

Bonesaw

FX Type: **FUZZ OCTAVE**

Build Level: Beginner

Based On: Univox® Super Fuzz™

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Overview

The **Bonesaw** is a faithful adaption of the ever-popular Univox® SuperFuzz™. It produces thick fuzz with a pronounced analog octave-up. This is a gnarly sounding circuit and fit for any guitar player who likes chaos now and then. Like most octave-up fuzz, when doing double stop bends a third note is produced that dive-bombs with the strings.

Controls

- **EXP:** Fuzz/Gain control
- **BAL:** Output volume.
- **TONE:** Down position is “normal”. Up position is heavily scooped.
- **SCOOP:** This dip switch changes the frequency center of the Tone control in the up position.
- **OCT:** This trimmer changes the tonality of the octave up sound. See Notes.

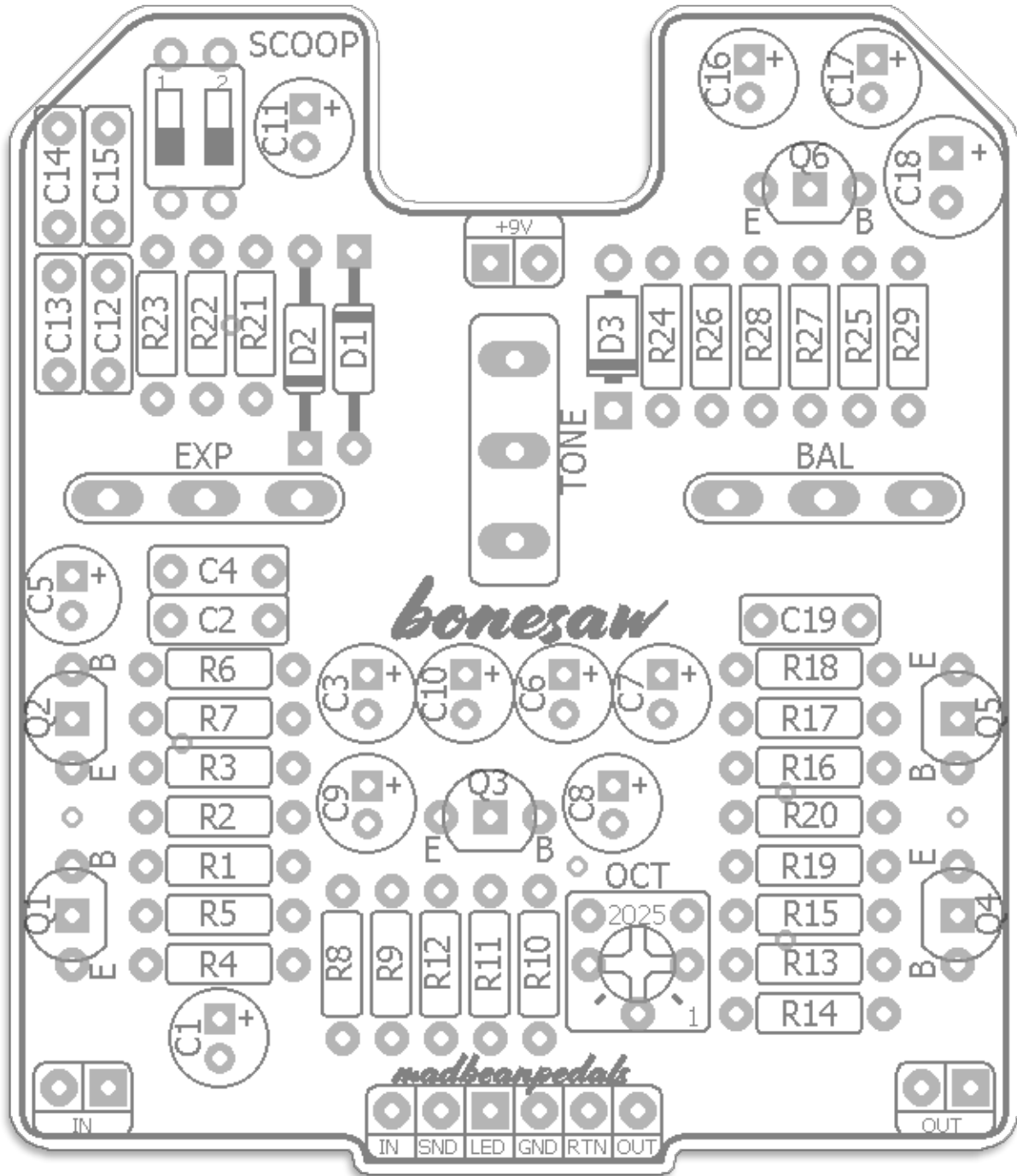
Further Reading: <http://revolutiondeux.blogspot.com/2012/02/univox-super-fuzz.html>

