

Giant Green Lemon

Based on:

Dunwich DA120

Effect type:

Pre-Amp Overdrive

Build difficult:

Advanced

Number of parts:

High, total 79 components

Technology:

Op Amp and DC/DC converter

Power consumption:

9V

Enclosure type:

1590BB

Get your board at:

[Giant Green Lemon](#)

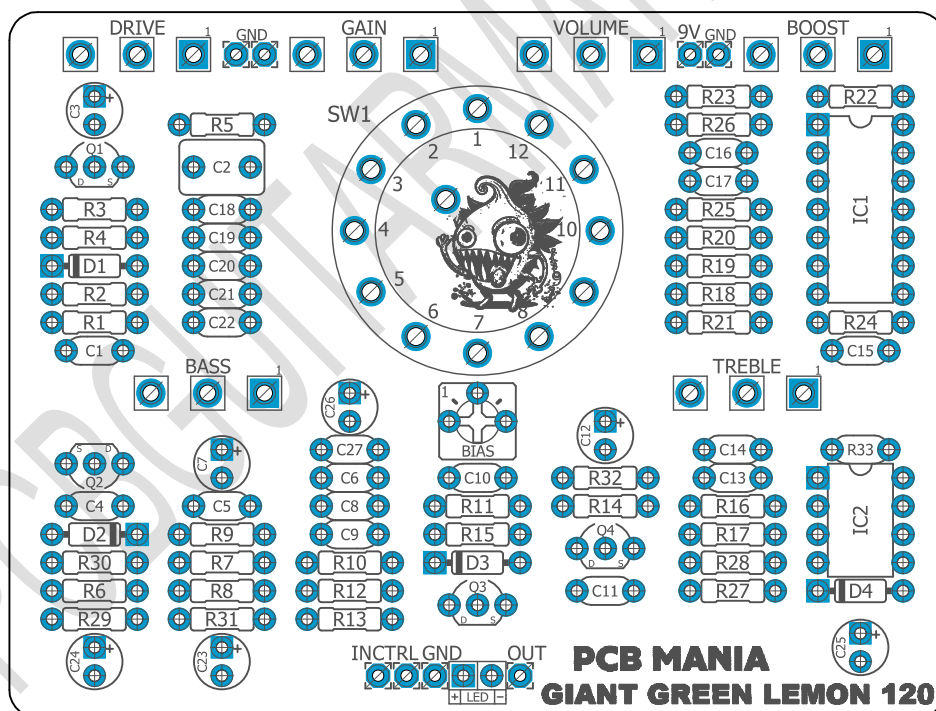
Get your kit at:

[Das Musikding \(Europe\)](#)

Project overview:

If life gives you lemons, make some juicy tone! This MOSFET-based emulator of an overdriven MATAMP GT120 is the perfect solution for any guitarist's sour note woes.

With the ability to create anything from low-medium gain drive to fully saturated high gain tones, the Giant Green Lemon will turn those sour lemons into sweet, musical nectar.



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Introduction

The Giant Green Lemon is more than just a fun name and a high-quality overdrive pedal, it's a ray of musical sunshine in your rig. This Dunwich DA120 replica has been designed to bring a smile to your face and a song to your heart. With a depth rotary switch that changes the value of the output cap on the first MOSFET stage and a Baxendal tone stack between the second and third MOSFET stages that get more tonal variation, you can turn any dull performance into a juicy, musical feast.

So, if life gives you lemons, remember to reach for the Giant Green Lemon and add a little bit of musical zest to your life!

