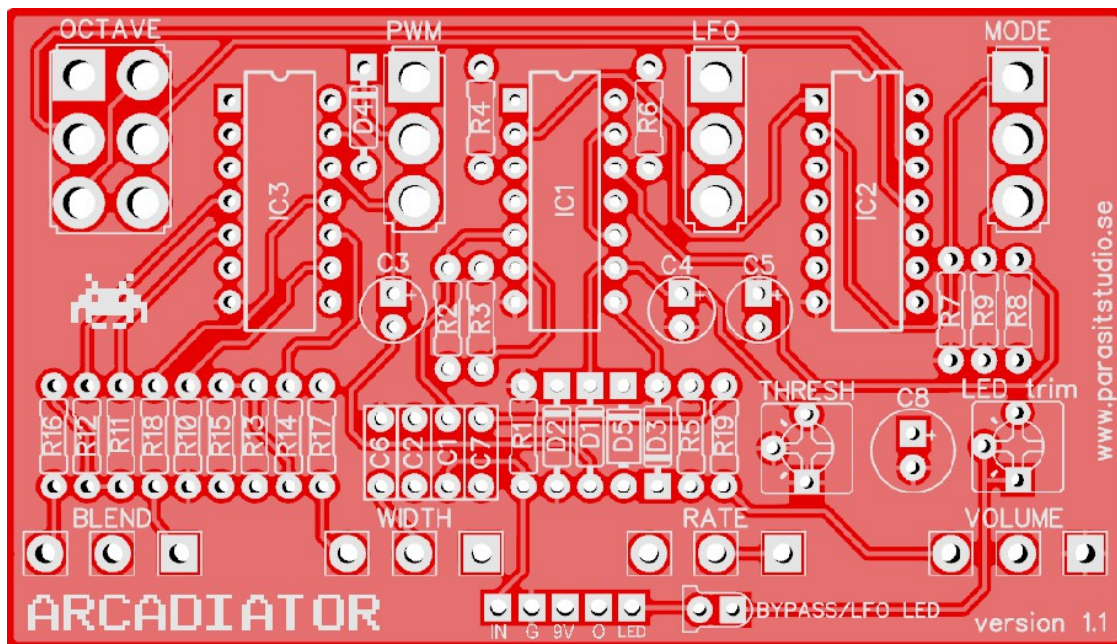
Build Document last updated dec 2015
for PCB version 1.1

The Arcadiator is an insane 8-bit sounding fuzz. It does octave down (one or two octaves), alternating octaves, octave up and pulse width modulation.

The pulse width modulation signal blended with the octave down gives it a retro game'ish sound that brings backs memories of the 8-bit era of videogaming. With all switches down it can also do ear-ripping octave up fuzz.

This circuit works best with high output pickups. It is a gated circuit by nature of the CMOS logic. If you are using single coils and need more sustain, try a boost or compressor in front. To improve tracking of the octave down, use your neck pickup with the tone rolled off.

Happy playing!



Note that this PCB layout is different than the rullywow.com PCB and uses different BOM's. It also has a few minor changes: added polarity protection, DC filtering and a optional LED trimmer on board.

Controls

SWITCHES

- **MODE:** Turns the octave down on/off. With the LFO engaged the mode switch changes between alternating octaves down or just octave down and unison. It can make a choppy "tremolo" of the octave down depending on how the blend pot is set.
- **LFO:** This turns the LFO/alternating octaves on/off
- **PWM:** This toggles between Pulse modulated signal or Octave up
- **OCTAVE:** This toggles between one or two octaves down

POTENTIOMETERS

- **RATE:** Controls the rate of the LFO / alternating octaves modulation
- **WIDTH:** Controls the pulse width or the intensity of the octave up
- **BLEND:** Blends between PWM/Octave up and Octave down
- **VOLUME:** Controls the overall volume

Think of the Arcadiator as having two signal paths:

- Path one is square wave fuzz (blend in CCW position) – this path is affected by:
 - the PWM switch
 - the WIDTH pot.
- Path two is octave down (blend in CW position)
 - this path is affected by:
 - the LFO switch
 - MODE switch
 - RATE pot
 - OCTAVE switch

