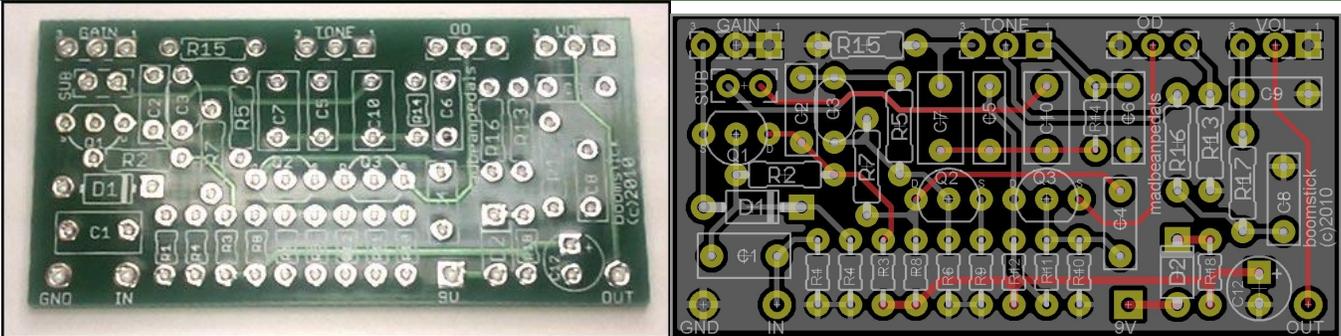


BOOMSTICK



FX Type: DISTORTION

PCB artwork ©2011 madbeanpedals
Release date: 01.15.11

The **Boomstick** is the gain side of the Kokbox project with some mods added in for extra boost and tone shaping. If you are familiar with the [BSAIB 2](#) project on General Guitar Gadgets, the **Boomstick** is very similar in topology. However, these two effects do not sound alike. The **Boomstick** is comprised of one dynamic and two static mosfet stages with a Big Muff™ type tone control, as well as a second order low pass filter at the end. It creates a very thick distortion similar to an overdriven Marshall® JTM45.

Controls

GAIN: Gain is controlled by an mosfet boost at the front-end of the circuit.

TONE: A Big Muff™ tone control derivative

VOL: The output level.

SUB: This switch lets you choose between two different sub levels to allow some control over the overall bass. When the switch is on, it adds a 470n cap in parallel with the existing 47n.

OD: This switch shorts the source pin of Q3 to ground for added gain.

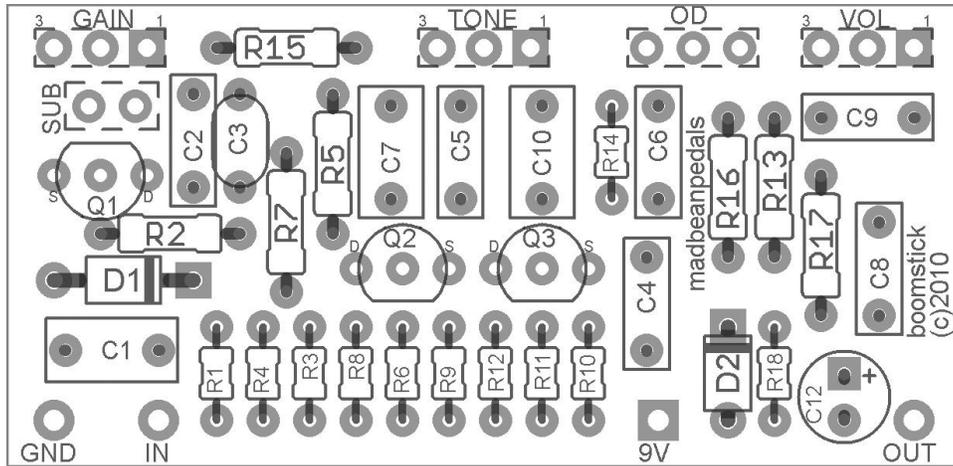
Build Notes

The filter network at the end of the circuit is a second order low pass filter centered on 7960Hz. This is obtained by a pair of 10k/2n networks in series. **C8** and **C9** call for 2n caps, however these values are harder to find (they are available as Xicon Mylar film caps (greenies)). You can use 2n2 as a sub for 2n, however, if you want to get approximately the same frequency response then use 9k1 resistors for **R16** & **R17**. Here is a chart using different combinations of resistor/cap values.

Cap	Resistor	Freq (Hz)
2n	10k	7961
2n2	9.1k	7953
1n8	11k	8042
1n5	13k	8165

Note that you can use [9mm Alpha pots](#) mounted directly to the PCB. If using these, I suggest mounting C2 last, as it will be a tight fit and may require you to bend its leads around slightly.

