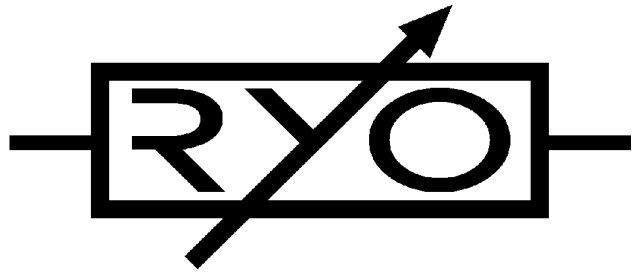


# Ljunggren Audio Roll Your Own Ampmix



Version: Ampmix 1.3

[For version 1.0 follow this link.](#)

## Bills Of Material

### COMPONENTS

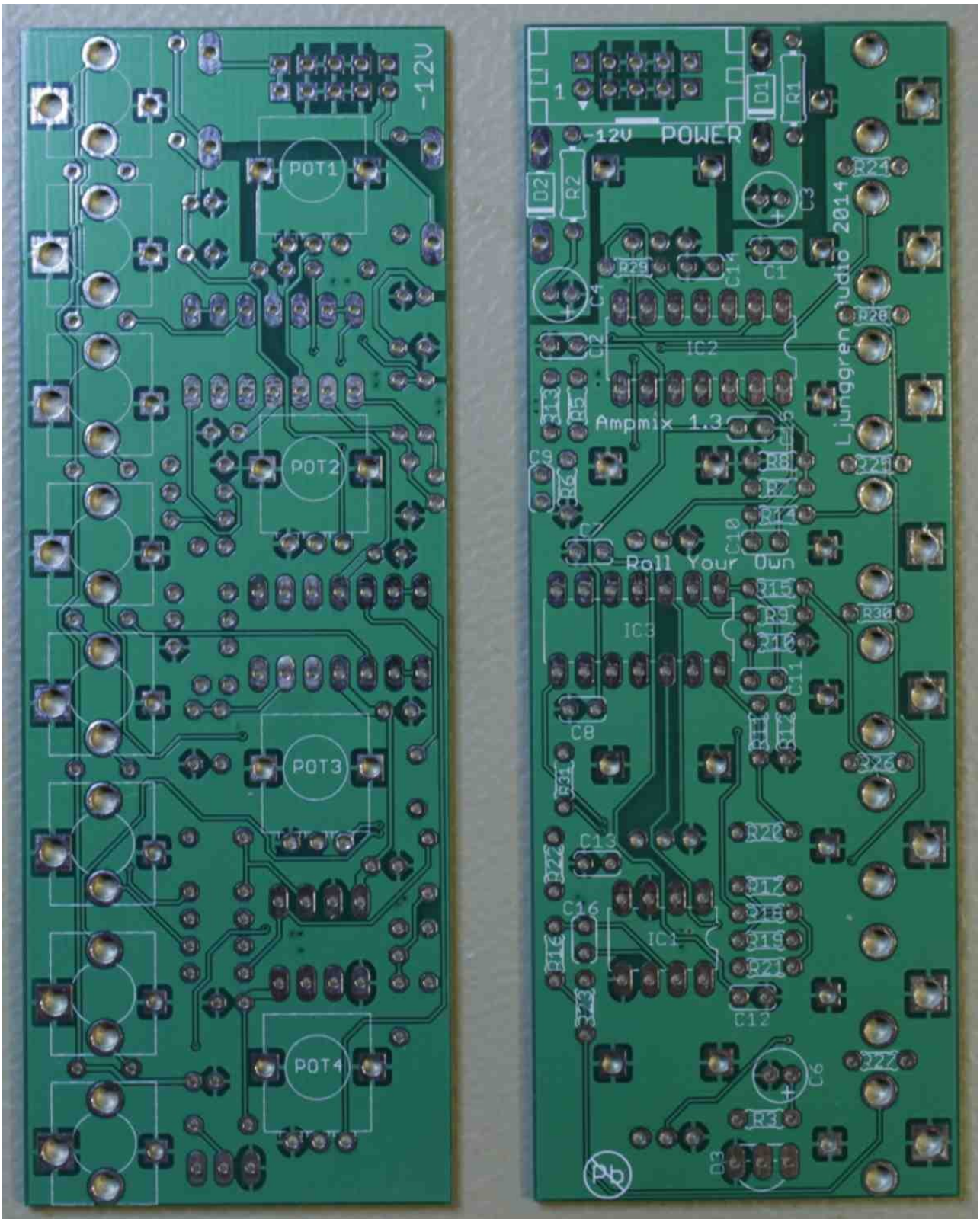
TYPE	PART	VALUE	PCS	NOTE
Resistor	R3	10K	1	Ca 3.5mm long resistor
Resistor	R13, R14, R15, R16	330R	4	Ca 3.5mm long resistor
Resistor	R5, R6, R7, R8, R9, R10, R11, R12, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31	22K, 1%	23	1% tolerance. Ca 3.5mm long resistor
Resistor	R1, R2	10R	2	Ca 7mm long resistor
Diode	D1, D2	SB130	2	Or 1N5818. Power polarity protection.
Capacitor	C9, C10, C11, C16	68pF	4	Ceramic 2.5mm
Capacitor	C1, C2, C7, C8, C12, C13, C14, C15	100nF	8	Ceramic X7R 2.5mm
IC Socket	IC1	8 pin	1	
Opamp	IC1	TL072	1	Or TL082
IC Socket	IC2, IC3	14 pin	2	
Opamp	IC2, IC3	TL084	2	Or TL074
Electrolytic	C3, C4, C6	10uF	3	2mm pin pitch, 5mm dia, 5mm height
Volt ref.	D3	LM4040 2.5V	1	
Power header	POWER	10 pin	1	boxed and keyed euro power header
Jack	IN1, IN2, IN3, IN4, OUT1, OUT2, OUT3, OUT4	3.5mm	8	PJ301BM
Potentiometer	POT1, POT2, POT3, POT4	22K linear	4	Or 25K. Snap in 9mm metal shaft.

