ASVF-212 v2.0

ANALOG
STATE VARIABLE
FILTER WITH
SELF-OSCILLATION

ASVF-212
Analog State Variable Filter
with Self-Oscillation

vers 2.0
[RACK EXTENSION]
MANUAL

FX device by Turn2on Software

A State-Variable Filter is an active filter that uses multiple feedback techniques to produce filter responses (LowPass, BandPass and HighPass) from a single filter with user selection.

Classical SVF filters include controls for Filter Frequency, Filter Q and Gain.

With the ASVF-212, we included deep LFO control for the device's parameters. A variety of textures and horizons of modulation morphing can be created by routing destinations such as Filter Freq, Filter Q, Low-High Filter Response, and Notch-Peak Fllter Response.

The **ASVF-212** has an additional Notch Filter (Band Stop filter) and Peak Filter (BandPass filter).

The device can also take advantage of Envelope Follower tricks with modulation destinations for Filter Freq, Filter Q, Low-High Filter Response, and Notch-Peak Filter Response with a few Envelope Follower detection modes.
Envelope Follower can work with main incoming signal or additional external input.

What makes the **SVF-212** different from a typical SVF filter? It is a Stereo filter-bank (LP, HP, BP, Notch, Peak filters) with deep LFO and Env. Follower modulation.

The **ASVF-212** includes a Blend knob (Dry/Wet mixture of incoming and processed signals) to create more interesting and creative effects. The user can use the included hard clipped Limiter to control the final signal by adjusting the necessary Gain and Pre-Gain (unprocessed) levels. **Drive** works as overdrive and compressor effect.
Filter at higher Filter Q values have small oscillation. In version 2.0 now is possible to activate **Filter Self-Oscillation** with filter **keytracking**, which allows you to use the filter as oscillator controllable by midi keys.

The **ASVF-212** is a modern stereo SVF filter with advanced features and classical analog SVF possibilities. It allows for a lot of variations of active filtering, resulting in a unique sound.
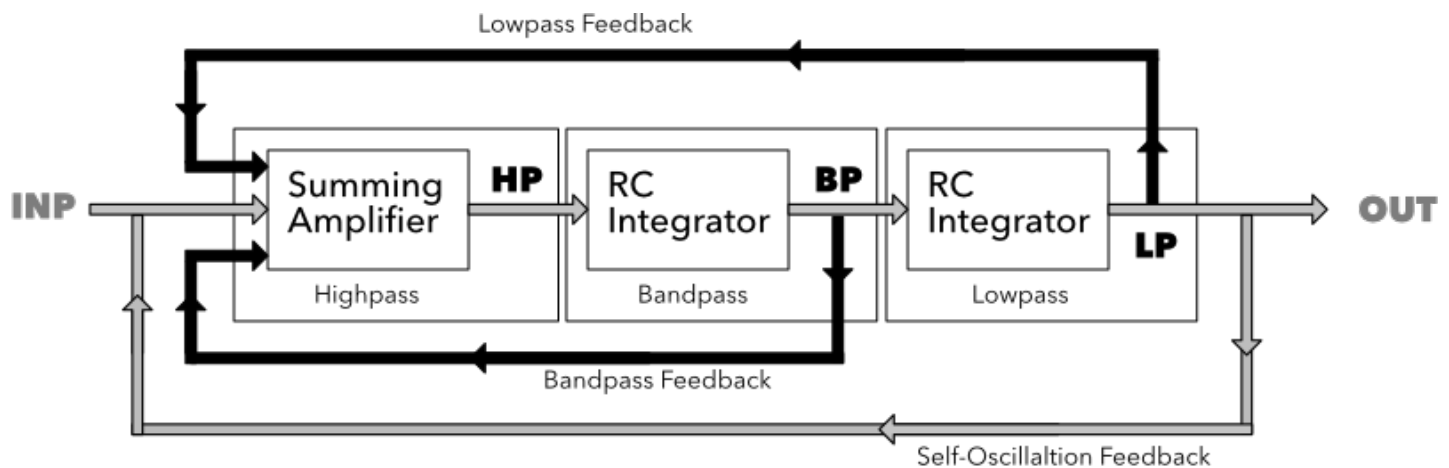
STATE-VARIABLE FILTER BASICS

A State-Variable Filter is an active filter design that uses multiple feedback techniques to produce filter responses (LowPass, BandPass and HighPass) from a single filter.