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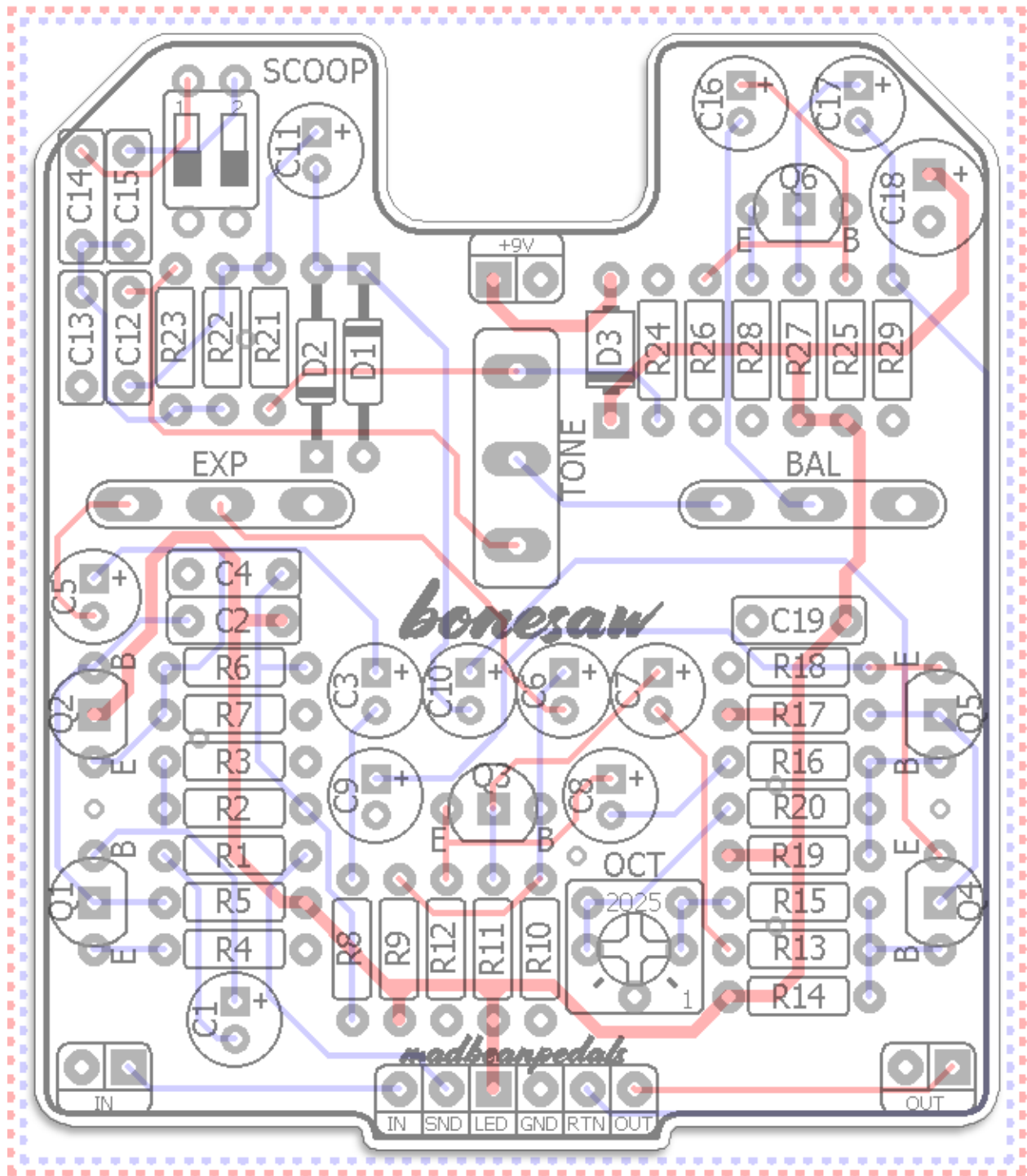
