Zap Device

Based on:
EQD Zap Machine 'limited edition'

Number of parts:
Average, total 48 components

Enclosure type:
125b

Effect type:
Unique overdrive

Technology:
BJT transistors

Get your board at:
Zap Device

Build difficult:
Moderate

Power consumption:
9V

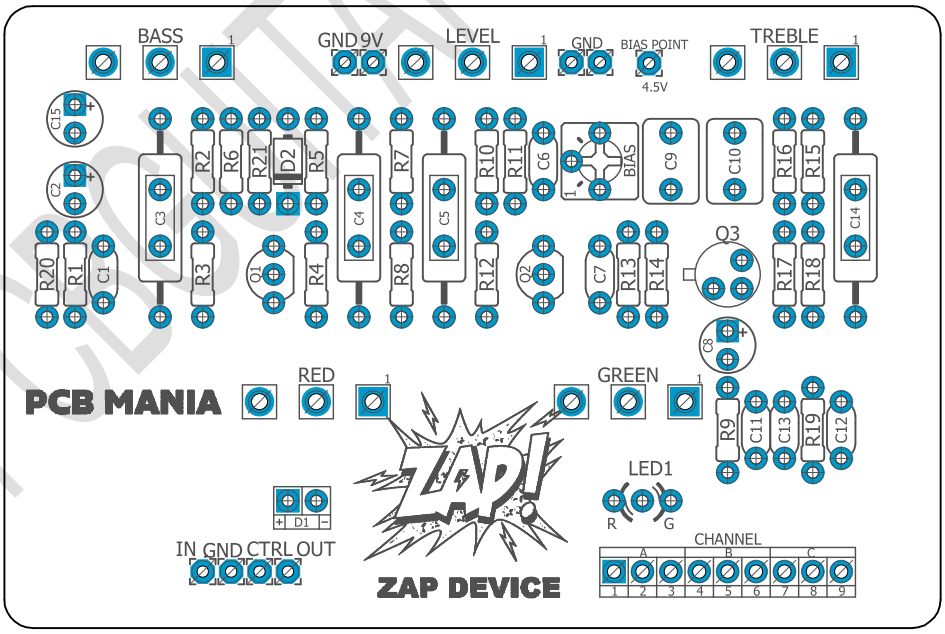
Get your kit at:
Das Musikding (Europe)

Project overview:

If you're looking for a truly unique addition to your gear collection, you may want to check out the Zap Machine by Earthquake Devices. This limited-run pedal was released in 2010, with fewer than 25 made. That's why, if you go to their website, you will run into a haunting sign:

THIS DEVICE IS NO LONGER IN PRODUCTION

But don't worry; PCB Guitar Mania has got you covered! We bring you the 2v and updated version, where Jamie included two channels and incorporated the Treble circuit. There are only 350 units of those in existence! So why go on a wild goose chase for an almost unobtainable PCB when you can proudly build it yourself?



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Introduction

The EQD Limited-Edition Zap Machine V2 is a dual-channel hybrid device made of silicon and germanium that's super touch-sensitive, meaning it's really responsive to your playing style.

What's great about it is that it has a wide range of sounds – you can go from a clean boost to a really intense fuzz just by adjusting the controls. You can even tweak the low-end frequencies to change the character of the sound, so it can behave like an overdrive, distortion, or fuzz box, depending on how you set it up.

Another cool thing is that it responds really well to your picking dynamics – something you don't always get with other fuzz boxes. And if you need to clean up your sound, just adjust the volume knob on your guitar

Controls

Potentiometers

- Bass
- Green
- Level
- Red
- Treble

Bill of materials

Resistors	
Part	**Value**
R1	47k
R2	470k
R3	43k
R4	484r
R5	12k4
R6	12k4
R7	100k
R8	1k
R9	1k
R10	18K7
R11	1k
R12	470r
R13	220K
R14	2K2
R15	12k
R16	47k
R17	12k
R18	12k
R19	1k
R20	1m
R21	100r

Capacitors	
Part	**Value**
C1	100pf
C3*	10n
C4*	100n
C5*	100n
C6	10n
C7*	1n
C9	1u
C10	1u
C11	6n8
C12*	470pf
C13*	1n
C14*	10n

Electrolytics Capacitors	
Part	**Value**
C2	4.7u
C8	4.7u
C15	4.7u

Potentiometers	
Part	**Value**
BASS	100K B
GREEN	500K A
LEVEL	500K A
RED	500k A
TREBLE	500K A

Trimpots	
Part	**Value**
BIAS	20k

Transistors	
Part	**Value**
Q1	2N5089
Q2	2N3904
Q3	2N1302

Diodes	
Part	**Value**
LED1	LED Dual Common Cathode
D1	3mm red LED
D2	1n5817

Shopping list

Resistors		
Qty	**Value**	**Parts**
1	100k	R7
1	100r	R21
3	12k	R15, R17, R18
2	12k4	R5, R6
1	18K7	R10
4	1k	R8, R9, R11, R19
1	1m	R20
1	220K	R13
1	2K2	R14
1	43k	R3
1	470k	R2
1	470r	R12
2	47k	R1, R16
1	484r	R4

