

The XOR'CIST

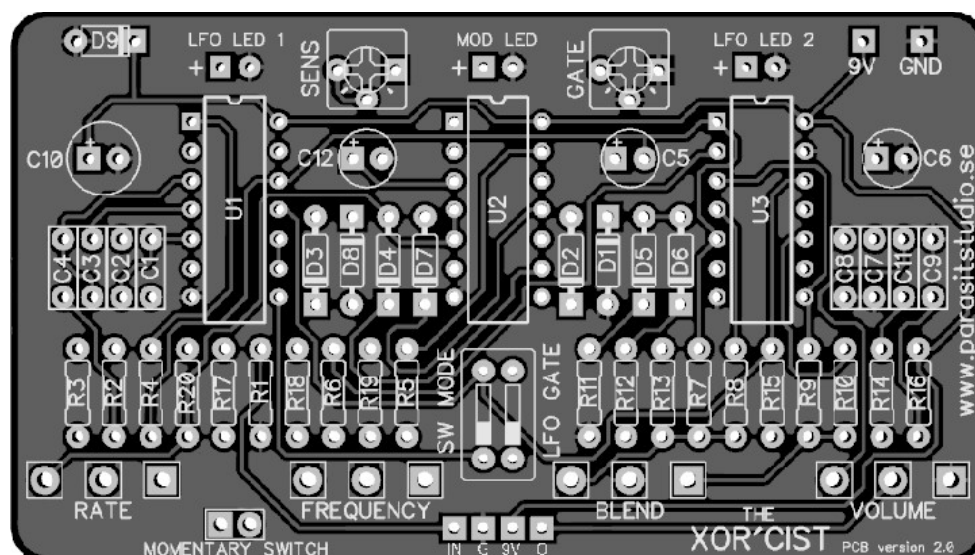
Build Document last updated april 2023
for PCB version 2.0

The Xor'cist is a glitchy and gated fuzz. But it's also a ringmodulator with a squarewave modulation feature.

The modulation can be set to either alternate between fuzz and ringmod sounds or create a choppy type of on/off tremolo/stutter.

It sounds like hell...

Happy building and playing!



Changelog version 2.0

- Trimmed down and optimized circuit - all switches, except the momentary one, has been removed. Most functions remains, except the 3-way tone selector.
- Input stage redesigned to prevent oscillation issues that some people was having.
- Input trimmer added to set the string sensitivity / balance between gate and sustain.
- Rate LED's are now board-mounted – no need for a special 3PDT daughterboard.
- Dip-switch added to toggle between latching or momentary switch action and gated or free running LFO.
- Redesigned PCB for a easier straight forward build.

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

FOOTSWITCH – This is a momentary footswitch that toggles the stutter on or off.

The footswitch action can be either momentary or latching, depending on the board-mounted dip-switch

Trim pots

SENS – *adjust the input sensitivity, from very touch sensitive when touching the strings, to gated.*

GATE – *Adjust how fast the ringmod oscillator shuts off when you stop playing a note.*

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.
- **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.
- The pots 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.

Wiring

The only thing that needs to be wired offboard (except the usual jacks and bypass switch) is the momentary switch. Since it's a momentary SPST switch, which connection goes to which lug on the switch doesn't matter.

Please note: If you are using the Parasit Studio 3PDT-board, you only need to connect your DC jack to either the 9V and GND connections on the main board or on the 3PDT-board, not to both.