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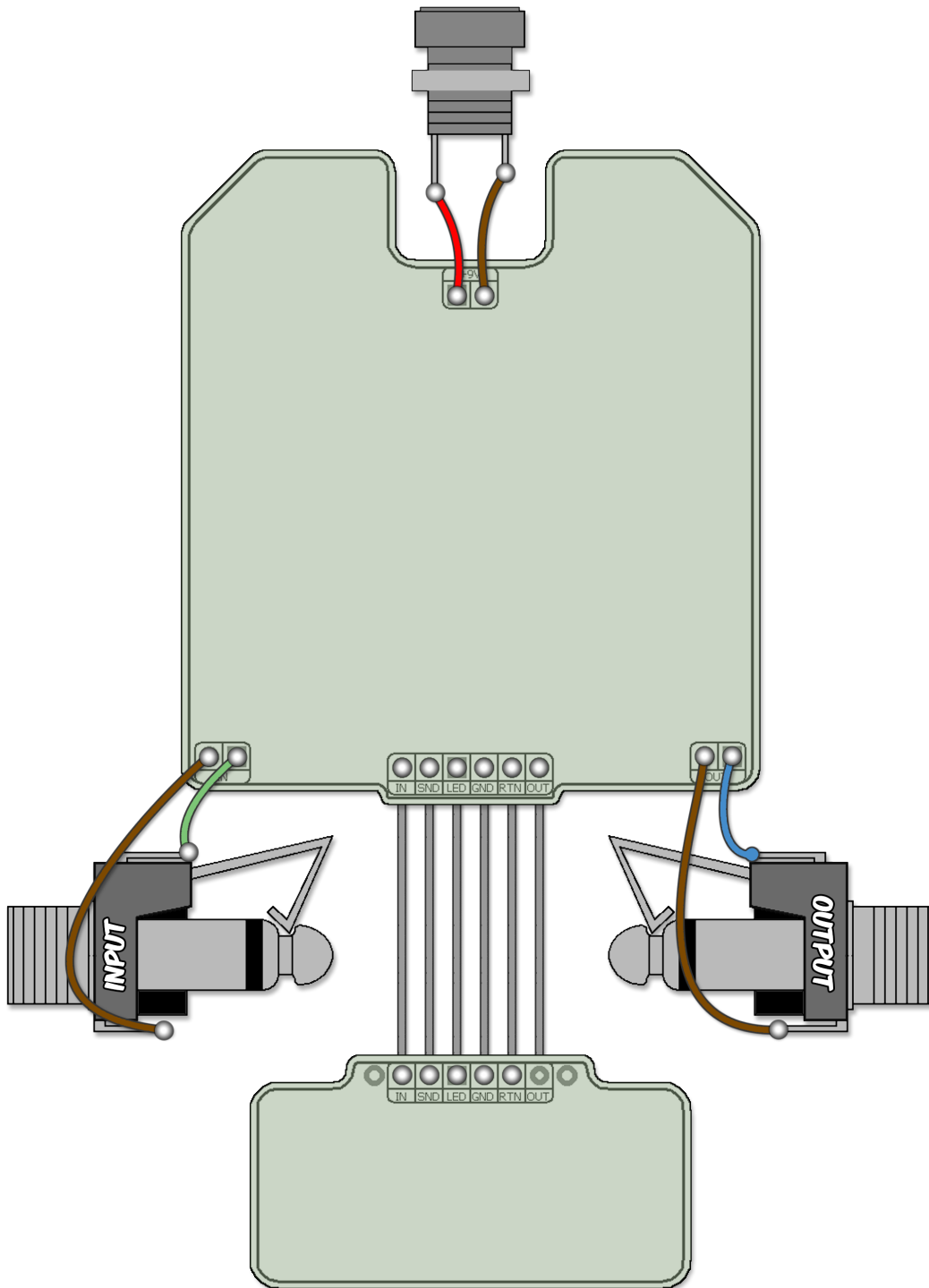
Parts Layout



