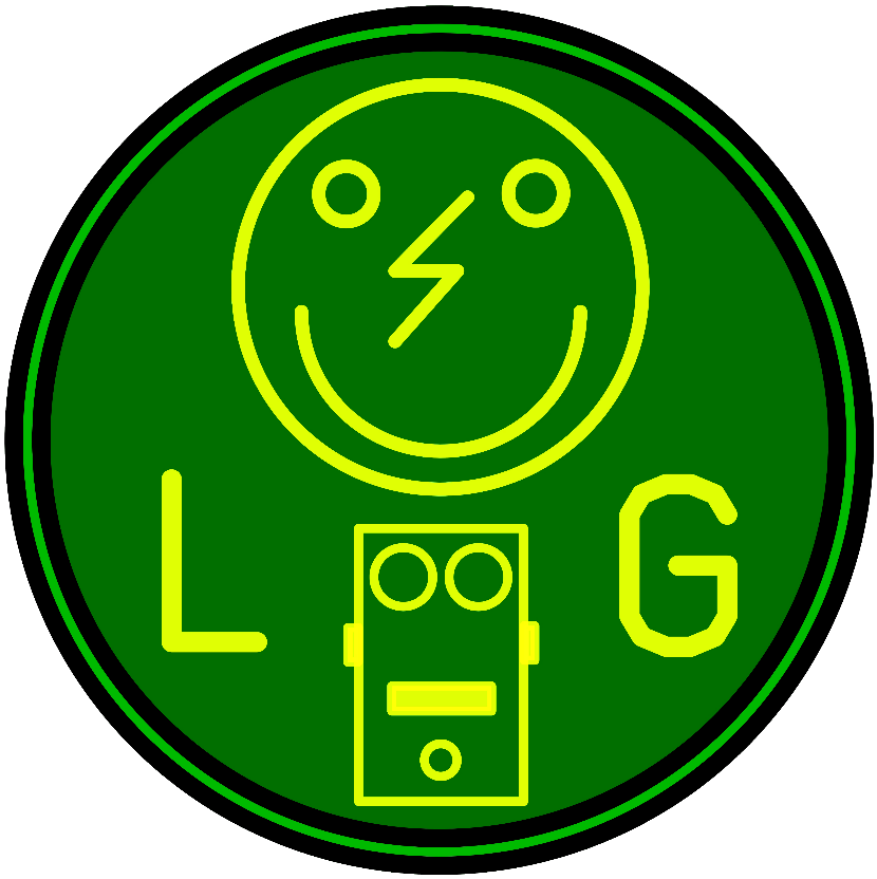
Feeler

Building instructions

v1.0.1



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Read this entire manual thoroughly before you start building the effect! There are some available options and you should choose which one you want to incorporate before starting your build.

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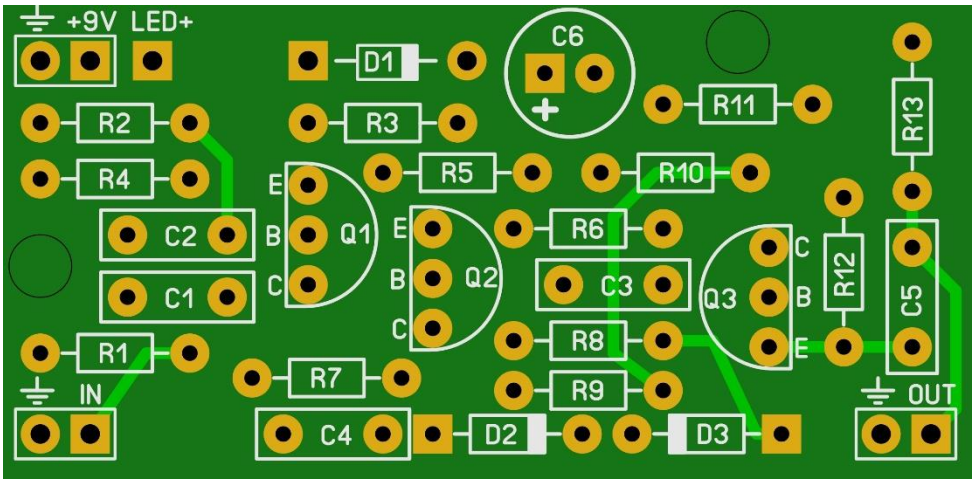
PCB layout

