

The G.B.O.F. - 16 Project Board by GuitarPCB

The **G.B.O.F** aka. "**The All In One Fuzz**" was originally designed by **Dcountry13** as a single board that you would be able to build many different projects with. It will fit into a 1590A enclosure if desired. Bruce R. has redesigned the fabricated layout which now has a few minor extra pad enhancements like two power pads. That said the old **DCOUNTRY13** Documents will still be laid onto the fabricated board in the same manner as we did with the older etched project.

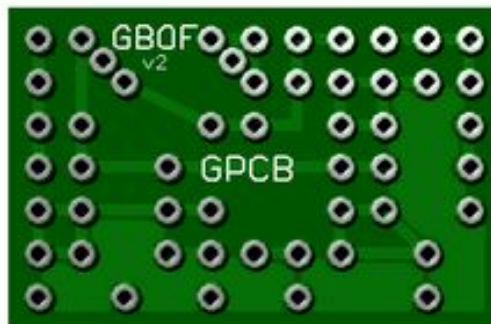
You will need to take a close proper look at your project as you will need to verify which holes in the board will be used for your particular project and which ones will not.

This in case you have not already noticed is very similar to populating Perf Board.

The **G.B.O.F.** Board and matching **DIY Layout Creator** diagrams are designed to teach how a Fuzz Face works. For more info on **DIY Layout Creator** and its symbols just click [here](#).

The benefits of our **G.B.O.F.** board are two-fold in that this board teaches the "typology" of a Fuzz Face on a single board but also the end result will be a wide range of fantastic Fuzz Builds for your collection. Uniquely this circuit will also allow you to build a Big Muff Pi tone stack to any build that may require one using a very small amount of space.

G.B.O.F. - Great Balls Of Fuzz



A 16 Project Fuzz Board

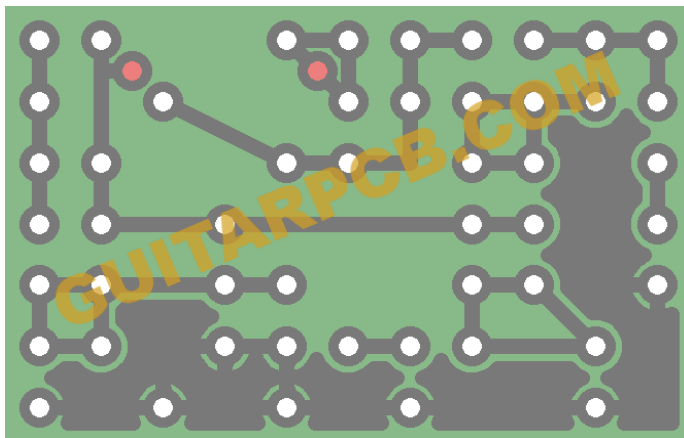
There are no schematics for these projects however may be found by using Google. Please also read [The Technology of the Fuzz Face](#)

Customer Submitted Video: <http://youtu.be/0TKE2KGo5V0>

Here is a list of projects to date:

1. Rangemaster
2. One Knob Fuzz
3. Meaty Version - Another Fuzz Face Variation. Compare to a Meathead.
4. Bazz Fuss
5. Roger Mayer Classic Fuzz Face
6. Electro Harmonix Screaming Bird
7. Fuzz Face NPN version.
8. Fuzz Face NPN version with Bias Control
9. Fuzz Face PNP version.
10. Fuzz Face PNP version with Bias Control
11. JD's Easy Drive
12. Big Muff Pi Tonestack
13. Big Muff Pi Tonestack (2 Knob)
14. Trotsky Drive
15. Hog's Foot / Mole Bass Booster
16. Neckbeard - Fuzz Face and Tonebender in one enclosure!
17. Hornby Skewes Treble Boost

The following picture shows the board from the top, and shows the traces on the bottom of the board, as if you had x-ray vision. This is very similar to using Perf Board.



Important Build Notes:

DIY Layout Creator diagrams as shown below use a very light shaded section to suggest the negative side of any electrolytic capacitor. It is hard to see. We have implemented a + to help.

Additionally the orientation of a transistor in the photo does not always match the project depending on the transistor you choose. Google a datasheet for the correct pinout which is hand written at the top of each build guide for proper orientation. Do not just blindly follow the photo.

Now onto the Project Guides. Take your time, learn and enjoy the great tones.

BAZZ FUSS

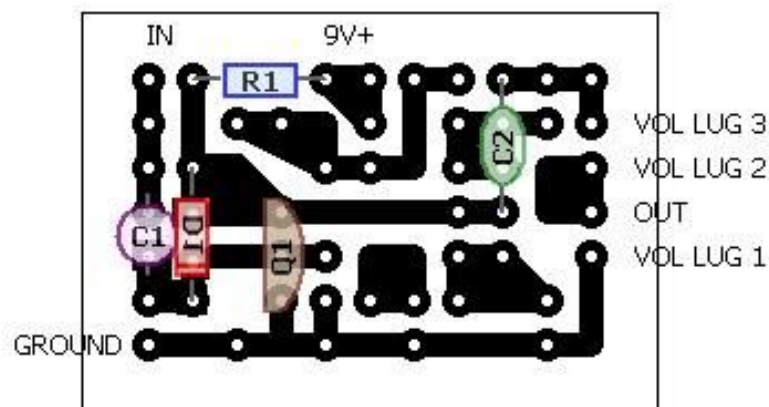
Layout By Dcountry13

Q1 Pinout is C, B, E from Top to Bottom

Use extra solder holes for different size components.

Try a Darlington Transistor MPSA13 for Q1.

If so, I suggest a value change of C2 to .22uf and R1 to 10K, but you can experiment.



