# LETFA

**FX TYPE: Fuzz**

Based on the Os-Mutantes Fuzz™

Enclosure Size: 1590A

“Softie” compatibility: none



## Overview

**LETFA** (Less Than Four Amigos f.k.a. ElGuapo) is a derivative of an older madbeanpedals project called “Deadpool” which is itself based on the Os Mutantes fuzz. This monster of a fuzz box was designed by Claudio Baptista for Sergio Dias, the guitar player in the Brazilian band for which the original was named.

Many liberties have been taken with the original design so it’s not accurate to call this one a clone of the OM fuzz, but an alternate version. Let’s call it: the Sweater implementation. This is a highly squashed, “velcro” type fuzz. If you are looking for something smooth and restrained (if such a fuzz exists) this is not for you. But, if you love belting out super compressed leads for effect the LETFA will envelope you like a warm, uhh, what’s the word? Sock. No, scarf. What a beautiful scarf!

Anyway, it’s hella fun to play.

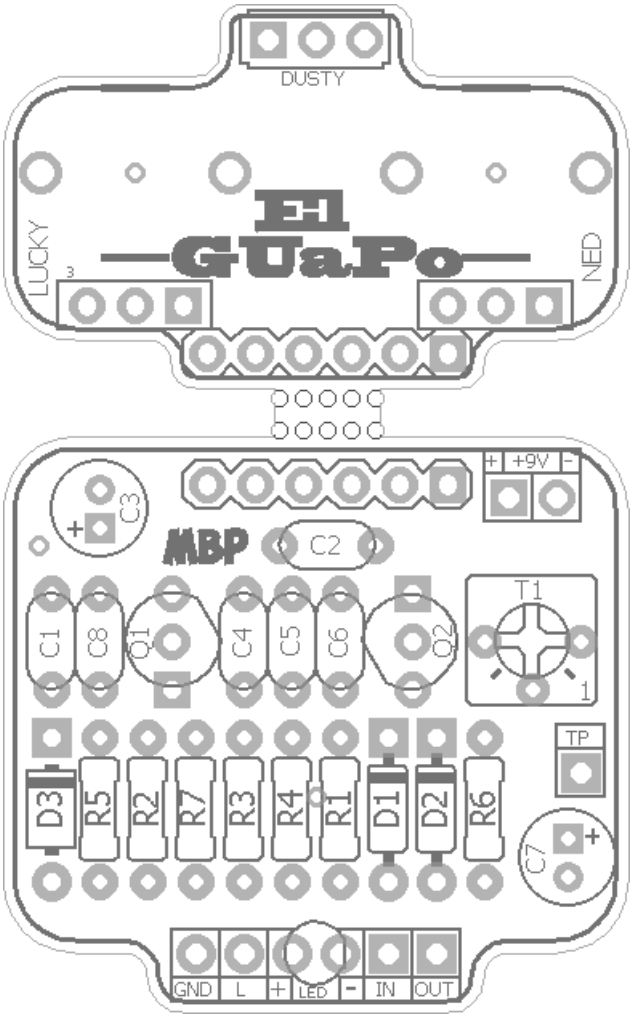
## Controls

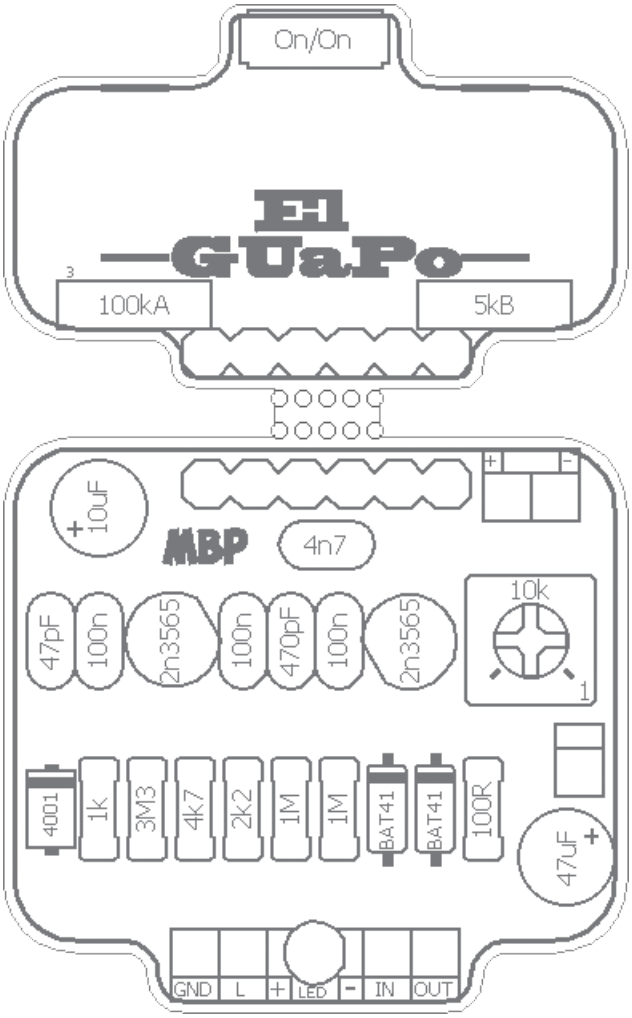
- **LUCKY:** Output volume.
- **NED:** This changes the output clipping diodes from highly asymmetrical to symmetrical clipping. Fully right will be smooth and squishy. Fully left will be loud and very asymmetrcial.
- **DUSTY:** This switch changes the total input capacitance to the circuit. It changes the feel of the circuit a bit - in the right position the “velcro” characterstic of the fuzz becomes even more pronounced.

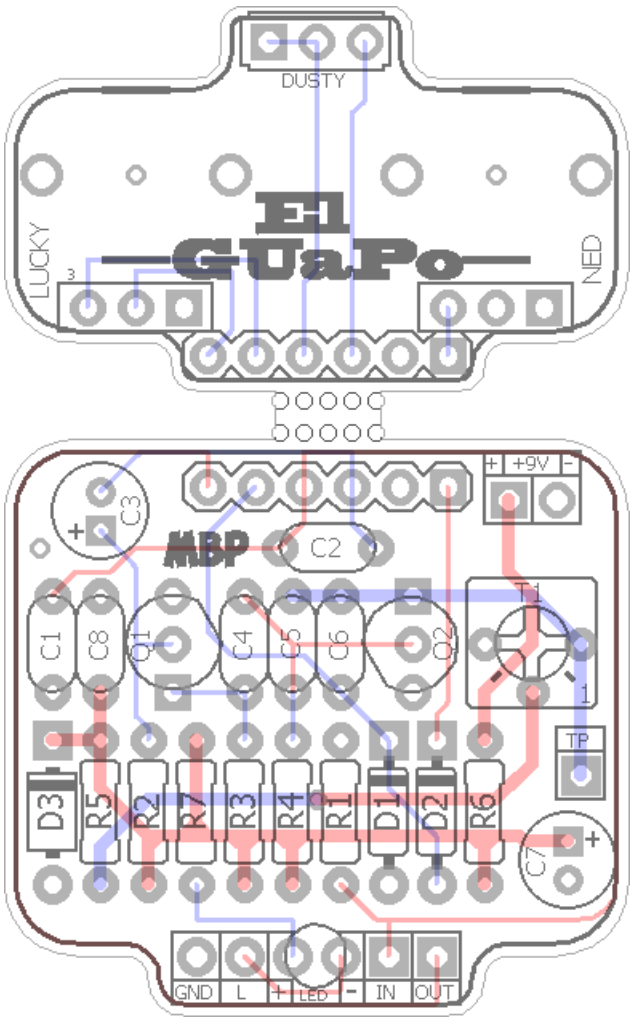
More about the Os Mutantes Fuzz
http://bestnetworx.com/uploader/files/48/mutantesfuzz.pdf



**Technical assistance** for your build(s) is available via the madbeanpedals forum. Please go there rather than emailing me for assistance on builds. This is because (1) I’m not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.