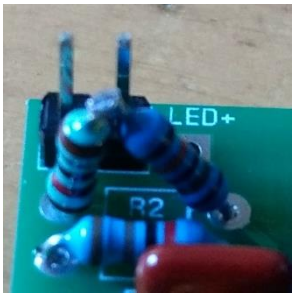


Dimensions: **49,4 mm x 24,2 mm**
1.94 inch x 0.95 inch

Components

Name	Value	Comment	Name	Value	Comment
C1	100p	MLCC	**R1**	2M2	1% metal film
C2	47n	SMF	**R2 ***	160k	1% metal film
C3	47n	SMF	**R3**	560k	1% metal film
C4	47n	SMF	**R4**	6k2	1% metal film
C5	100n	SMF	**R5**	18k	1% metal film
C6	100u	Electrolytic	**R6**	10k	1% metal film
D1	1N5817		**R7**	10k	1% metal film
D2	1N4148		**R8**	68k	1% metal film
D3	1N4148		**R9**	68k	1% metal film
Q1	2N5089		**R10**	22k	1% metal film
Q2	2N3906		**R11**	22k	1% metal film
Q3	2N5089		**R12**	10k	1% metal film
			R13	47k	1% metal film

* If you do not have a 160k resistor then connect a 150k resistor and 10k resistor together in series to form a 160k. Like this:



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Build sequence

Soldering this board can be very complicated for some people since the solder pads are very close together. Use a magnifying glass to make the job easier.

The trick to soldering a PCB is to work from small to big components. My building sequence suggestions in this section are based on the parts I used myself. Sometimes some components are smaller (or bigger) so always use your own common sense and change the order accordingly. Usually capacitors can differ a lot in size depending on their rating and value.

Note: Do not blow on your solder in an attempt to cool it down. That can result in a bad join that might corrode! Also take extra care not to short components.

Start by soldering **D2** and **D3**, the resistors and then **D1**.

If you want to experiment with other transistors then you could socket them instead of soldering them to the board. You'll need a some 20 SIL sockets, break off the sockets and solder them to the board. Now is the time to solder these sockets on the PCB as well as the socket for the IC. Place the transistors and IC once you are finished with all soldering and off board wiring!

Now continue by soldering the MLCC, SMF and MKT capacitors. Now finish with soldering the transistors (if not socketed) and the Electrolytics.

You are almost ready to rock, well… not really. The difficult part starts now.

Besides the components mentioned in the components table, you will need:

- **1 mono input jack socket and 1 stereo input jack socket**.
- **3PDT footswitch** (9 pins)
- **2,1mm DC jack socket** (isolated).
- **22 gage stranded hook-up wire.**
- **LED holder.** This enables you to mount the LEDs in the enclosure.
- **LED (3mm or 5mm depending on your taste).**
- **Hammond 1590A** case (or similar) in your favorite color. If you need more room you could consider using a **Hammond 1590B**.