Trace Layout



Wiring



Unless otherwise noted, all Standard Series projects have the same wiring regardless of which 3PDT bypass board is used. A 6-pin, 2" ribbon cable is recommended for soldering the connections between the two PCBs.

B.O.M.

Resistors		Caps		Diodes	
R1	22k	C1	10uF	D1	1n34A
R2	100k	C2	1n	D2	1n34a
R3	100k	C3	10uF	D3	1n5817
R4	1k8	C4	100n	Transistors	
R5	47k	C5	10uF	Q1 - Q6	2SC828
R6	470k	C6	10uF	Switches	
R7	10k	C7	10uF	SCOOP	DIP
R8	47k	C8	10uF	TONE	SPDT
R9	220k	C9	10uF	Trimmers	
R10	150k	C10	10uF	OCT	10k
R11	10k	C11	10uF	Pots	
R12	10k	C12	1n	BAL	50kB
R13	470R	C13	22n	EXP	50kB
R14	100k	C14	33n		
R15	22k	C15	47n		
R16	470R	C16	10uF		
R17	10k	C17	10uF		
R18	1k8	C18	100uF		
R19	100k	C19	100n		
R20	22k				
R21	47k				
R22	22k				
R23	10k				
R24	10k				
R25	100k				
R26	15k				
R27	10k				
R28	1k				
R29	100k				

Shopping List

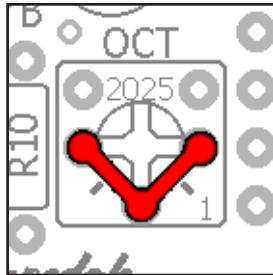
Value	QTY	Type	Rating
470R	2	Carbon / Metal Film	1/4W
1k	1	Carbon / Metal Film	1/4W
1k8	2	Carbon / Metal Film	1/4W
10k	7	Carbon / Metal Film	1/4W
15k	1	Carbon / Metal Film	1/4W
22k	4	Carbon / Metal Film	1/4W
47k	3	Carbon / Metal Film	1/4W
100k	6	Carbon / Metal Film	1/4W
150k	1	Carbon / Metal Film	1/4W
220k	1	Carbon / Metal Film	1/4W
470k	1	Carbon / Metal Film	1/4W
1n	2	Film	16v min.
22n	1	Film	16v min.
33n	1	Film	16v min.
47n	1	Film	16v min.
100n	2	Film	16v min.
10uF	11	Electrolytic	16v min.
100uF	1	Electrolytic	16v min.
1n34a	2	or, silimar GE	
1n5817	1		
2SC828	6		
DIP	1	2-pos., mini	
SPDT	1	On/On, Solder Lug	
10k	1	Bourns 3362p or 6mm	
50kB	2	PCB Right Angle	16mm

Additional Hardware

- (1) 1590B enclosure
- (2) Lumberg 1/4" Compact mono jacks
- (1) Slim 2.1mm DC jack
- (1) Standard 3PDT footswitch
- (1) 5mm LED

Build Notes

- The Bonesaw is fitted for 2sc828 transistors like the vintage units. The pinout for these transistors is E[C]B. If you cannot source the 2sc828 you should be able to sub other transistors with a similar pinout like the 2sc1815. If all else fails, use a EB[C] pinout transistor like the 2n3904 and bend the leads to fit the footprint on the PCB.
- If you have a transistor tester, used matched hFE for Q4 and Q5 for achieve the best octave up sound.
- The OCT trimmer is a popular mod for DIY builders of the SuperFuzz™. It alternates the input bias to the Q4/Q5 differential pair. In practice, it seems to alter the tonality of the octave up somewhat as well as where it “sits” in the mix with the fuzz sound. The right setting is the one that sounds best to you. I liked it best around 1/3rd up.
- If you wish to build it stock, omit the OCT trimmer and wire jumpers from the outside pins to the center pin.



- The Scoop dip-switch allows you to change the midpoint of the scoop when the Tone switch is in the up position. It is disabled when the Tone switch is in the down position.

These are the settings:

Both switches up = $22n \parallel 33n \parallel 47n = 102n$ (stock and heavily scooped)

[1] down [2] up = $22n \parallel 47n = 69n$

[1] up [2] down = $22n \parallel 33n = 55n$

[1] and [2] down = $22n$ (getting into a more nasal range)

- If you wish to build the Bonesaw stock, omit the dip-switch, C14 and C15 and make C13 100n.