R1: 100K

C1: 4.7uF

Q1: 2N3904 or 2N5088

C2: .1uF

D1: 1N914

VOLUME POT = A100K

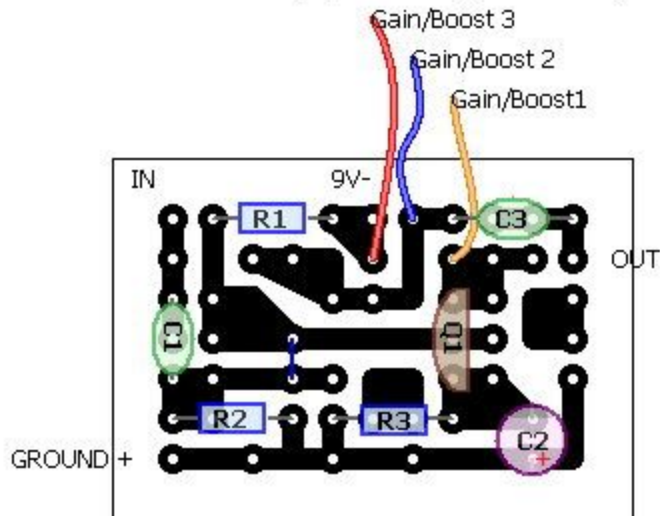
Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>



DALLAS RANGEMASTER PNP

Layout By Dcountry13

Classic Treble Booster. Positive Ground. Watch Electro Cap Orientation.
 C1 could also be .0068uf. Q1 pinout is C, B, E from Top to Bottom



R1: 470K	C1: .005uF	Q1: OC44, OC71, NT275 (PNP Germ)
R3: 4.7K or 3.9K	C2: 25uF (22uF)	For Q1 most PNP Transistors will
R2: 68K	C3: .01uF	"work". Germanium or Silicon.

Gain/Boost = A10K ***Note One (1) Jumper***

A 25uf Electro Cap is to be placed between the Negative (-) lug of the DC Jack and the Positive (+) lug of the DC Jack. Just remember that this circuit is a Positive Ground circuit so solder the Electro accordingly to the Jack.

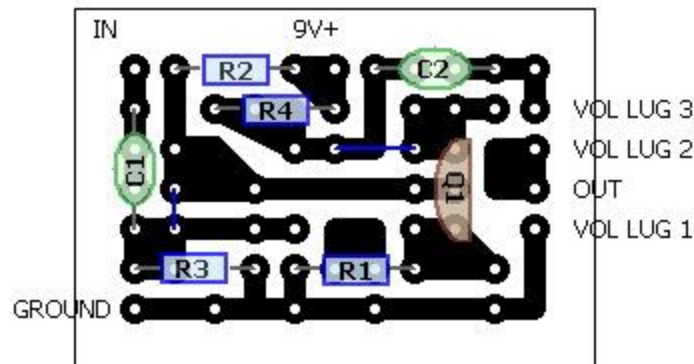
A 22uf could be used in place of either 25uf Electro Cap. And 47uf has been used, too.



EH SCREAMING BIRD/ SCREAMING TREE

Layout By Dcountry13

A cool old Treble Booster. Not much dirt, but try it in front of your fave dirtbox.
Used by Joey Santiago (The Pixies) and Jack White (The White Stripes)
Q1 Pinout is C, B, E from Top to Bottom



R1: 390R **C1: .002uF** **Q1: 2N5133 or 2N5088**
R2: 430K **C2: .002uF**
R3: 43K
R4: 10K ***Note the 2 Jumpers.***

VOLUME = A100K

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<http://www.storm-software.co.yu/diy/>



FUZZ FACE NPN

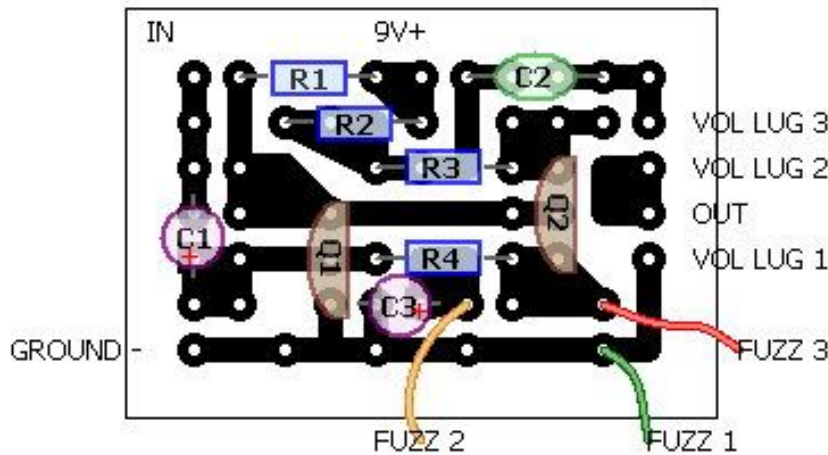
Layout By Dcountry13

Q1, Q2 Pinouts are C, B, E from Top to Bottom

I find that Transistors with higher hfe work, but keep the higher of the two hfe at Q2. Germanium NPN Transistors are hard to find.

Try some silicon. The BC108/BC109 combo sounds good.

www.forrestwhitesides.com/shop/ offers 2N3013/2N2219A that work, too.



R1: 33K **C1: 2.2uF** **Q1: NPN hfe ~70**
R2: 470K/330K **C2: .01uF** **Q2: NPN hfe ~120**
R3: 8.2K **C3: 20uf or 22uf**
R4: 100K
VOLUME = A500K
FUZZ = B1K

Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>

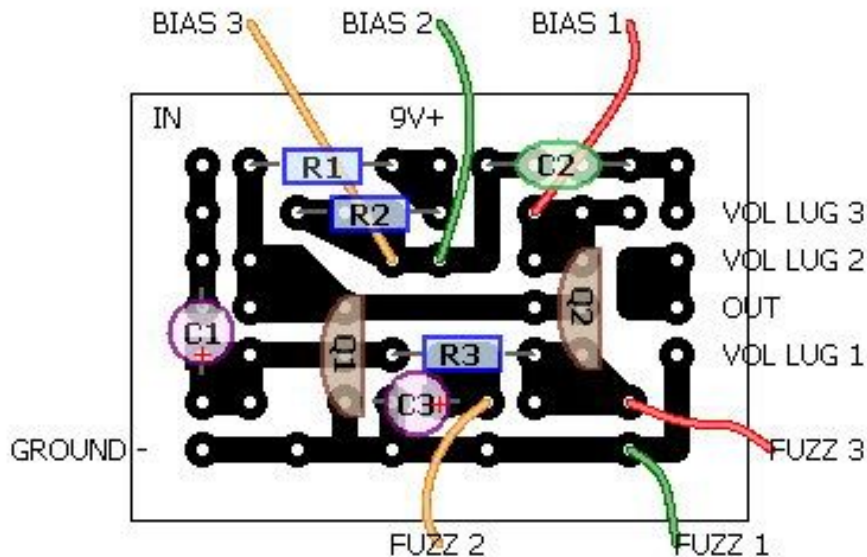


FUZZ FACE NPN WITH BIAS

Layout By Dcountry13

Q1, Q2 Pinouts are C, B, E from Top to Bottom

I find that Transistors with higher hfe work, but keep the higher of the two hfe at Q2.



