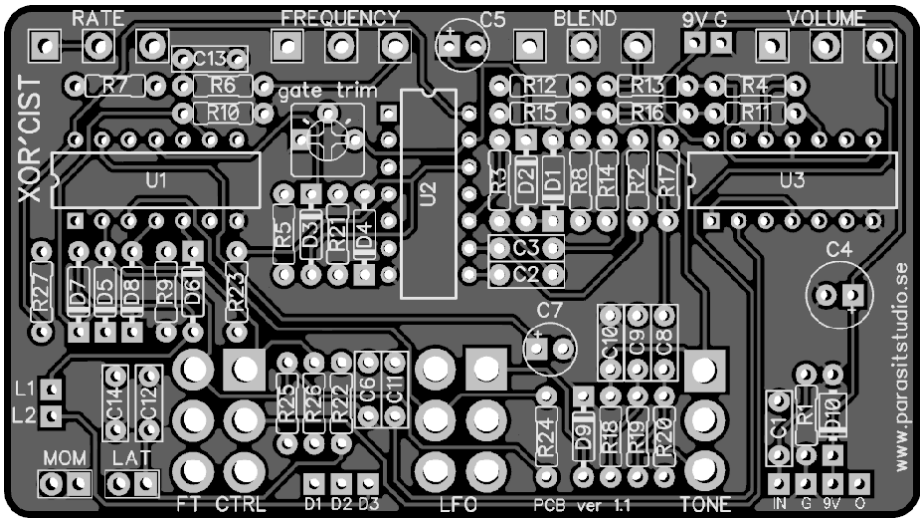
THE XOR'CIST

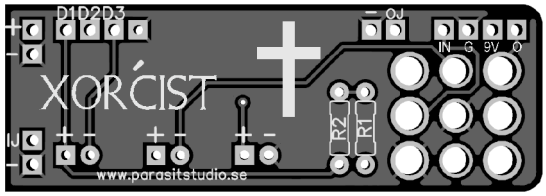
Build Document last updated may 2016
for PCB version 1.1

The Xor'cist is a glitchy and gated fuzz and a ringmodulator with a squarewave modulation feature that can either be set to alternate between fuzz and ringmod sounds or create a choppy type of on/off tremolo/stutter.

It sounds like hell...

Happy building and playing!





(optional 3PDT board)

Controls

Potentiometers

VOLUME – Controls the overall output volume

BLEND – Blends between straight fuzz and ringmodulation

The blend pot goes from stutter fuzz (CCW) to alternating between fuzz and ringmod, to stuttering ringmod (CW) when the modulation is active

FREQUENCY – Sets the carrier frequency of the ringmodulation

RATE – Controls the speed of the squarewave modulation

Switches

TONE – Toggles the output filter for a bright, normal or dark sound

LFO – Toggles the LFO: Off (down position), On (middle position) or Gated by the guitar signal (up position)

FT CTRL (Foot control) – Toggles the momentary footswitch On (up position) or Off (down position). When engaged, the modulation is only active when triggered by the momentary footswitch.

FOOTSWITCH – This is a momentary footswitch that toggles the stutter on or off. This can be built to have either momentary or latching action.

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.
- 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 angeled 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.
- The pots and the switch are meant to be mounted on the bottom (solder side) of the board, and soldered on the top (component side).
- The square pad represents pin 1 of each pot.

The XOR'CIST Bill Of Materials (BOM)

Resistors			
R1	1M	R22	100K
R2	1M	R23	10K
R3	2.2M	R24	10K
R4	1M	R25	4.7K*
R5	15K	R26	4.7K*
R6	10K	R27	10K
R7	3.9K		
R8	47K		
R9	1M		
R10	1M		
R11	100K		
R12	100K		
R13	100K		
R14	100K		
R15	47K		
R16	47K		
R17	33K		
R18	12K		
R19	12K		
R20	22K		
R21	220K		

Capacitors	
C1	100nF
C2	100nF
C3	4.7nF
C4	220uF
C5	1uF
C6	100nF
C7	33uF
C8	10nF
C9	100nF
C10	8.2nF
C11	100nF
C12	100nF
C13	100nF
C14	100nF