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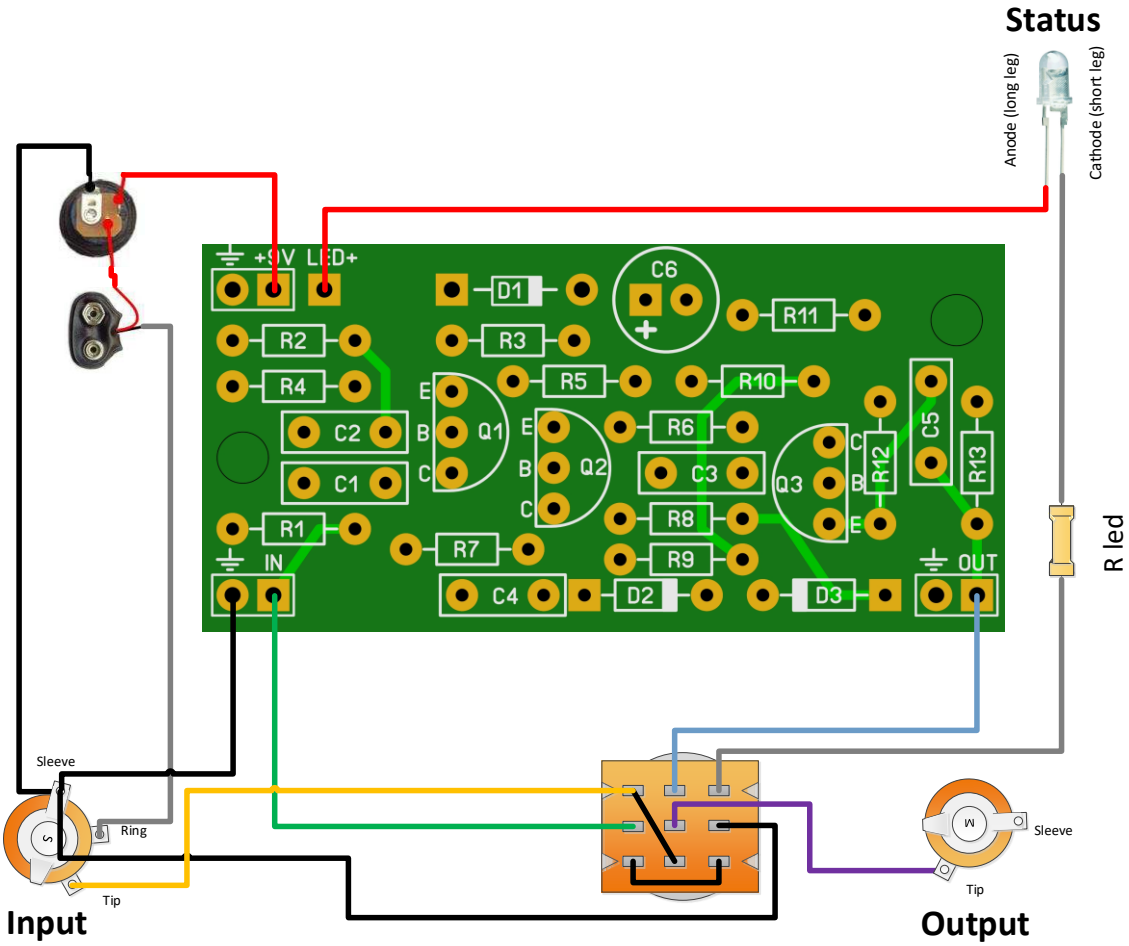
Off board wiring



Note that **R led** is a **4k7** resistors. You can change these value depending on the type of LED you use but 4k7 is safe enough for almost all LEDs @9V.

The sleeve of the output socket is not connected on purpose. It does however require a good contact between the output socket and enclosure to work. If this is not possible then connect the sleeve of the output socket to the sleeve of the input socket.

You should use Switchcraft/Neutrik type metal chassis sockets. When using plastic, you will need to connect the input socket sleeve to the output socket sleeve!

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Troubleshooting

All PCB's have been 100% factory e-tested and out of every batch I receive I build an effect to double check, so there should not be a connection problem on the PCB itself.

The board is not working (at all), what now?

