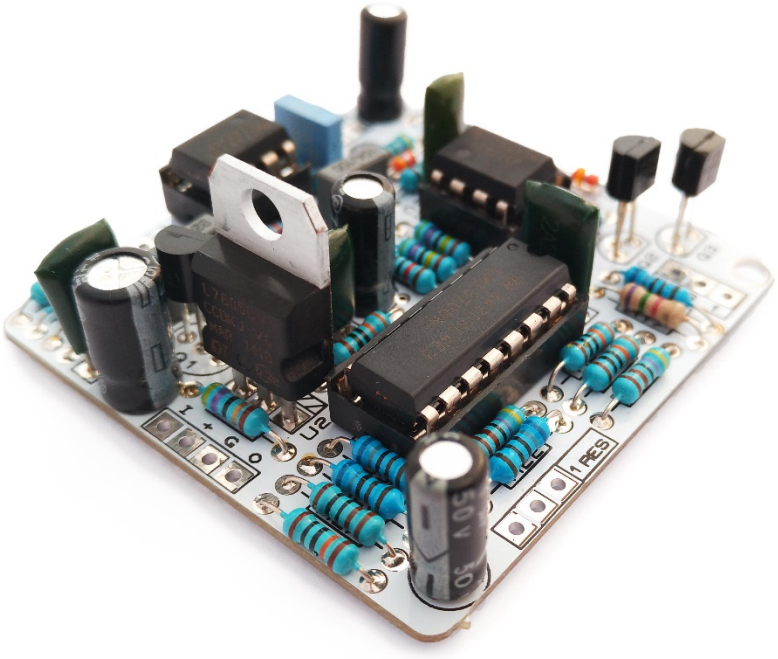
7 Dwarfs Autowah Kit
Building Manual



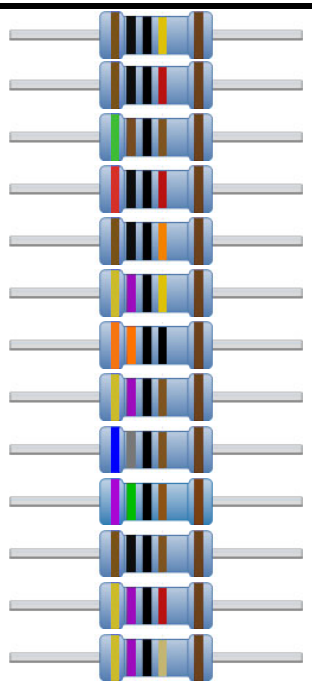
Effect Pedal Kits:
7 Dwarfs Autowah

The 7 Dwarfs Autowah is inspired in a wah wah rack that has been adapted to fit a small effect pedal enclosure so you can bring it wherever you go! Once you try it, we're sure the 7 Dwarfs Autowah will never leave your pedalboard.

This envelope filter works great with both bass and guitar: thanks to the Bias and Sensitivity knobs, you can fine tune the 7 Dwarfs Autowah to perfectly fit your instrument. You may find a bit difficult to find the perfect spot at the begining, but the work is worth it: the 7 Dwarfs Autowah is a beast, and if you're looking for a versatile envelope filter you've definitely found it!

This pedal is super tweakable: once you have the 7 Dwarfs Autowah set to your instrument, the Decay knob allows you to control the speed of the frequency filter. That way, you can adjust the envelope filter to a fast wah for every note or to a slower traditional autowah sound perfect for rhythms. You can use the Resonance knob to set the amplitude of the filter.

BOM (1/2)

Resistors (31)			
2	R1, R3	1M	
4	R2, R4, R10, R11	10k	
1	R5	5.1k	
3	R6, R8, R9	20k	
2	R7, R28	100k	
2	R12, R13	4.7M	
5	R14, R18, R19, R23, R24	330	
3	R15, R21, R25	4.7k	
4	R16, R20, R22, R26	6.8k	
1	R17	7.5k	
1	R27	1k	
2	R29, R30	47k	
1	R31	47	

