BigBottoms

FX Type: **OCTAVE**
Build Level: Intermediate
Based On: EHX® Octave Multiplexer™

Last Updated: November 22, 2024 6:11 PM

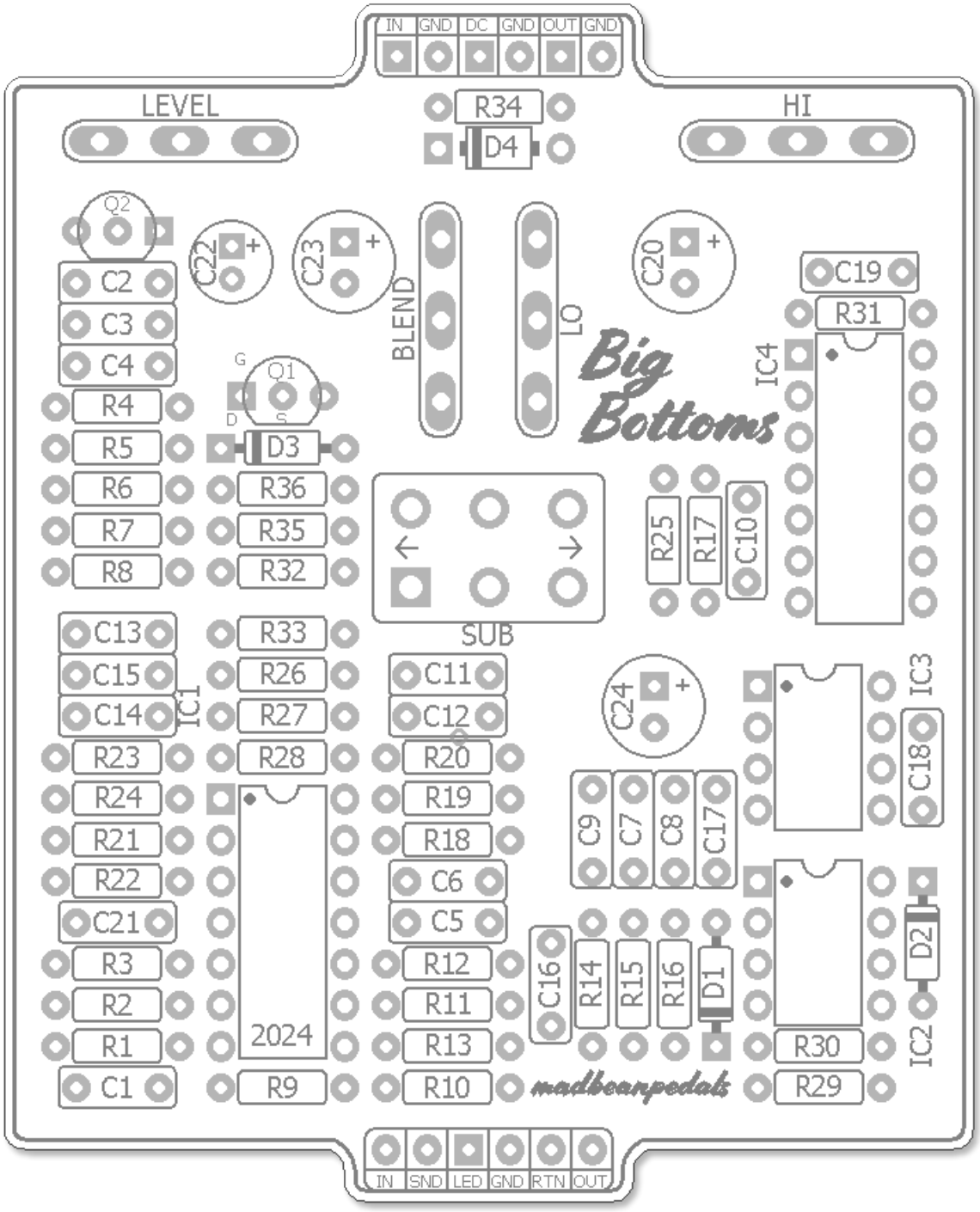
Overview

The **BigBottoms** is based on the vintage 3-knob EHX® Octave Multiplexer™. It creates a monophonic octave down and sounds excellent with guitar and bass. The BigBottoms adds an additional output gain stage with level control for extra flexibility.