### OTHER

TYPE	PART	VALUE	PCS	NOTE
Faceplate		8hp	1	PCB material (FR4), black, 2mm
PCB			1	
Power cable		IDC	1	16pin – 10pin
Mounting screws			2	M3x6 black pozi

[For schematics follow this link.](#)

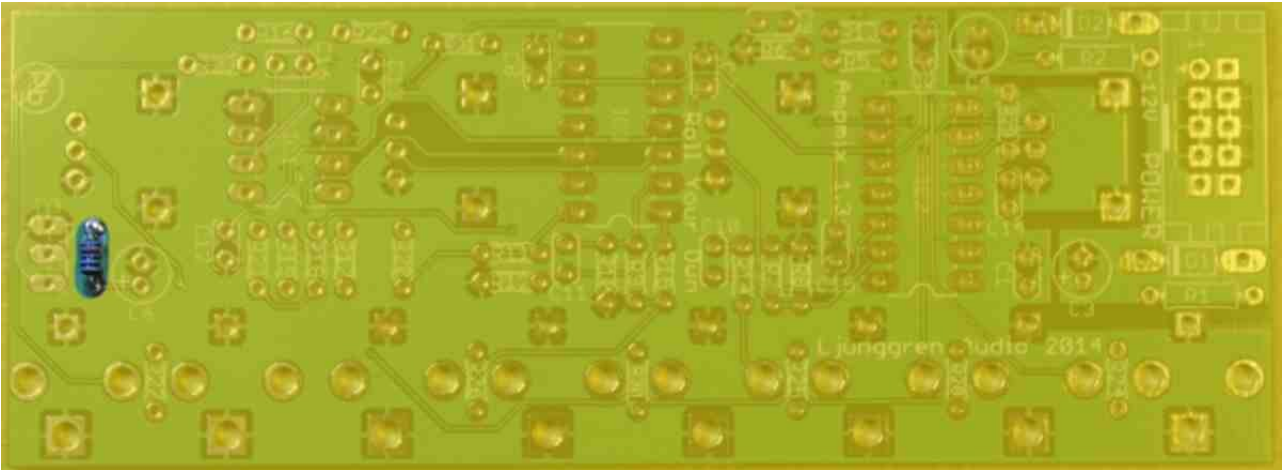
# Assembly instructions



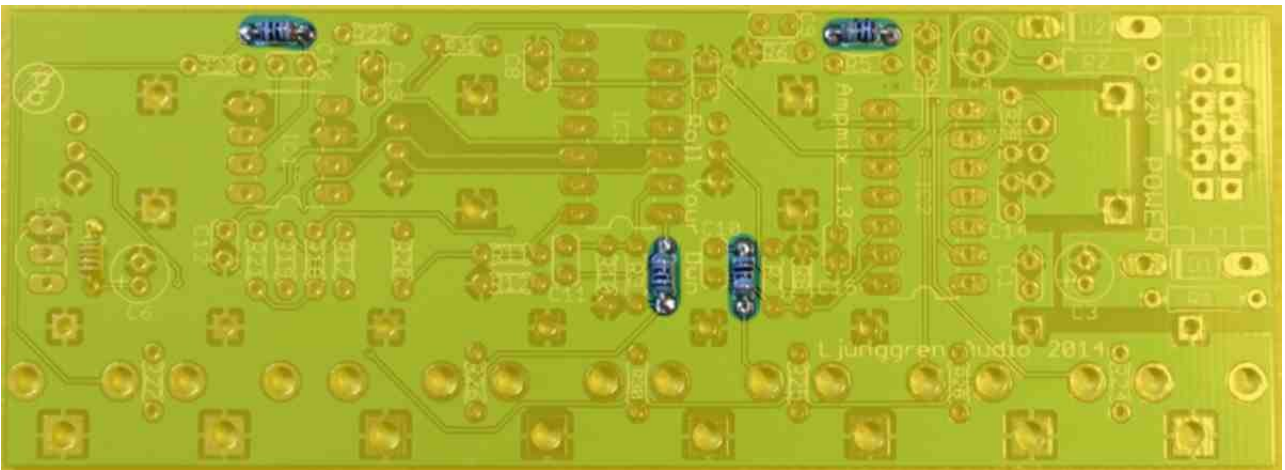
Empty PCB.

## Step 1

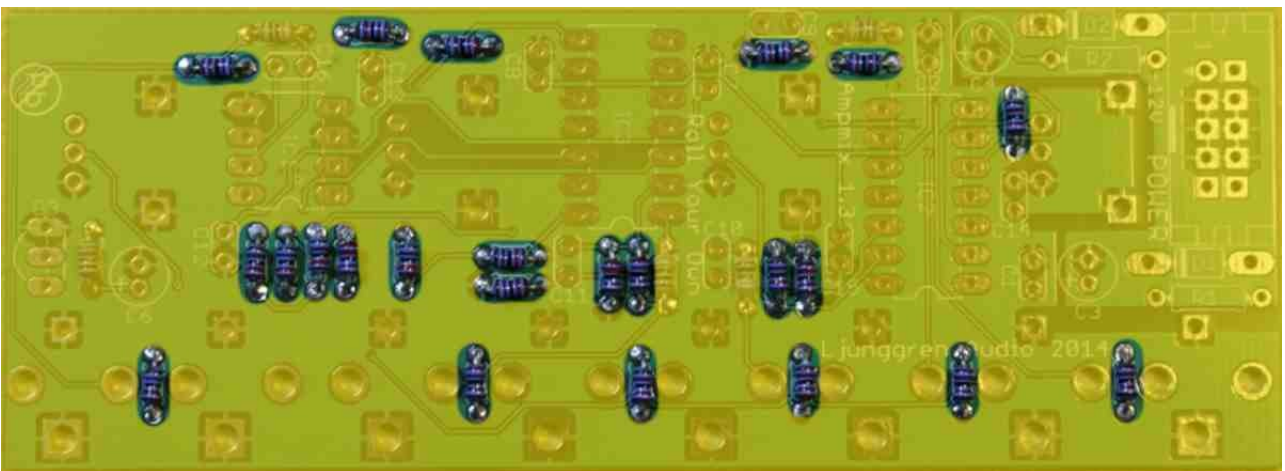
Solder resistors. Resistors are not sensitive to mounting direction.