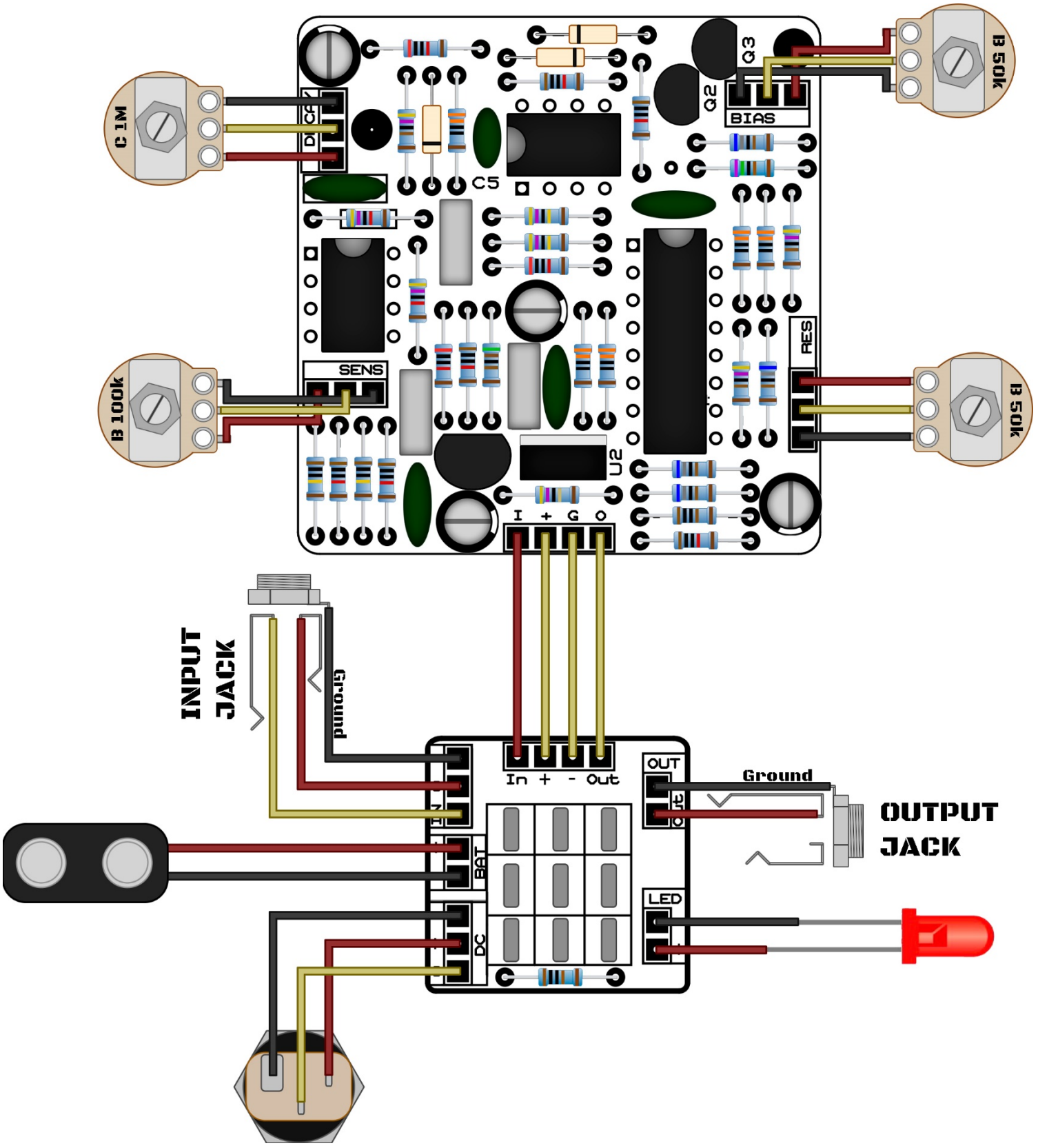
Capacitors (12)		
3	C1, C8, C9	22n
1	C2	220n
2	C3, C10	1u (electrolytic)
1	C4	68n
1	C5	8.2n
1	C6	2.2u (electrolytic)
2	C7, C11	100n
1	C12	100u (electrolytic)

BOM (2/2)

Diodes, Transistors and ICs		
2	U1, U4	TL072
1	U2	7805 Regulator
1	U3	LM13700
1	Q1	J113
2	Q2, Q3	BC550
3	D1, D2, D3	1N914