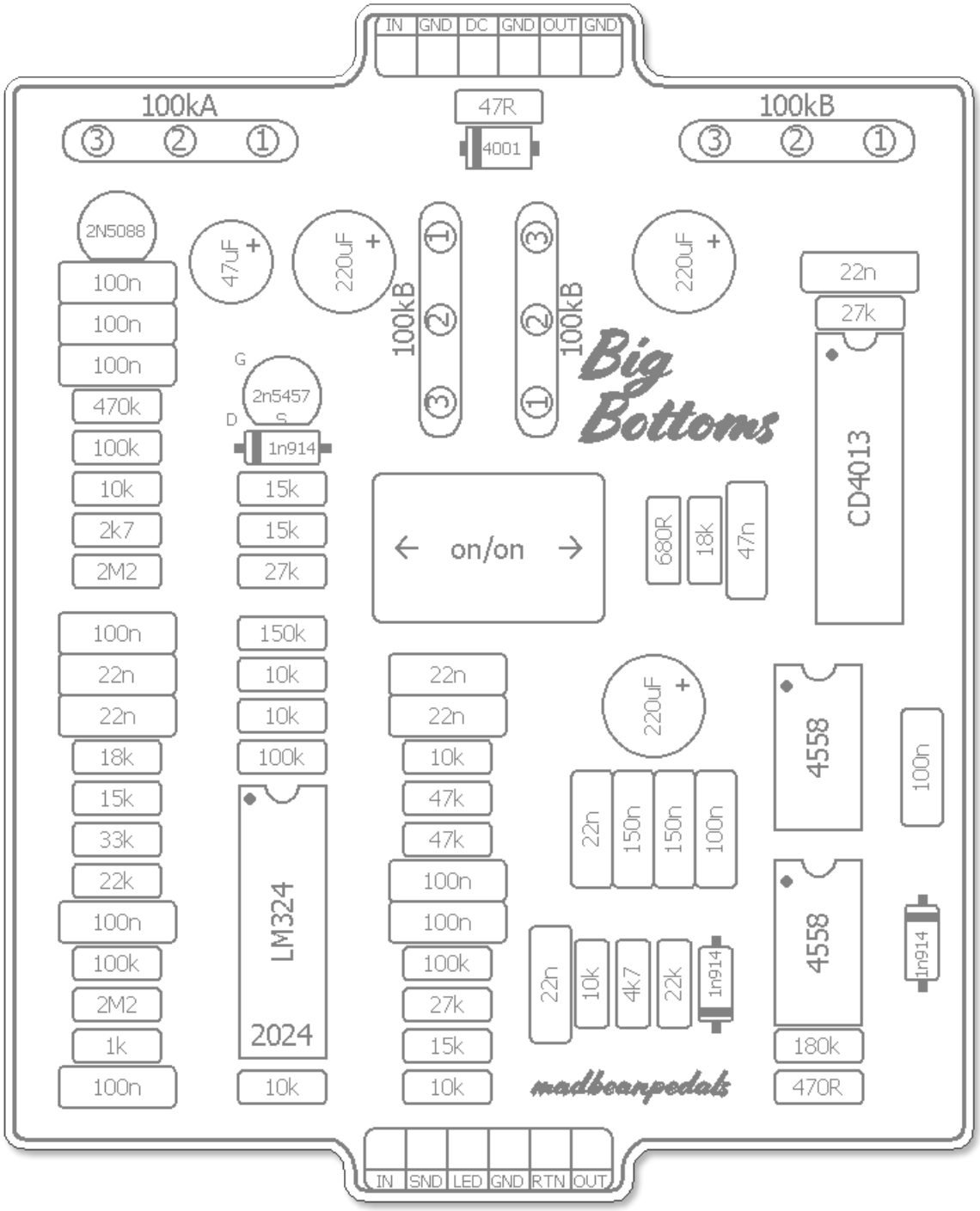
Controls

- **LOW:** Sets the amount of low end present in the octave down voice. This control is disabled when the Sub switch is off (left).
- **HI:** Sets the amount of high end available to the octave down voice.
- **BLEND:** CCW: clean signal, 50% equal amounts of clean and octave down, CW: octave down only.
- **LEVEL:** Output control.
- **SUB:** In the off position (left) the Sub switch deactivates the LOW control. In on position (right) the LOW control becomes active and allows for additional tone chaping of the octave down.