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

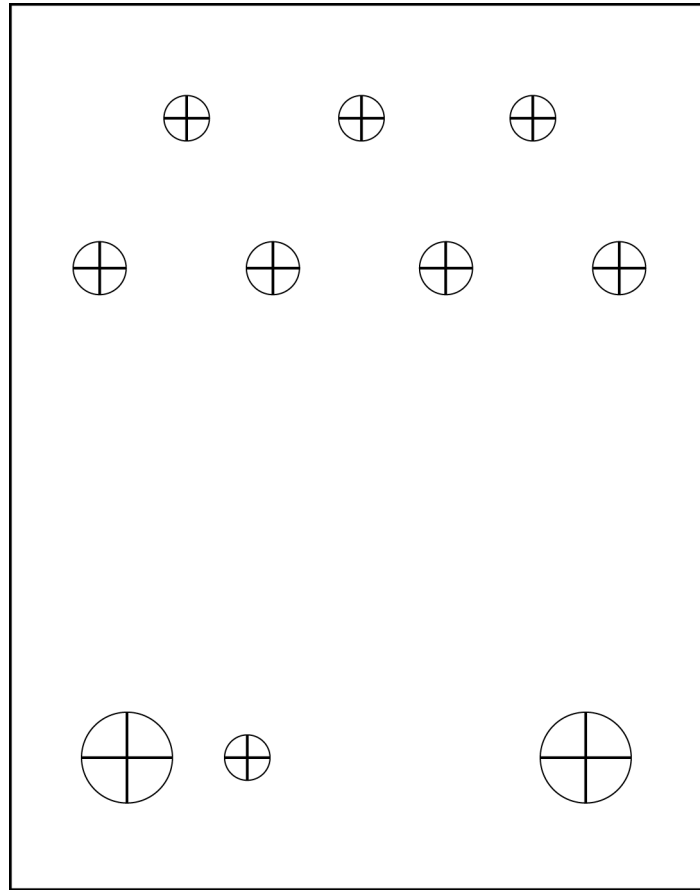
<http://www.parasitstudio.se/build-docs.html>

The XOR'CIST Bill Of Materials (BOM)

Resistors				IC's	
R1	1M	R19	15K*	U1	CD4069UBE
R2	1M	R20	15K*	U2	CD40106BE
R3	1M	Capacitors		U3	CD4070BE
R4	1M	C1	100nF	Potentiometers	
R5	15K	C2	2.2nF	VOLUME	A100K
R6	10K	C3	4.7nF	BLEND	B50K
R7	100K	C4	100nF	FREQUENCY	B50K
R8	100K	C5	2.2uF	RATE	C50K
R9	100K	C6	1uF	Gate trim trimpot	100K
R10	100K	C7	100nF	Sensivity trimpot	200K
R11	1M	C8	100nF	Switches	
R12	1M	C9	100nF	Momentary SPST footswitch	
R13	47K	C10	100uF	DIP-switch: 2 positions	
R14	47K	C11	100nF	(2 switches, 4 pins)	
R15	100K	C12	33uF	Diodes	
R16	1M			D1-D8	1N4148
R17	3.9K			D9	1N4001
R18	15K*			3x LED's	

- * These are current limiting resistors for the rate indicator LED's and the modulation indicator LED. Use the appropriate value for your LED type. I use 15K resistors in my fully assembled builds (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.
- The sens trimpot sets the input string sensitivity and a balance between gate and sustain.
- The DIP switch has two functions. It can toggle on/off the LFO gate and set the momentary switch action as either latching or momentary.
- **Not included in the BOM:**
 - 1x bypass LED
 - 1x CLR (current limiting resistor) for the bypass LED
 - Also not included in the BOM but also good to have: enclosure, input and output jacks, LED bezels, DC jack, 3PDT bypass switch, 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. There is room for the DC jack at the top side.
- Bypass LED hole is only a suggestion (need to be wired offboard together with a current limiting resistor if you don't have the special 3PDT board that comes with the DIY kit).
- **Measure and confirm before drilling!**

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.

Musikding DIY kit

If you have bought the Musikding DIY kit and have recieved a faulty faulty, incorrect or missing component, please contact musikding.

[Contact us](#)

Smallbear Electronics / Synthcube DIY kit

If you have bought the Smallbear Electronics DIY kit and got a faulty, incorrect or missing component, please contact Smallbear Electronics.