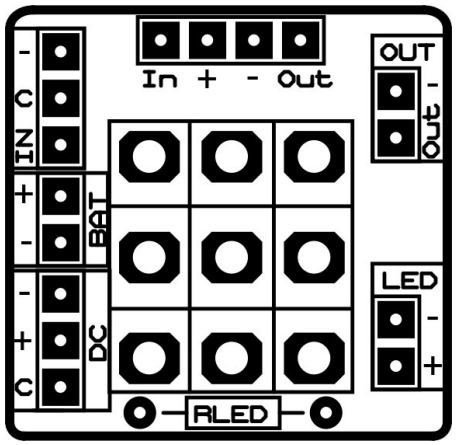
Generic Parts and Potentiometers		
1	Battery clip	
1	DC Jack	
1	RLED	1k LED resistor
1	LED Bezel	
1	3PDT	
2	IN, OUT	6.35mm Jacks
1	1M Antilogarithmic (A) Potentiometer	Decay
2	50k Linear (B) Potentiometer	Bias, Res
1	100k Linear (B) Potentiometer	Sens

Component Placement

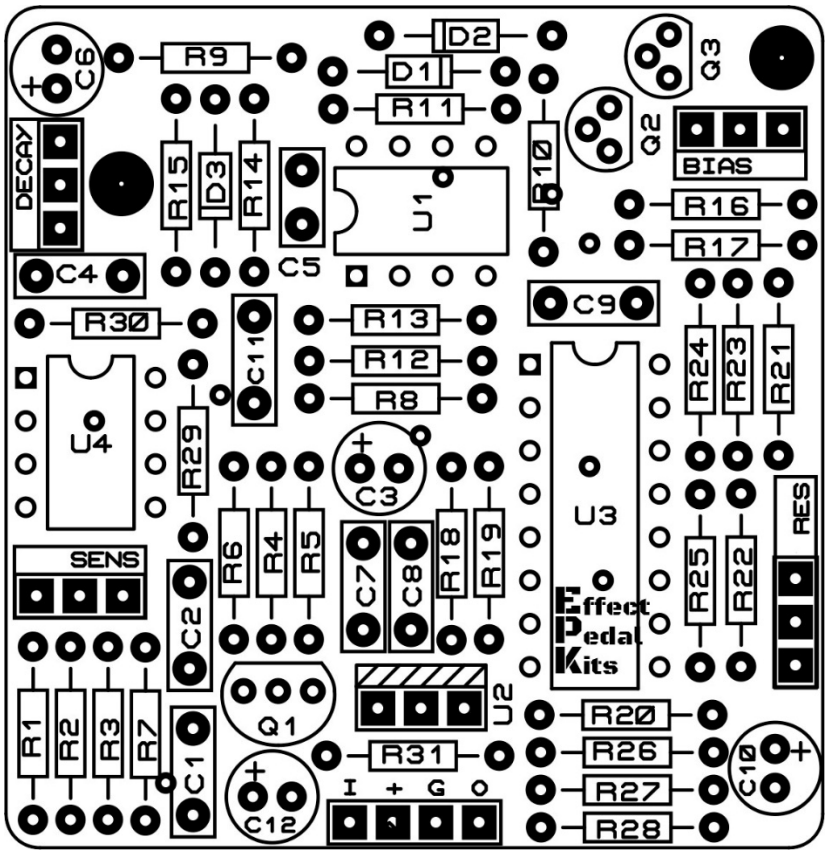


Board Layouts

3PDT PCB

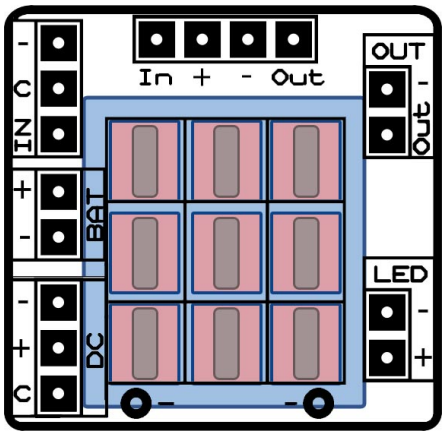


Effect PCB



Building Tips

1- Pay attention to the **orientation of the 3PDT**! In the following picture you can see how the 3PDT pins should be positioned (inserting the pins in the holes can be a bit tight to avoid movement while soldering):



2- For a proper soldering you just have to apply the **right amount of solder wire**. A right solder joint should have a concave shape around the joint and look like this:

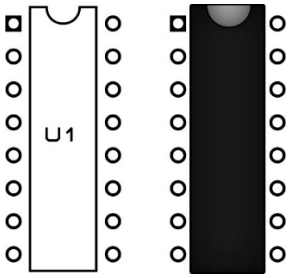
3- Don't apply too much heat! When soldering, the time you hold the solder iron against the joint should be **as short as posible** to avoid damaging any part (a few seconds should be enough). If you can't get a solder joint right, **let it cool** a bit before trying again.

