

# LOW RIDER

## FX TYPE: OCTAVE

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There are very few clean, analog octave down projects available to DIY'ers. The Pearl® Octaver™ is offers not only one and two octaves down, but an octave up and very respectable tracking. The **Low Rider** is a faithful reproduction on the circuit, available for the first time in a through-hole layout on a single PCB.

This is an intensive build with a lot of components. However, if you are patient and plan ahead it will be a very rewarding build...a milestone for those wanting to take on a challenge.

Very special thanks to [www.gaussmarkov.net](http://www.gaussmarkov.net), without whom this project would not be possible. Note that I have altered their schematic slightly to correlate with this particular project, but the credit goes to them for both drawing it so well, and offering the Eagle schematic as a download. Please visit [www.gaussmarkov.net](http://www.gaussmarkov.net) for many other cool DIY projects!

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## Controls

**CLEAN:** The clean signal volume

**UOCT1:** Octave up volume

**DOCT1:** 1<sup>st</sup> octave down volume

**DOCT2:** 2<sup>nd</sup> octave down volume

**TRIM:** Sets the overall strength of the upper octave

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## Notes

- The four pots are independent of each other. This means you can dial in any blend of clean, octave up, 1<sup>st</sup> and 2<sup>nd</sup> octave down. This is a super cool feature!
- To set the trimpot, turn the **CLEAN**, **DOCT1**, **DOCT2** all the way down and the **OCT1** all the way up. Now adjust the trimpot for the most prominent upper octave you can achieve.
- I found that 2n5457 transistors worked a little better than the stock 2SK30 for tracking. They are also easier to source.
- There are many types of the CD4013 IC. I found the CD4013BCN (purchased from smallbear) gave excellent results.
- You should be able to use any germanium type of diode if you cannot get the 1n34a.
- This PCB allows you to use 16mm PCB mounted pots ☺