Controls

Potentiometers

- Bass
- Boost
- Drive
- Gain
- Treble
- Volume

Switches

- Rotary switch (SW1)

Bill of materials

| Resistors | |
|-----------|-------|
| Part | Value |
| R1 | 10m |
| R2 | 1m |
| R3 | 2k7 |
| R4 | 2k7 |
| R5 | 33k |
| R6 | 1m |
| R7 | 2k7 |
| R8 | 2k7 |
| R9 | 100k |
| R10 | 27k |
| R11 | 100k |
| R12 | 1m |
| R13 | 2k7 |
| R14 | 2k7 |
| R15 | 100k |
| R16 | 10k |
| R17 | 10k |
| R18 | 220k |
| R19 | 220k |
| R20 | 470k |
| R21 | 470k |
| R22 | 3k3 |
| R23 | 5k1 |
| R24 | 3k3 |
| R25 | 100k |
| R26 | 330r |
| R27 | 1k |
| R28 | 100k |
| R29 | 62k |
| R30 | 100k |
| R31 | 4k7 |
| R32 | 1m |

| Capacitors | |
|------------|-------|
| Part | Value |
| C1 | 100n |

| | |
|------|------|
| C2 | 1n |
| C4 | 100n |
| C5 | 100n |
| C6 | 10n |
| C8 | 2n2 |
| C9 | 330p |
| C10 | 100n |
| C11 | 100n |
| C13 | 100n |
| C14 | 100n |
| C15 | 470p |
| C16 | 150n |
| C17 | 8n2 |
| C18 | 2n2 |
| C19 | 4n7 |
| C20 | 10n |
| C21 | 22n |
| C22 | 100n |
| C27 | 100n |
| C33* | 2n2 |

| Electrolytics Capacitors | |
|--------------------------|-------|
| Part | Value |
| C3 | 47u |
| C7 | 47u |
| C12 | 47u |
| C23 | 47u |
| C24 | 47u |
| C25 | 10u |
| C26 | 47u |

| Potentiometers | |
|----------------|-------|
| Part | Value |
| BASS | 1M A |
| BOOST | 5K B |
| DRIVE | 1K B |
| GAIN | 1M A |

| | |
|--------|--------|
| TREBLE | 1M A |
| VOLUME | 100K A |

| Trim pots | |
|-----------|-------|
| Part | Value |
| BIAS | 100k |

| IC | |
|------|---------|
| Part | Value |
| IC1 | TL074 |
| IC2 | LTC1144 |

| Transistors | |
|-------------|-------|
| Part | Value |
| Q1 | BS170 |
| Q2 | BS170 |
| Q3 | BS170 |
| Q4 | BS170 |

| Switches | |
|----------|-------|
| Part | Value |
| SW1 | 1P12T |

| Diodes | |
|--------|-------------|
| Part | Value |
| D1 | 9.1v |
| D2 | 9.1v |
| D3 | 9v1 |
| D4 | 1n5817 |
| LED | 3mm red LED |

Shopping list

| Resistors | | |
|-----------|-------|-----------------------------|
| Qty | Value | Parts |
| 6 | 100k | R9, R11, R15, R25, R28, R30 |
| 2 | 10k | R16, R17 |
| 1 | 10m | R1 |
| 1 | 1k | R27 |
| 4 | 1m | R2, R6, R12, R32 |
| 2 | 220k | R18, R19 |
| 1 | 27k | R10 |
| 6 | 2k7 | R3, R4, R7, R8, R13, R14 |
| 1 | 330r | R26 |
| 1 | 33k | R5 |
| 2 | 3k3 | R22, R24 |
| 2 | 470k | R20, R21 |
| 1 | 4k7 | R31 |
| 1 | 5k1 | R23 |
| 1 | 62k | R29 |

| Capacitors | | |
|------------|-------|--|
| Qty | Value | Parts |
| 9 | 100n | C1, C4, C5, C10, C11, C13, C14, C22, C27 |
| 2 | 10n | C6, C20 |
| 1 | 150n | C16 |
| 1 | 1n | C2 |
| 1 | 22n | C21 |

| | | |
|---|------|---------------|
| 3 | 2n2 | C8, C18, C33* |
| 1 | 330p | C9 |
| 1 | 470p | C15 |
| 1 | 4n7 | C19 |
| 1 | 8n2 | C17 |

