Bionic Pandora

Based on:
Bixonic Expandora

Number of parts:
Average, total 54 components

Enclosure type:
125b

Effect type:
Unique Overdrive / Distortion

Technology:
Dual Op Amp, opto-FET

Get your board at:
Bionic Pandora

Build difficult:
Intermediate

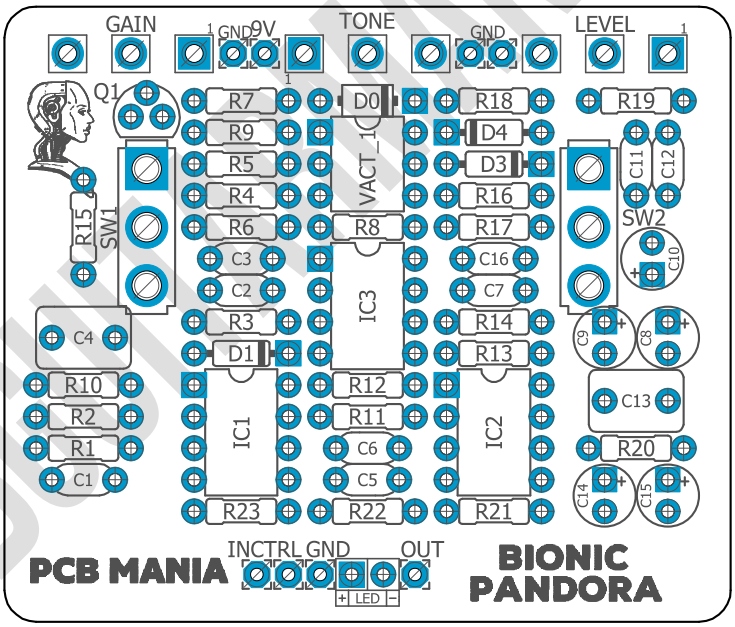
Power consumption:
9V

Get your kit at:
Das Musikding (Europe)

Project overview:

Inspired by the classic Bixonic Expandora, a distortion/fuzz pedal beloved by many guitarists and bands such as Billy Gibbons, Joe Satriani, Megadeth, and Bootsy Collins.

Bionic Pandora sets free a unique but totally useful character of overdrive, crunch, and distortion. The only downside is that we cannot guarantee that this thing won't become self-aware.



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Introduction

A few months ago, I purchased one of the earliest versions of the Bixonic Expandora. They say that some boxes are not meant to be opened, but I couldn't resist my curiosity and had to peek inside that tuna-can-like enclosure. By doing that, I may have released serious sustaining, saturated tones destined to send humankind into sonic oblivion!

Our board is inspired by one of the earliest versions of the Bixonic Expandora, the Expandora II. The original pedal was loved but had its drawbacks, such as having its DIP switches inside. It was also a little thin-sounding.

Our Bionic Pandora, on the contrary, has more tone control and better low-end response due to the change from two internal dip switches for external toggles, making it way easier to dial your favorite settings. It also has an increased low-frequency response that gives the unit added power and depth.

These new features provide the sustaining, saturated tones of the original Expandora without sacrificing the sonic transparency and dynamic responsiveness that made the EXP-2000 famous.

The 1.0 version has an issue that needs an easy fix. To solve this, check the Building Notes below. From the 1.1 version onwards, no repairs need to be made.

Controls

Potentiometers

- Gain
- Level
- Tone

Switches

- SW1
- SW2

Bill of materials

Resistors	
Part	**Value**
R1	2m2
R2	100k
R3	100k
R4	51k
R5	820k
R6	4k7
R7	47k
R8	47r
R9	4k7
R10	2m2
R11	2m2
R12	43k
R13	47r
R14	560r
R15	560r
R16	1k1
R17	1k1
R18	1k5
R19	1m
R20	1k1
R21	4k7
R22	10k
R23	10k

Capacitors	
Part	**Value**
C1	100n
C2	33p
C3	100n
C4	1u
C5	22n
C6	1n
C7	33p
C11	100n
C12	3n3
C13	1u
C16	100p

Electrolytic Capacitors	
Part	**Value**
C8	2u2
C9	4u7
C10	4u7
C14	100u
C15	100u

Potentiometers	
Part	**Value**
GAIN	1m B
LEVEL	1m B
TONE	100k C

IC	
Part	**Value**
IC1	LM308N
IC2	LM308N
IC3	jrc4558

Transistors	
Part	**Value**
Q1	2N3906

Switches	
Part	**Value**
SW1	SPDT On/On Toggle
SW2	SPDT On/On Toggle
-	3PDT Stomp foot

Vactrol	
Part	**Value**
VACT_1	h11f1

Diodes	
Part	**Value**
D0	1n5817
D1	1n4148
D3	1n4148
D4	1n4148

Shopping list

Resistors		
Qty	**Value**	**Parts**
2	100k	R2, R3
2	10k	R22, R23
3	1k1	R16, R17, R20
1	1k5	R18
1	1m	R19
3	2m2	R1, R10, R11
1	43k	R12
1	47k	R7
2	47r	R8, R13
3	4k7	R6, R9, R21
1	51k	R4
2	560r	R14, R15
1	820k	R5

