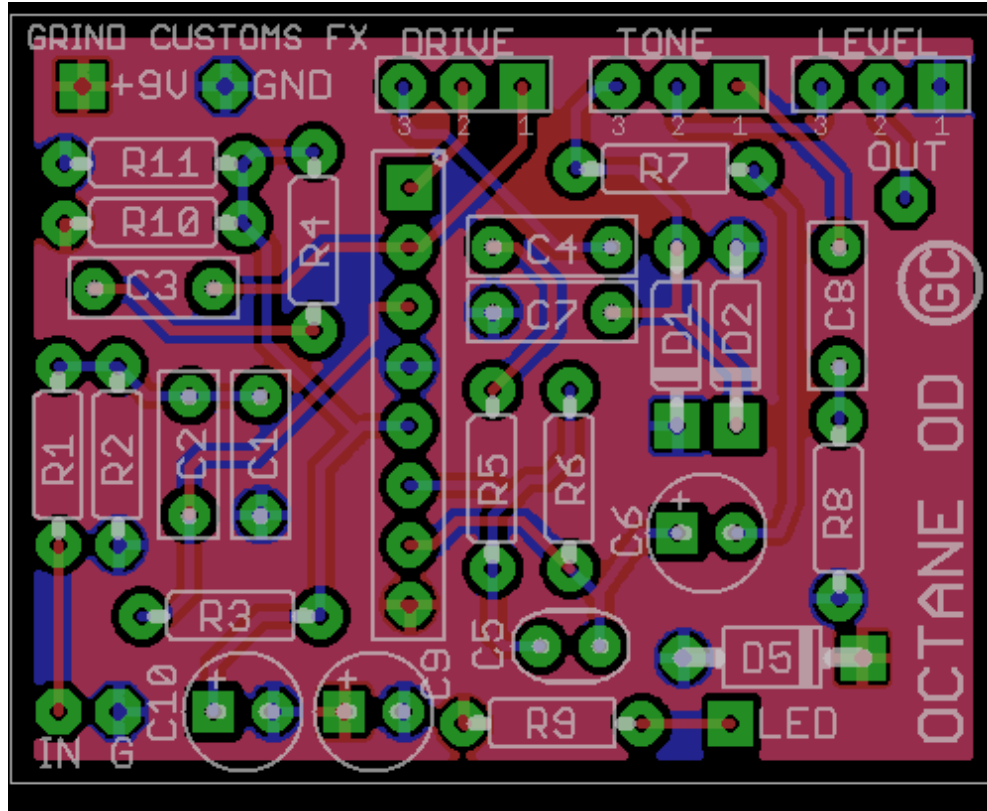




## Octane OD



Dimensions are approximately 1.65" x 1.4"

R1	1K	C1	3.3nF	D1	1N914
R2	1M	C2	47nF	D2	1N914
R3	1M	C3	220nF	D5	1N4001
R4	1K	C4	47nF	IC1	SIL Dual Op Amp
R5	10K	C5	220pF	DRIVE	A100K
R6	820K	C6	10 $\mu$ F	TONE	B5K
R7	10K	C7	10nF	LEVEL	A100K
R8	1K5	C8	100nF		
R9	4K7	C9	47 $\mu$ F		
R10	22K	C10	47 $\mu$ F		
R11	22K				



## Overview

The Octane OD is, in a nutshell, a stripped-down reworking of the old classic Marshall Guv'nor\* distortion pedal that was a hot item in the 1980s. The main difference is that instead of the three-band tonestack in the Guv'nor\*, the Octane has been reduced to a very simplistic single tone control that is used to tame the excessive highs that are present in many high-gain circuits. The overall gain stages retain the same basic topology, but some values were changed to accommodate the wildly different tone control. The stock clipping diodes (1N914) are also different from the Guv'nor\* (LEDs), giving a more “hair metal” sound. Perhaps the most visually striking difference is the use of an SIP (single inline package) op amp, as opposed to the now more common DIP (dual inline package) op amp. The decision to go with SIP over DIP was purely cosmetic (but everyone smart knows that SIP chips add a lot more mojo!) This circuit bears some resemblance to a few current-production pedals, but it is not a *direct* clone of any given product. And all of them, most especially this one, owe a tip ‘o the hat to the fine folks at Marshall.

*\* Brand and product names are used for reference only. No affiliation of any kind regarding this project with any commercial brand, product, or company is either expressed or implied.*

## Notes

- There is no D3 or D4. This is a mistake on the silkscreen. My bad.
- Pad “LED” connects to the positive lead of the bypass status LED in the pedal.
- R9 is a current-limiting resistor. You may omit it if you plan to wire the LED completely off-board.
- The “IN” and “OUT” pads are not marked on the PCB, so please refer to the layout image above for reference.



## Tweaks and Modifications

**Tone Control:** You can adjust the frequency roll-off by changing the values of C8/R8. It's dialed in for a broad range of gear as is, but you may find that small changes will suit your setup better. It may be a good idea to socket C8 and try several values.

C1 shaves off highs before the signal is amplified by the circuit. Higher values = more cut, up to a point where you start to cut mids as well and it gets "woofy".

