Crysis

Based on:
Suhr Riot

Amount of parts:
Low, total 45 components

Enclosure type:
1590b

Effect type:
Distortion

Technology:
Double dual Op-Amp

Get your board at:
Crysis

Build difficult:
Average

Power consumption:
8mA (9v-18v)

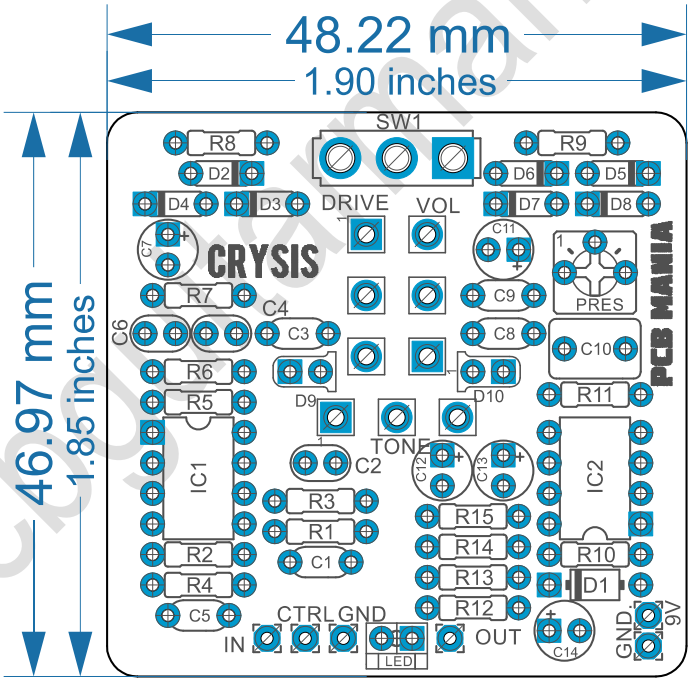
Get your kit at:
Das Musikding (Europe)

Project overview:

Crysis is a versatile high-gain distortion pedal with the sonic characteristics and touch sensitivity of a high quality 100 watt tube amplifier.

Especially good for tight crunch rhythms and dynamic solos.

This board features an internal Presence trimmer.



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Introduction

The Crysis is a circuit inspired on the famous Suhr Riot, without being an exact replica, through the years they have been many different versions of the Riot and the riot Reloaded, most of them with small values changes on the components and in the clipping section. For this project I've made a research of the most common versions of this pedal and many schematics provided by the DIY community in order to lay down an ultimate boutique version of it that captures the best essence of the original Suhr Riot.

If we take a look to the schematic we can find many similarities to the M-Audio Crunch Box, later also cloned and modded by JHS as the Angry Charlie, you can check our Angry Carlos if you want to build either of these.

The Crunch Box it also has roots on some other famous pedals as the Marshall Blues Breaker and the Fulltone OCD. So we can proudly say that PCB Guitar Mania's Crysis is the prodigal son of a long family of Marshall-like pedals, taking the best of each model through the years and refining it as one of the most lauded high-gain "stack of amps" pedal.

Controls

- Drive: Adjusts the amount of gain added to your tone, taking you from classic crunch to high-gain heaven.
- Vol: Adjusts the output of the pedal. Riot provides enough level to push the front end of any tube amp into natural overdrive.
- Tone: Shapes the overall tonal response of the pedal, from smooth and warm to cutting lead tones.
- Presence: affects the overall 'shape' of the tone of the pedal. It interacts with the tone control.
- Diode Switch: Select In between 3 Different clipping options. To the left engages the symmetrical Germanium diodes + the LED pair, to the right the asymmetrical Silicon diodes + Led pair, on the center we got just the Pair of LEDs, being the loudest of all the 3 options, with more open and organic tone. The pair of LEDs clip are hardwired as always on.