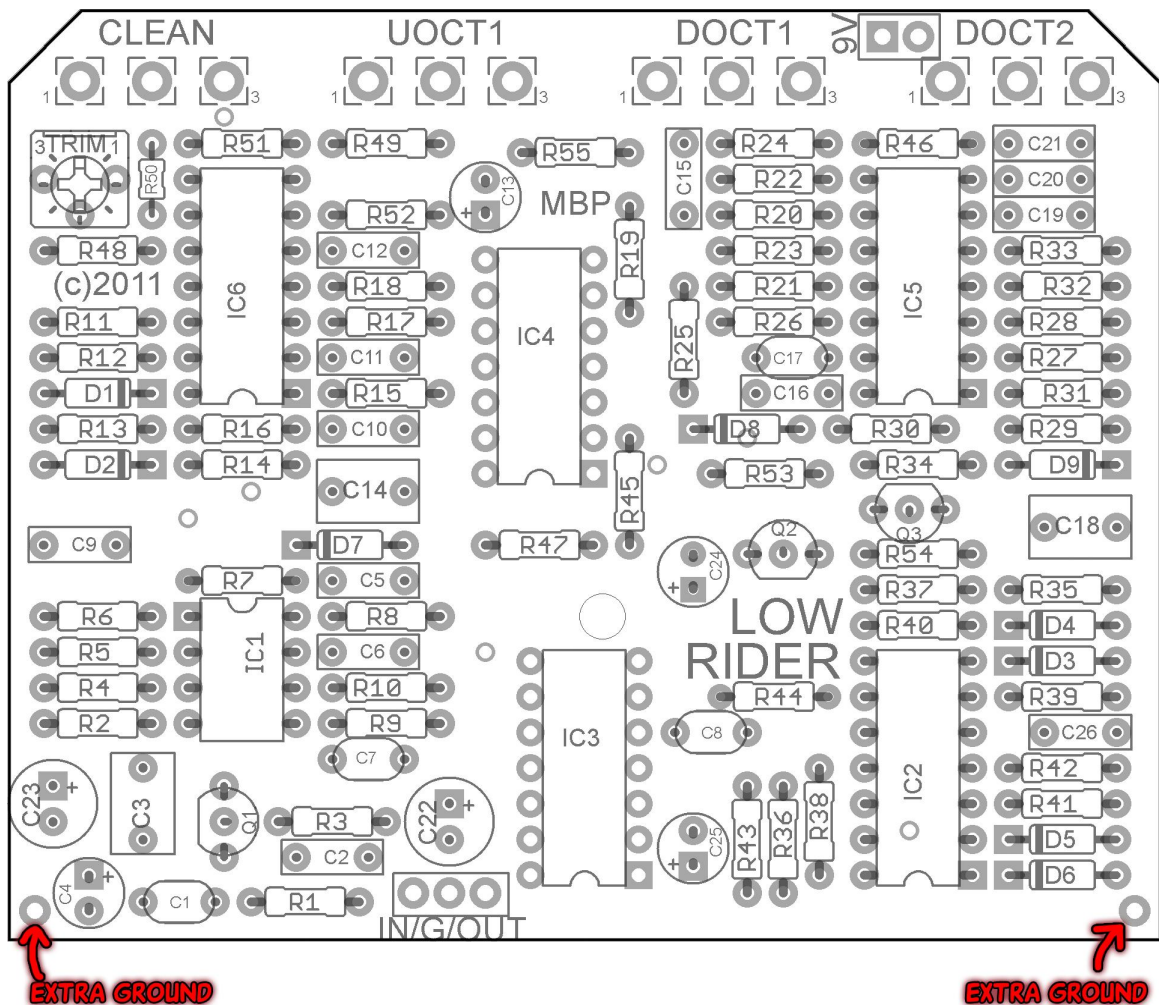
## Mods

### Increase the upper octave

The stock version of the circuit has a fairly weak upper octave in comparison to the two octaves down. To increase the strength of the upper octave you can omit **C10** and **C12**. However, this may make the octave sound a little fuzzy. I ended up leaving C12 off, and using a 1n instead of 10n for **C10**. This resulted in a nice octave without too much fuzziness.

Special thanks to forum member Scruffie for suggesting this mod!