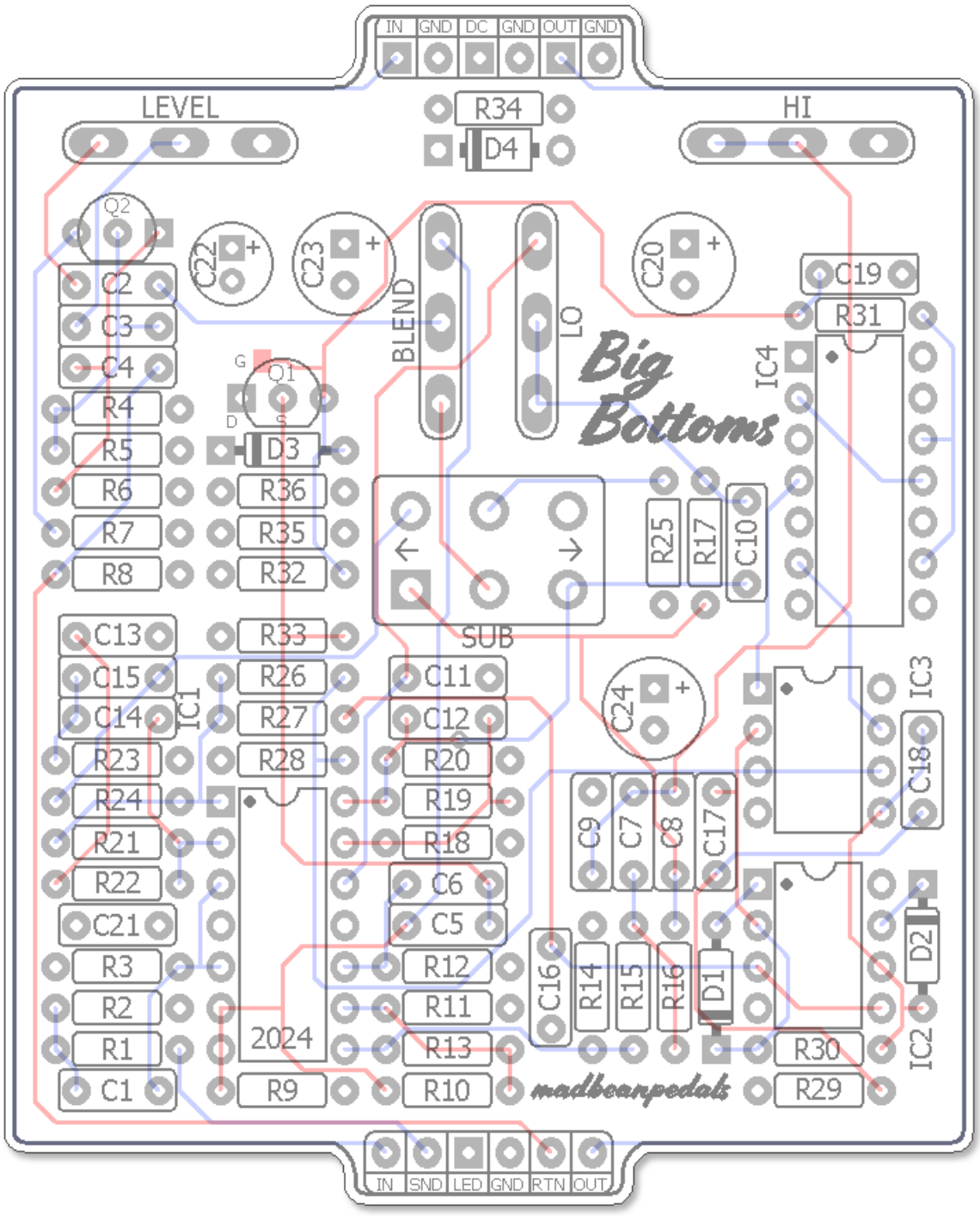
Parts Layout



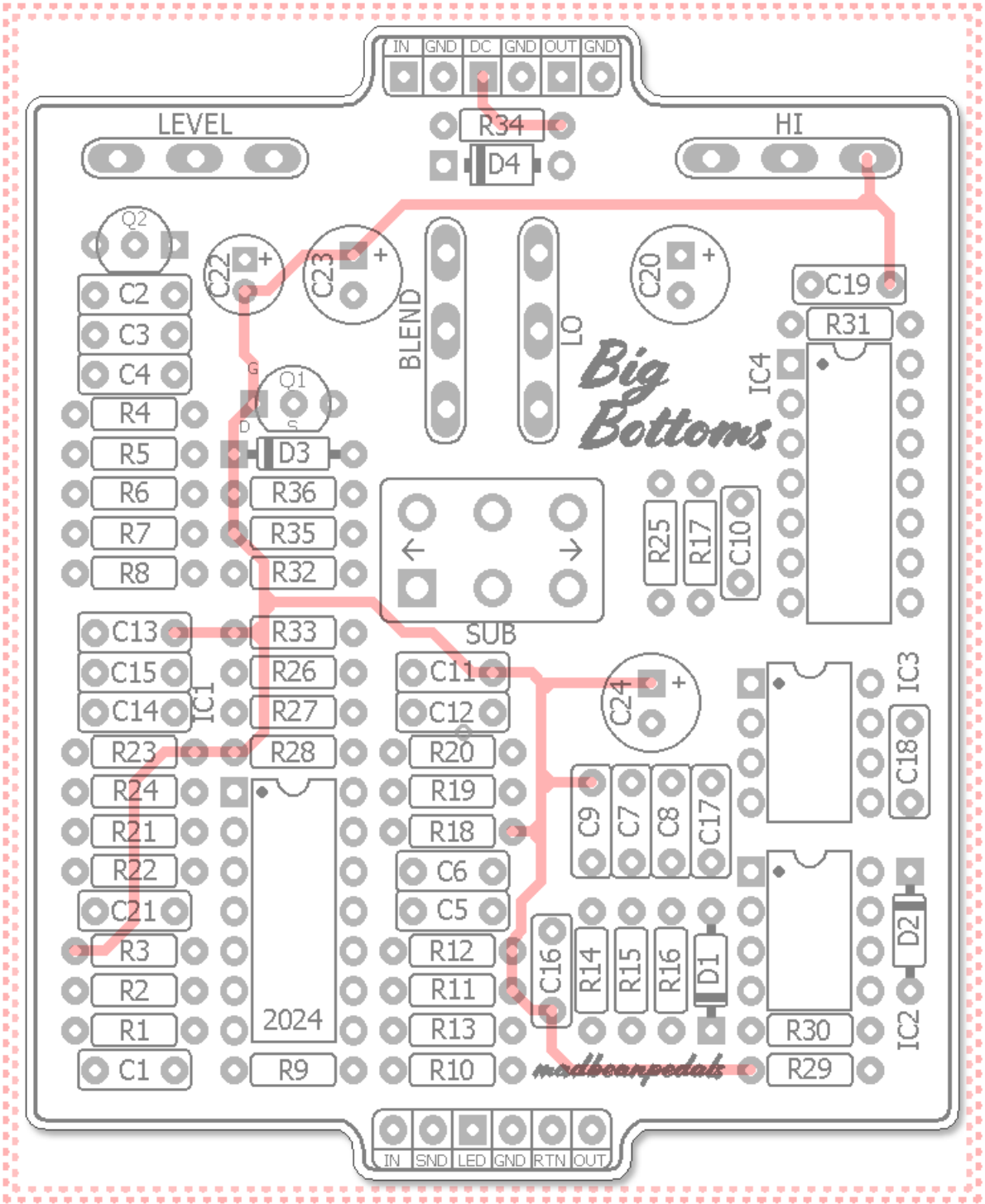
Component Values



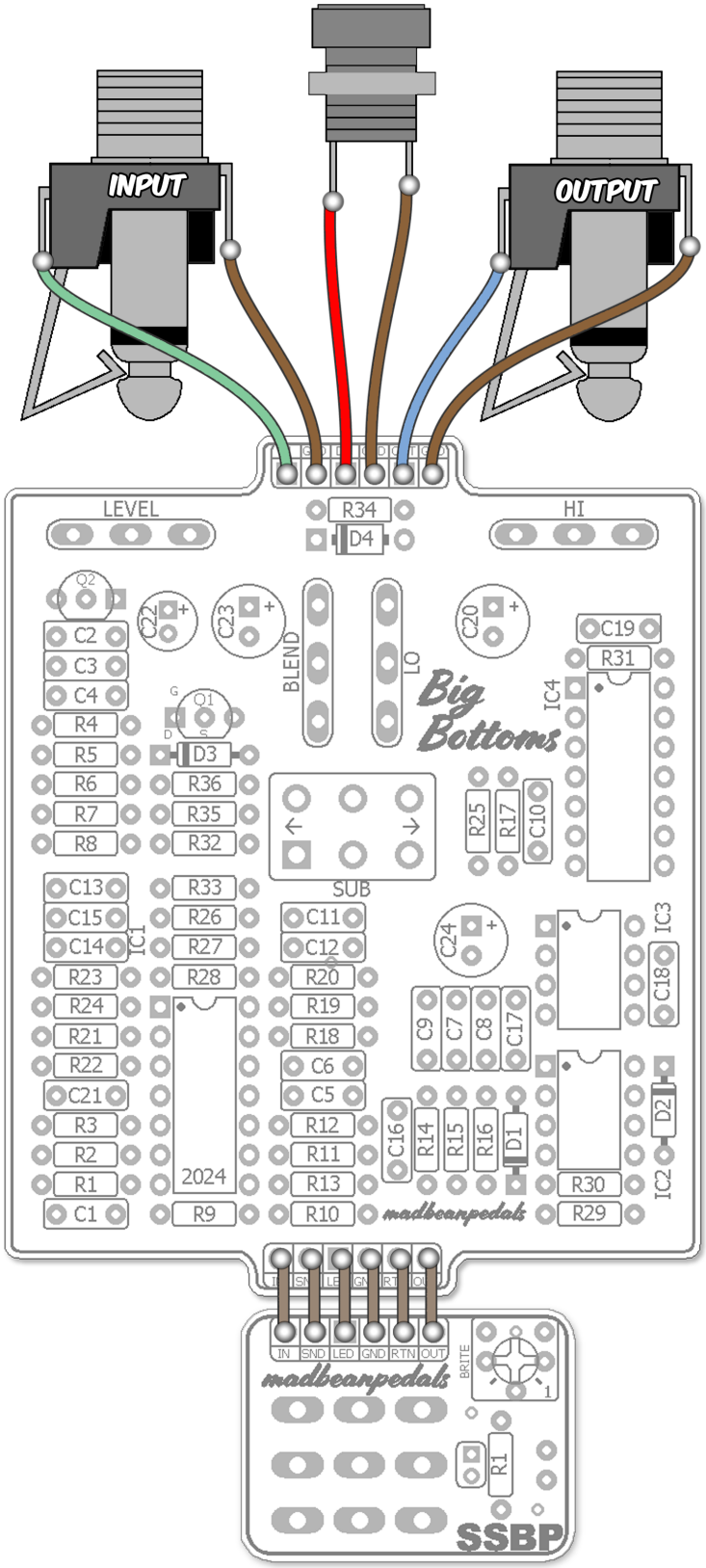
Traces - Outer



Traces - Inner



Wiring



The BigBottoms is compatible with both the **SSBP** and **SSABP** bypass boards available at madbeanpedals. The wiring is the same for both.