Bill of materials

Resistors	
Part	**Value**
R1	2m2
R2	1m
R3	1k
R4	1k
R5	10k
R6	1m
R7	470r
R8	220r
R9	470r
R10	100k
R11	100r
R12	4k7
R13	100r
R14	22k
R15	22k

Capacitors	
Part	**Value**
C1	22n
C2	33pf
C3	100n
C4	100pf
C5	220n
C6	100pf
C7	2u2
C8	22n
C9	22n
C10	1uf
C11	10u
C12	10u
C13	10u
C14	100u

Diodes	
Part	**Value**
D1	1n4001
D2	**1n914***
D3	1n914
D4	1n914
D5	1n34a
D6	1n34a
D7	1n34a
D8	1n34a
D9	3mm Red Led
D10	3mm Red Led
LED	3mm LED

IC	
Part	**Value**
IC1	JRC4580
IC2	JRC4580

Potentiometers	
Part	**Value**
DRIVE	100K B
TONE	10K C
VOL	10K A
PRES	20k

Switches	
Part	**Value**
SW1	SPDT ON-OFF-ON

Shopping list

Resistors		
Qty	**Value**	**Parts**
1	2m2	R1
1	100k	R10
2	100r	R11, R13
1	4k7	R12
2	22k	R14, R15
2	1m	R2, R6
2	1k	R3, R4
1	10k	R5
2	470r	R7, R9
1	220r	R8

Capacitors		
Qty	**Value**	**Parts**
3	22n	C1, C8, C9
1	1uf	C10
3	10u	C11, C12, C13
1	100u	C14
1	33pf	C2
1	100n	C3
2	100pf	C4, C6
1	220n	C5
1	2u2	C7

Diodes		
Qty	**Value**	**Parts**
1	1n4001	D1
3	1n914	D2, D3, D4
4	1n34a	D5, D6, D7, D8
3	3mm Red LED	D9, D10, LED

Potentiometers		
Qty	**Value**	**Parts**
1	10K C	TONE
1	10K A	VOL
1	100K B	DRIVE
1	20k	PRES

IC		
Qty	**Value**	**Parts**
2	JRC4580	IC1, IC2

Switch		
Qty	**Value**	**Parts**
1	SPDT ON-OFF-ON	SW1

Components Recommendations

As many people like to experiment some pedals with higher voltage, always ensure the max tolerance of your **electrolytic capacitors** is over 25v.

This board has been tested using Film box capacitors for most of the values over 1nf, and ceramics discs for the ones under 1nf. However, high quality components such as Wima's Capacitors and Panasonic's electrolytics can deliver a better performance.

All the resistors used for testing this project are 1/4W Metal Film.

The BOM and Shopping list are exclusively regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

D2* in many schematics online D2 is actually a BLUE 3mm LED. Feel free to socket and experiment with it and tell us which one you like the most.