IC's	
U1	CD40106BE
U2	CD4069UBE
U3	CD4070BE

Potentiometers	
VOLUME	A100K
BLEND	B50K
FREQUENCY	B50K
RATE	C50K
Gate trim (trimpot)	100K

Switches	
TONE	SPDT on/off/on
LFO	DPDT on/off/on
FT CTRL	DPDT on/on
FOOTSW	SPST MOMENTARY

Diodes	
D1-D9	1N4148
D10	1N4001
3x LED's	

- * These are two current limiting resistors for the rate indicator LED's. Use the appropriate value for your LED type. I use 15K resistors in my fully assembled build (with superbright LED's)
- The gate trimpot sets the decay of the ringmodulation carrier frequency gate. Set the blend fully clockwise and adjust the trimmer to match the sustain of short notes.
- **Not included in the BOM:**
  - One CLR (current limiting resistor) for the bypass LED
  - One optional CLR for the latching footswitch indicator LED (these are mounted offboard or on the optional 3PDT board)
- Also not included in the BOM but also good to have: enclosure, input and output jacks, DC jack, 3PDT bypass switch, knobs.

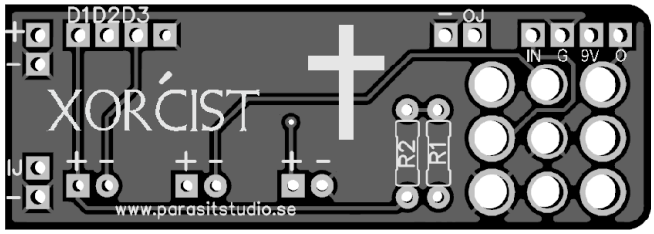
Wiring

The Xor'cist can be built in two different ways depending on how you want the second stutter footswitch to respond. It can be configured for either:

1. Momentary footswitch action with two alternating rate LED's
2. Latching footswitch action with one rate indicator LED and one switch indicator LED

Pay close attention to the differences before doing the wiring!

- Note that both configurations uses a momentary SPST switch. The latching mode is set up with an internal flip flop circuit. Never use a latching switch!
- The DC jack only needs to be connected to either the main board or the 3PDT board, not to both. Choose the connections that are most convenient for your DC jack placement.