DUSTY
LUCKY
NED
EH
GUaPo
MBP
+9V
C1
C2
C3
C4
C5
C6
C7
C8
D1
D2
D3
Q1
Q2
R1
R2
R3
R4
R5
R6
R7
T1
TP
GND
L
LED
IN
OUT


On/On
El GUaPo
100kA
5kB
10uF
MBP
4n7
10k
47pF
100n
2n3565
100n
470pF
100n
2n3565
4001
1k
3M3
4k7
2K2
1M
1M
BAT41
BAT41
100R
47uF
GND
L
+
LED
-
IN
OUT


DUSTY
LUCKY
NED
El GUaPo
MBP
+9V
C1
C8
Q1
C4
C5
C6
Q2
C2
C3
TP
D3
R5
R2
R7
R3
R4
R1
D1
D2
R6
C7
GND
L
LED
IN
OUT

| Resistors | |
|---|---|
| R1 | 1M |
| R2 | 3M3 |
| R3 | 2k2 |
| R4 | 1M |
| R5 | 1k |
| R6 | 100R |
| R7 | 4k7 |

| Caps | |
|---|---|
| C1 | 47pF |
| C2 | 4n7 |
| C3 | 10uF |
| C4 | 100n |
| C5 | 470pF |
| C6 | 100n |
| C7 | 47uF |
| C8 | 100n |

| Diodes | |
|---|---|
| D1, D2 | BAT41 |
| D3 | 1N4001 |

| Transistors | |
|---|---|
| Q1, Q2 | 2n3565 |

| Trimmer | |
|---|---|
| T1 | 10k |

| Switch | |
|---|---|
| DUSTY | On/On |

| Pots | |
|---|---|
| LUCKY | 100kA |
| NED | 5kB |

| Value | QTY | Type | Rating |
|---|---|---|---|
| 100R | 1 | Metal / Carbon Film | 1/4W |
| 1k | 1 | Metal / Carbon Film | 1/4W |
| 2k2 | 1 | Metal / Carbon Film | 1/4W |
| 4k7 | 1 | Metal / Carbon Film | 1/4W |
| 1M | 2 | Metal / Carbon Film | 1/4W |
| 3M3 | 1 | Metal / Carbon Film | 1/4W |
| 47pF | 1 | Ceramic / MLCC | 16v min. |
| 470pF | 1 | Ceramic / MLCC | 16v min. |
| 4n7 | 1 | Film | 16v min. |
| 100n | 3 | Film | 16v min. |
| 10uF | 1 | Electrolytic, Low Profile | 16v min. |
| 47uF | 1 | Electrolytic, Low Profile | 16v min. |
| BAT41 | 2 | | |
| 1N4001 | 1 | | |
| 2n3565 | 2 | | |
| On/On | 1 | Mini SPDT, Pin Mount | |
| 10k | 1 | Bourns 3362p | |
| 100kA | 1 | PCB Right Angle, Metal Shaft | |
| 5kB | 1 | PCB Right Angle, Metal Shaft | |

**Low-Profile Electrolytic:**
http://smallbear-electronics.mybigcommerce.com/electrolytic-radial-low-profile-16v-1-f-100-f/

**BAT41:**
http://smallbear-electronics.mybigcommerce.com/diode-schottky-bat41/

**2n3565:**
http://www.smallbear-electronics.mybigcommerce.com/transistor-2n3565/

**Mini SPDT:**
http://smallbear-electronics.mybigcommerce.com/spdt-on-on-mountain-10tc410/

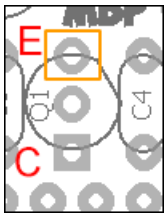
**Bourns 3362p:**
https://www.taydaelectronics.com/potentiometer-variable-resistors/cermet-potentiometers/3362p/10k-ohm-trimmer-potentiometer-cermet-1-turn-3362p.html
https://www.mouser.com/ProductDetail/Bourns/3362P-1-103LF?qs=sGAEpiMZZMvygUB3GLcD7k%252bod3ZqvEIQboRRPdOKB6M%3d