**R3** 10K 1pcs

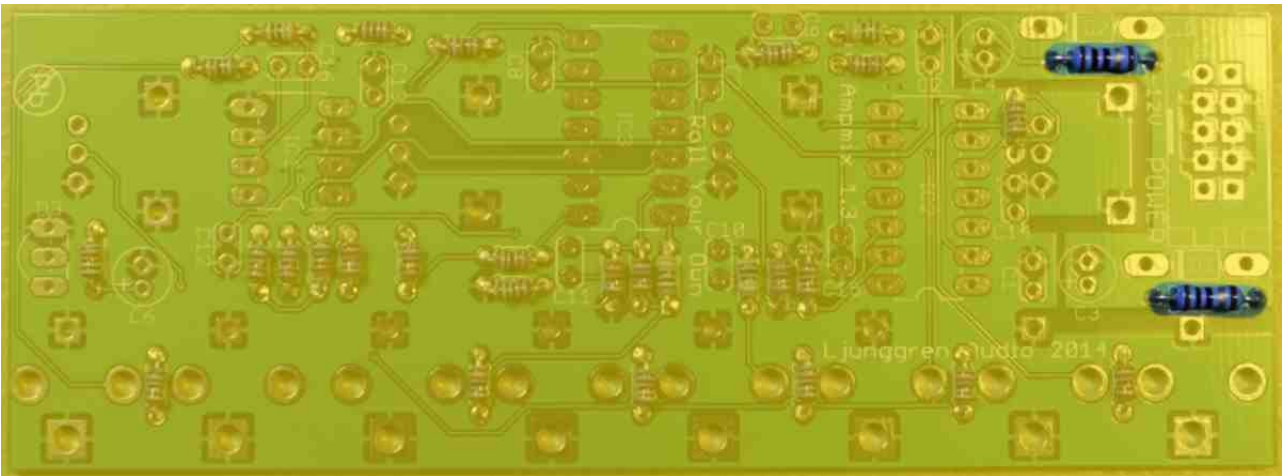


**R13, R14, R15, R16** 330R 4pcs



**R5, R6, R7, R8, R9, R10, R11, R12, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31** 22K 23pcs

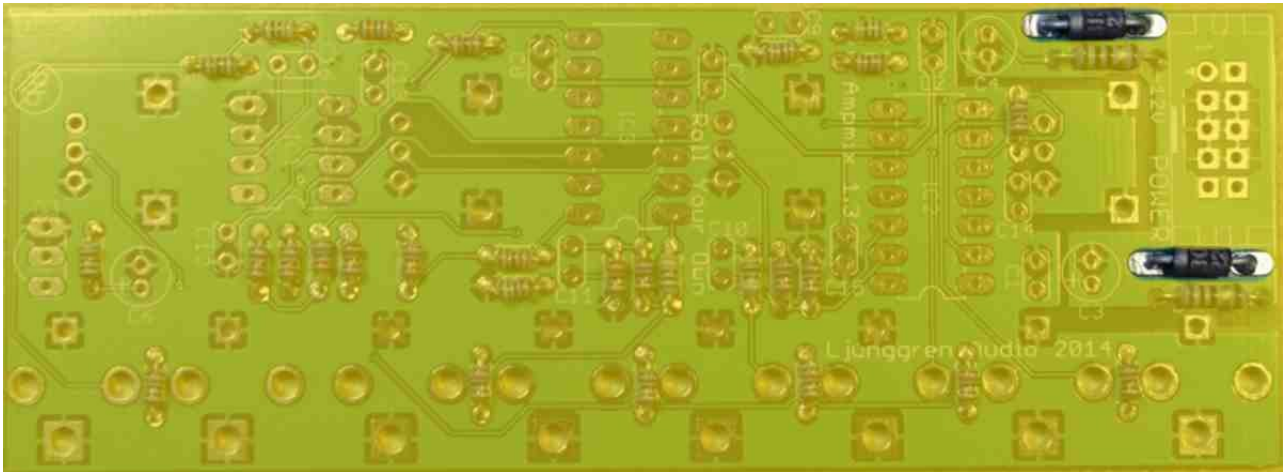