LAYOUT DIAGRAM

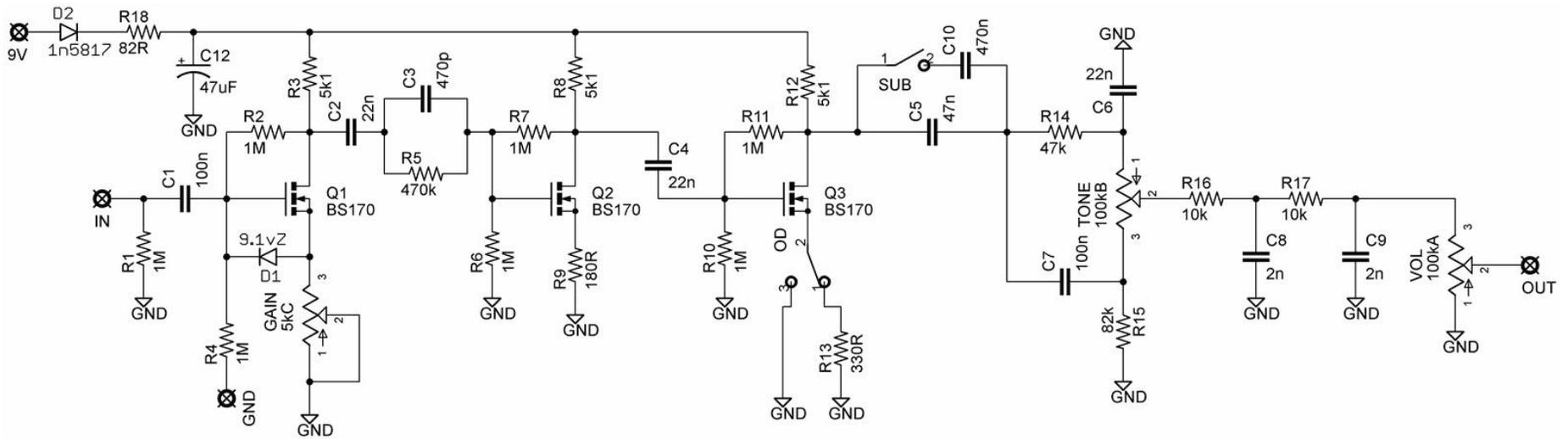


This PCB will fit in a 1590B enclosure
2.05"W x 1.0"H

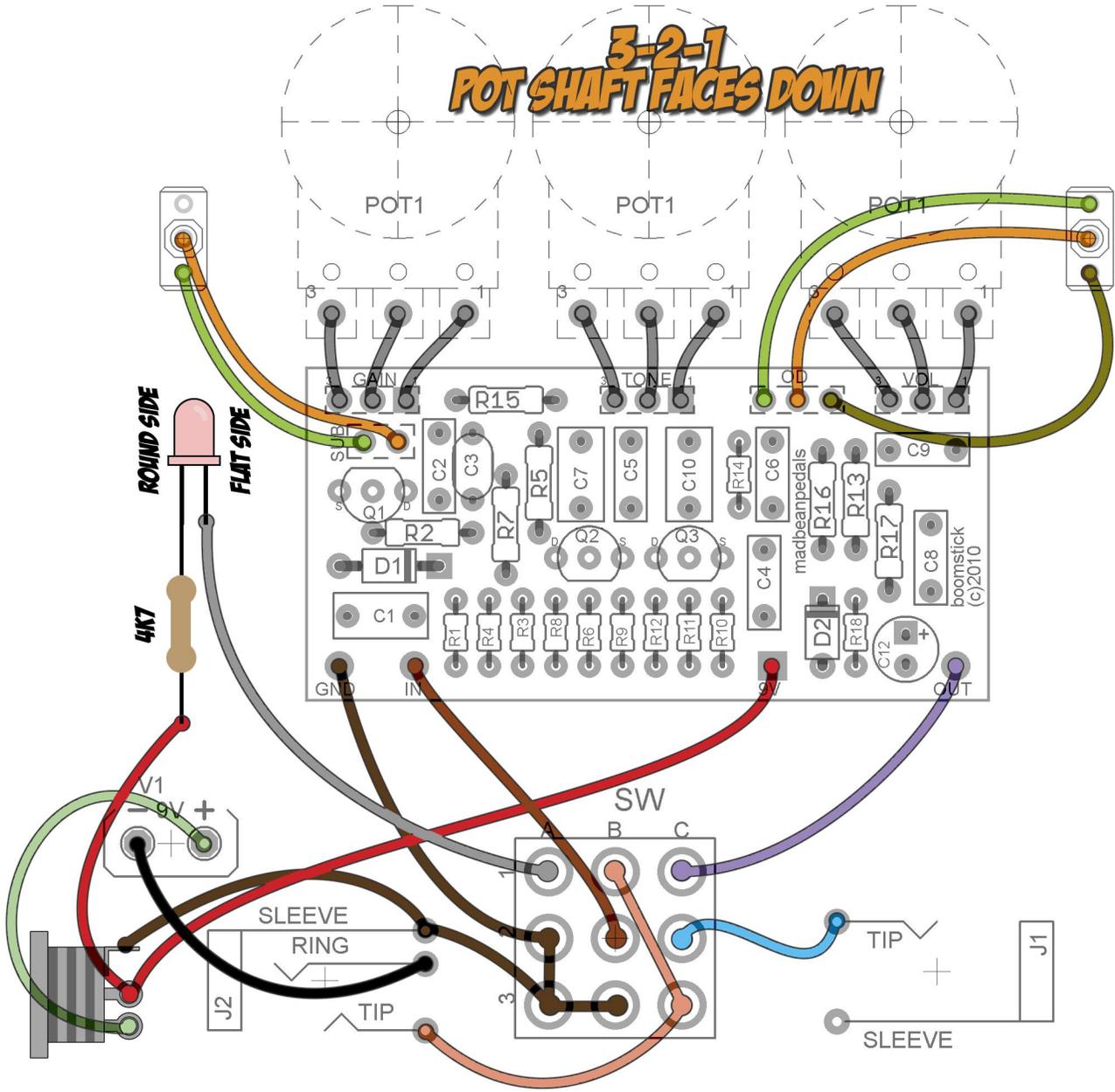
BILL OF MATERIALS

Resistors		Caps		Diodes	
R1	1M	C1	100n	D1	9.1v Zener
R2	1M	C2	22n	D2	1n5817
R3	5k1	C3	470p	Transistors	
R4	1M	C4	22n	Q1 - Q3	BS170
R5	470k	C5	47n	Switches	
R6	1M	C6	22n	SUB	SPST
R7	1M	C7	100n		SPDT
R8	5k1	C8	2n	OD	(On/On)