R1: 33K	C1: 2.2uF	Q1: NPN hfe ~70
R2: 470R/330R	C2: .01uF	Q2: NPN hfe ~ 120
R3: 100K	C3: 20uf or 22uf	

VOLUME = A500K

FUZZ = B1K

BIAS = B10K or B20K

Germanium NPN transistors can be hard to find. Try Silicon here.

The BC108/BC109 combo sounds good.

www.forrestwhitesides.com/shop/ offers some options.....

Try 2N3013 at Q1 and 2N2219A at Q2

Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>



FUZZ FACE PNP

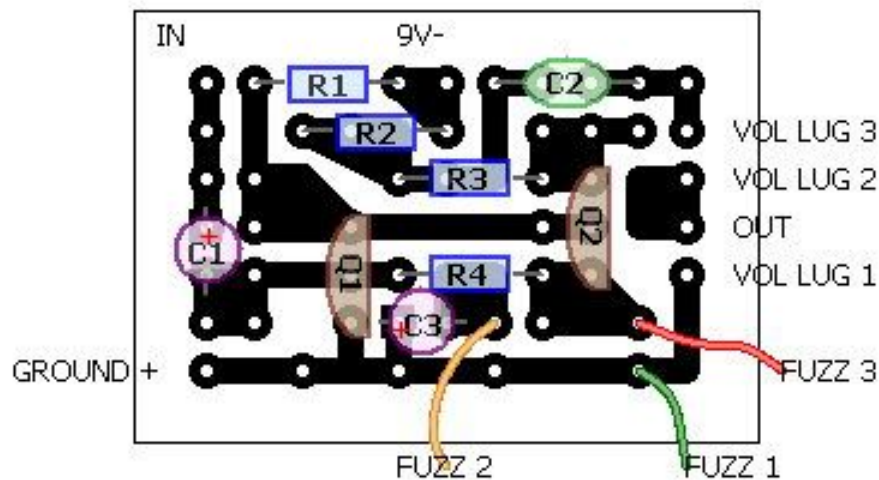
Layout By Dcountry13

Q1, Q2 Pinouts are C, B, E from Top to Bottom

The original PNP Germanium transistors can be hard to find.

Check www.forrestwhitesides.com/shop/ for some great choices.

Small Bear Electronics also sells sets of them.



R1: 33K

C1: 2.2uF

Q1: AC128, NKT275 (PNP hfe ~ 70)

R2: 470R/330R

C2: .01uF

Q2: AC128, NKT275 (PNP hfe ~ 120)

R3: 8.2K

C3: 20uf or 22uF

R4: 100K

VOLUME = A500K

FUZZ = B1K

Created with freeware DIY Layout Creator by Storm Software

<http://www.storm-software.co.yu/diy/>



FUZZ FACE PNP WITH BIAS

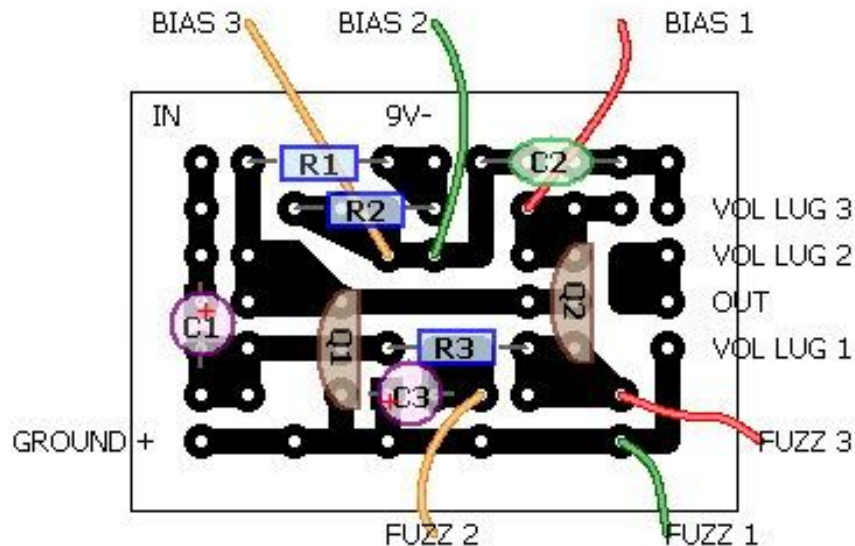
Layout By Dcountry13

Q1, Q2 Pinouts are C, B, E from Top to Bottom

The Original PNP Germanium Transistors can be hard to find.

Try www.forrestwhitesides.com/shop/ for some other great choices.

Small Bear Electronics also sells sets of them.



