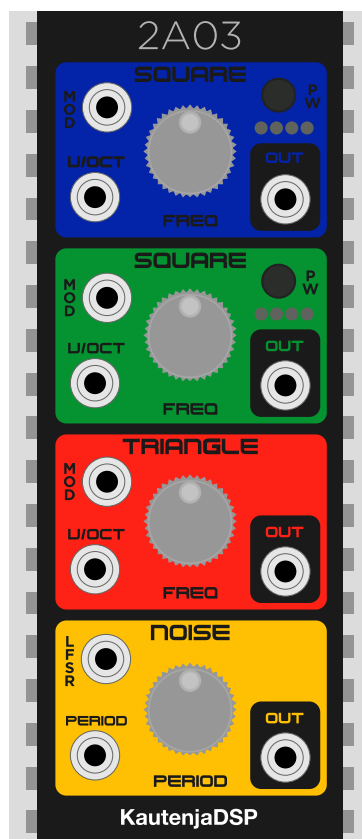


2A03



KautenjaDSP

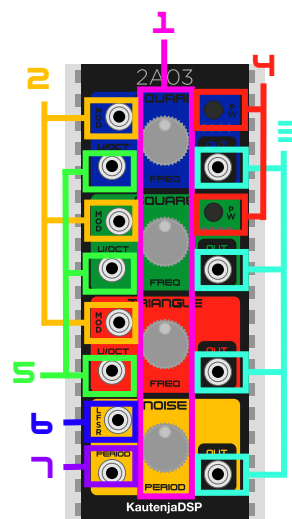
1 Overview

2A03 is an emulation of the 2A03 sound chip from the Nintendo Entertainment System (NES) for VCV Rack. The 2A03 chip contains two square wave generators, a quantized triangle wave generator, and a noise generator. The original chip featured a DMC loader for playing samples that has been omitted in this emulation.

2A03 provides the key features of the 2A03 chip, namely,

- **Dual square wave generator:** Dual 8-bit square waves with four duty cycles: 12.5%, 25%, 50%, and 75%;
- **Quantized triangle wave generator:** Generate NES style triangle wave with 16 steps of quantization;
- **Noise generator:** generate pseudo-random numbers at 16 different frequencies; and
- **Linear Feedback Shift Register (LFSR):** for that old-school 8-bit randomness!

2 Panel Layout



1. Coarse frequency control over the four channels.
2. CV Frequency modulation for square and triangle generators.
3. Channel outputs, $10V_{pp}$.
4. Pulse width selector. Chooses between four duty cycles: 12.5%, 25%, 50%, and 75%.
5. V /Octave inputs for square and triangle generators.
6. CV (Linear Feedback Shift Register) LFSR gate, high at $2V$.
7. Period of randomness $\in [0, 15]$. See https://wiki.nesdev.com/w/index.php/APU_Noise for approximate frequency and pitch mappings.

References & Acknowledgments

Green, S. (2003). Nes_Snd_Emu. <http://www.slack.net/~ant/libs/>.