4- If having troubles with the building, checking the schematic in the last page will help you find **where the audio signal stops**. When you find the spot, check out that **everything around that joint is ok** (components placed at their right place, solder joints…).

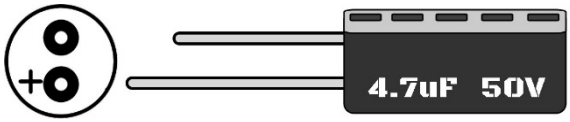
Building Tips

5- Pay attention to the **parts that have a polarity** and make sure they are connected as in the component placement picture:

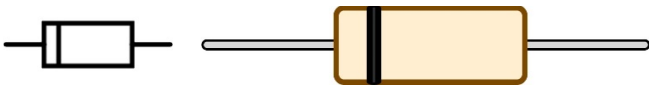
- **ICs** (they have a small dot or indication that must fit the indication in the board



- **Electrolytic capacitors** (longer pin is connected to the "+" hole):

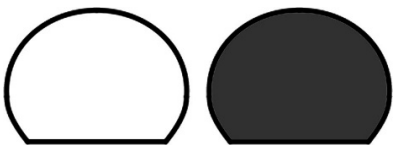


- **Diodes** (check for the mark and make it fit with the one in the PCB):



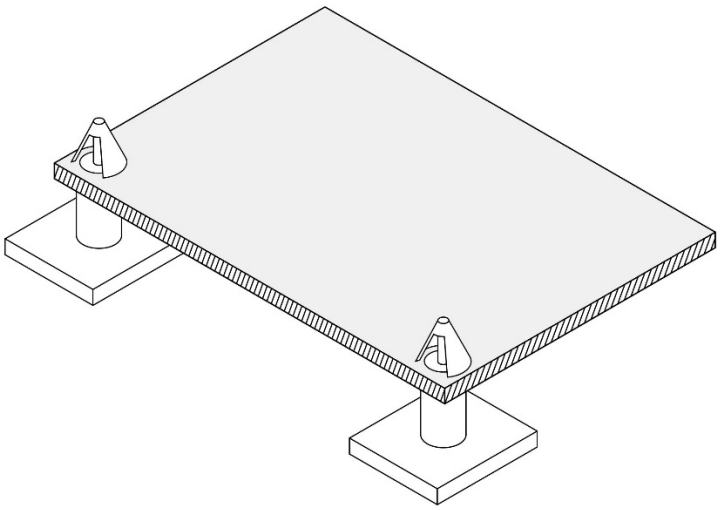
- **Leds** (longer pin is connected to the "+" hole)

- **Transistors** (inserted to fit the drawing in the PCB)



