Electric Druid NOISE2

Introduction

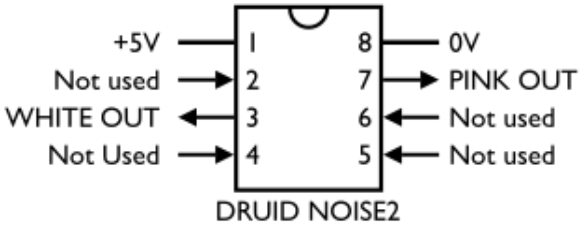
This very easy-to-use digital noise source provides independent channels of white noise and pink noise. This avoids the need for extra "pinking" filters to generate a pink noise sound.

The Electric Druid Noise2 Generator uses two linear feedback shift registers (LFSR) and the Voss-McCartney algorithm to generate pseudo-random white and pink noise data at an output rate of around 100KHz.

The high output rate ensures that the noise is pure white throughout the audio spectrum, to within 2 or 3dB.

The pink noise output follows the theoretical -3dB slope closely (again, to within 2-3dB) across the audio spectrum.

Pinout Diagram



Pin	Function	Details	Notes
1	+5V	Power supply	
2	Unused	0-5V digital input	
3	WHITE OUT	0-5V digital output	Random digital pulses @ ~100KHz, 0-5V
4	Unused	0-5V digital input	
5	Unused	0-5V digital input	
6	Unused	0-5V digital input	
7	PINK OUT	0-5V analog output	Random analog output 4-bit @ ~100KHz, 0-5V
8	0V	Power supply	

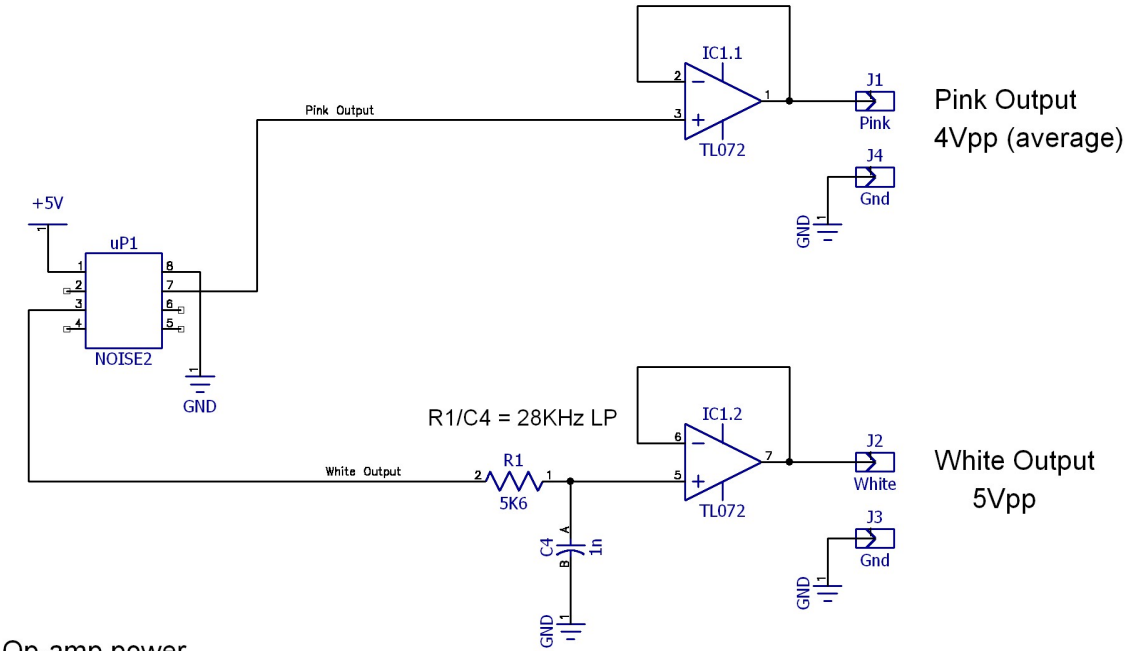
Application Notes

The chip is very simple to use. Once powered up, it produces random 5V pulses on the WHITE OUT output pin. This digital noise output can be used as-is, or can be lowpass filtered to provide an analogue audio noise signal. A simple RC filter is all that is required. Note that the digital noise signal has only two levels; 0V and +5V. Although this sounds the same as analogue white noise to the human ear, sometimes the difference is significant - if the chip is used to feed a Sample-and-Hold, for example.

The PINK OUT pin is the output from a 4-bit DAC, so it produces a genuine analog output. However, the DAC does not have a large drive capability, so if much current is required, it should be buffered.

Please see the example schematic on the next page for details of buffering and filtering.

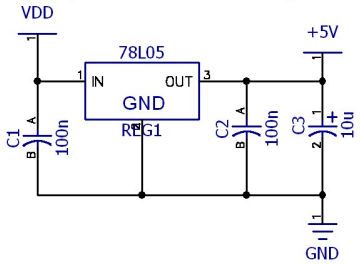
www.electricdruid.net



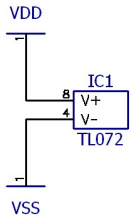
Pink Output
4Vpp (average)

White Output
5Vpp

+5V power conditioning



Op-amp power



Op-amp choice is not critical. Any audio type.

Vdd/Vss bipolar supply can be anywhere from +/-5V (no 5V reg required) to +/-18V (heatsink required on reg?!)
Basically any power supply suitable for op-amps will work.

White/Pink noise generator

Title	White/Pink noise generator		
Size A4	Model NOISE2		Rev 1
Date	1 May 2019	Drawn by	TMW
Filename	Noise2.dch	Sheet	1 of 1