ShoeMan

Based on:
Schumann PLL One

Number of parts:
High, total 81 components

Enclosure type:
1590bb

Effect type:
Analog Fuzz harmonizer

Technology:
Operational Amplifiers and CMOS

Get your board at:
Shoeman

Build difficult:
Advanced

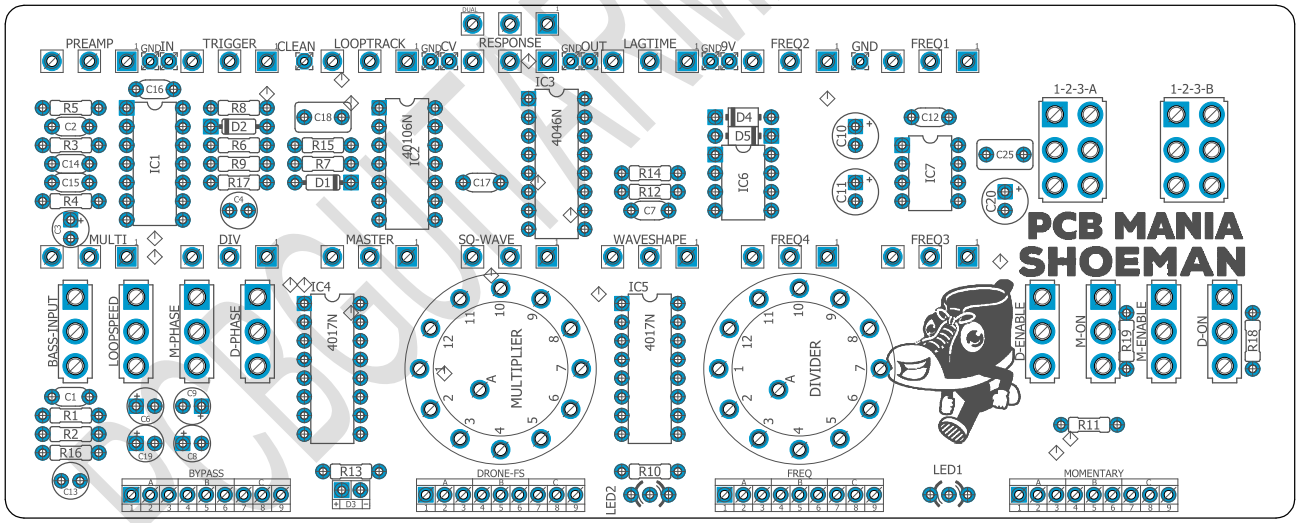
Power consumption:
9V

Get your kit at:
Das Musikding (Europe)

Project overview:

Shoeman is one of the coolest, rarest, and most sought effects pedals ever made. This absolute unit of pure genius is full of more options than any pedal probably should have.

An analog harmonizer that turns your input signal into a square wave and then launches it through a multiplier and divider that adds intervals to your note, sending your signal into the far reaches of space and beyond.



Index

Introduction

This crazy analog fuzz harmonizer turns your guitar or any other instrument into a badass chord machine that allows control over each voice independently with specific knobs. Plus, the Looptrack control lets you decide just how accurately it follows your playing. And the best part? The controls are super interactive with each other, making for some seriously cool sound experimentation.

I've been playing around with mine ever since it was created, and let me tell you, this thing has limitless potential. I mean, with 14 potentiometers and 16 switches, you can create an infinite amount of sounds and chord combinations. And the best part is, the more you play with it, the more you discover just how versatile it is. It's like a never-ending journey of sound exploration; the possibilities are truly endless.