- Check if your 9V is plugged in correctly (and/or soldered correctly on the board). Pay special attention to the polarity.
- Check that you oriented the capacitors, IC's ,transistors and diodes the right way. SMF, MKT and ceramic capacitors as well as resistors do not need to be oriented. A likely sign of incorrect capacitors and/or orientation is when an effect is sputtering, rumbling or "motorboating".
- Check if you used the correct values of the components. For resistors you can look here: http://www.diyaudioandvideo.com/Electronics/Color/
- Double and triple check your soldering! A loose or cold solder can be really bad for your board.
- Replace the IC and/or transistors, one might be defective. Before doing that first unplug the 9V and wait for 5 seconds.
- Check that you have good/high grade components. A lot of Chinese sourced parts are fakes (especially high end opamps, audio capacitors, vintage diodes and transistors) so be careful that you source your parts from reliable suppliers.

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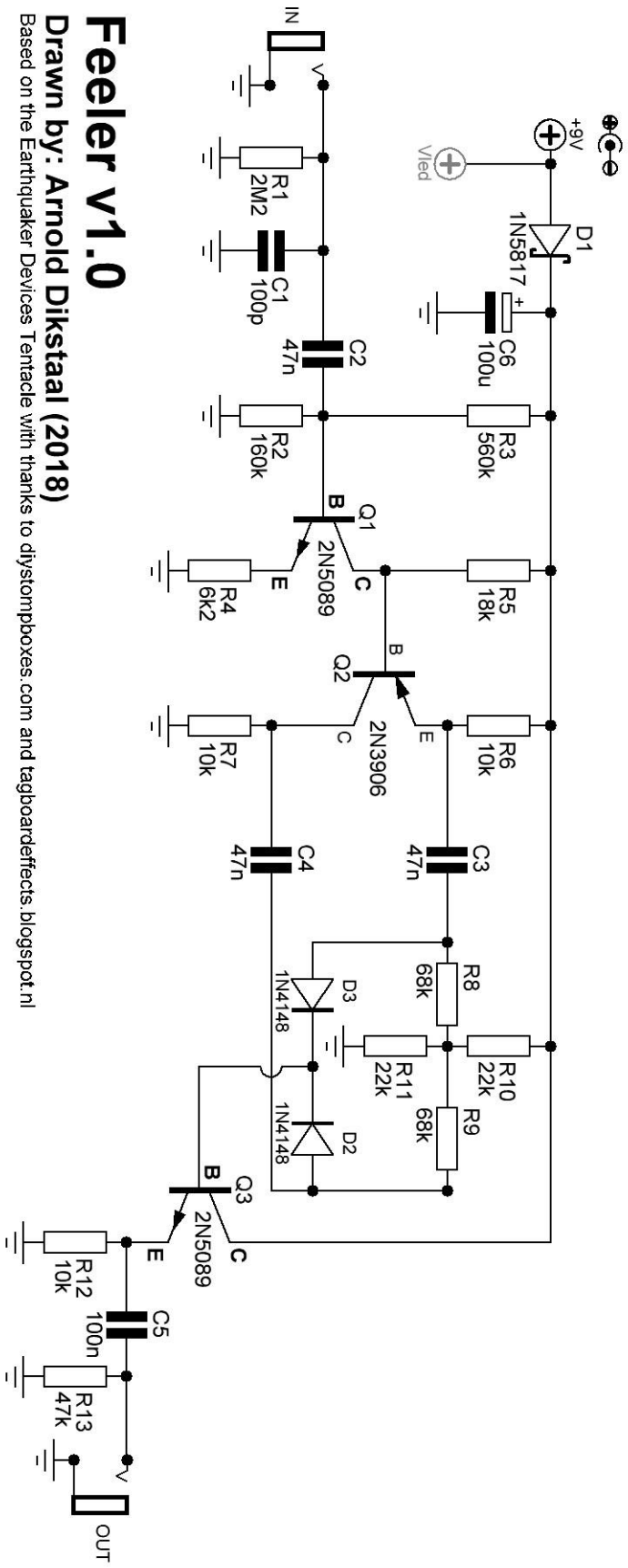
Schematic



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