A State Variable filter has three internal outputs (HP, BP, LP) with three op-amps.

Output from the Summing Amplifier produces a HighPass response (coming to the input of first RC Integrator). Output from this integrator produces a BandPass response (coming to the input of second RC integrator).

The Second RC Integrator produces a LowPass response. The feedback of the LP and BP is generated by coming back into the Summing Amplifier.

A State Variable Filter has three basic parameters: Gain, Frequency, and Filter Q. A SVF filter can sometimes be unstable over other basic filters at higher frequencies and damping factors, so it is best used with low Q at lower frequencies.
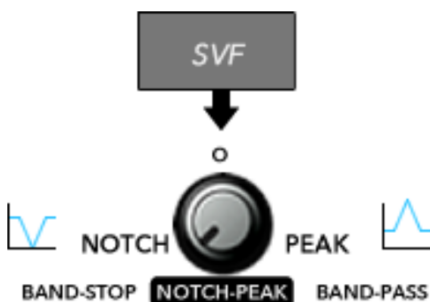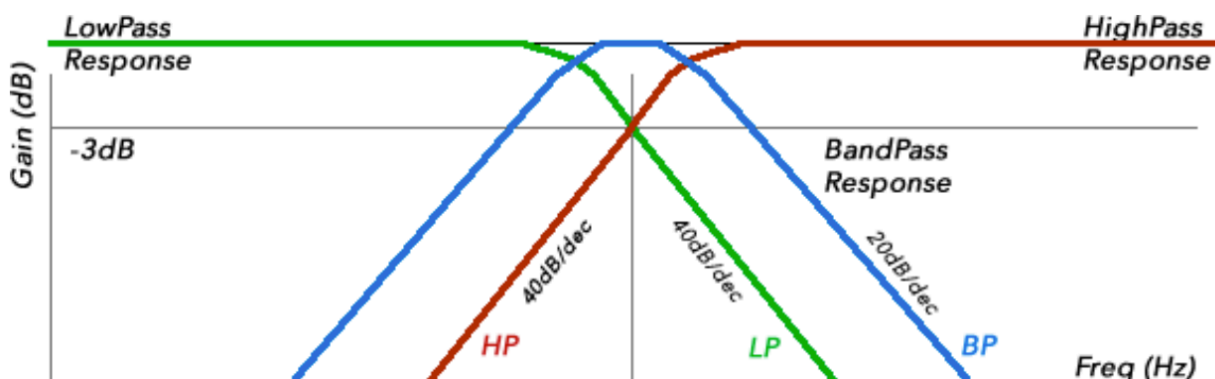
Notch Filter (Band Stop)

A notch filter is basically the opposite of a BandPass filter, it rejects, or stops, a specific band of frequencies. A Notch filter is also known as a "Band Stop Filter". It works as summing of HighPass and LowPass output responses.

Peak Filter (Band Pass)

A Peak filter is a frequency filter that passes a narrow band of frequencies and stops all other frequencies. This is a very narrow bandPass filter and the opposite of a Notch filter. For example, peak filters are used in WahWah effects.

FRONT PANEL CONTROL

ASVF / Main parameters

Filter Frequency	Cuftoff Frequency of HighPass, BandPass and LowPass filters
Filter Note Key	Basic Note Keys steps identical to Hz values of Cutoff Freq for filter & Osc keytracking
Frequency Mode	Set filter mode between the classic Frequency value and key note value. At the Note mode, avaliable to use Filter & Self-Oscillation keytracking (fx can be used as oscillator)
Filter / Osc keytracking	For Osc keytrack: create ASVF-212, set Notes freq mode, select in context menu "New Note Lane" and create midi clip with sequence for self-oscillated signal. For Filter keytrack: create ASVF-212, set Freq mode, in context menu "New Note Lane" and create midi clip with sequence for filter keytrack..
Filter Q	For Filter keytrack: Just create ASVF-212, set Frequency mode, select in context menu "New Note Lane" and create midi clip with sequence for filter keytrack.
Low-High Freq Response	Fade between LowPass and HighPass response
Notch-Peak Freq Response	Fade between Notch/BandStop and Peak/BandPass response
Filter Smoothing	Filter speed (in seconds) that makes sound of the filter smoother with higher level