C4 is also a major tone-shaping point. If you find the stock setup to be a bit thin, try increasing C4 to 100nF. The stock cap on the Guv'nor was 220nF.

If you want to calculate the cutoff frequency of any of the above mods, use the following equation:

$$f_c = \frac{1}{2\pi\tau} = \frac{1}{2\pi RC}$$

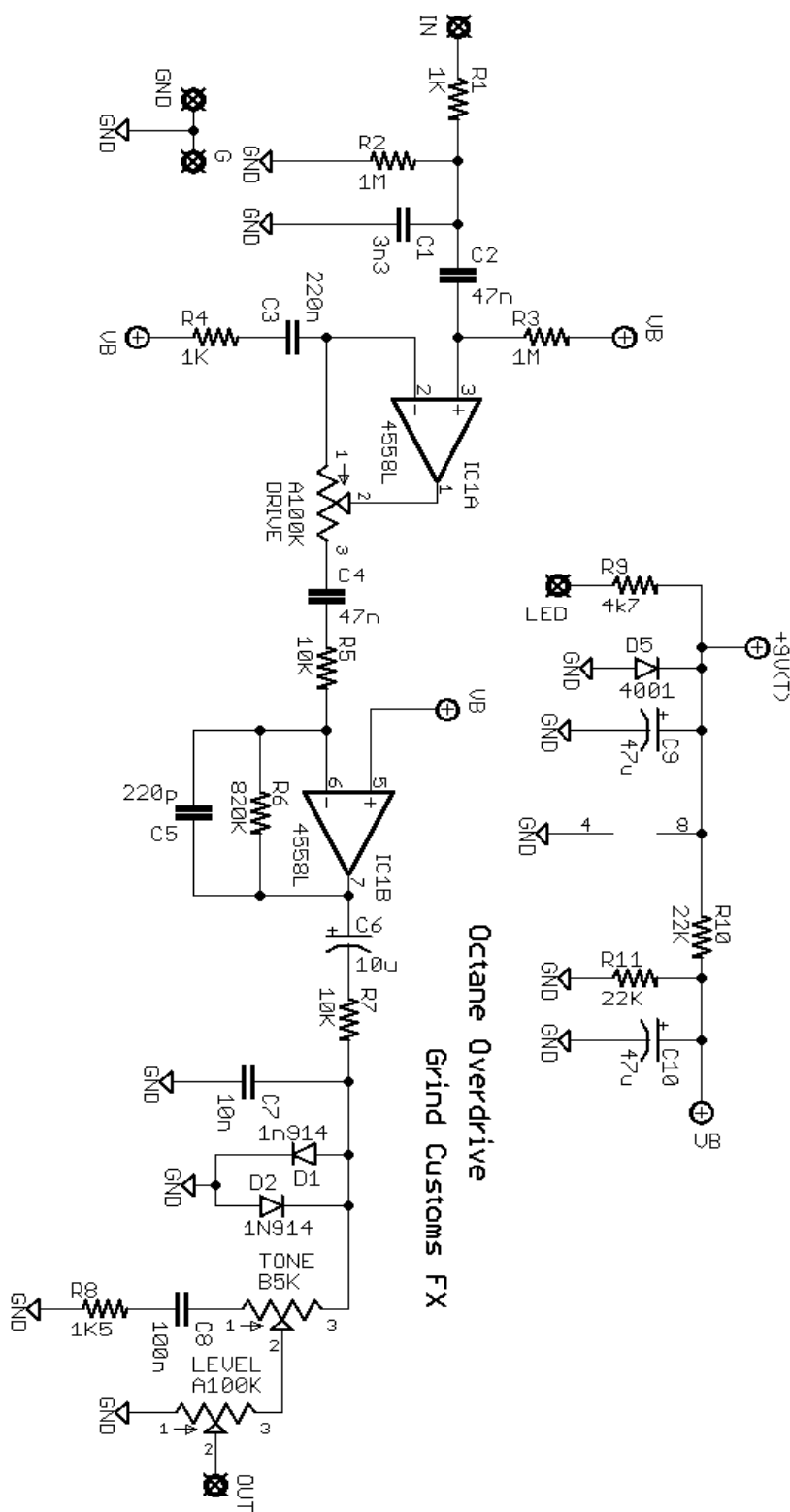
...where R is resistance in ohms and C is capacitance in microfarads.

**Diode Switch:** A nice easy mod is to use a toggle switch (DPDT) to swap between different types of clipping diodes (D1/D2 on the layout/schematic). Any diode will work, just be sure to observe the proper orientation. Generally, the lower the forward voltage, the more fuzz/clipping there will be, but there is also less overall output. Instead of a toggle switch, you could use a rotary switch for many different diode options.

**Gain Mods:** You may want more or less gain (dirt) from this circuit. There are a few key components that set the gain. In the first stage (IC1a), try adjusting the value of C3. In the second stage (IC1b), adjust R6. You could even replace R6 with a 1M pot to add a second-stage gain control.

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## Octane Overdrive

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