**R1, R2** 10R 2pcs

### Step 2

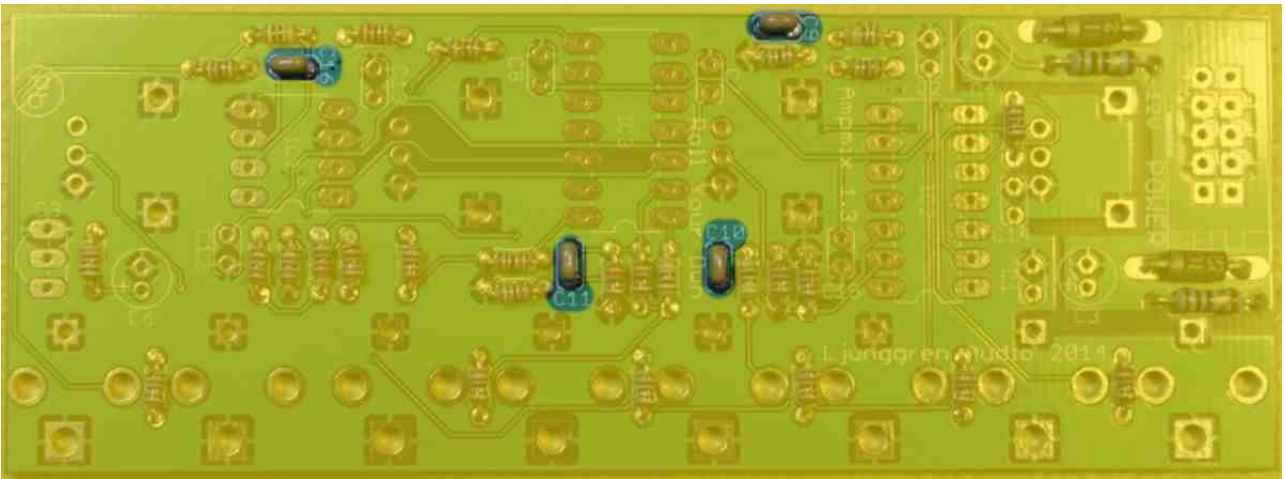
Solder reverse polarity protection diodes. The stripe on the diodes must be on the same side as indicated in the silk screen.