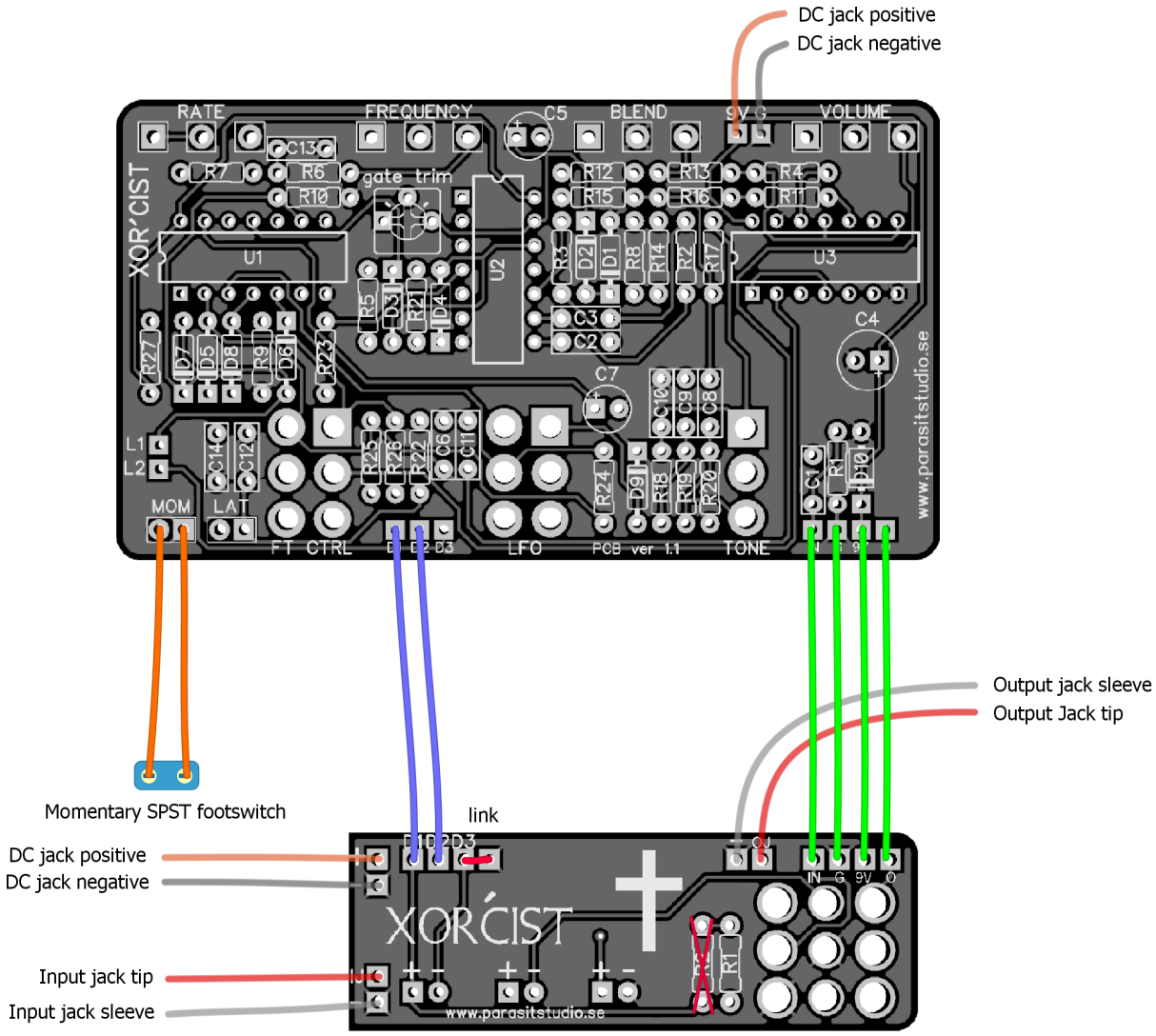
The 3PDT board

- R1 is the CLR (current limiting resistor) for the bypass LED
- R2 is a CLR for the switch indicator LED - should only used for configuration 2 (latching switch action)
- The 3 LED's on the 3PDT board are:
  - left LED: rate indicator (configuration 1)
    switch indicator (configuration 2)
  - middle LED: bypass indicator
  - right LED: rate indicator

Note that this LED order is when looking at the 3PDT board from the bottom side, so the LED order will be reversed when looking at the front of the enclosure

