FLAWED LOGIC FUZZ MKII

Get your guitar-synth fix! The Flawed Logic Fuzz is a CMOS-based squarewave fuzz that feeds into two gated oscillators in series (NAND gates). The result is a very synthy sound. It also has a built in LFO to modulate the frequency of the second oscillator, making a weird phaser'ish sound.

The MKII version has a few new features; the triangle waveshape LFO, depth control and improved sustain.

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.

Happy playing!
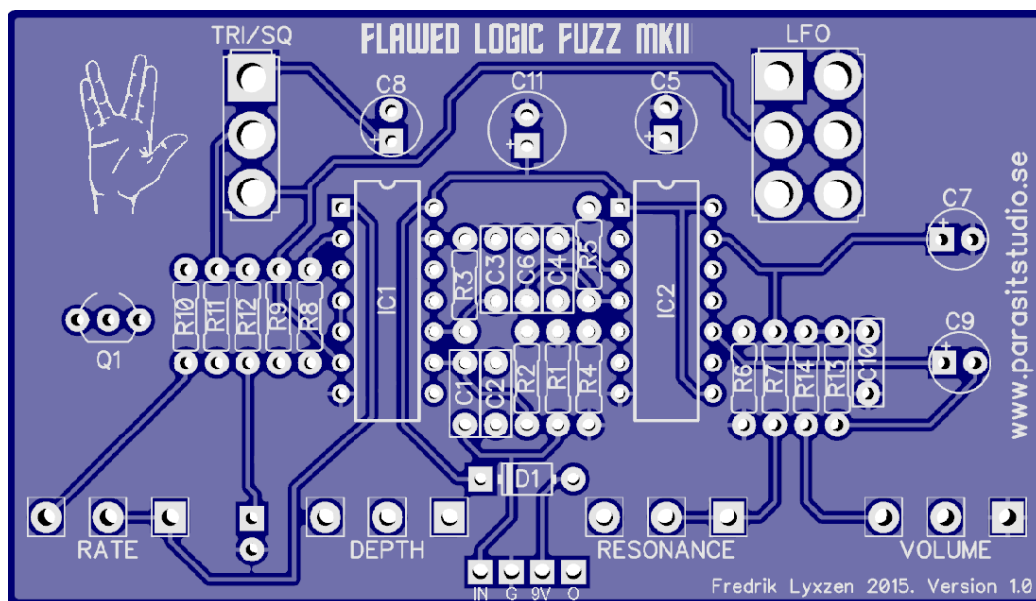
Controls

SWITCHES
- **LFO**: Turns the LFO on/off

- **TRI/SQU**: Toggles between square wave or triangle wave LFO shapes

POTENTIOMETERS
- **RATE**: Controls the rate of the LFO

- **DEPTH**: Controls range of the LFO sweep. Interactive with the resonance pot

- **RESONANCE**: Controls the frequency of the second oscillator

- **VOLUME**: Controls the overall volume

Tip: To get the strongest modulation, turn down the Resonance and turn up the Depth

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 a 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.
- This PCB's is designed for 16mm Alpha PCB mounted 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.
- Pots, switches and the LFO LED and meant to be mounted on the backside (solder side) of the PCB and soldered on the front (component side).
- 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.

Flawed Logic Fuzz MKII Bill Of Materials (BOM)

| Resistors		Capacitors		IC's	
R1	1M	C1	100nF	IC1	CD4069
R2	1M	C2	100nF	IC2	CD4093
R3	1M	C3	4.7nF		
R4	100K	C4	100nF	**Transistors**	
R5	4.7K	C5	1uF	Q1	2N5485
R6	100K	C6	100nF		
R7	470R	C7	1uF	**Potentiometers**	
R8	470K	C8	22uF	Rate	C50K
R9	1M	C9	4.7uF	Resonance	B2K
R10	1.8K	C10	4.7nF	Depth	B5K
R11	10K	C11	100uF	Volume	B50K
R12	4.7K	**Diodes**		**Switches**	
R13	2.2K	D1	1N400*	LFO	DPDT on/on
R14	100K			TRI/SQU	SPDT on/on

- + optional rate indicator LED
- R12 is a current limiting resistor for the rate LED. Use the appropriate value for your LED.
- Also not included in the BOM is a LED for bypass indication and a current limiting resistor for that LED. It will have to be wired off board.
- For the strongest modulation, you might have to test a few different 2N5485 until you found the one that has the widest/strongest sweep. Use a socket, and when you build is complete, test it with the LFO engaged and try different transistors until you find the one that sound best to your ears.
- Also not included in the BOM but good to have: enclosure, input and output jacks, DC jack, stomp switch and knobs.

Wiring

For more info on how to wire up the stompswitch, 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