**9mm Pots:**
http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount/

**Thinline DC Jack:**
http://smallbear-electronics.mybigcommerce.com/dc-power-jack-all-plastic-unswitched-2-1-mm/

**Enclosed Mono:**
http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-jack/
http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-switchcraft-111x/

## 2n3565

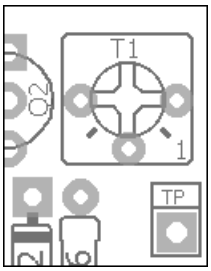


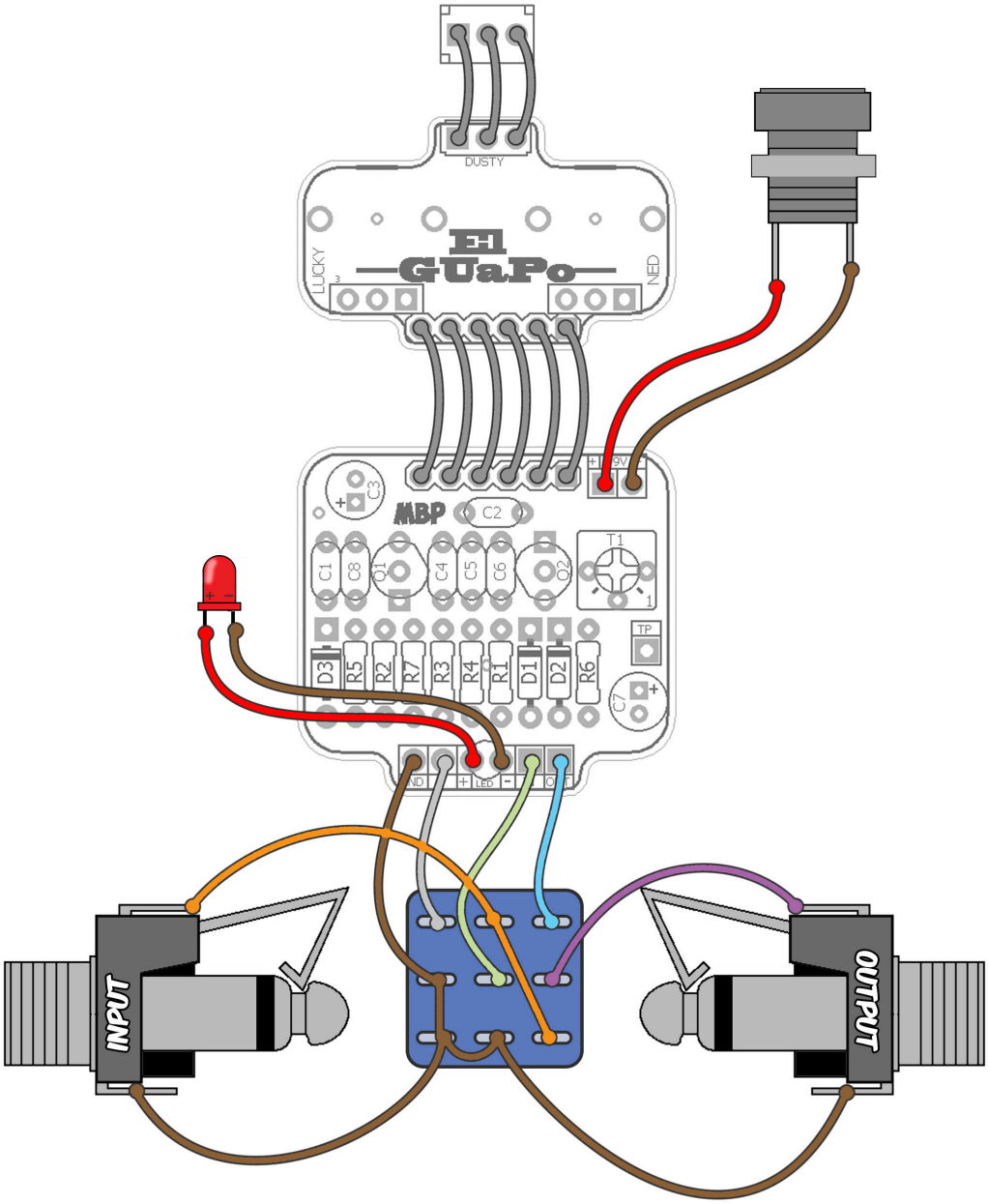

The 2n3565 has a flattened end on the mushroom style casing. The flattened part indicates the emitter. Be sure to put the transistor in the right way!

Also, the leads for the 2n3565 are in a triangle formation, so you will need to push them more into a straight line to fit in the transistor package on the PCB.