Controls

Potentiometers

- Div
- Freq1
- Freq2
- Freq3
- Freq4
- Lagtime
- Looptrack
- Master
- Multi
- Preamp
- Response
- SQ-Wave
- Trigger
- Waveshape

Switches

- D-On
- M-ON
- M-ENABLE
- D-ENABLE
- M-PHASE
- D-PHASE
- BASS-INPUT
- Loopspeed
- 1-2-3 A
- 1-2-3 B
- Freq
- DRONE-FS
- Momentary
- BYPASS
- Multiplier
- Divider

Bill of materials

Resistors	
Part	**Value**
R1	150k
R2	10k
R3	1k
R4	200k
R5	1m
R6	10k
R7	10k
R8	10k
R9	100k
R10	4k7
R11	4k7
R12	1m
R13	4k7
R14	10k
R15	10k
R16	1m
R17	150k
R18	1m
R19	1m

Capacitors	
Part	**Value**
C1	10p
C2	47p
C7	10n
C12	100n
C14	100p
C15	220n
C16	100n
C17	20n
C18	470n
C25	470n

Electrolytic Capacitors	
Part	**Value**
C3	10u
C6*	**470n - 10u**
C8	2u2
C9	2u2
C10	100u
C11	10u
C19	33u
C20	47u

Non-polarized Capacitors	
Part	**Value**
C4	**10u****
C13	**10u****

Potentiometers	
Part	**Value**
DIV	100K A
FREQ1	1M B
FREQ2	1M B
FREQ3	1M B
FREQ4	1M B
LAGTIME	10K B
LOOPTRACK	500K A
MASTER	100K A
MULTI	100K A
PREAMP	10K A
RESPONSE	1M B Stereo
SQ-WAVE	100K A
TRIGGER	10K B
WAVESHAPE	250K B

Switches	
Part	**Value**
D-ON	SPDT On-On
M-ON	SPDT On-On

M-ENABLE	SPDT On-On
D-ENABLE	SPDT On-On
M-PHASE	SPDT On-On
D-PHASE	SPDT On-On
BASS-INPUT	SPDT On-On
Loopspeed	SPDT On-Off-On
1-2-3 A	DPDT On-On-On Type 1
1-2-3 B	DPDT On-On-On Type 1
FREQ	3PDT On-On
DRONE-FS	3PDT On-On
Momentary	3PDT Momentary non latching On-On
BYPASS	3PDT On-Off
Multiplier	1P12t set to 8 positions
Divider	1P12t set to 8 positions
-	3PDT Stomp foot
-	3PDT Stomp foot
-	3PDT Stomp foot
-	3PDT Stomp foot

IC	
Part	**Value**
IC1	TL074
IC2	40106N
IC3	4046N
IC4	4017N
IC5	4017N
IC6	TL072
IC7	TC1044SCPA

Diodes	
Part	**Value**
D1	1N4001
D2	1N4001
D3	3mm LED
D4	1n5817
D5	1n4742
LED1	Dual LED Common Cathode
LED2	Dual LED Common Cathode

Jacks	
Part	**Value**
-	DC Jack
-	Audio Jack
-	Audio Jack

Shopping list

Resistors		
Qty	**Value**	**Parts**
1	100k	R9
6	10k	R2, R6, R7, R8, R14, R15
2	150k	R1, R17
1	1k	R3
5	1m	R5, R18, R12, R16, R19
1	200k	R4
3	4k7	R10, R11, R13

Capacitors		
Qty	**Value**	**Parts**
2	100n	C12, C16
1	100p	C14
1	10n	C7
1	10p	C1
1	20n	C17
1	220n	C15
2	470n	C18, C25
1	47p	C2

Electrolytic Capacitors		
Qty	**Value**	**Parts**
1	100u	C10
2	10u	C3, C11
2	2u2	C8, C9
1	33u	C19
1	**470n - 10u**	**C6***
1	47u	C20

Non-polarized Capacitors		
Qty	**Value**	**Parts**
2	10u non-polarized	C4, C13

Potentiometers		
Qty	**Value**	**Parts**
4	100K A	DIV, MASTER, MULTI, SQ-WAVE
1	10K A	PREAMP
2	10K B	LAGTIME, TRIGGER
4	1M B	FREQ1, FREQ2, FREQ3, FREQ4
1	250K B	WAVESHAPE
1	1M B Stereo	RESPONSE
1	500K A	LOOPTRACK