**D1, D2** SB130 2pcs

### Step 3

Solder ceramic capacitors. Ceramic capacitors are not sensitive to mounting direction.



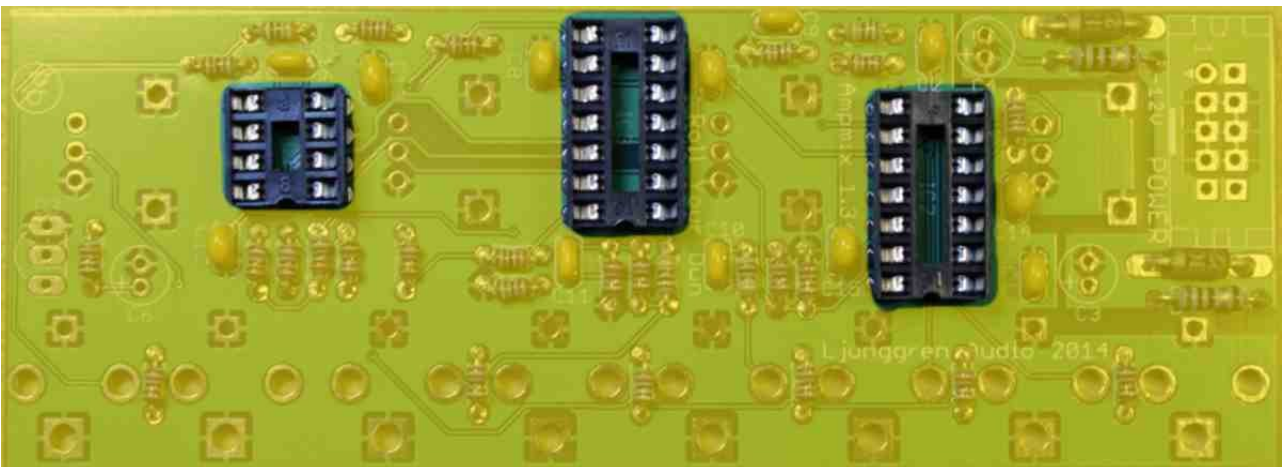
**C9, C10, C11, C16** 68pF 4pcs



**C1, C2, C7, C8, C12, C13, C14, C15** 100nF 8pcs

#### **Step 4**

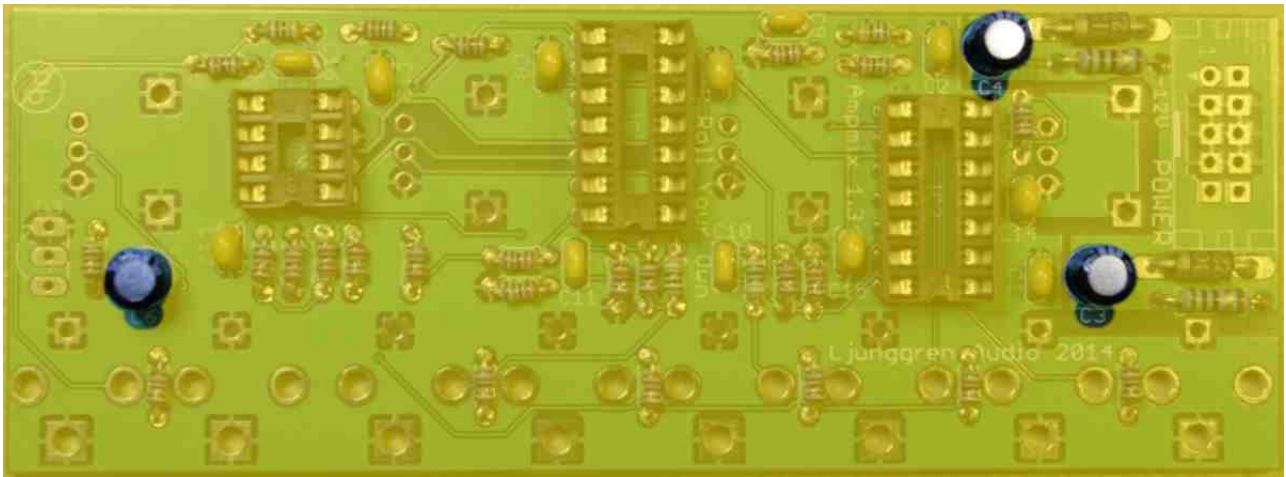
Solder sockets. Match the IC sockets indent (indicating pin 1 side) with the silk screens.