General builds tips

- Solder the low profile components first, from short to tall height. Recommended order: resistors, diodes, IC socket, film-caps, electrolytics, pots and switches
- CMOS chips are very sensitive to static charges and can be easily damaged. It's a good idea to wear an anti-static wristband or at least avoid wearing a wool jumper and petting your cat/dog while building...
- Always use sockets for IC chips and transistors to avoid heating them directly. It also makes it much easier to swap them out if needed.
- Pay special attention to the orientation of the diodes and electrolytics.
- The square pad represents pin 1 of each pot.
- There are a LOT of switches and pots on this PCB. Be sure to place them in the PCB without soldering first, THEN place them in your drilled enclosure. Gently tighten the nuts to the enclosure, then solder LAST. Otherwise, it will be really hard to get this in your enclosure.
- This PCB's is designed for 16mm Alpha PCB mounted angled pots. You could also use solder lug type and just tack some "legs" with short pieces of wire to each pot to mimic a PCB mount type. Again, it is a very good idea to drill holes in your enclosure first, and mount the pots with the nuts BEFORE soldering the pots to the PCB. This ensures you won't put a lot of stress on the PCB.
- Both the pots, the switches and the board mounted LED is meant to be mounted on the bottom (solder side) of the board, and soldered from the top (component side).

Wiring

For more info on how to wire up the stomp switch, jacks ect, please visit the Parasit Studio website and download the PDF called "offboard wiring". You can find it here:

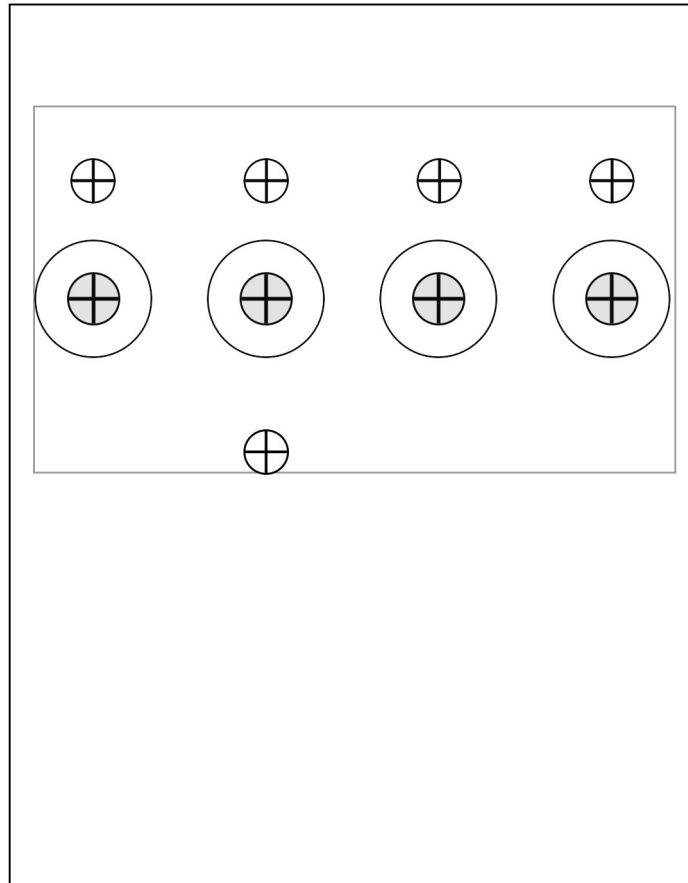
<http://www.parasitstudio.se/build-docs.html>

The Arcadiator Bill Of Materials (BOM)

Resistors		Capacitors		IC's	
R1	1M	C1	100nF	IC1	CD4069
R2	1M	C2	2.2nF	IC2	CD4024
R3	22K	C3	2.2uF	IC3	CD4070
R4	1M	C4	1uF		
R5	10K	C5	1uF		
R6	27K	C6	10nF	Potentiometers	
R7	100K	C7	100nF	BLEND	B500K
R8	1K*	C8	100uF	WIDTH	C500K
R9	100K			RATE	B200K
R10	100K			VOLUME	A100K
R11	100K			THRESH (trim)	200K
R12	100K			LED* (trim)	10K
R13	100K				
R14	100K				
		Diodes		Switches	
R15	10K	D1	1N4148	OCTAVE	DPDT on/on
R16	10K	D2	1N4148	PWM	SPDT on/on
R17	47K	D3	1N4148	LFO	SPDT on/on
R18	100K	D4	1N4148	MODE	SPDT on/on
R19	100K	D5	1N5817		