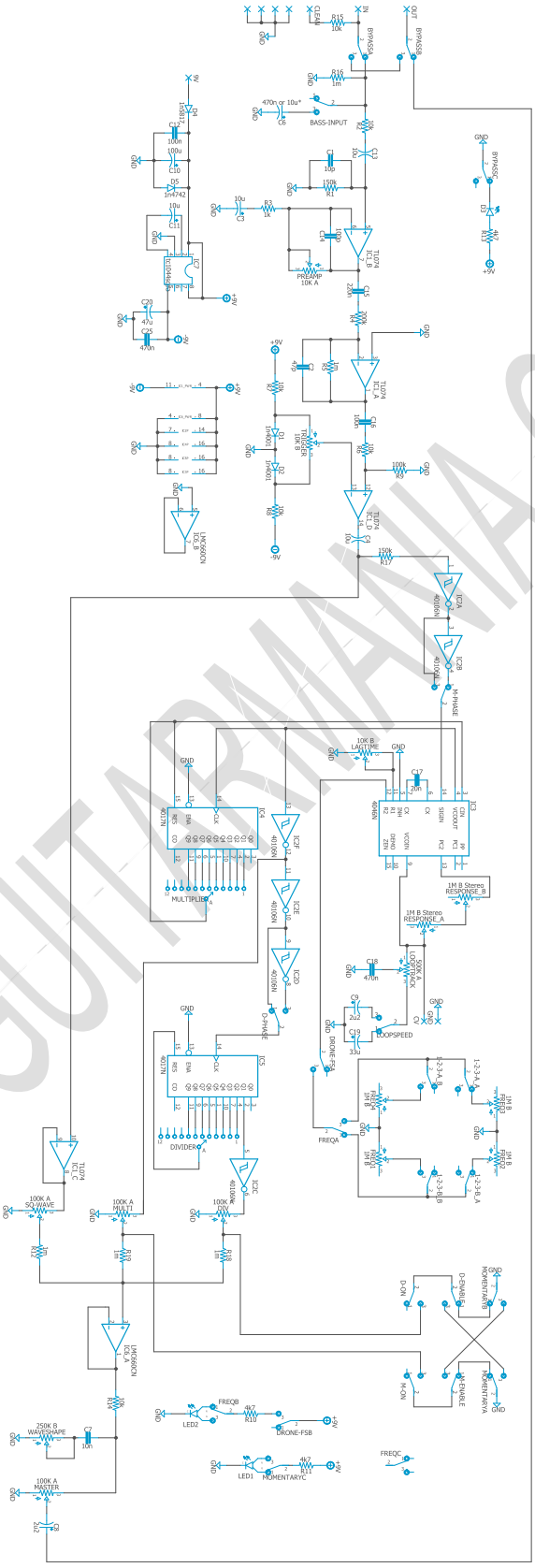
Switches		
Qty	**Value**	**Parts**
7	SPDT On-On	D-ON, M-ON, M-ENABLE, D-ENABLE, M-PHASE, D-PHASE, BASS-INPUT
1	SPDT On-Off-On	Loopspeed
2	DPDT ON-ON-ON Type 1	1-2-3 A, 1-2-3 B
2	3PDT On-On	FREQ, DRONE-FS
1	3PDT Momentary non latching On-On	Momentary
1	3PDT On-Off	BYPASS
2	1P12t set to 8 positions	Multiplier, Divider
4	-	3PDT Stomp foot

IC		
Qty	**Value**	**Parts**
1	40106N	IC2
2	4017N	IC4, IC5
1	4046N	IC3
1	TL072	IC6
1	TL074	IC1
1	TC1044SCPA	IC7

Diodes		
Qty	**Value**	**Parts**
2	1N4001	D1, D2
1	1n4742	D5
1	1n5817	D4
1	3mm LED	D3

Jacks		
Qty	**Value**	**Parts**
1	DC Jack	-
2	Audio Jacks	-

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

C6*

It is a capacitor added in later PLL units. The "CON" switch engages this capacitor, allowing the unit to function better with lower frequency inputs. Reports from two different units have this value at 1uF, and 10uF. Conduct tests to find the value that suits your operation.

C4 & C13**

Both are non-polarized capacitors, which means that it does not matter the direction you place them on the PCB.

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 1590dd 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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