**IC1, IC2, IC3** sockets, 1pcs 8pin DIP, 2pcs 14pin DIP. IC's will be mounted later.

#### **Step 5**

Solder Electrolytics. Long leg is + (anode).

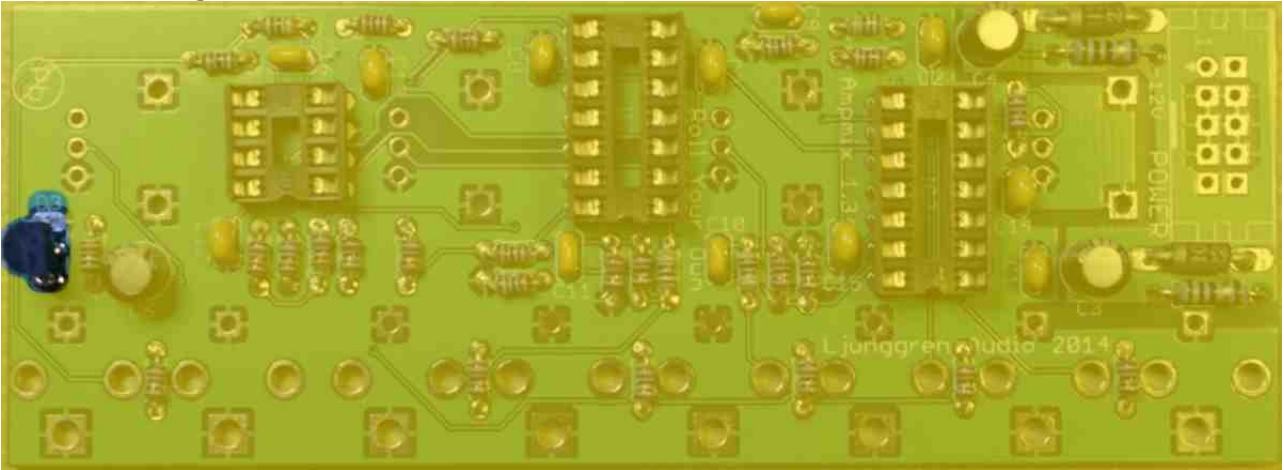


**C3, C4, C6** 10 $\mu$ F 3pcs



### Step 6

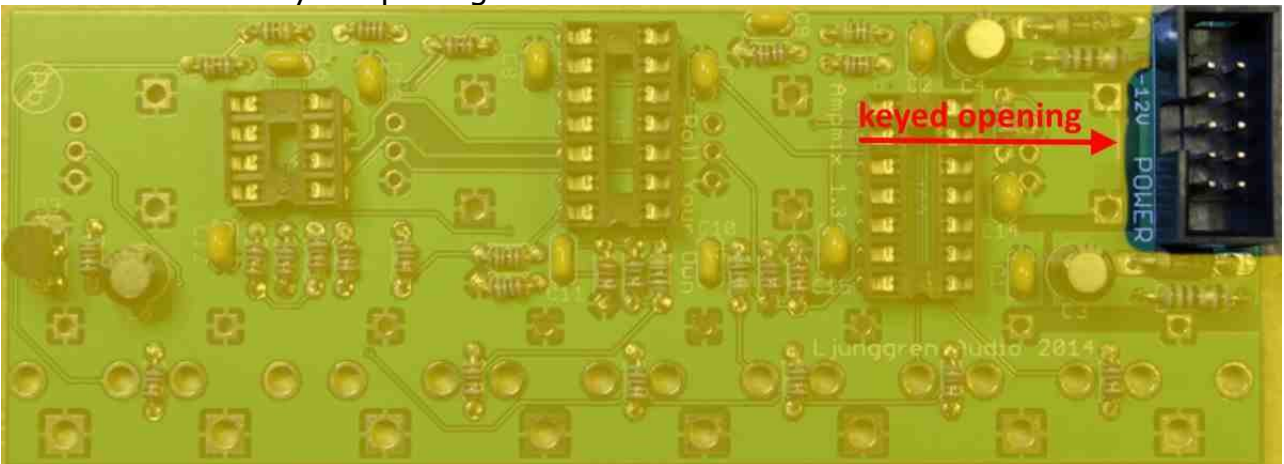
Solder voltage reference zener.