Capacitors		
Qty	**Value**	**Parts**
3	100n	C1, C3, C11
1	100p	C16
1	1n	C6
2	1u	C4, C13
1	22n	C5
2	33p	C2, C7
1	3n3	C12

Electrolytic Capacitors		
Qty	**Value**	**Parts**
2	100u	C14, C15
1	2u2	C8
2	4u7	C9, C10

Potentiometers		
Qty	**Value**	**Parts**
1	100k C	TONE
2	1m B	GAIN, LEVEL

IC		
Qty	**Value**	**Parts**
2	LM308N	IC1, IC2
1	jrc4558	IC3

Transistors		
Qty	**Value**	**Parts**
1	2N3906	Q1

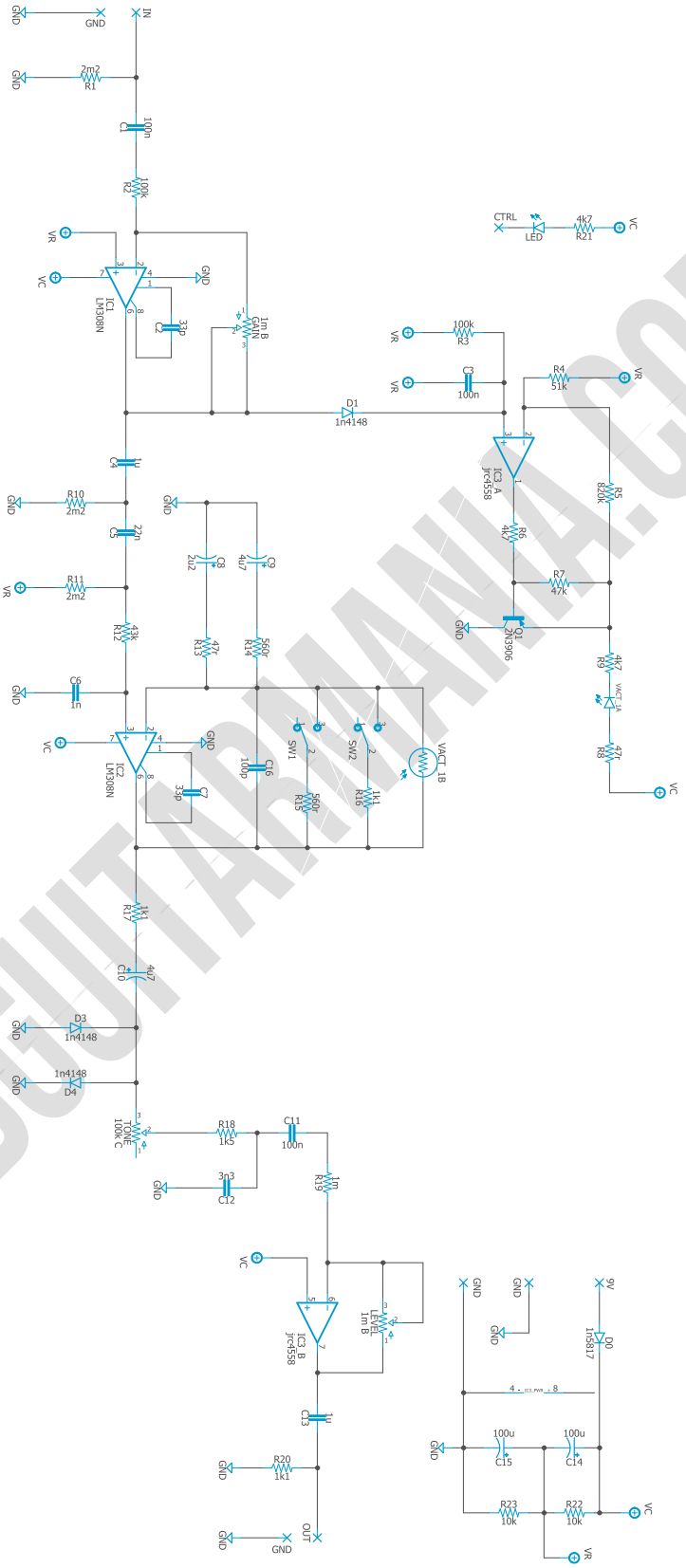
Switches		
Qty	**Value**	**Parts**
2	SPDT On/On Toggle	SW1, SW2
1	3PDT Stomp foot	-

Vactrol		
Qty	**Value**	**Parts**
1	h11f1	VACTROLFET-OPTO (VACTROL)

Diodes		
Qty	**Value**	**Parts**
2	1n4148	D3, D4
1	1n4148	D1
1	1n5817	D0

Jacks		
Qty	**Value**	**Parts**
1	DC JACK	-
2	AUDIO JACK	-

Schematic



Components Recommendations

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

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for those 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 exclusive regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