Dip Switch:

<https://smallbear-electronics.mybigcommerce.com/dip-switch-2-position/>

<https://stompboxparts.com/switches/dip-switch-2-position/>

<https://www.taydaelectronics.com/electromechanical/switches-key-pad/dip-switch/black-dip-switch-2-positions-gold-plated-contacts-top-actuated.html>

Circuit Voltages

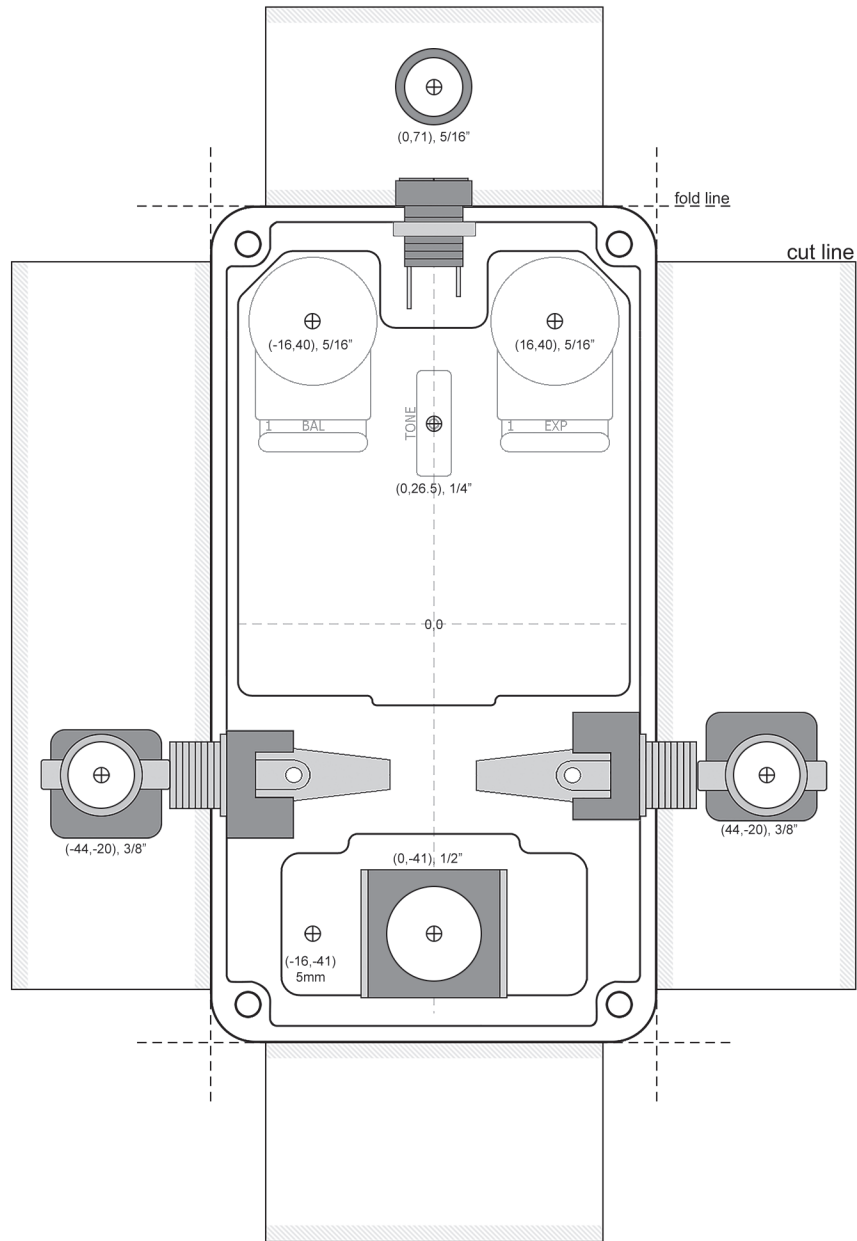
Q1	2sc828	Q4	2sc828
B	0.69	B	1.85
C	5.54	C	1.71
E	136mV	E	1.34
Q2	2sc828	Q5	2sc828
B	5.55	B	1.97
C	9.27	C	1.71
E	4.93	E	1.34
Q3	2sc828	Q6	2sc828
B	3.58	B	1.16
C	6.26	C	3.75
E	3.0	E	553mV