B.O.M.

Resistors		Caps		Diodes	
R1	1k	C1	100n	D1	1n914
R2	2M2	C2	100n	D2	1n914
R3	100k	C3	100n	D3	1n914
R4	470k	C4	100n	D4	1n4001
R5	100k	C5	100n	Transistors	
R6	10k	C6	100n	Q1	2n5457
R7	2k7	C7	150n	Q2	2N5088
R8	2M2	C8	150n	IC	
R9	10k	C9	22n	IC1	LM324
R10	10k	C10	47n	IC2	4558
R11	27k	C11	22n	IC3	4558
R12	100k	C12	22n	IC4	CD4013
R13	15k	C13	100n	Switches	
R14	10k	C14	22n	SUB	On/On
R15	4k7	C15	22n	Pots	
R16	22k	C16	22n	BLEND	100kB
R17	18k	C17	100n	HI	100kB
R18	47k	C18	100n	LO	100kB
R19	47k	C19	22n	LEVEL	100kA
R20	10k	C20	220uF		
R21	33k	C21	100n		
R22	22k	C22	47uF		
R23	18k	C23	220uF		
R24	15k	C24	220uF		
R25	680R				
R26	10k				
R27	10k				
R28	100k				
R29	470R				
R30	180k				
R31	27k				
R32	27k				
R33	150k				
R34	47R				
R35	15k				
R36	15k				

Shopping List

Value	QTY	Type	Rating
47R	1	Carbon / Metal Film	1/4W
470R	1	Carbon / Metal Film	1/4W
680R	1	Carbon / Metal Film	1/4W
1k	1	Carbon / Metal Film	1/4W
2k7	1	Carbon / Metal Film	1/4W
4k7	1	Carbon / Metal Film	1/4W
10k	7	Carbon / Metal Film	1/4W
15k	4	Carbon / Metal Film	1/4W
18k	2	Carbon / Metal Film	1/4W
22k	2	Carbon / Metal Film	1/4W
27k	3	Carbon / Metal Film	1/4W
33k	1	Carbon / Metal Film	1/4W
47k	2	Carbon / Metal Film	1/4W
100k	4	Carbon / Metal Film	1/4W
150k	1	Carbon / Metal Film	1/4W
180k	1	Carbon / Metal Film	1/4W
470k	1	Carbon / Metal Film	1/4W
2M2	2	Carbon / Metal Film	1/4W
22n	7	Film	16v min
47n	1	Film	16v min
100n	10	Film	16v min
150n	2	Film	16v min
47uF	1	Electrolytic	16v min
220uF	3	Electrolytic	16v min
1n914	3		
1n4001	1		
2n5457	1	smd or through-hole	
2N5088	1		
LM324	1		
4558	2		
CD4013	1		
DPDT	1	On/On, Pin Mount	
100kB	3	PCB Right Angle	16mm
100kA	1	PCB Right Angle	16mm

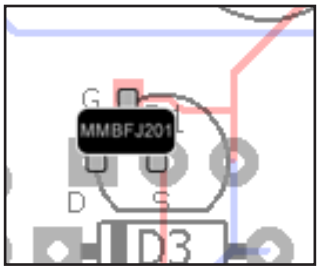
Additional Hardware

(1) 125B enclosure
(2) 1/4” mono jacks
(1) Slim 2.1mm DC jack
(1) Standard 3PDT footswitch
(1) 5mm LED

Build Notes

This is probably not a total beginner project but otherwise it is a simple and straight-forward build. Anyone with a couple solid builds under their belt should be able to BigBottoms themselves easily.

Q1 can be either a through-hole 2n5457 or its SMD counterpart. The the surface mount, the gate is soldered to the square pad and the drain and source are soldered directly to the through-hole pads.