Build Notes

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

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

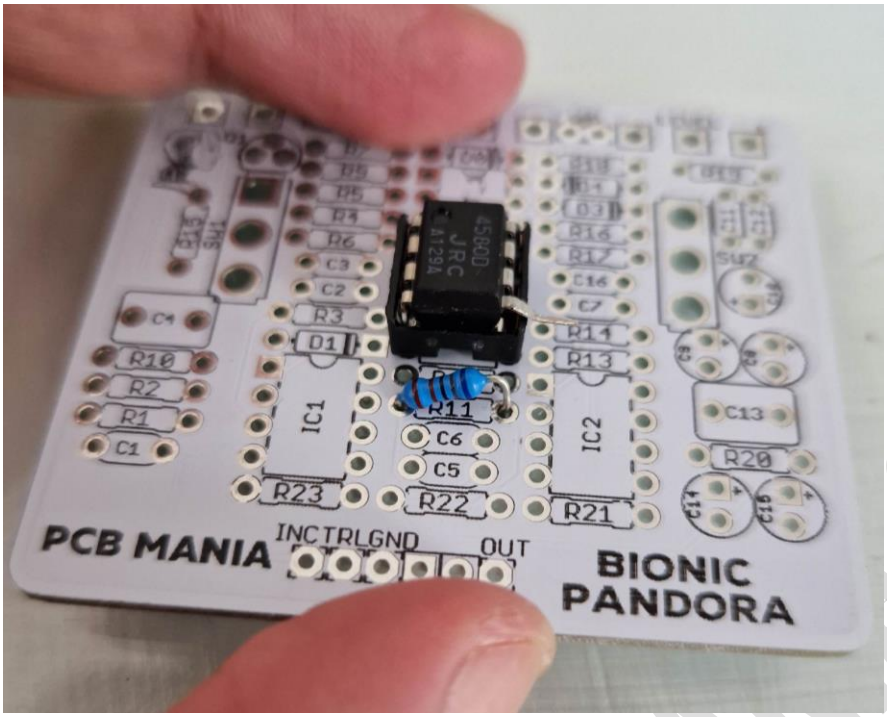
1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off-board wiring

IMPORTANT:

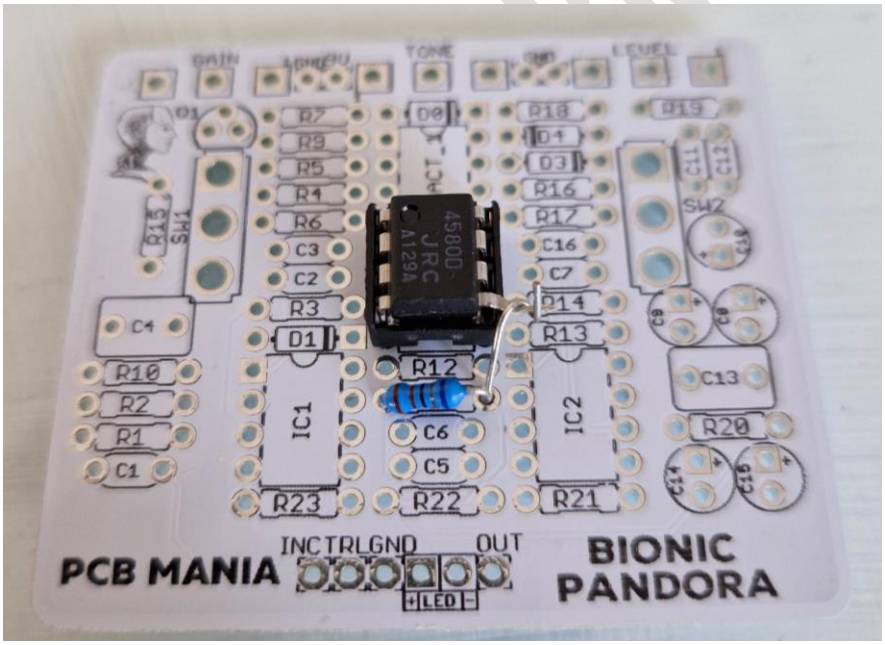
The 1.0 version of this product has rout an issue. To resolve it without cutting any traces, just **lift leg 5 of IC 3 and connect a jumper wire to the left side of R11**, as shown in the accompanying picture. Once you have everything set up, simply apply solder like always.

This problem is not present from the 1.1 version onwards. If you have one of those versions, there is no need to address it.

1) First lift leg 5 of IC3 as shown below:



2) Connect a jumper wire to the left side of R11



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 the control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB; check it here to access our Pedal Wiring Guide.

Drill Template

This Project has been planned to fit into a 125b enclosure type.

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

Licensing and Usage

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

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

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

These boards may be used for commercial endeavors in any quantity unless expressly noted. No attribution is necessary, though accreditation or a link back is always much 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 to 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 silkscreen 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 designs with your brand and logo, we could undoubtedly reach an agreement.

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