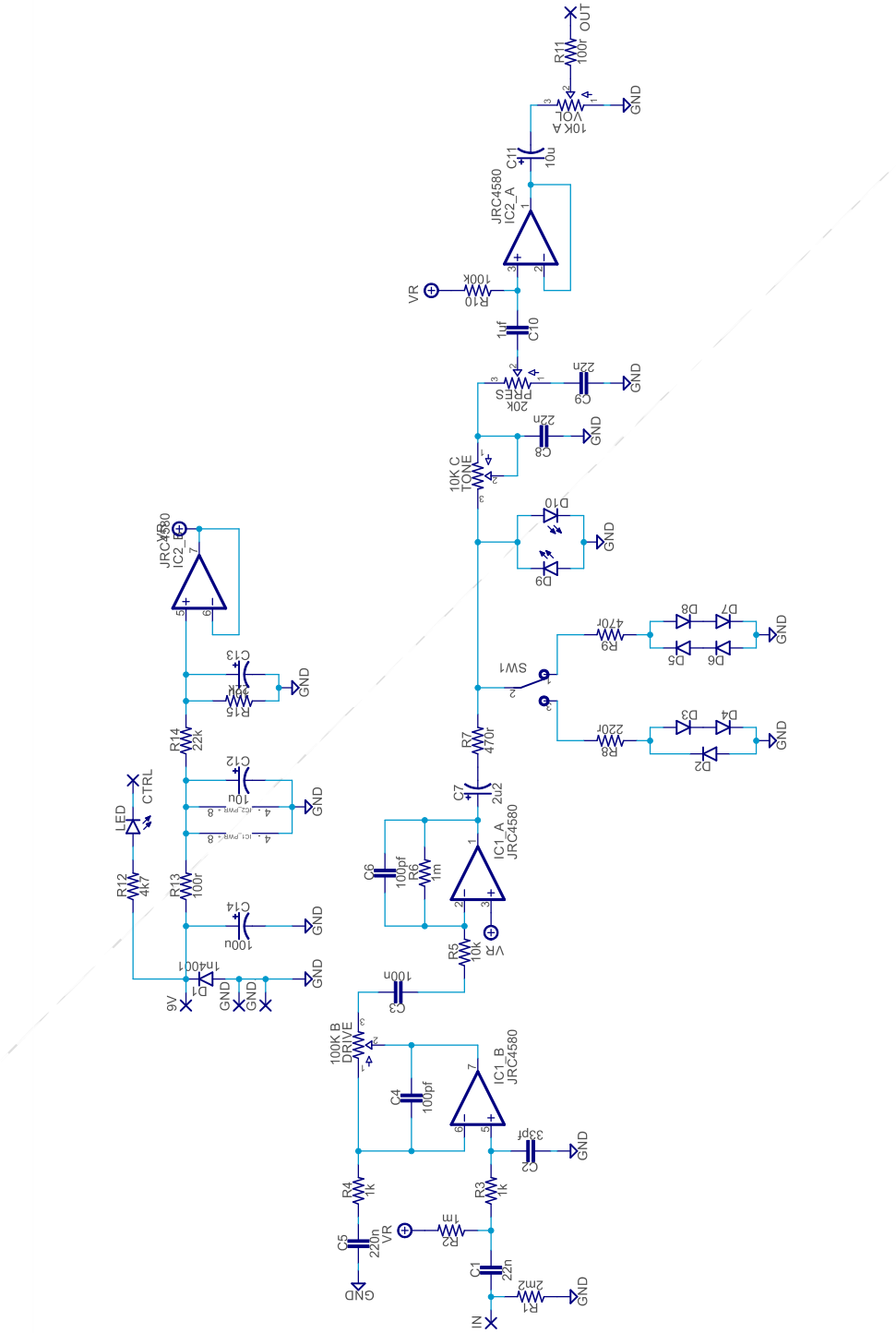
Build Notes

If this is one of your first projects I recommend you to take a look on our Pedal Building Guide

For a successful and tidy build it's recommended the following order:

1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off board wiring

Schematic

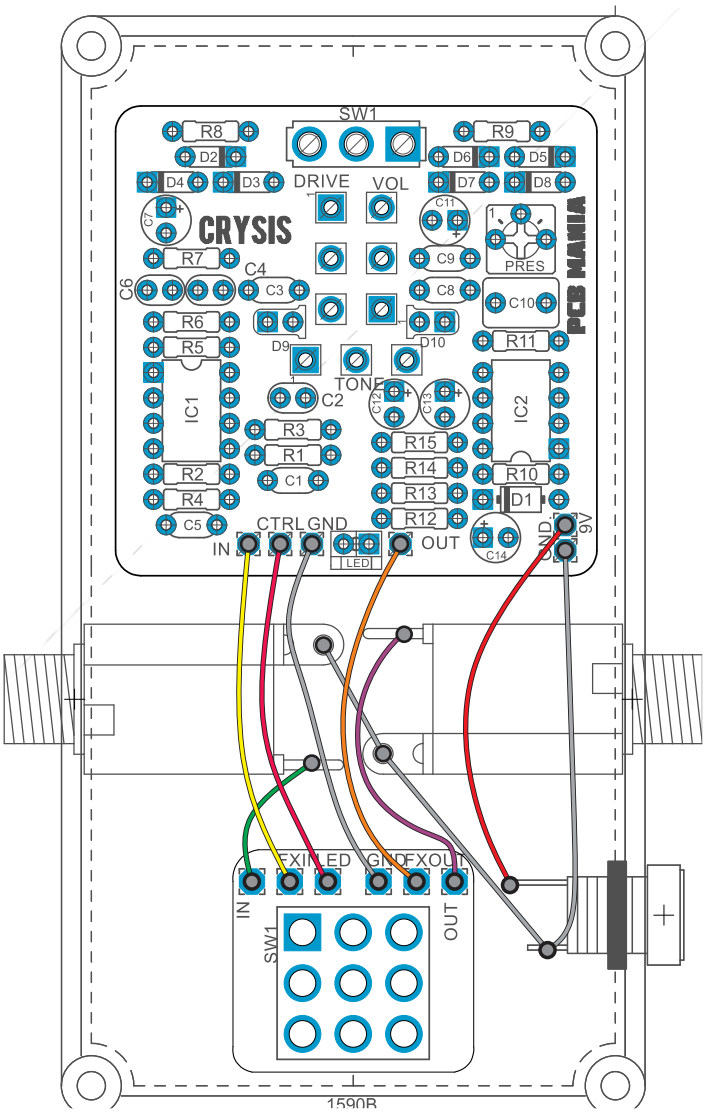

R11
100r
OUT
10K A
VOL
GND
C11
10u
JRC4580
IC2_A
VR
R10
100K
1uf
C10
20K
PRES
C9
22n
C8
10K C
TONE
D10
D9
SW1
R9
470r
D8
D7
D6
D5
R8
220r
D4
D3
D2
R7
470r
C7
2u2
IC1_A
JRC4580
C6
100pf
R6
1m
VR
R5
10K
C3
100n
100K B
DRIVE
C4
100pf
IC1_B
JRC4580
C2
33pf
R4
1k
R3
1k
C5
220n
VR
R2
1m
C1
22n
R1
2M2
IN
GND
JRC4580
IC2_B
C13
10u
R15
10K
R14
22k
C12
10u
LED
CTRL
R12
4k7
R13
100r
C14
100u
1n4001
D1
9V
GND

Wiring Diagram

All our projects include a free 3PDT Board to make the wiring easier and tidier. Also all of our PCBs feature the status LED on board.

The pad named “Ctrl” or “LED” is the one that controls the status of the led, wire it to the “LED”pad on the 3PDT board, or in control slug of your 3PDT.

You can take a look on the following diagram to understand the general connections. For further information check our Pedal Wiring guide.



Drill Template

This Project has been planned to fit into a 1590B enclosure type (122x67x35mm approx.)

Check the Attached "Drilling templates" to drill the box properly. The files are on Scale 1:1, ready to print in an A4 page.

Licensing and Usage

We really appreciate your trust and support buying this PCB, as well as your will to dive into the DIY electronics world. That's why for us is really important that you can make this project work properly and to enjoy not only the building process, but also to experiment and play with it on your rig.

We try to reply to every question we receive on our email or in our social media, but we try to encourage all our customers to join our PCB Guitar Mania – Builders Group on Facebook, in order to post all your doubts, issues, suggestions or request, as well to share your builds and have some feedback from us and other fellow builders!

All of our projects have been tested following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been tested. These are suggestions based on the schematic analysis, and on the experiences and opinions of others. Feel free to share with us your opinions and suggestions regarding the mods your own personal experimentation.

These boards may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though accreditation or a link back is always greatly appreciated.

If you are a builder planning to make your own run of pedals we also offer the service of custom made boards with your brand and logo, design according your specifications.

The only usage restrictions are that, first, you cannot resell the PCB as part of a kit without prior arrangement with us, and second, you cannot scratch off the silk screen, or other way of trying to hide our logos and the source of the PCBs. Like it's written above, if you want to have your own designs, with your brand and logo we could certainly reach an agreement.

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