Circuit Voltages

IC1	LM324
1	4.52
2	4.53
3	4.49
4	9.01
5	4.49
6	4.52
7	4.53
8	4.47
9	4.51
10	4.46
11	0
12	4.42
13	4.48
14	4.46

IC2	4558
1	2.26
2	4.53
3	4.52
4	0
5	4.52
6	4.48
7	7.45
8	9.01

IC3	4558
1	5.3
2	4.53
3	4.51
4	0
5	4.48
6	4.52
7	5..42
8	9.01

IC4	CD4013
1	5.3
2	5.11
3	0
4	5.3
5	0
6	5.33
7	0
8	0
9	7.55
10	0
11	0
12	4.56
13	4.6
14	9.01

Q1	2n5457
D	4.59
S	4.45
G	2.24

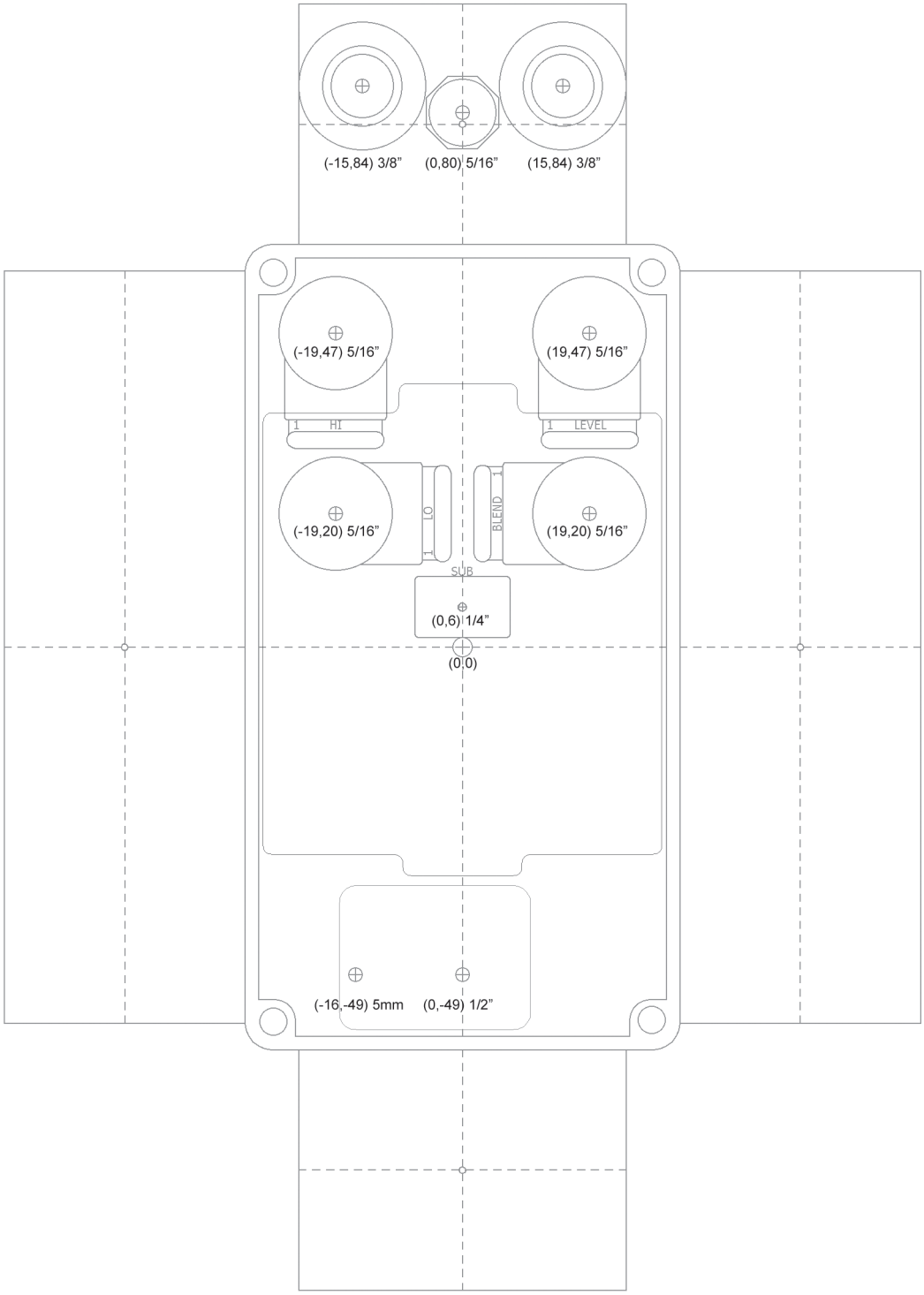
Q2	2n5088
C	5.5
B	1.53
E	0.94

- 9.5vDC One Spot
- Current Draw ~ 9mA

Drill Template

Coordinates are denoted in (X,Y), drill size format starting from the center (0,0) location of the enclosure.