9.52vDC One Spot supply
Current Draw: ~2mA

1590B Drill Template

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

[Link to Tayda Standard Series master drill template](#)

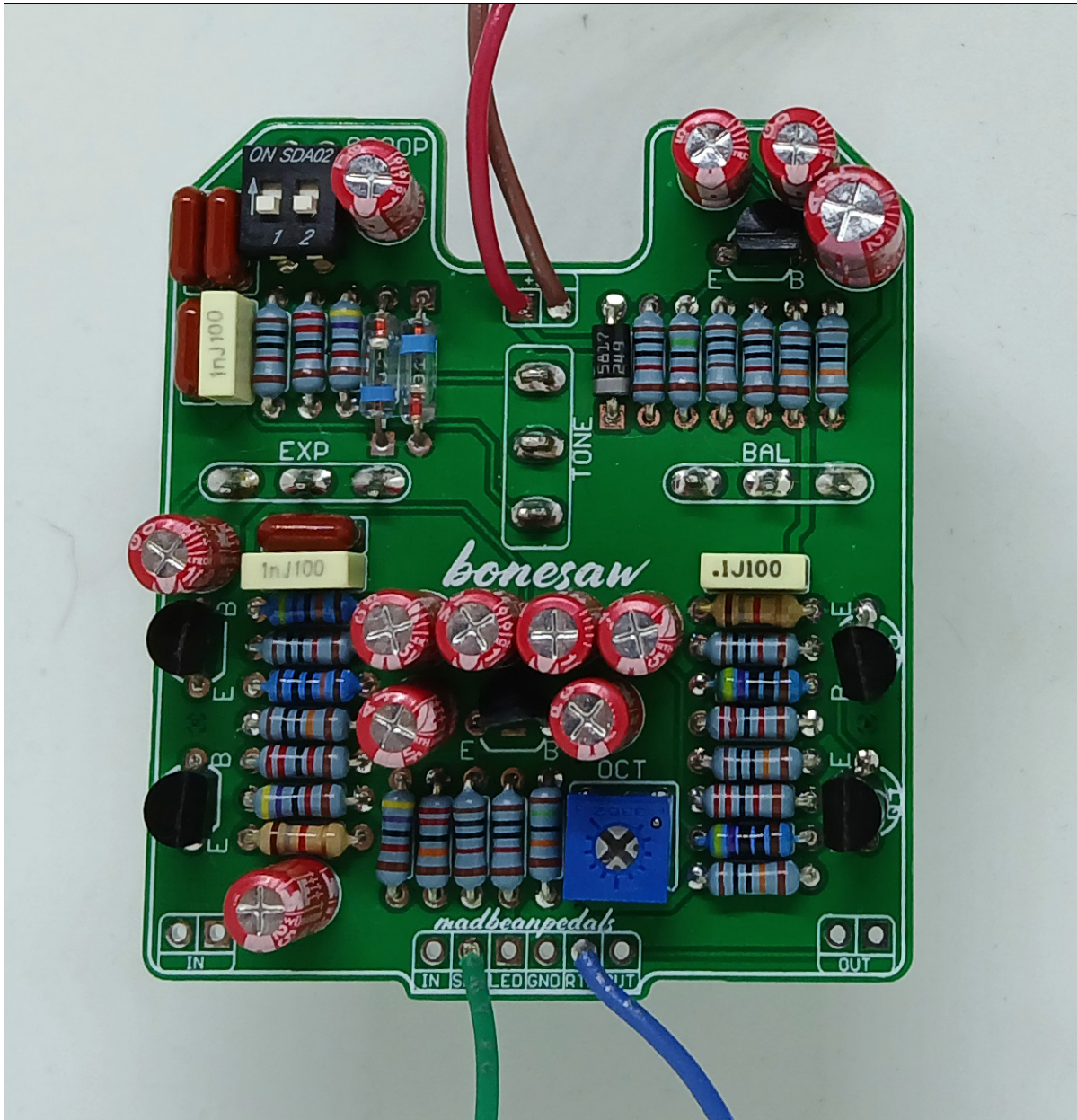


Hardware

1590B enclosure
Lumberg 1/4" Compact 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



Schematic