Capacitors		
Qty	**Value**	**Parts**
2	100n	**C4*, C5***
1	100pf	C1
3	10n	**C3***, C6, **C14***
3	1n	**C7*, C12*, C13***
2	1u	C9, C10
1	6n8	C11

Electrolytics Capacitors		
Qty	**Value**	**Parts**
3	4.7u	C2, C8, C15

Potentiometers		
Qty	**Value**	**Parts**
1	100K B	BASS
4	500K A	GREEN, LEVEL, TREBLE, RED

Trimpots		
Qty	**Value**	**Parts**
1	20k	BIAS

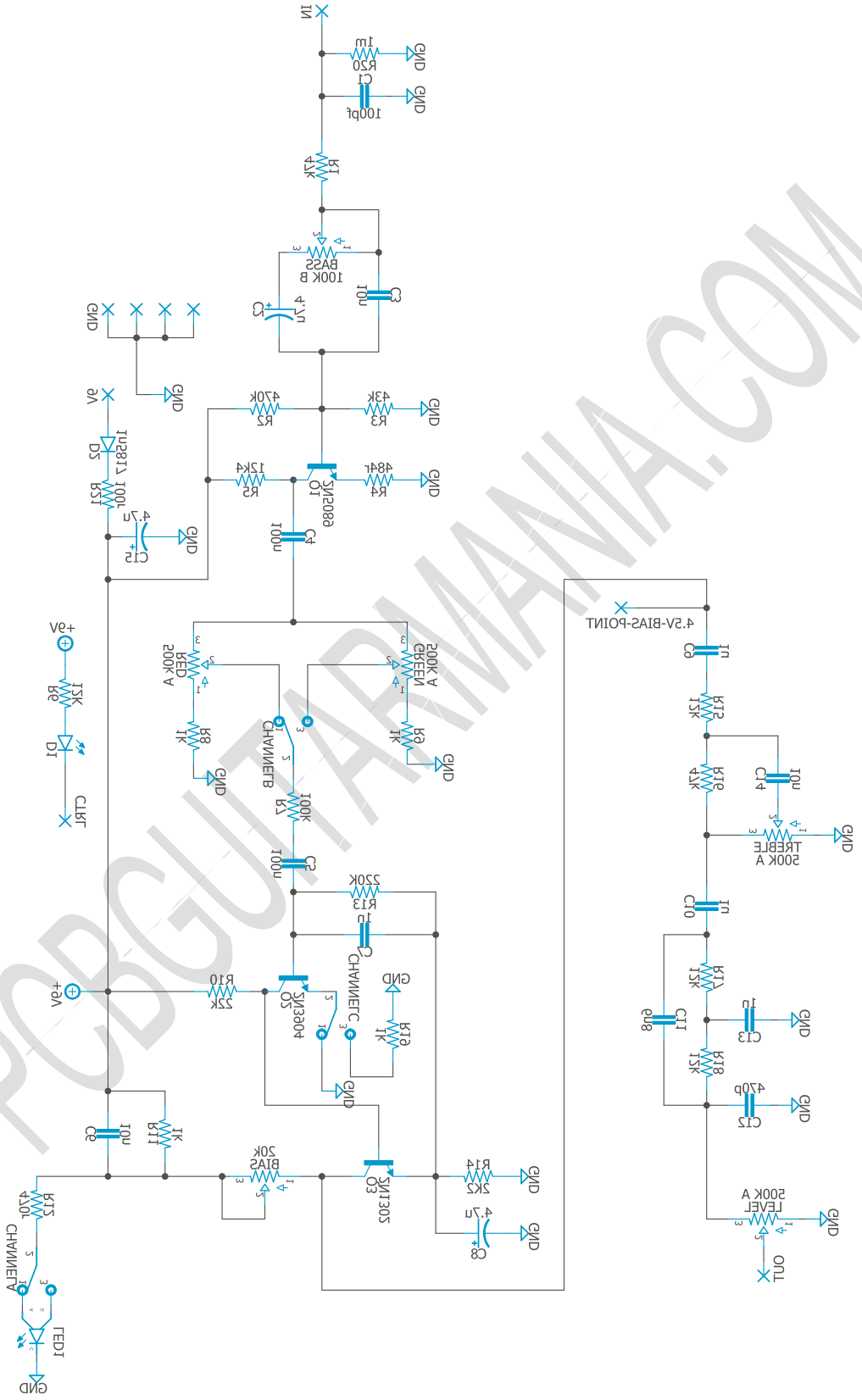
Transistors		
Qty	**Value**	**Parts**
1	2N1302	Q3
1	2N3904	Q2
1	2N5089	Q1

Diodes		
Qty	**Value**	**Parts**
1	LED Dual Common Cathode	LED1
1	3mm red LED	D1
1	1n5817	D2

Switches		
Qty	**Value**	**Parts**
2	3PDT Stomp foot	Channel, Footswitch

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

C3, C14, C4, C5, C7, C12, C13*

On those values, this PCB allows you the flexibility to select between standard capacitors or axial capacitors, which closely replicate the original pedal.

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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