Tayda drill template: https://drill.taydakits.com/box-designs/new?public_key=Q3haaUdHemZTY1p6d0ZQN1NKY0hqdz09Cg==

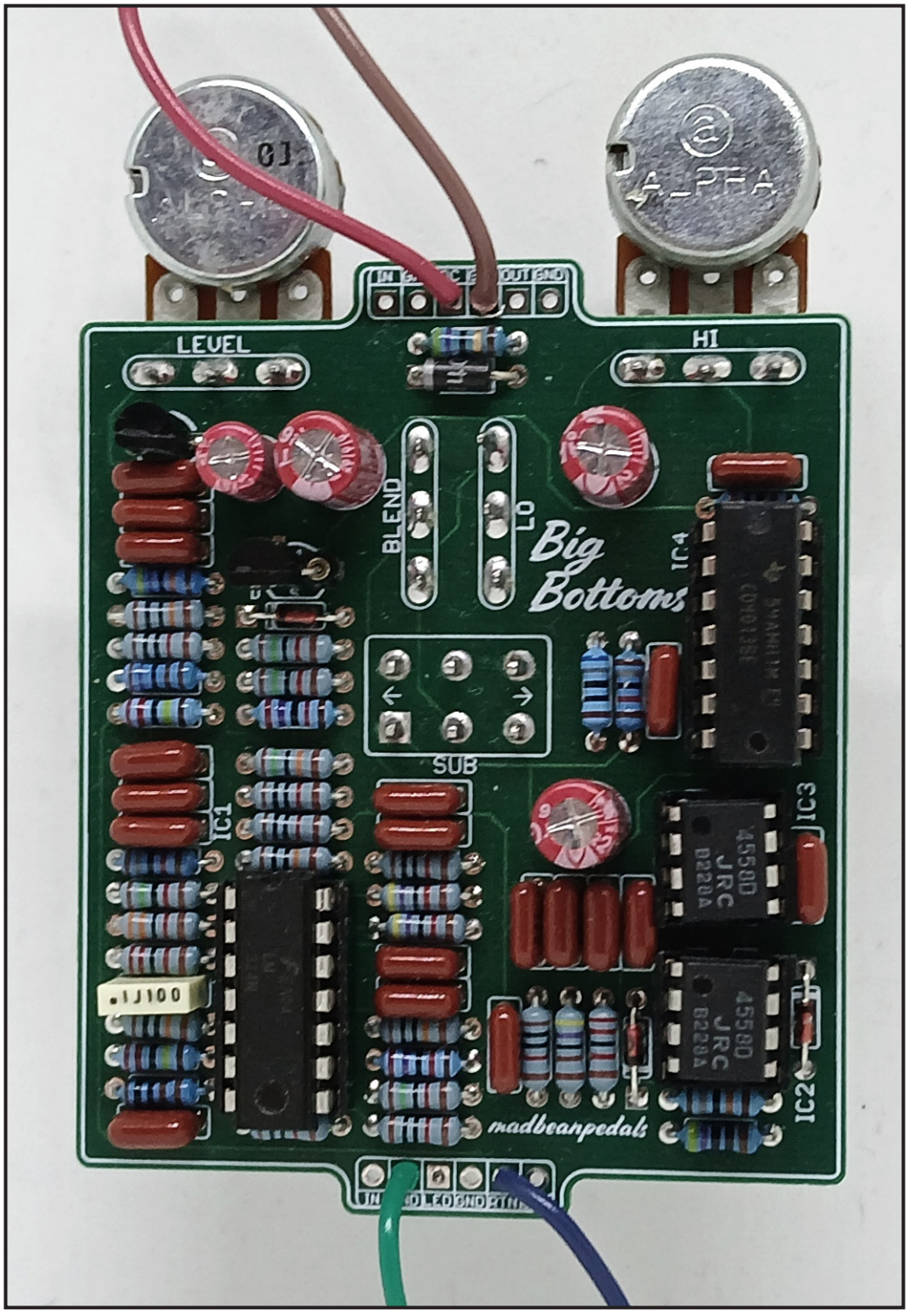


Hardware

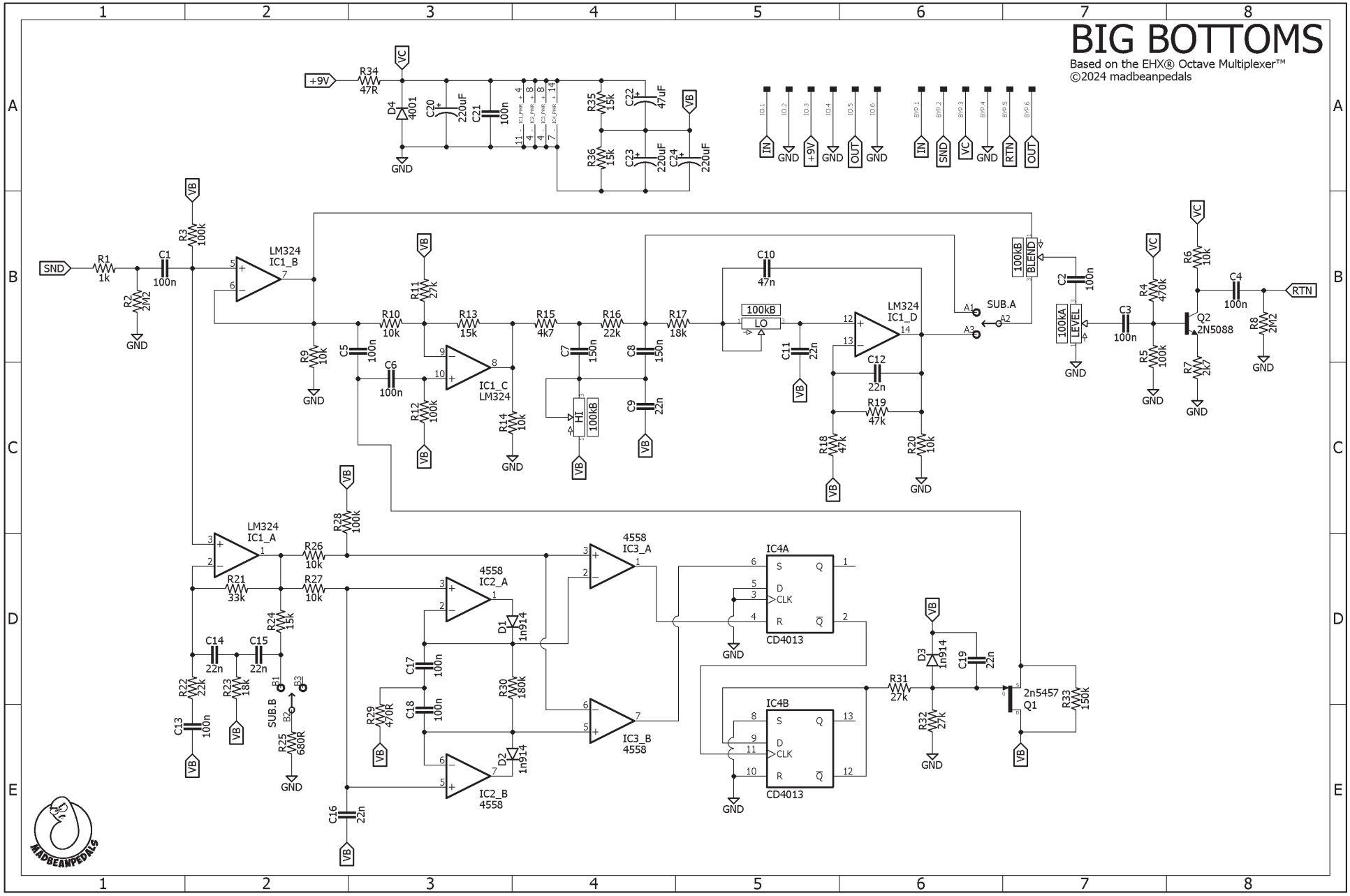
125B enclosure
Mono jacks
Slim 2.1mm DC jack
Standard 3PDT footswitch
5mm LED

NOTE: Different 1/4" and DC jack styles may require different sized drill holes.

Build Pic


LEVEL
HI
BLEND
LO
Big
Bottoms
SUB
IC1
IC2
IC3
IC4
4558D
JRC
madbeanpedals

Schematic


BIG BOTTOMS
Based on the EHX® Octave Multiplexer™
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+9V
R34 47R
D4 4001
C20 220uF
C21 100n
R35 15k
R36 15k
C22 47uF
C23 220uF
C24 220uF
VC
VB
GND
IO.1 IN
IO.2 GND
IO.3 +9V
IO.4 GND
IO.5 OUT
IO.6 GND
BYP.1 IN
BYP.2 SND
BYP.3 VC