Configuration 1

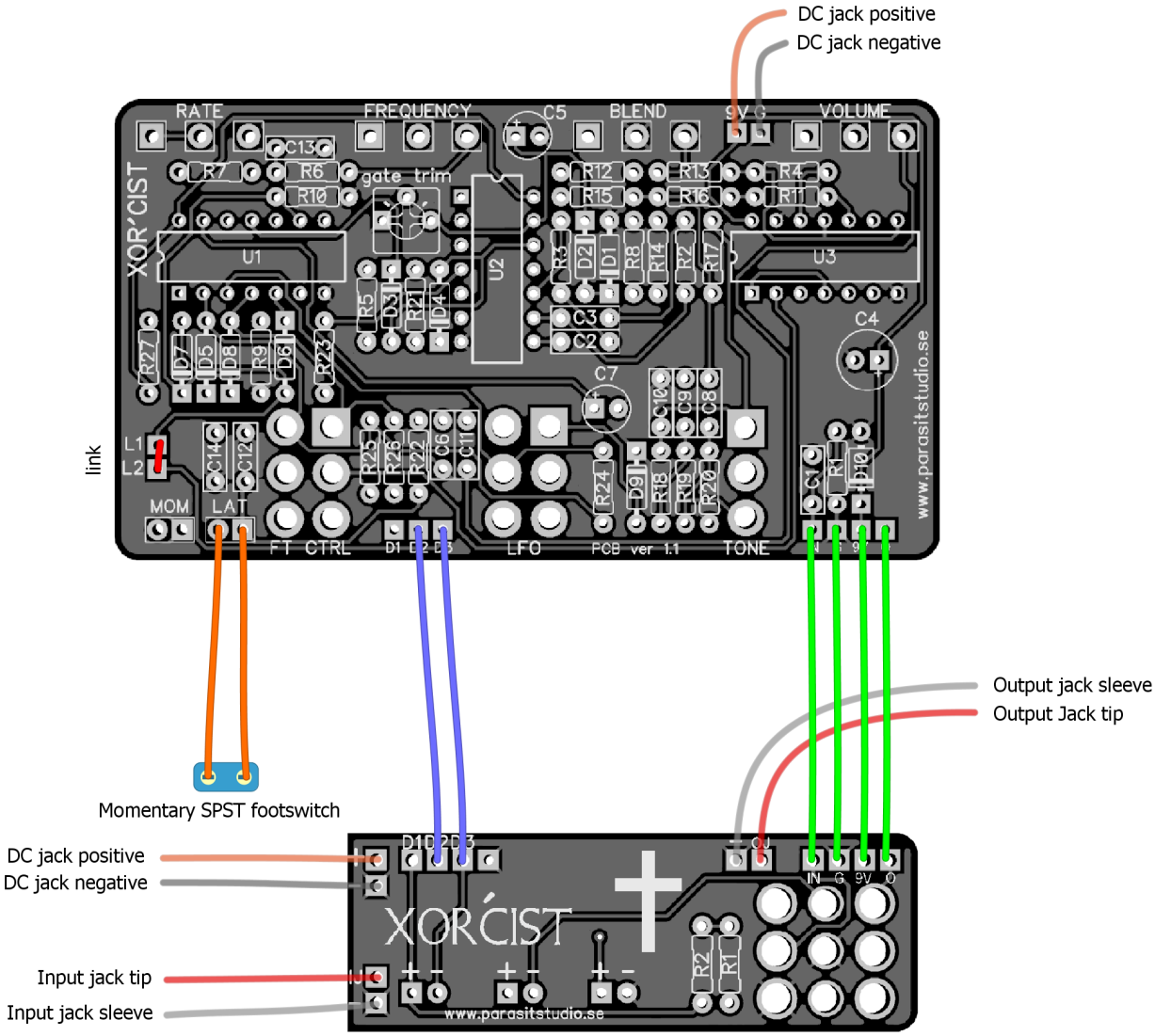
momentary switch action with two alternating rate LED's



- Connect the momentary footswitch to the MOM pads
- Connect D1 and D2 from the main board to the 3PDT board
- Solder a link between D3 on the 3PDT board and the pad next to it
- Omit R2 on the 3PDT board

Configuration 2

latching switch action with one rate LED and one switch LED

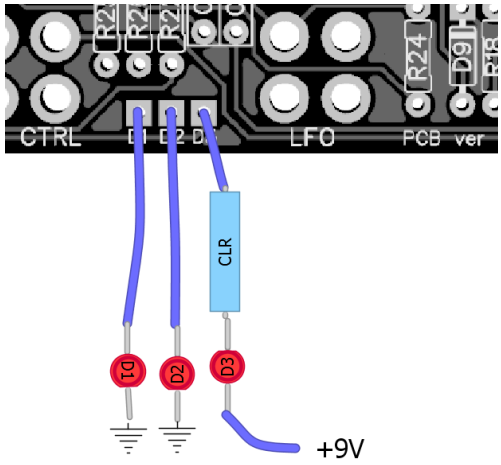


- Connect the momentary footswitch to the LAT pads
- Solder a link between L1 and L2
- Connect D2 and D3 from the main board to the 3PDT board
- Include R2 for the switch indicator LED

Offboard wiring without the 3PDT board

If you don't want to use the optional 3PDT board, this is how the LED's needs to be connected.