## Biasing

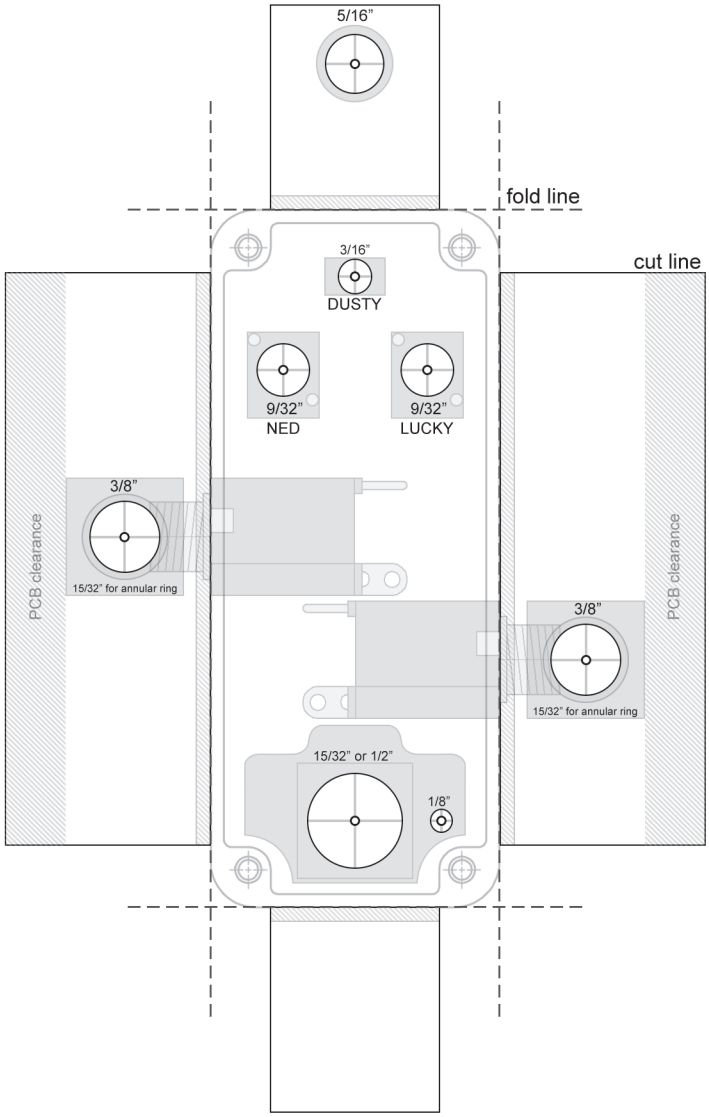
The Os Mutantes had a 5k fixed resistor for Q2 bias. This was changed to a 10k trimmer on El Guapo. I'd start with the trimmer about half-way up and work from there. Use the "TP" pad to measure the collector voltage of Q2. I landed on a little less than 1v for my build. This feels like the right setting for squash without noise. Higher voltage settings will produce some noise but YMMV.






The mini SPDT was intended to be soldered directly to the breakout PCB, but after looking at it again I felt like it was too close to the pots. Luckily there is plenty of room to just wire the switch and give you more space to work the controls.

