



Guitar Effect by xoxos



Pink is intended to be straightforward and easy to use. Pink's monophonic signal path is as follows:

parameter	function	description
gain, hi	gain	multiply, multiply by a lot
fat	integration	leaky integrator
hp	high pass filter	6 dB/octave high pass filter
	oversample	4x with 2nd order bicubic interpolation
bias, fine	bias	adds a constant to signal
shape	shape	nonlinearity
clip	softclip	variable $1/(n + 1)$ squisher
lp, emph	lowpass	24 dB/octave biquad (emph is resonance)
	dc offset	CCRMA dc blocker with raised coefficient
mid, gain	mids	cookbook biquad peak filter
dual	selects second stage	
	oversample	
gain 2	gain	
(bias)	bias	
(shape)	shape	
(clip)	softclip	
(lp, emph)	low pass filter	
	dc offset	
post	post gain	multiply

Pink uses 32 bit floating point for authentic signal tone. Do not submerge Pink for elongated periods. Do not use Pink during thunderstorms or near open sewers. Keep Pink covered at all times except during festival or while enjoying sunlight.

Details

Integrator

An integrator is a variable that integrates incoming samples. Each new sample is added to the sum. Of course, most natural waveforms have some dc offset which would cause a pure integrator to build exponentially. A leaky integrator multiplies the integrator by a coefficient so that it will diminish.

The effect of the integrator on the signal is that it increases the gain, particularly of lower frequencies, and, especially with non-periodic signals, can introduce dc offset. I figured this would be a good way of adding some responsivity.

High Pass Filter

The cutoff spans eight octaves, from ~ 3.4 Hz to 880 Hz, with the center position at 55 Hz.

Shape

Some of these waveshapers have innate signal clipping. The shaped rectifier uses a buffer for its smoothing filter.

1:	"12AX7"	Polynomial alleged to resemble 12AX7 tube output
2:	Poly 1	Square-weighted polynomial ($a \cdot n^3 + b \cdot n^2 + c \cdot n$)
3:	Poly 2	Cube-weighted polynomial
4:	Poly 3	Polynomial with negative square
5:	Cubic	Cubic "softclip" nonlinearity ($n - n^3$ hard-clipped at $\pm 2/3$)
6:	Rect	Square rectifier ($n \cdot n$)
7:	Shaped Rect	abs() rectifier with smoothing filter
8:	Asymm	A somewhat involved multistage waveshaper based on tube output
9:	Diode	"Flat center" waveshape similar to bad tape biasing or transistor
10:	None	Signal passed without shaping

Clip

A clipper that varies smoothly to a hard clipping effect by scaling the over-threshold signal before and after $1/(n + 1)$.

LP, Emph

Two stages of Bristow-Johnson cookbook low pass filtering, summing 24 dB/octave used for both tone and antialiasing. Cutoff frequency ranges from about 3064 Hz to 12,256 Hz with center at 6128 Hz. Q for this filter is 1 (none), pi ("emphasis on") and $2 \cdot \pi$ for "turbo". I like pi. Two times pi hurts.

Mid, Gain

Cookbook peak filter up to ± 24 dB/octave (Q is pi). Cutoff frequency ranges from 220 Hz to 1,760 Hz, centering at 622 Hz.

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