R9	180R	C9	2n	Pots	
R10	1M	C10	470n	GAIN	5kC
R11	1M	C12	47uF	TONE	100kB
R12	5k1			VOL	100kA
R13	330R				
R14	47k				
R15	82k				
R16	10k				
R17	10k				
R18	82R				

Boomstick Schematic

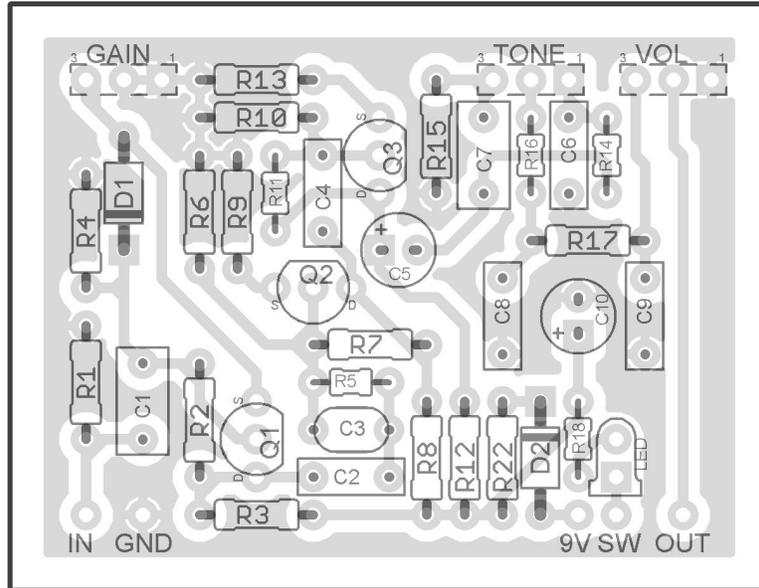


WIRING DIAGRAM

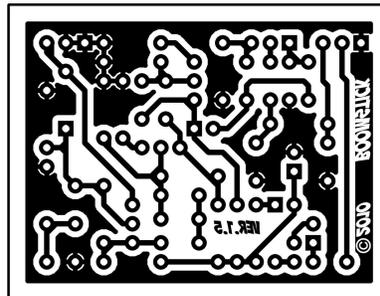


SINGLE SIDED LAYOUT

Boomstick ver.1.5 (does not include the **Sub** or **OD** switches)