**D3** LM4040 2.5V 1pcs

### Step 7

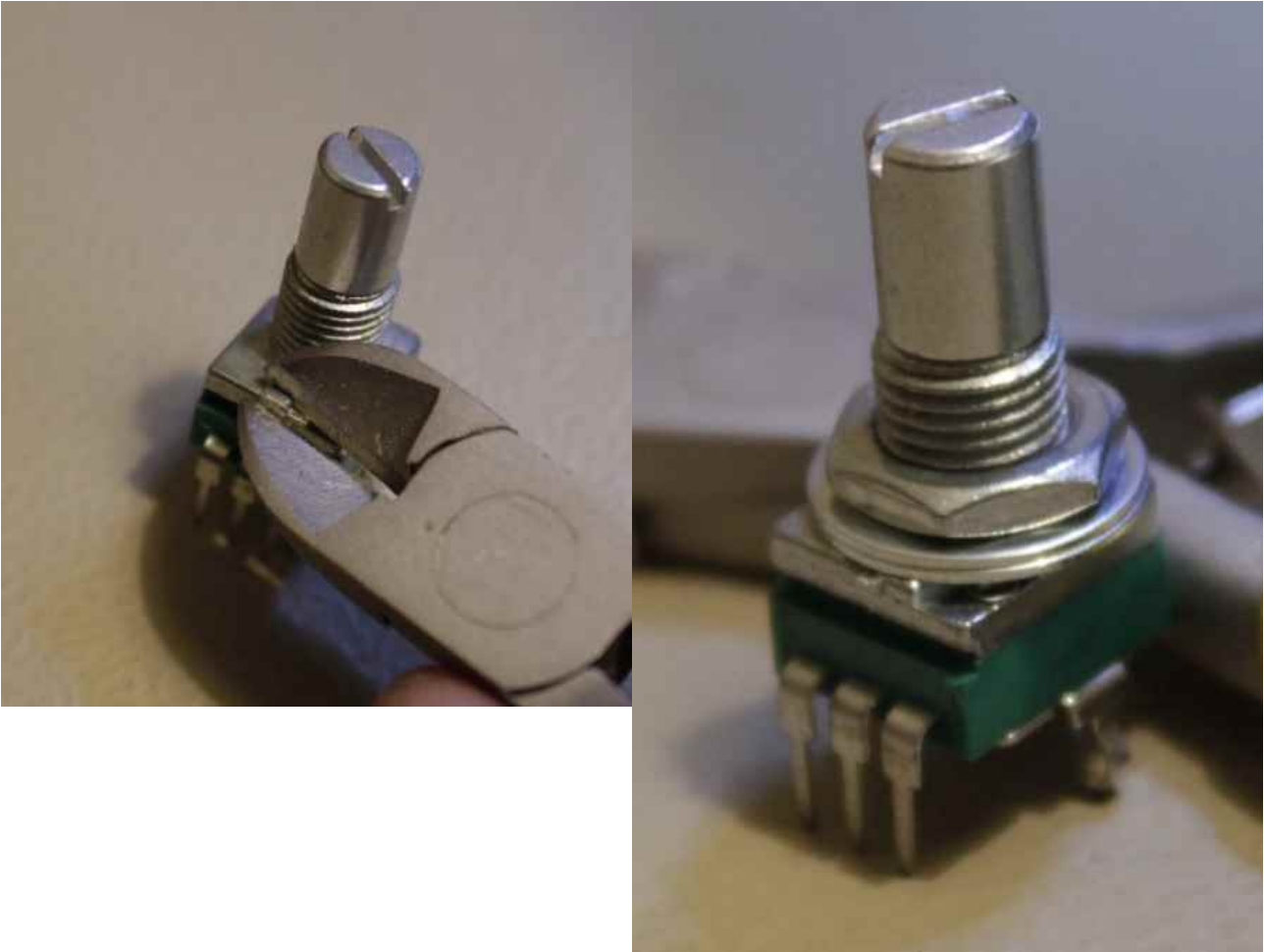
Solder the keyed boxed power header. Pay extra attention to the direction. The triangle (pin 1) must be at the -12V side. In the picture below you can see the direction of the keyed opening in the boxed header.