**Note:** *Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.*

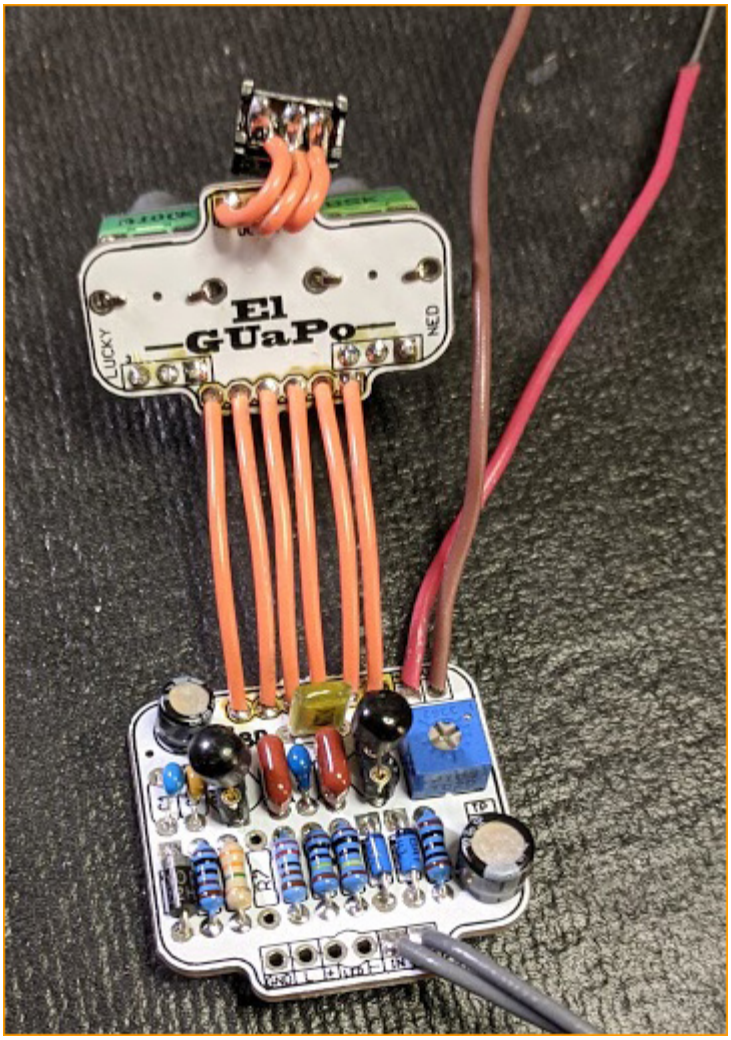


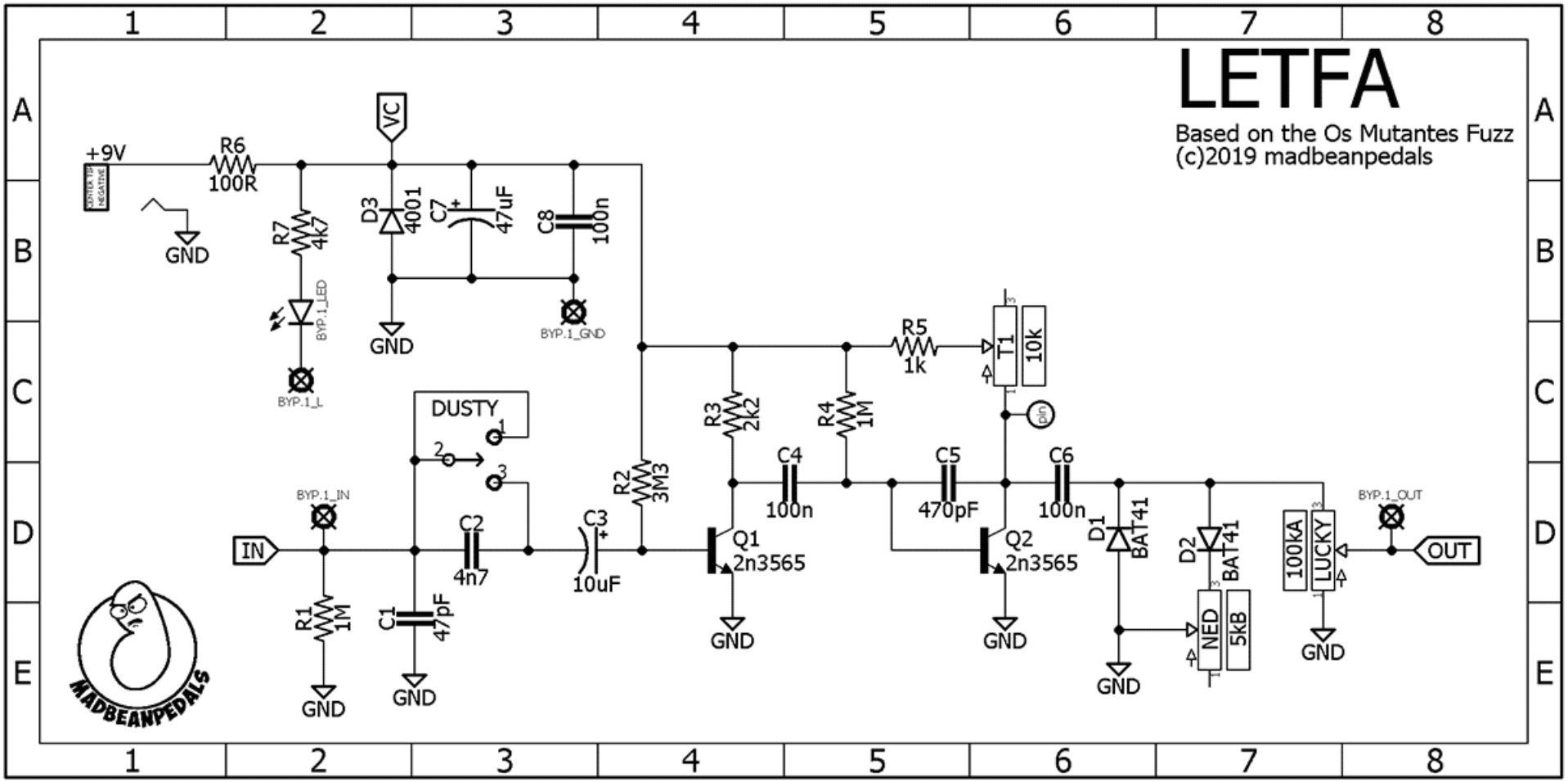

- This template will work for either mono enclosed jacks or the “Lumberg” style.
- You should use the “Thinline” style DC jack for this build.
- It also shows the 3PDT02 bypass PCB but this is not required. If you are wiring straight to a 3PDT you can use the same LED location on the right side or choose a different spot.
- The drill spot for the Dusty switch is the position for the switch *wired*, not soldered directly to the breakout PCB.

| Q1 | DC |
|---|---|
| C | 7.88 |
| B | 0.638 |
| E | 0 |

| Q2 | DC |
|---|---|
| C | 0.85 |
| B | 0.6 |
| E | 0 |

- 9.42vDC One Spot
- Current Draw ~ 2mA


El
GUaPo
LUCKY
NED


LETFA
Based on the Os Mutantes Fuzz
(c)2019 madbeanpedals
+9V
R6
100R
VC
GND
R7
4k7
D3
4001
C7
47uF
C8
100n
BYP.1_LED
BYP.1_L
BYP.1_GND
R5
1k
T1
10k
DUSTY
R3
2k2
R4
1M
C4
100n
C5
470pF
C6
100n
BYP.1_IN
IN
R2
3M3
C2
4n7
C3
10uF
Q1
2n3565
Q2
2n3565
D1
BAT41
D2
BAT41
NED
5kB
100kA
LUCKY
BYP.1_OUT
OUT
R1
1M
C1
47pF
MADBEANPEDALS