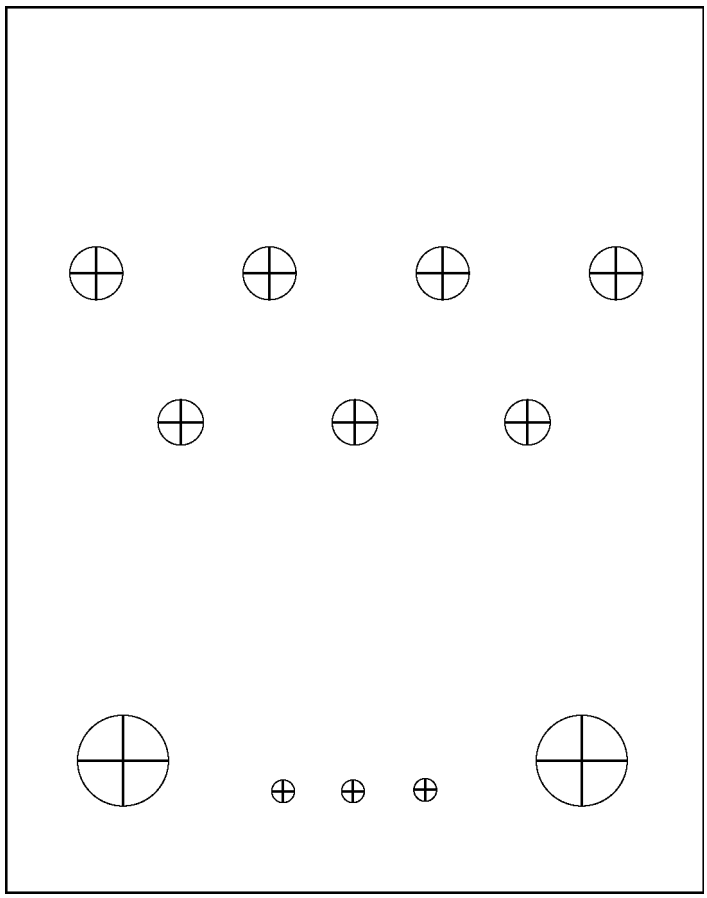
- D1 and D2 (alternating rate indicator LED's) connects from the PCB pads to LED anodes with cathodes to ground.
- D3 (switch indicator LED) connects from PCB pad to LED cathode via a CLR resistor and LED anode to +9V



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:

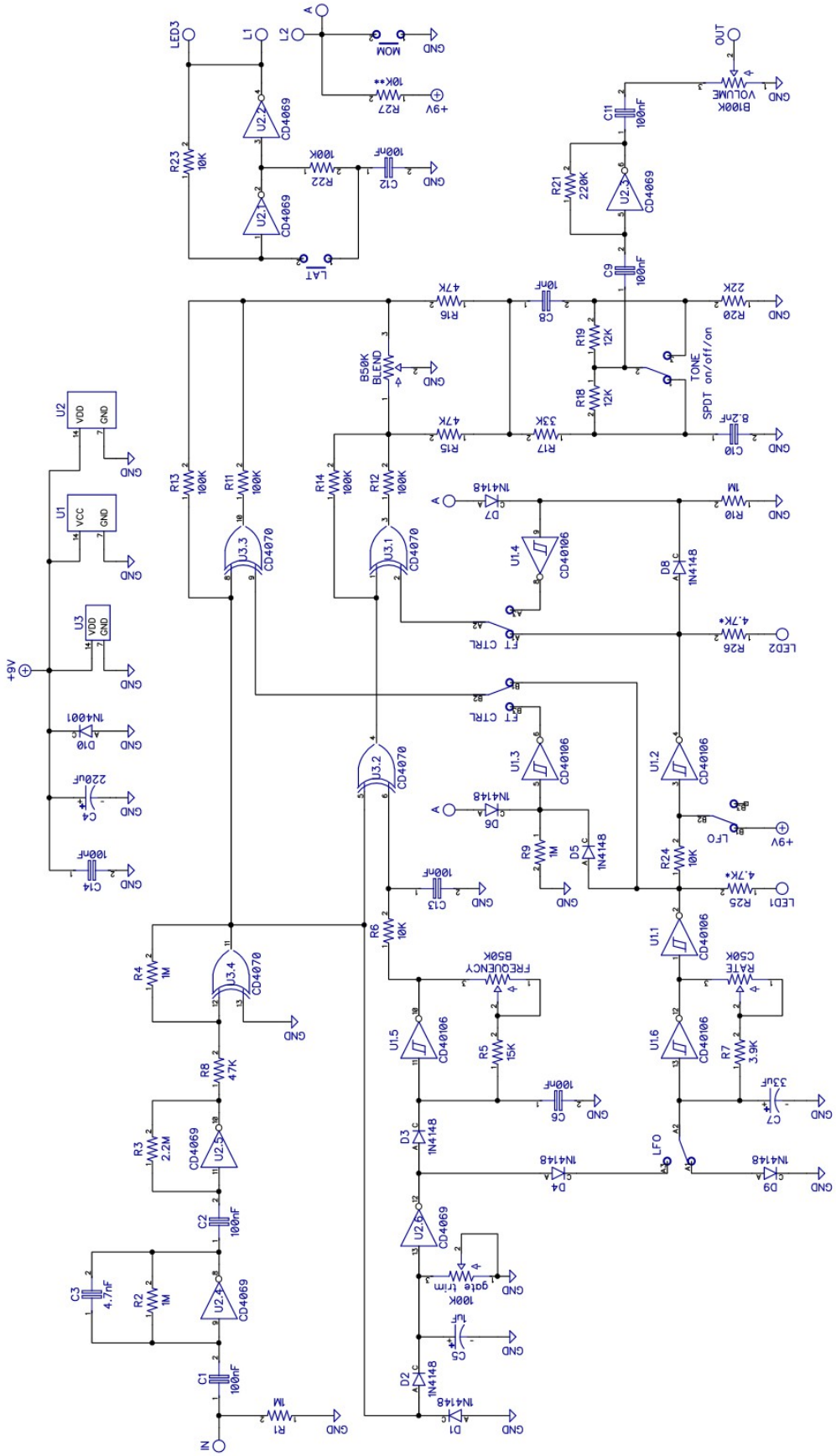
http://www.parasitstudio.se/build-docs.html

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, rec and play switches, DC jack and input/output jacks to your own preference. There is room for the DC jack at the top side.
- **Measure and confirm before drilling!**

Schematic


LED3
L1
L2
A
MOM
GND
10K**
R27
+9V
OUT
VOLUME
B100K
C11
100nF
R23
10K
R22
100K
C12
100nF
U2.2
CD4069
U2.1
CD4069
LAT
R21
220K
U2.3
CD4069
C9
100nF
R16
47K
C8
10nF
R20
22K
R19
12K
R18
12K
TONE
on/off/on
SPDT
B50K
BLEND
R15
47K
R17
33K
C10
8.2nF
U2
VDD
GND
U1
VCC
GND
U3
VDD
GND
+9V
R13
100K
R11
100K
R14
100K
R12
100K
U3.3
CD4070
U3.1
CD4070
U3.2
CD4070
U3.4
CD4070
D7
1N4148
U1.4
CD40106
R10
1M
D8
1N4148
FT CTRL
4.7K*
R26
LED2
U1.3
CD40106
U1.2
CD40106
D6
1N4148
LFO
R9
1M
D5
1N4148
R24
10K
4.7K*
R25
LED1
C13
100nF
R6
10K
U1.1
CD40106
FREQUENCY
B50K
RATE
C50K
R4
1M
R8
47K
U1.5
CD40106
R5
15K
U1.6
CD40106
R7
3.9K
C6
100nF
C7
33UF
R3
2.2M
U2.5
CD4069
D3
1N4148
D4
1N4148
D9
1N4148
C2
100nF
U2.6
CD4069
C3
4.7nF
R2
1M
U2.4
CD4069
gate trim
100K
C5
1uF
C1
100nF
D2
1N4148
D1
1N4148
R1
1M
IN
D10
1N4001
C4
220uF
C14
100nF

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

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