Building Tips

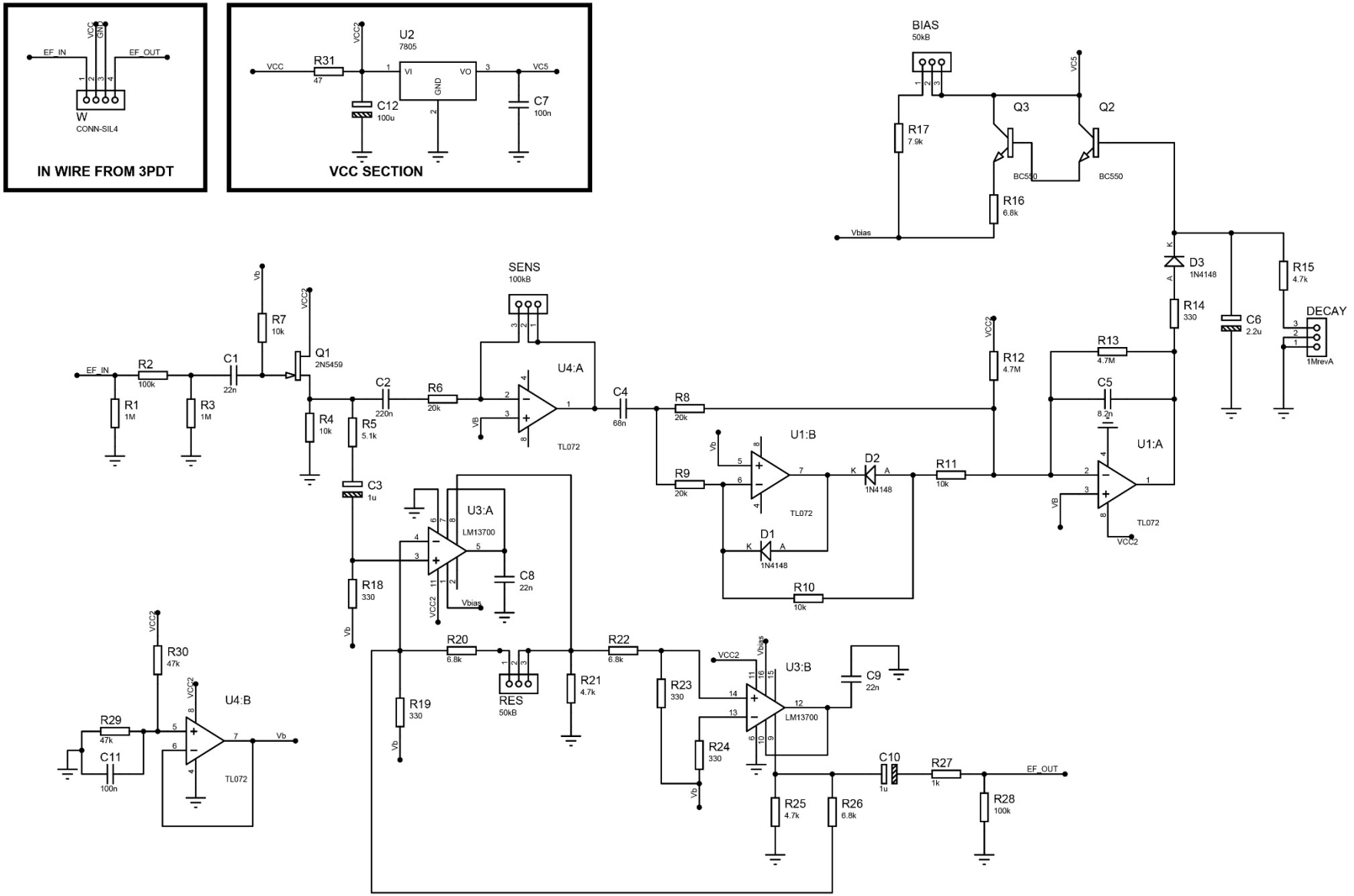
6- With the kit we include plastic PCB supports with an adhesive bottom. You can use them to anchor the PCB to your enclosure for a better stability. Just insert the PCB support tip into the 3.5mm holes and remove the adhesive protective film.



To avoid any issue always check the latest building manual. Use the pictures only as a reference! Colors/shapes of wires, PCB or parts can change slightly, this doesn't affect their functionality in any way.

Always double check part polarity, resistor and capacitor values, potentiometer placement, IC orientation… before soldering.

Schematic


IN WIRE FROM 3PDT
EF_IN
EF_OUT
VCC
GND
W
CONN-SIL4
VCC SECTION
U2
7805
R31
47
C12
100u
C7
100n
VCC2
VC5
BIAS
50kB
R17
7.9k
Q3
Q2
BC550
R16
6.8k
Vbias
D3
1N4148
R15
4.7k
R14
330
C6
2.2u
DECAY
1MrevA
SENS
100kB
R7
10k
Q1
2N5459
R2
100k
R1
1M
R3
1M
C1
22n
R4
10k
R5
5.1k
C2
220n
R6
20k
U4:A
TL072
C4
68n
R8
20k
R12
4.7M
R13
4.7M
C5
8.2n
U1:A
U1:B
D2
1N4148
R11
10k
R9
20k
D1
1N4148
R10
10k
C3
1u
U3:A
LM13700
C8
22n
R18
330
Vb
VB
R20
6.8k
RES
50kB
R22
6.8k
R21
4.7k
R19
330
R23
330
R24
330
U3:B
C9
22n
C10
1u
R27
1k
EF_OUT
R25
4.7k
R26
6.8k
R28
100k
R30
47k
U4:B
R29
47k
C11
100n