**POWER**

### Step 8

Cut off the small metal tab sticking out on the potentiometers. Use a cheap plier/nipper for this step, save your expensive ones for other tasks. Mount 2 washers and 1 nut on each potentiometer if you are using the potentiometers from the kit.



### Step 9

Place the potentiometers and jacks in their positions but don't solder them yet.



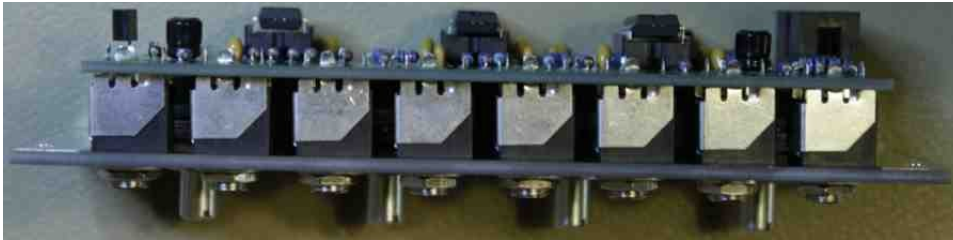
**IN1,**  
**IN2,**



**IN3,**  
**IN4, OUT1, OUT2, OUT3, OUT4** PJ301BM  
**POT1, POT2, POT3, POT4** 22K linear

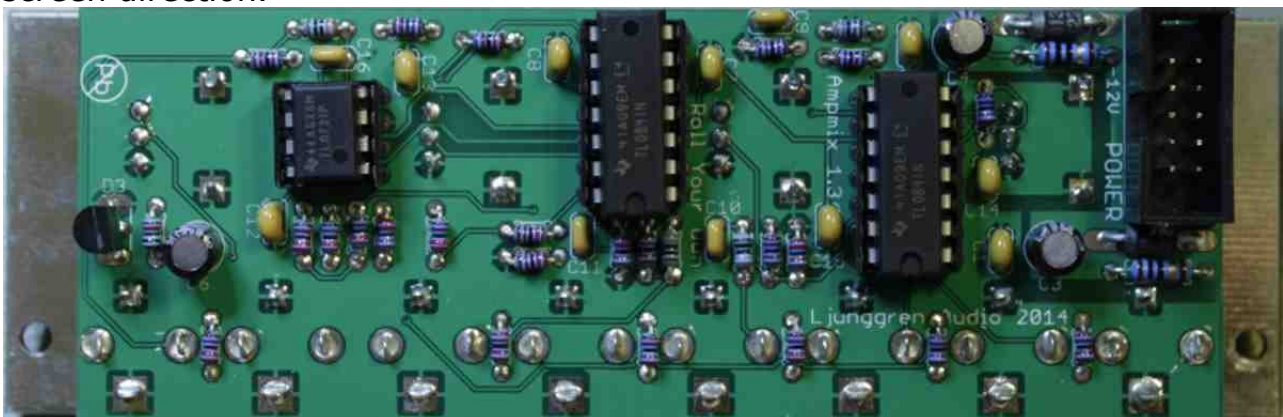
### Step 10

Mount the panel, make sure there is no gap between the panel and jacks. Use one washer and one nut on each potentiometer and jack. Use 8 mm wrench socket for the jacks and 10 mm for the potentiometers to avoid scratching of the panel. Solder the potentiometers and jacks after fixating the components in the panel.



### Step 11

Mount the IC's. The IC's indent or dot marking pin 1 must match the silk screen direction.



**IC1** TL072 or TL082 1pcs

**IC2, IC3** TL074 or TL084 2pcs

**Step 12**

Mount the knobs on the potentiometers.





### Step 13

Mount the power cable. Red stripe at -12V.



### Finished module!

#### Upgrading precision

There will be some small variations between the channels due to the use of 1% resistors and opamps with up to 6mV offset, or 10mV if you don't have a kit and select a TL07x/08x version that have 10mV offset (check the datasheet and suffixes).

If you use 0.1% resistors on R5 to R12 and R17 to R23 (15pcs) you will get better precision, but it might be difficult to find in the small package needed. You can get a more expensive, higher precision LM4040 2.5V reference for the 5V offset as well if you need.

It should be considered before deciding on the precision upgrade that the pots tolerances won't allow an ideal center position of 1x gain on every potentiometer. This is also why we don't use center click potentiometers, it would require trimmers to calibrate the center position in an analog circuit.