R1: 33K

C1: 2.2uF

Q1: AC128, NKT275 (PNP hfe ~ 70)

R2: 470R/330R

C2: .01uF

Q2: AC128, NKT275 (PNP hfe ~ 120)

R3: 100K

C3: 20uf or 22uF

VOLUME = A500K

FUZZ = B1K

BIAS = B10K or B20K

Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>

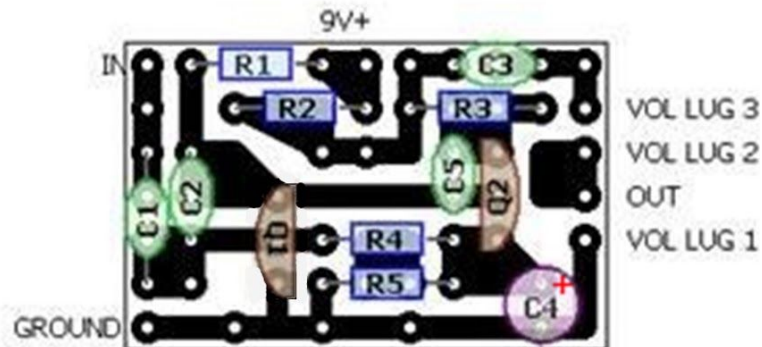


Meaty Version

Layout By Dcountry13

Q1, Q2 Pinouts are C, B, E from Top to Bottom.

Extra Solder Pads by C1, C2 and C3 are for different size caps.



R1: 18K	C1: .01uF	Q1: 2n3904
R2: 820R	C2: 470pF	Q2: BC182
R3: 4.7K	C3: .022uF	
R4: 120K	C4: 10uF	
R5: 1K	C5: 47pF	

VOLUME = A500K

A 47uF Electro Cap is to be placed between the Negative (-) on the DC Jack and the Positive (+) on the DC Jack.

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<http://www.storm-software.co.yu/diy/>

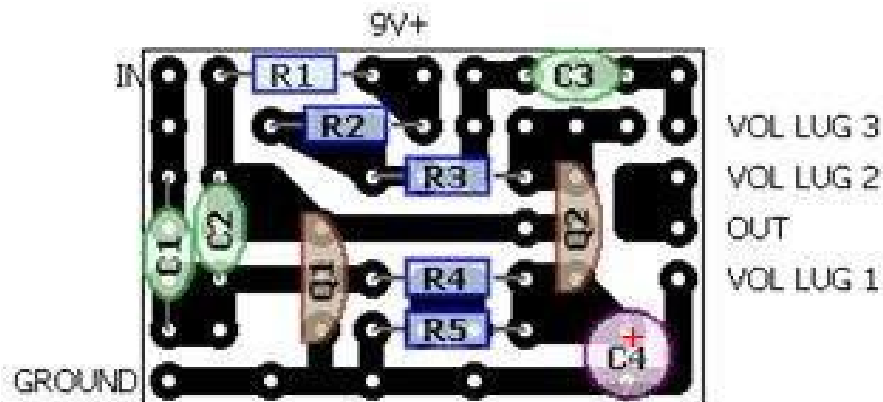


One Knob Fuzz

Layout By Dcountry13

Q1, Q2 Pinouts are C, B, E from Top to Bottom.

Extra Solder Pads by C1, C2 and C3 are for different size caps.



R1: 10K
R2: 820R
R3: 2.2K
R4: 150K
R5: 1 K

C1: 0.1uF
C2: 220pF
C3: .22uF
C4: 10uF

Q1: BC109
Q2: BC108

VOLUME = A500K

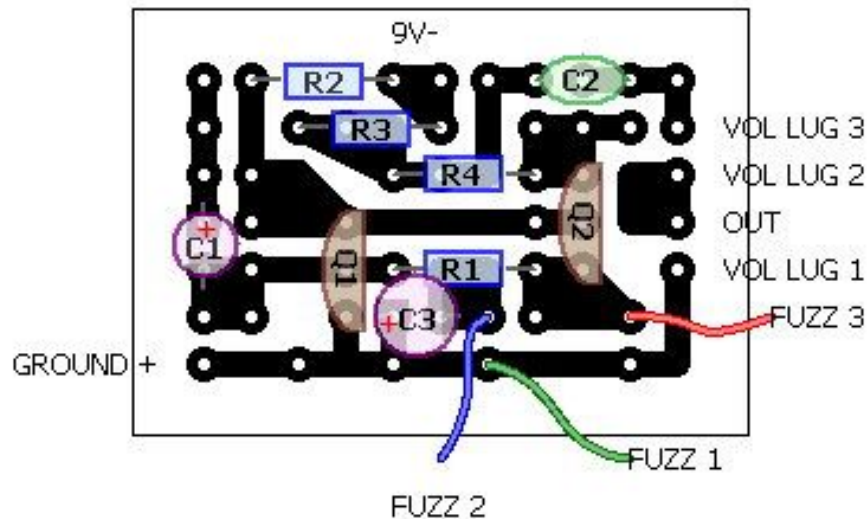
Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>



ROGER MAYER CLASSIC FUZZ

Layout By Dcountry13

The Classic Fuzz. Positive Ground. Watch Polarity on Electro Caps.
 The original PNP Germanium Transistors can be hard to find.
 Check www.forrestwhitesides.com/shop/ for some other great choices.
 Small Bear Electronics also sells sets of them.



R1: 100K	C1: 2.2uF	Q1: AC128 or similar PNP Germ
R2: 33K (Bias)	C2: .01uF	Q2: AC128 or similar PNP Germ
R3: 1K	C3: 22uF	
R4: 18K (Bias)		

VOLUME = A470K (A500K will work)

FUZZ = B2K

R2 and R4 can be adjusted for Biasing. Sockets are a good idea.
 Later Versions reportedly used the following value substitutions:
 C1 = 4.7uf, C3 = 47uf, R2 = 5.6K

Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>

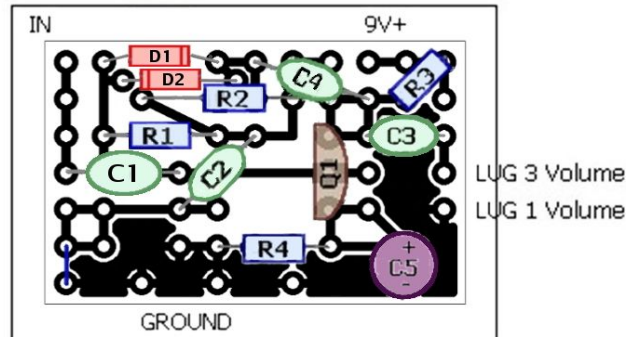


JD's EASY DRIVE

Layout By Dcountry13

Additional pads were added to the version 2 board specifically for this layout to accomodate diodes D1 and D2.