Drilling template (1590BB)
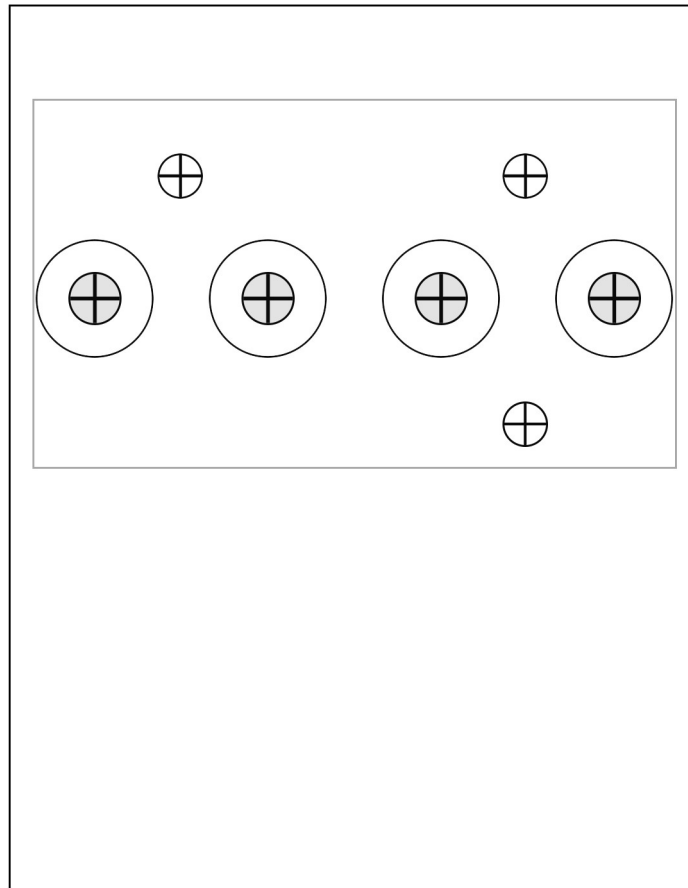
- Use at your own risk! This template is approximate.
- Make sure your printer isn't doing any scaling / is set to 100% print size.
- Drill footswitch, DC jack and input/output jacks to your own preference.
- Some PCB mount pots have longer shafts than others, it will change the hole positions slightly =
- **Measure and confirm before drilling!**
- Read the build tips section highlighted in red before soldering pots and switches to the PCB.

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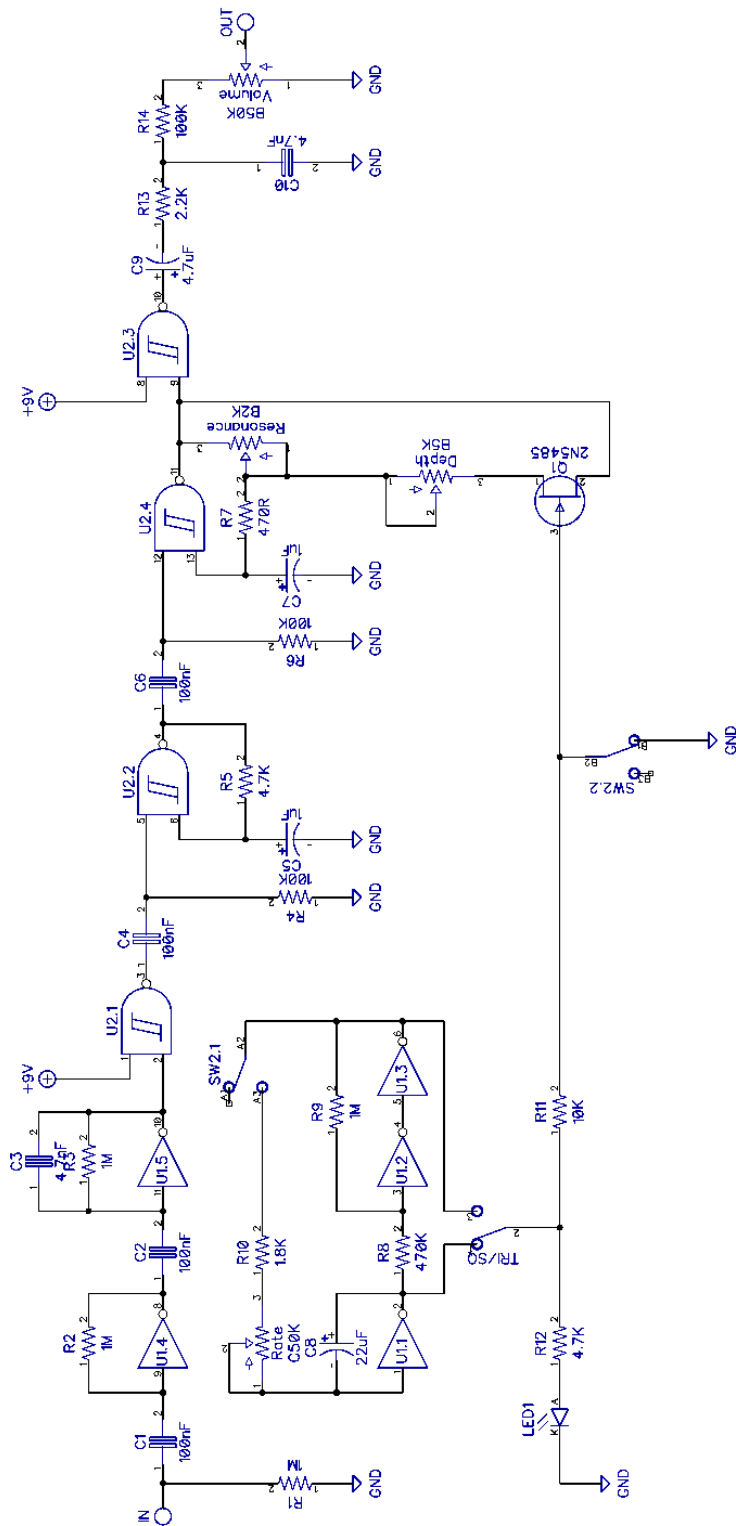
note that power connections, polarity protection and DC-filtering is not shown

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 insted 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 recieved a faulty or missing component, please contact musikding directly.

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