BYP.4 GND
BYP.5 RTN
BYP.6 OUT
SND
R1 1k
C1 100n
R2 2M2
R3 100k
LM324 IC1_B
R9 10k
C5 100n
C6 100n
R10 10k
R11 27k
R12 100k
R13 15k
IC1_C LM324
R14 10k
R15 4k7
C7 150n
HI 100kB
R16 22k
C8 150n
C9 22n
R17 18k
C10 47n
100kB LO
C11 22n
LM324 IC1_D
C12 22n
R19 47k
R18 47k
R20 10k
100kB BLEND
A1 SUB.A A2 A3
C2 100n
100kA LEVEL
C3 100n
R4 470k
R5 100k
R6 10k
C4 100n
Q2 2N5088
R7 2k7
R8 2M2
RTN
LM324 IC1_A
R28 100k
R26 10k
R21 33k
R27 10k
4558 IC2_A
4558 IC3_A
D1 1n914
C17 100n
C18 100n
R29 470R
R30 180k
D2 1n914
IC2_B 4558
IC3_B 4558
C16 22n
R24 15k
C14 22n
C15 22n
R22 22k
R23 18k
C13 100n
SUB.B
R25 680R
B1 B2 B3
IC4A
IC4B
CD4013
CD4013
R31 27k
D3 1n914
C19 22n
2n5457 Q1
R33 150k
R32 27k
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