***Don't miss Jumper in Left Bottom of layout.



****OUTPUT is from LUG 2 of VOLUME POT****

R1: 220K	C1: .1uF	Q1: 2N5089
R2: 220K	C2: .01uF	D1: 1N914
R3: 68K	C3: .1uF	D2: 1N914
R4: 680R	C4: .1uF	
	C5: 22uF	

VOLUME is A100K.

Q1 Pinout is C, B, E from Top to Bottom.

Here is a Mod idea (Courtesy of Tonmann) to try.

The Mod uses a potentiometer to determine the Bias Value as opposed to socketing and guessing so you may check the value you like on the potentiometer with a DMM then use that value as a resistor value in the circuit or simply keep the potentiometer.

The Mod in depth:

The original circuit was deliberately mis-biased to a very low voltage (the large value of R3), about 1.23V at the collector. A 10k resistor for R4 for example will raise the collector voltage to about 2.11V, rather than worry about voltage measurements use your ears to see how much difference you notice and whether you like any differences.

Once you have chosen a value for R4 you can add a pot in series with C5 (either between emitter and C5 or between C5 and Ground), use lug 2 for the "upper" connection and lug 1 for the "lower" connection, you can connect lug 3 to lug 2 if you wish.

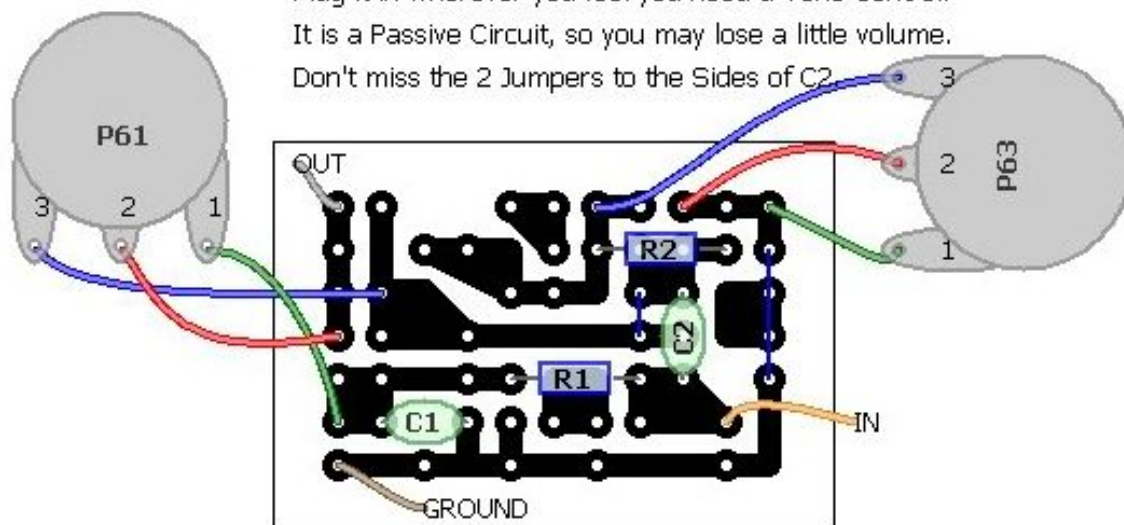
The value of the pot is up to you, I wouldn't be afraid to use a 10kΩ pot when R4 is 10kΩ (this is why you make R4 as large as possible, so you can use a larger pot which gives more control over the AC voltage gain.

BIG MUFF PI TONESTACK with "BODY" Control (2-KNOB).
Jack Orman's additional to the BMP Tone Control.
To learn more:
<http://www.muzique.com/lab/tone3.htm>

BIG MUFF PI TONESTACK (2-KNOB)

Layout By Dcountry13

The ToneStack from The Big Muff PI with "Body" control.
"Body" helps shape flat and "scooped" frequency response.
Plug it in wherever you feel you need a Tone Control.
It is a Passive Circuit, so you may lose a little volume.
Don't miss the 2 Jumpers to the Sides of C2



R1: 39K **C1: .01uF** **P61: 100K Linear**
R2: 3.3K **C2: .012uF** **P63: 25K Linear**

Kudos to Jack Orman for his Big Muff Pi Tone research.
And Dano over at Beavis Audio, too.

Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>



TROTSKY DRIVE

Layout By Dcountry13

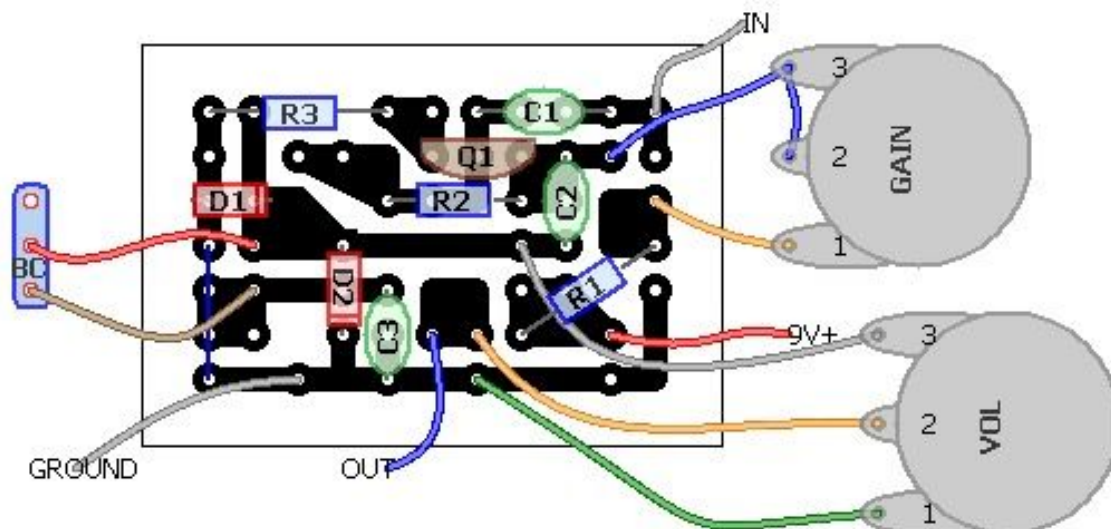
Electra based circuit. Reworked by Dano at www.beavisaudio.com.