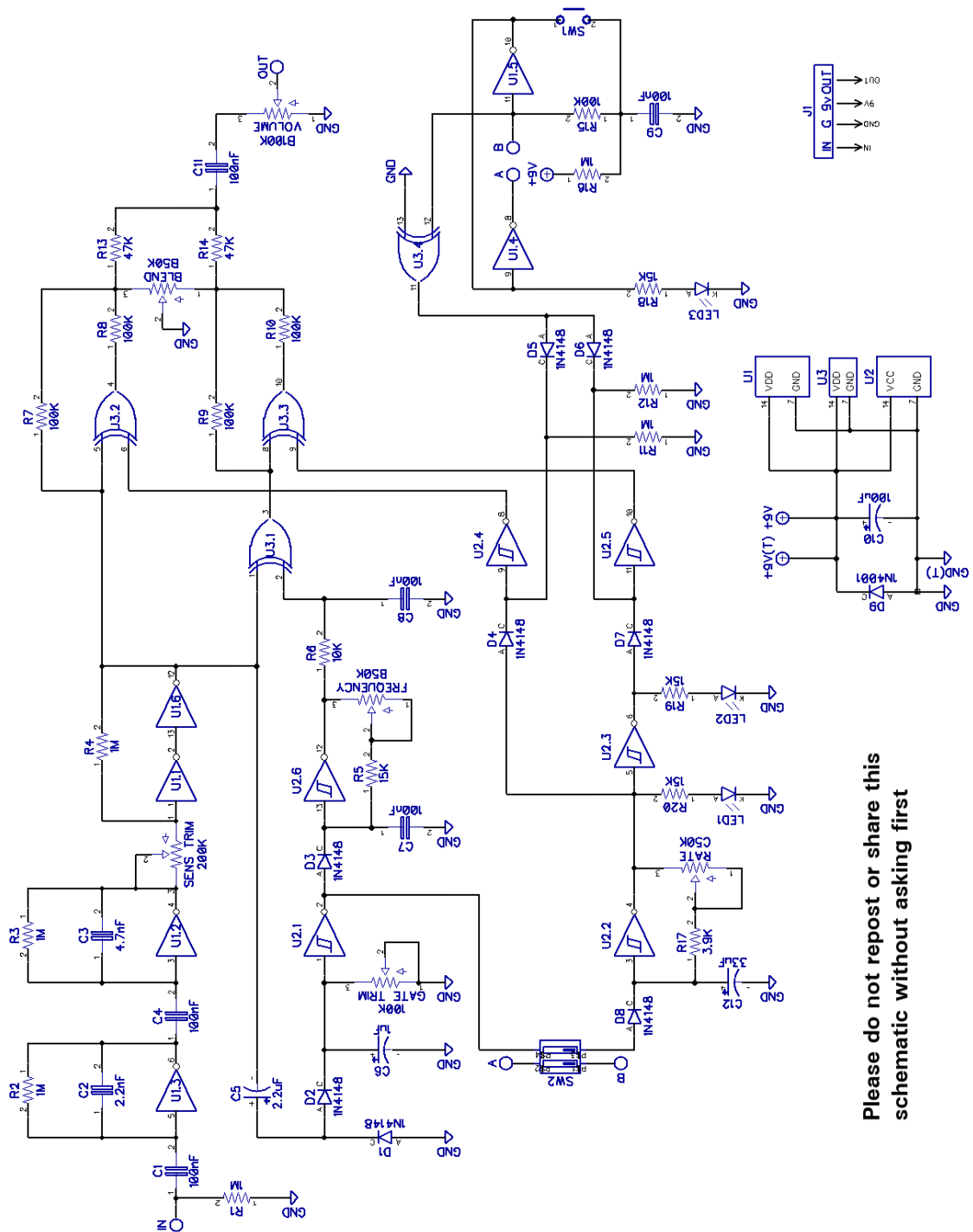
smallbearelec@synthcube.com

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Schematic



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