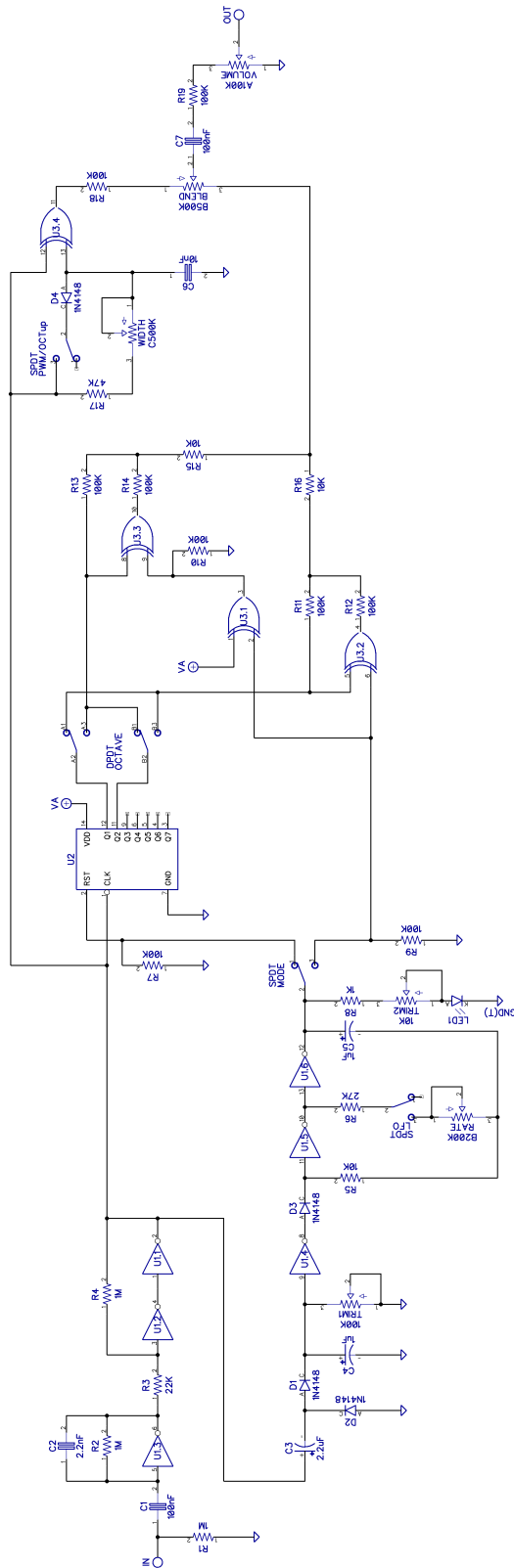
- Note that the LED for bypass/rate is not included in the BOM.
- The LED trimmer is optional. Without it, put a link between the top and bottom trimmer-holes and increase R8 to 4.7K or the appropriate current limiting resistor value for your LED.
- The threshold trimmer sets the threshold and relesetime for the gate that turns on the LFO when playing. It's a leftover from "The Corruptor" and could probably have been a fixed resistor in this circuit, so it doesn't have to be exakt, just set it so the LFO turns only when you are playing (with the LFO switch engaged)
- The "LED" hole (next to the output connection hole) should be connected to the ground for LED bypass on your stompswitch.
- The board mounted LED works as both a bypass indicator and LFO rate indicator LED, as the LED only blinks when playing and stays lit otherwise when the pedal is engaged, and off when disengaged.
- Other things that are not included in the BOM but good to have: enclosure, input and output jacks, DC jack, stomp switch and knobs.

Drilling template (1590BB)



- Use at your own risk! This template is approximate.
- Make sure your printer isn't doing any scaling / is set to 100% print size.
- Drill footswitch, DC jack and input/output jacks to your own preference.
- **Measure and confirm before drilling!**
- Read the build tips section highlighted in red before soldering pots and switches to the PCB.

Schematic



note that power connections, polarity protection and DC-filtering is not shown

Troubleshooting

There's always a chance of running into trouble. To minimize error, follow the BOM and general building tips carefully. Take your time and don't rush. Take a break now and then. Use good solder, and it helps to have a decent soldering station instead of a cheap iron.

If you are still having trouble, please visit the madbean forum Parasit Studio subforum section and ask for help there.

<http://www.madbeanpedals.com/forum/index.php?board=84.0>

If you have bought the Musikding kit and have received a faulty or missing component, please contact musikding directly.

<https://www.musikding.de/kontakt.php?lang=eng>

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