The SPST is a Bright Cut(BC)

Any Low-Gain NPN transistor will work.

Q1 PinOut is E, B, C from Left to Right.

Don't miss the Jumper under D1.



R1: 3.3K
R2: 2.2M
R3: 680R

C1: .047uF
C2: .1uF
C3: .022uF

Q1: KT312 (2N2222, 2N3904)
D1: 1N34A (or 1N914)
D2: 1N34A
GAIN: 50K Linear
VOL: 100K Audio
BC: SPST

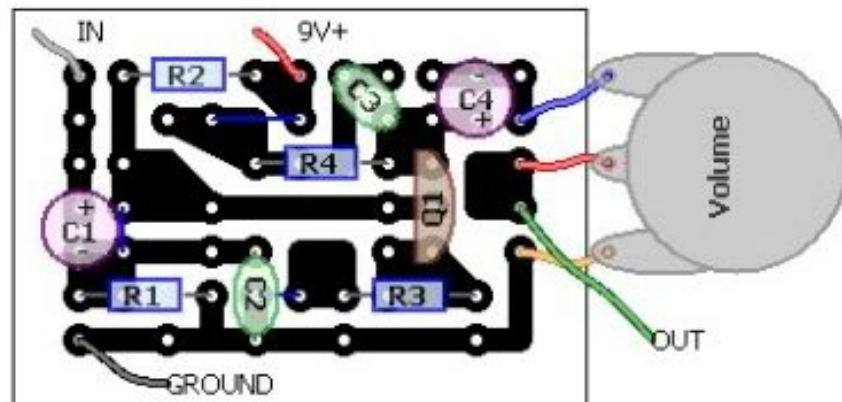
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<http://www.storm-software.co.yu/diy/>



GBOF Hog's Foot/Mole Bass Booster

Layout By Dcountry13

Three (3) Jumpers including one that goes under C2.



R1: 43K/47K	C1: 3.3uF	Q1: 2N5133/2N5088
R2: 430K	C2: 0.1uF	Volume: 100K Audio
R3: 390R	C3: 0.1uF	
R4: 10K	C4: 3.3uF	

Created with freeware DIY Layout Creator by Storm Software
<http://www.storm-software.co.yu/diy/>



Here are a few more projects to play with below and try visualizing how you can create your own G.B.O.F. project.

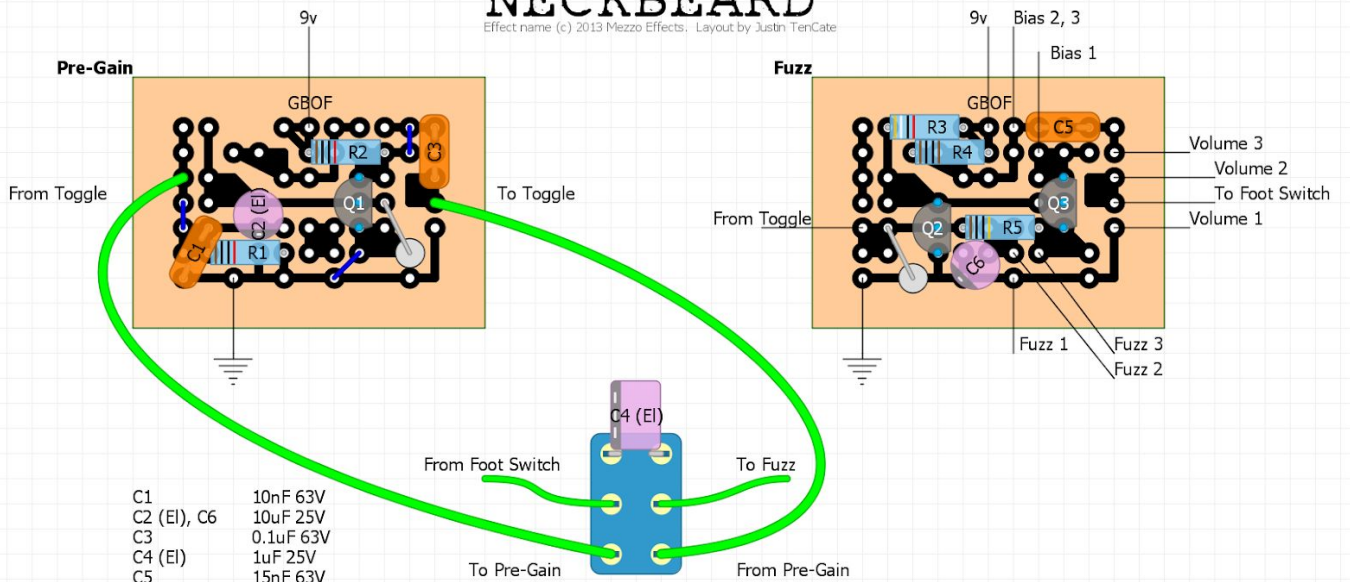
Support is minimal for these projects as a certain amount of understanding is expected regarding biasing and basic troubleshooting. Please read the following article.

[The Technology of the Fuzz Face](#)

An easy switchable Fuzz Face and Tone Bender in one

NECKBEARD

Effect name (c) 2013 Mezzo Effects. Layout by Justin TenCate



- C1 10nF 63V
- C2 (EL), C6 10uF 25V
- C3 0.1uF 63V
- C4 (EL) 1uF 25V
- C5 15nF 63V
- D1, D2 Germanium
- Blank Board GBOF
- Q1 ~65-90 hFE Germanium NPN (low leakage)
- Q2 ~80-95 hFE NPN Germanium (low leakage)
- Q3 ~140-200 hFE NPN Germanium
- R1, R2 10K 0.25W
- R3 39K 0.25W
- R4 1K 0.25W
- R5 100K 0.25W
- SW1 DPDT