| Electrolytics Capacitors | | |
|--------------------------|-------|----------------------------|
| Qty | Value | Parts |
| 1 | 10u | C25 |
| 6 | 47u | C3, C7, C12, C23, C24, C26 |

| Potentiometers | | |
|----------------|--------|--------------------|
| Qty | Value | Parts |
| 1 | 100K A | VOLUME |
| 1 | 1K B | DRIVE |
| 3 | 1M A | BASS, GAIN, TREBLE |
| 1 | 5K B | BOOST |

| Trim pots | | |
|-----------|-------|-------|
| Qty | Value | Parts |
| 1 | 100k | BIAS |

| IC | | |
|-----|---------|-------|
| Qty | Value | Parts |
| 1 | LTC1144 | IC2 |
| 1 | TL074 | IC1 |

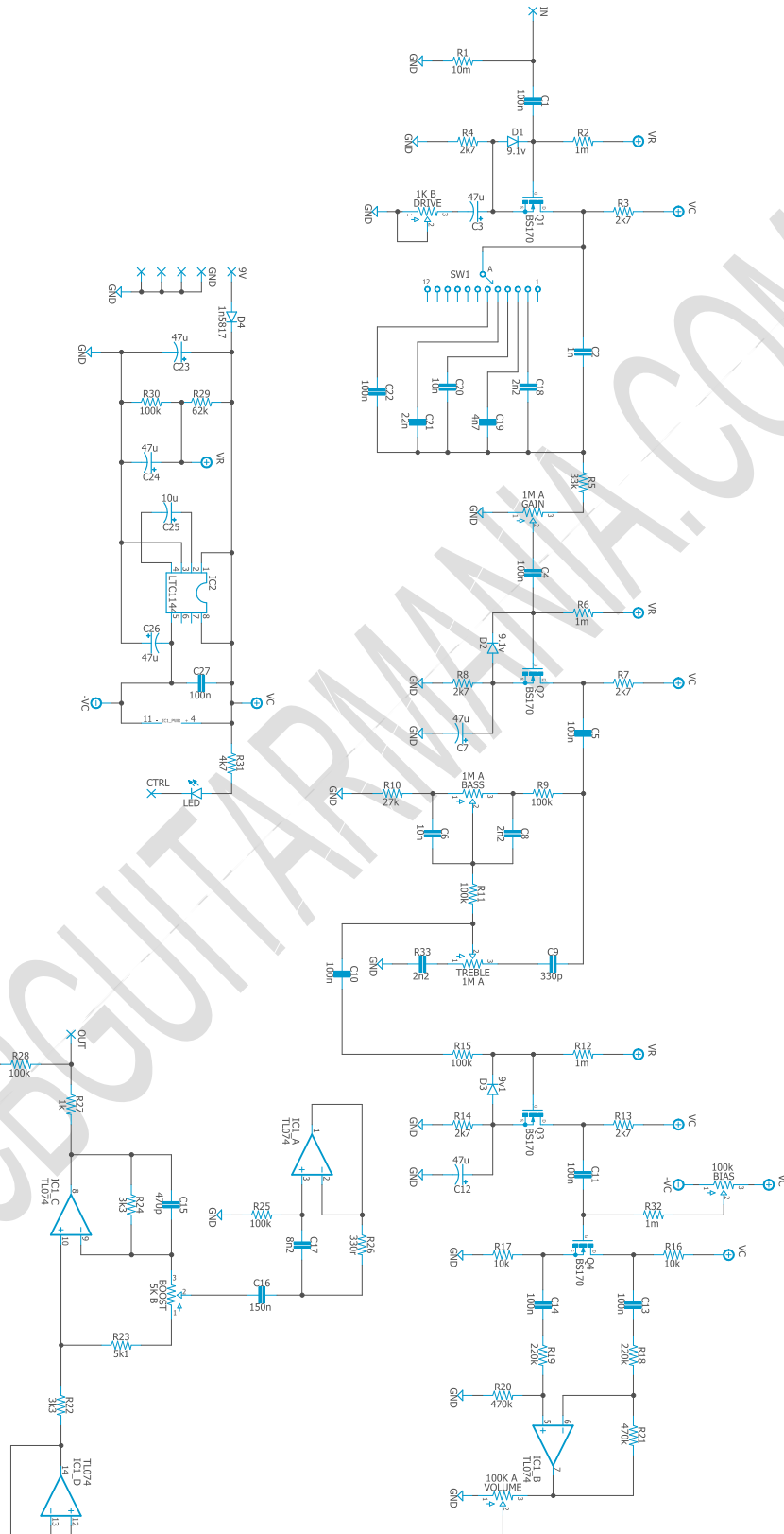
| Transistors | | |
|-------------|-------|----------------|
| Qty | Value | Parts |
| 4 | BS170 | Q1, Q2, Q3, Q4 |

