

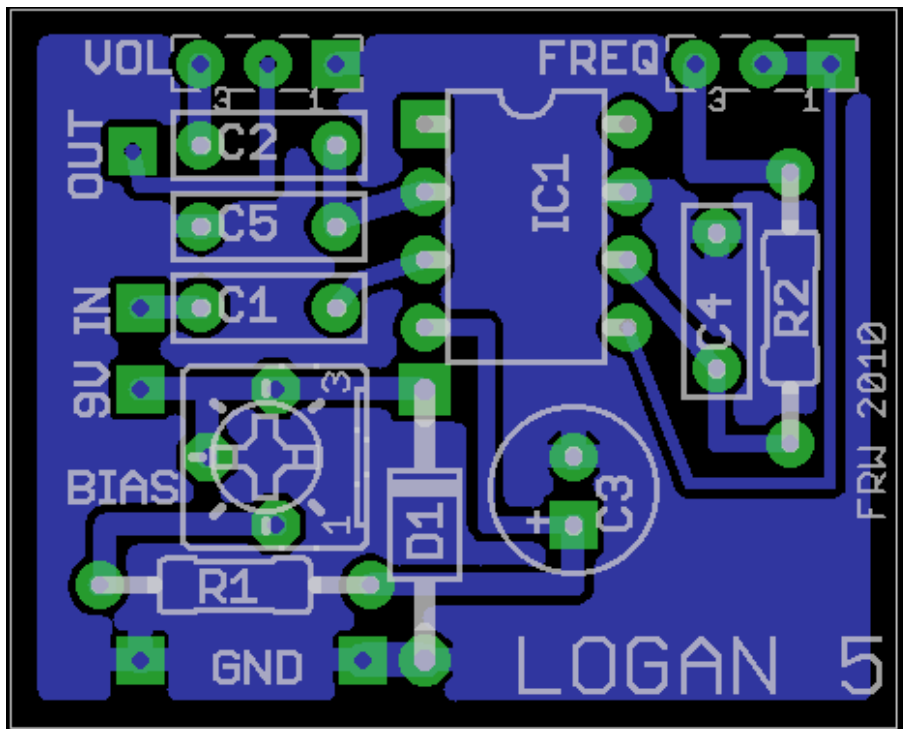
LOGAN 5 - Ring Modulator

November 2010

This project is a low-parts-count pseudo ring modulator based directly on Tim Escobedo's "Thing Modulator" circuit. A few tweaks were added to help reduce background hiss and oscillator noise to a useable level.

The core of the circuit is the LMC567 tone decoder IC, which has an internal high-frequency oscillator that makes the funky ring-mod-like tones possible.

PCB dimensions are (approximately): 1.30" wide 1.05" high.



Parts List

Name	Value	Name	Value
C1	0.1 μ F	D1	1N4001
C2	0.1 μ F	IC1	LMC567
C3	100 μ F	Bias	100K trimmer
C4	0.1 μ F	Frequency	B10K pot
C5	0.001 μ F	Volume	A100K pot
R1	100K		
R2	10K		

Tweaks, Substitutions, and Mods

- The Bias trimmer is in place to allow you to find the sweet spot between max output volume and minimum background noise. Adjust to taste.
- The B10K pot for the Frequency control was chosen to ensure the entire sweep of the pot would produce noise-free ring modulation tones. You may wish to try B25K (or a higher value) as an alternative, as this will allow more low-frequency modulation. However, 25K may also produce audible popping/clacking in the lower frequency range.
- **Range Mod.** C4 is the timing cap for the oscillator. The larger the value of the cap, the slower the oscillation will be (which means a lower pitch of modulation). Using a DPDT toggle switch to alternate between two different value caps for C4 will allow for two different pitch ranges for the Frequency control. Start with 100n and 10n and then adjust to taste.
- **LDR Mod.** Adding a light-dependent resistor (LDR) in parallel with the Frequency pot (across lugs 3 and 1) opens up a whole realm of interesting possibilities. This will allow you to wave your hand (or foot) over the LDR and change the pitch of the modulation.
- **LFO Mod.** If you really want to get fancy, start with the LDR Mod and then drive the LDR with an LED modulated by an LFO. How's that for acronyms?? ☺