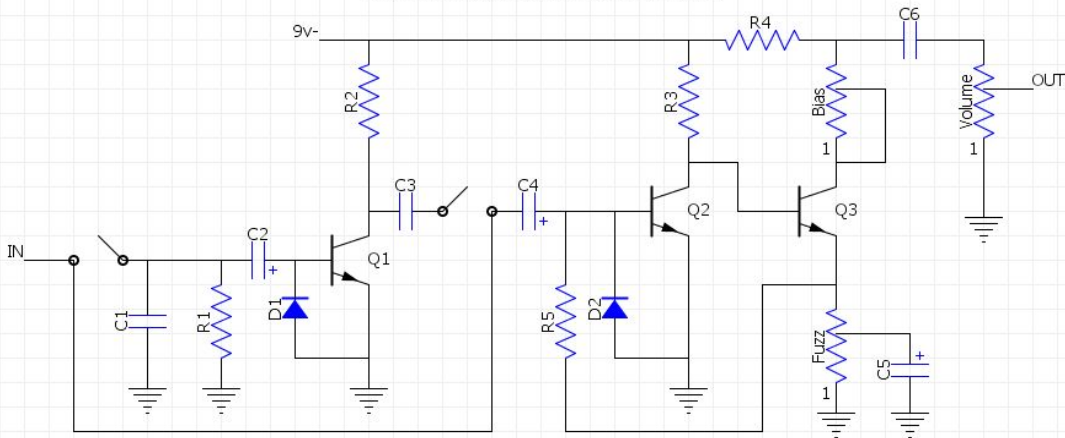
- Volume 100kA
- Fuzz 2kB
- Bias 10kB or 25kB

- *Socket and try Q1, Q2, Q3 and C5*
- *Please Note 3 jumpers on Pre-Gain Boost*
- *Consider shielded input wire to reduce hiss*
- *Diodes are optional leakage protection*

An easy switchable Fuzz Face and Tone Bender in one

NECKBEARD

Effect name (c) 2013 Mezzo Effects. Schematic by Justin TenCate



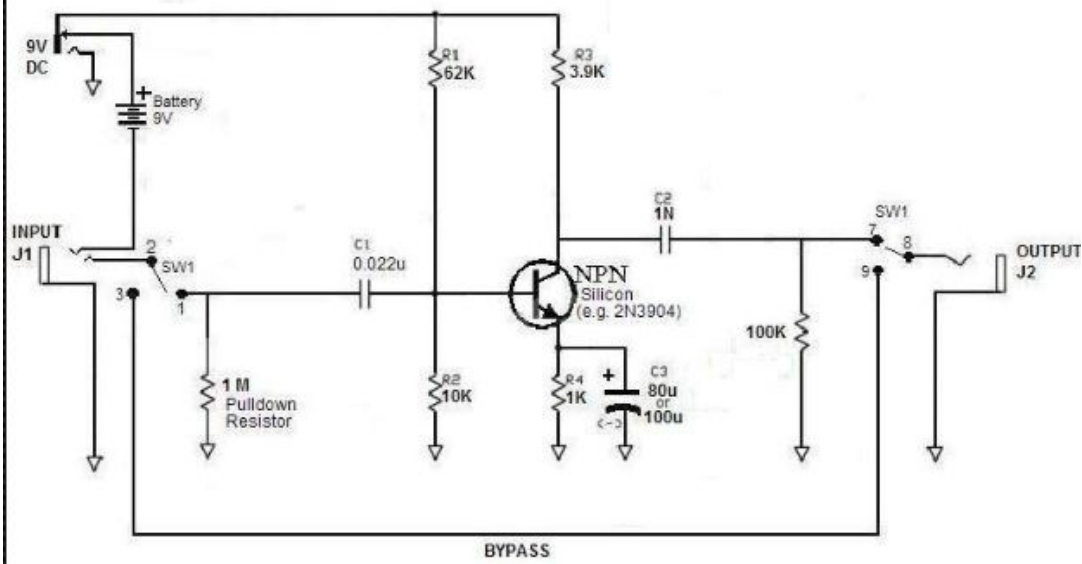
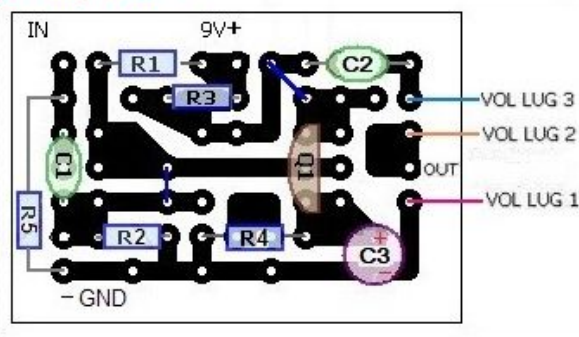
- Bias 25K 0.25W
- C1 10nF 63V
- C2 4.7uF 16V
- C3 100nF 63V
- C4 1uF 16V
- C5 10uF 16V
- C6 15nF 63V
- D1, D2 Germanium
- Fuzz 2K 0.25W

- Q1 ~85-90 hFE NPN Germanium
- Q2 ~90-95 hFE NPN Germanium
- Q3 ~140-160 hFE NPN Germanium
- R1, R5 100K 0.25W
- R2 10K 0.25W
- R3 39K 0.5W
- R4 1K 0.25W
- Volume 100K 0.5W