| Switches | | |
|----------|-----------------|-------|
| Qty | Value | Parts |
| 1 | 1P12T | SW1 |
| 1 | 3PDT Stomp foot | - |

| Diodes | | |
|--------|-------------|------------|
| Qty | Value | Parts |
| 1 | 1n5817 | D4 |
| 3 | 9.1v | D1, D2, D3 |
| 1 | 3mm red LED | LED |

| Jacks | | |
|-------|------------|-------|
| Qty | Value | Parts |
| 1 | DC JACK | - |
| 2 | AUDIO JACK | - |

Schematic



Components Recommendations

As many people like to experiment with some pedals with higher voltage, always ensure your **electrolytic capacitors'** max tolerance is over 25v.

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for those under 1nf. However, high-quality components such as Wima's Capacitors and Panasonic's electrolytics can deliver a better performance.

All the resistors used for testing this project are 1/4W Metal Film.

The BOM and Shopping list are exclusive regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

Build Notes

If this is one of your first projects, I recommend you to take a look at our [Pedal Building Guide](#).

For a successful and tidy build, it's recommended the following order:

1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off-board wiring

C33 - R33*

In the first version of this board, C33 was mistakenly labeled as R33. This typo has been corrected in all subsequent versions.

Wiring Diagram

All our projects include a free 3PDT Board to make the wiring easier and tidier. Also, all of our PCBs feature the status LED on board.

The pad named "Ctrl" or "LED" is the one that controls the status of the led; wire it to the "LED" pad on the 3PDT board or in the control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB; check it [here](#) to access our [Pedal Wiring Guide](#).

Drill Template

This Project has been planned to fit into a 1590BB enclosure type.

Check the Attached “Drilling templates” to drill the box properly. The files are on Scale 1:1, ready to print on an A4 page.

Licensing and Usage

We really appreciate your trust and support in buying this PCB, as well as your will to dive into the DIY electronics world. For us, that's why you can make this project work properly and enjoy not only the building process but also experiment and play with it on your rig.

We try to reply to every question we receive on our email or our social media. Still, we try to encourage all our customers to join our [PCB Guitar Mania - Builders Group](#) on Facebook to post all your doubts, issues, suggestions, or requests, share your builds, and have some feedback from other fellow builders and us!

We tested all our projects following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been checked. These are suggestions based on the schematic analysis and the experiences and opinions of others. Feel free to share with us your views and recommendations regarding the mods your personal experimentation.

These boards may be used for commercial endeavors in any quantity unless expressly noted. No attribution is necessary, though accreditation or a link back is always much appreciated.

If you are a builder planning to make your own run of pedals, we also offer the service of custom-made boards with your brand and logo, design according to your specifications.

The only usage restrictions are that, first, you cannot resell the PCB as part of a kit without prior arrangement with us, and second, you cannot scratch off the silkscreen or other way of trying to hide our logos and the source of the PCBs. Like it's written above, if you want to have your designs with your brand and logo, we could undoubtedly reach an agreement.

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