LFO / Parameters

Wave	LFO Waveforms: Sqr, Sine, Tri, Saw, Uniform, FlatMid, EarlyComb, Essence
Destination	LFO destination: Filter Freq, Filter Q, Low/High Filter Response, Notch/Peak Filter Response
Mod Way	Select Increase or Reduce mode of the modulation parameter
Mod Index	Ramping LFO steps. 0% switches from one value to the next
Rate	LFO Rate (Time in seconds or or if Sync mode is on, works with Step grid synced to the tempo)
Random Amt	Scale each step of LFO by a random amount
Sync Mode	Set the LFO rate in steps per beat or steps per second
LFO Amt	Amount of the LFO modulation
Retrigger	Restart LFO steps after pauses (sync = Sec), and when Bar beat changed (sync = Beats).
Rate Affect	How much the value affects the LFO Rate
Drift Contour	How much the value affects the LFO Wave. Change the waveform from hard to soft curve.

ENV. FOLLOWER CONTROL

| Env. Follower / Parameter	
Mode	Envelope detection modes: LIN: Linear voltage measurement up to the threshold level; LOG: Logarithmic dB measurement above the threshold level; GATE: Switch off and on as the signal level passes the threshold
Threshold	LIN: Audio level for full modulation; LOG: Audio level for no modulation; GATE: switching Threshold.
Attack	Rise time when the audio level increases, or the gate opens
Release	Fall time when the audio level decreases, or the gate closes
Destination	Off, Filter Frequency, Filter Q, Low/High and Notch/Peak frequency response
Env. Amount	Amount of the Envelope Filter modulation to the selected destination
Env. Source	INTERNAL: use main incoming signal processed by ASVF-212 EXTERNAL: use external incoming signal from EXTERNAL ENV. FOLLOWER Inputs

LIMITER & DRIVE CONTROL

Limiter / Drive	
Clip Limiter	Limiter on/off. CPU safety hard clipping limiter
Release	Recovery time of the Limiter
Drive On/Off	Drive On/Off button. Drive can work only if as part of active Limiter
Drive	Boost and compress the signal, helps make the signal stronger, adds harmonics
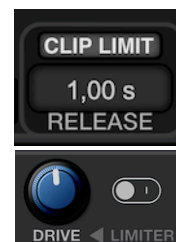
OTHER

| Bypass / Patch Browser / Blend	
Blend	Blend Dry/Wet functional of incoming and processed signals
Pre-Gain	Gain of incoming signal
Gain	Output Level Gain
ENABLE BYP/ON/OFF	BYPASS - disable effect / ON - enable effect / OFF - mute incoming signal
SOFT BYPASS	Soft Bypass with smoothed fade in/out functionality
PATCH BROWSER	Select and open factory patches, save your own patches with unique patterns
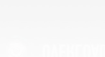
MAIN AUDIO INPUT/OUTPUT:
Mono or Stereo connections of incoming and processed audio signals

ENV. FOLLOWER:
Additional audio inputs for Envelope Follower to work in EXTERNAL mode

CV INPUTS
Use these CV inputs to control the main parameters by external CV source curves

SIGNAL ROUTING ICONS

ASVF-212

ANALOG STATE-VARIABLE FILTER

ReasonStudios Add-on Shop

Turn2on

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PRODUCT OF
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Thanks to all beta-testers,
Special thanks to
- Challis McAffee (Challism)
- **MrFigg (Cameron Jeffrey)**
- Philip Meadows (Despondo)

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