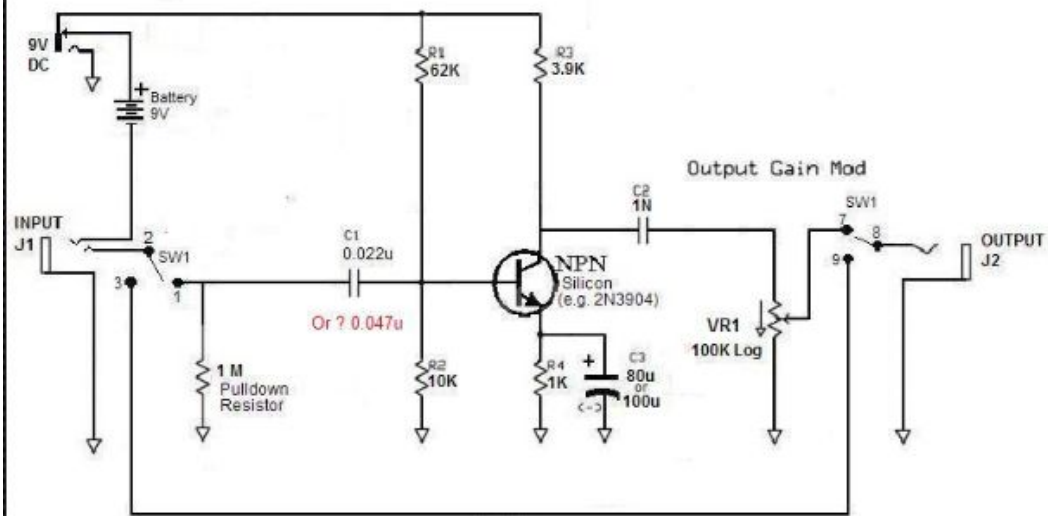
D1, D2 leakage should equal leakage of Q1 and Q2, respectively

Hornby Skewes style Treble Booster

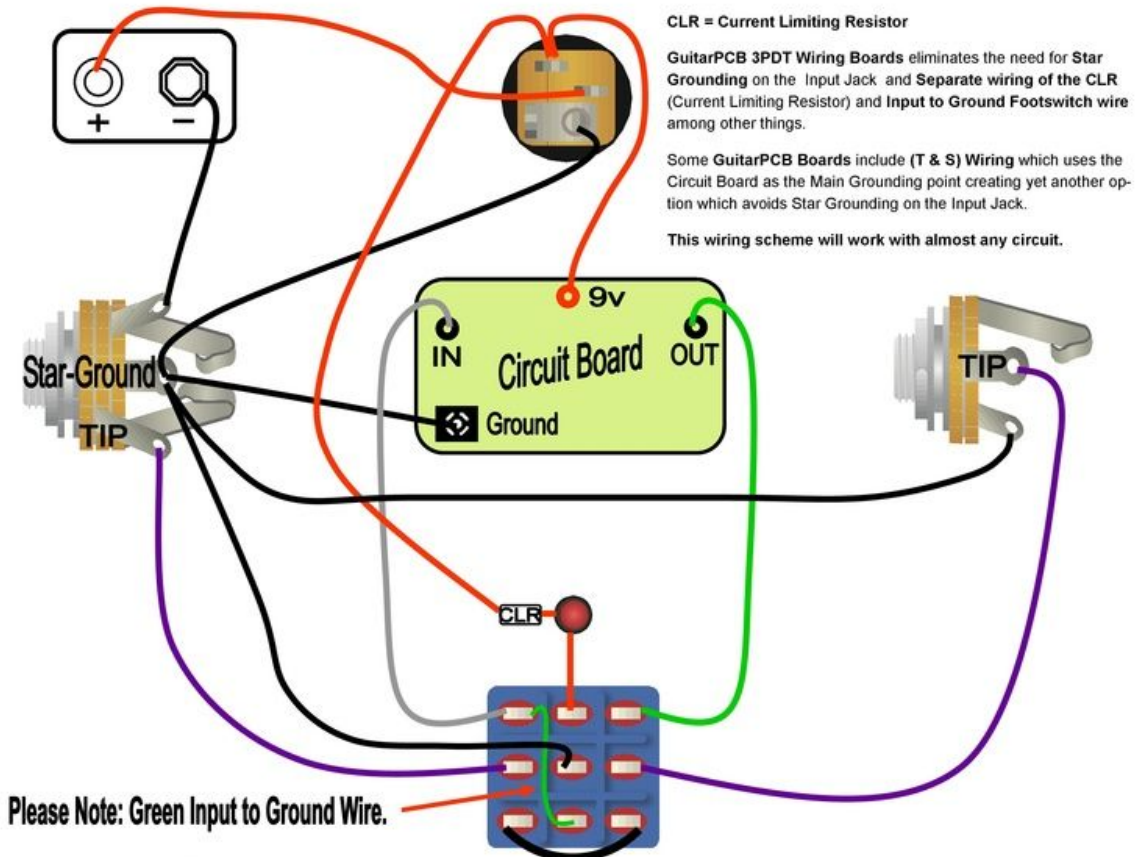
Courtesy of RPaul



Rumored Blackmore Mod for HS Treble boost



***** Please Google Datasheets for proper Orientation of the Transistor Pinouts!**
Don't just go by the picture! Different Transistors have Different Pinouts!



GuitarPCB's Easy Wiring Diagram

TRANSISTOR SUBSTITUTION CHART

IF YOU NEED.... THESE WILL USUALLY WORK !

BC108, BC109 2N5088, 2N5089, 2N4401, 2N3904, 2N2222
AC128 OC76, AC188, NKT275, OC44, NTE158
OC140 AC187, AC176, NTE103
J201 2N5457, NTE458, MPF102
BS170 2N7000, NTE490

HIGH GAIN SILICON NPN 2N5088, 2N5089
MEDIUM GAIN SILICON NPN 2N4401, 2N3904
LOW GAIN SILICON NPN 2N3903, 2N2369, 2N2270
GERMANIUM NPN OC140, AC187, NTE103
RANGEMASTER TRANSISTOR OC44, OC76, AC128, NTE158
FUZZ FACE TRANSISTOR NKT275, AC128, AC188, NTE158

NOTE...THESE SUBSTITUTIONS WILL USUALLY WORK JUST FINE. SOMETIMES THEY WILL SOUND BETTER THAN THE ORIGINAL, SOMETIMES NOT QUITE AS GOOD. THE LISTED SUBSTITUTES ARE USUALLY AVAILABLE ON THE WEB, AT PLACES LIKE WWW.Mouser.COM, WWW.DIGIKEY.COM, WWW.FUTURELEC.COM, OR EVEN WWW.EBAY.COM

[Soldering Tutorial on Youtube](#)

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Europe – [Das Musikding](#) Order either boards or kits direct from Europe.
[PedalPartsAustralia](#) - Order either boards or kits direct from Australia
If they do not have a KIT listed send them a note asking if they can help you out.



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