### Layout Diagram

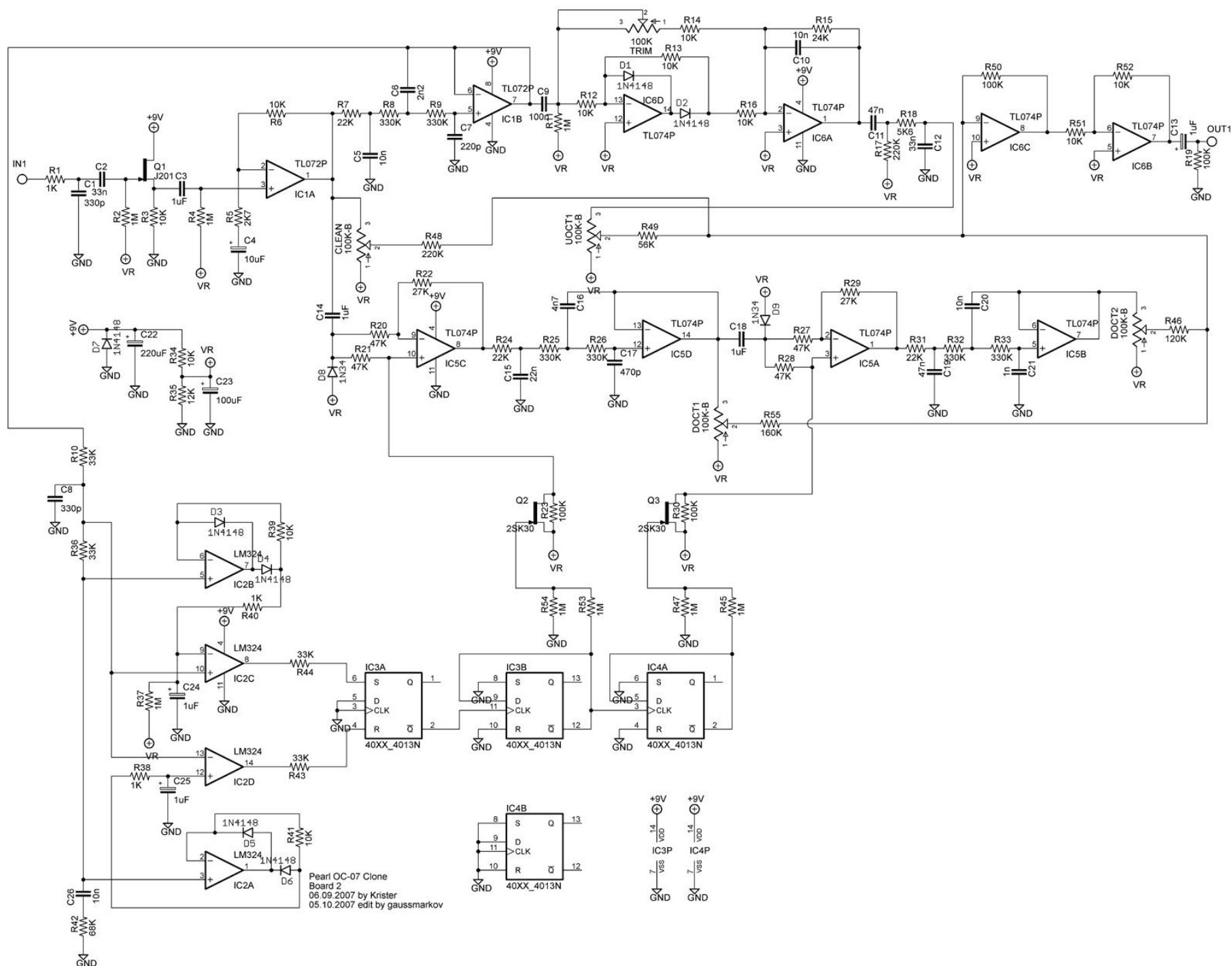


You can see a short demo of the Low Rider in action here: [http://www.youtube.com/watch?v=6EvgnMvfs\\_I](http://www.youtube.com/watch?v=6EvgnMvfs_I)

## Bill of Materials

Resistors		Resistors		Caps		Transistors	
R1	1K	R27	47K	C1	330p	Q1	J201
R2	1M	R28	47K	C2	33n	Q2, Q3	2SK30
R3	10K	R29	27K	C3	1uF	Diodes	
R4	1M	R30	100K	C4	10uF	D1 - D7	1N4148
R5	2K7	R31	22K	C5	10n	D8, D9	1N34a
R6	10K	R32	330K	C6	2n2	ICs	
R7	22K	R33	330K	C7	220p	IC1	TL072
R8	330K	R34	10K	C8	330p	IC2	LM324
R9	330K	R35	12K	C9	100n	IC3, IC4	CD4013
R10	33K	R36	33K	C10	10n	IC5, IC6	TL074
R11	1M	R37	1M	C11	47n	Trimpot	
R12	10K	R38	1K	C12	33n	TRIM	100K-B
R13	10K	R39	10K	C13	1uF	Pots	
R14	10K	R40	1K	C14	1uF	CLEAN	100K-B
R15	24K	R41	10K	C15	22n	UOCT1	100K-B
R16	10K	R42	68K	C16	4n7	DOCT1	100K-B
R17	220K	R43	33K	C17	470p	DOCT2	100K-B
R18	5K6	R44	33K	C18	1uF		
R19	100K	R45	1M	C19	47n		
R20	47K	R46	120K	C20	10n		
R21	47K	R47	1M	C21	1n		
R22	27K	R48	220K	C22	220u		
R23	100K	R49	56K	C23	100u		
R24	22K	R50	100K	C24	1uF		
R25	330K	R51	10K	C25	1uF		
R26	330K	R52	10K	C26	10n		
		R53	1M				
		R54	1M				
		R55	160K				

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**1590BB**  
**Image size – 5.805" x 6.8"**