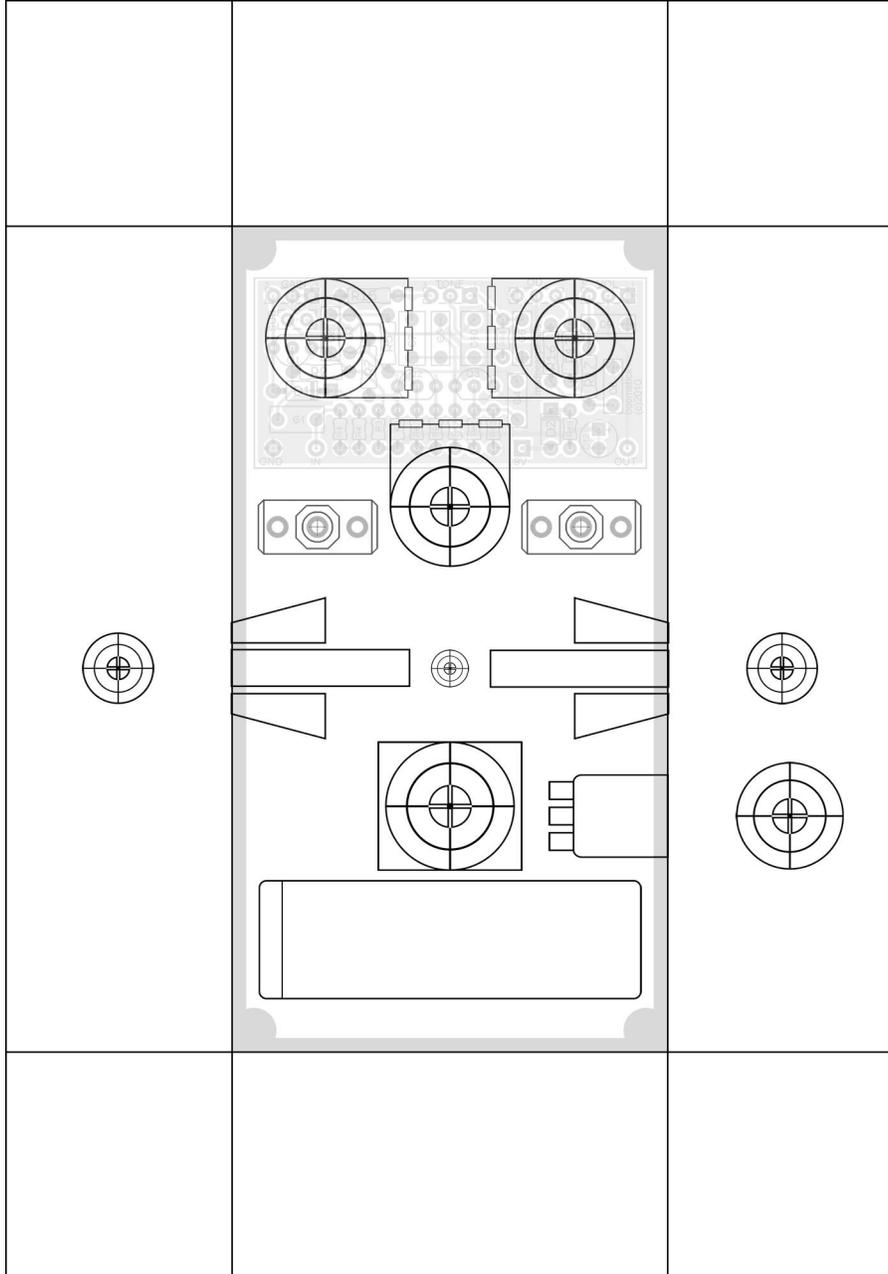


2" W x 1.55" H (including borders)



R1	1M	C1	100n
R2	1M	C2	22n
R3	5k1	C3	470p
R4	1M	C4	22n
R5	470k	C5	1uF
R6	1M	C6	22n
R7	1M	C7	100n
R8	5k1	C8	2n
R9	180R	C9	2n
R10	1M	C10	47uF
R11	1M		
R12	5k1	D1	9.1v Zener
R13	330R	D2	1n5817
R14	47k		
R15	82k	Q1 - Q3	BS170
R16	10k		
R17	10k	GAIN	5kC
R18	4k7	TONE	100kB
R19	82R	VOL	100kA

4.64"W x 6.68"H



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