The DWS Digital Waveshaper Chip

Application Manual v1.0

dsp SYNTHESIZERS

The digital waveshaper Chip

The dws is a chip that contains a phase locked bandlimited saw oscillator in an 8-pin DIP package. It is a digital oscillator with no aliasing and a range of 0-20KHz.

The chip locks it's oscillator to the frequency of an incoming squarewave signal. Only the upgoing edge of the carrier is detected so it can be any signal that passes the Vcc/2 threshold level.

A modulator input is provided that can act as a hardsync input or ringmod input.

The mode is selected by a mode input. If connected to Vcc or not connected selects hardsync mode and ground selects ring modulation mode.

In hardsync mode the modulator acts as a second waveform input that resets the saw waveform.

In ringmod mode the modulator inverts the saw output.

Input signals are allowed between Gnd and Vcc and the threshold for wave detection is Vcc/2.

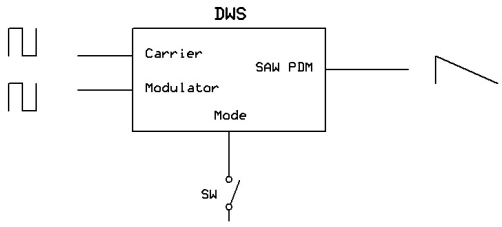
The output is a 50KHz 10-bit Sigma-Delta PDM and needs to filtered by a passive LPF, 1K/100nF is sufficient, and the chip runs standalone from a 2.7-5 volt power source.

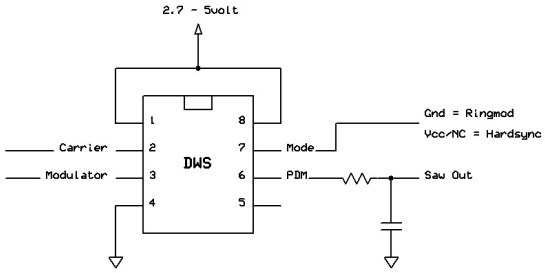
The chip works great as a waveshaper for the VCDM chip but can be used with any oscillator.

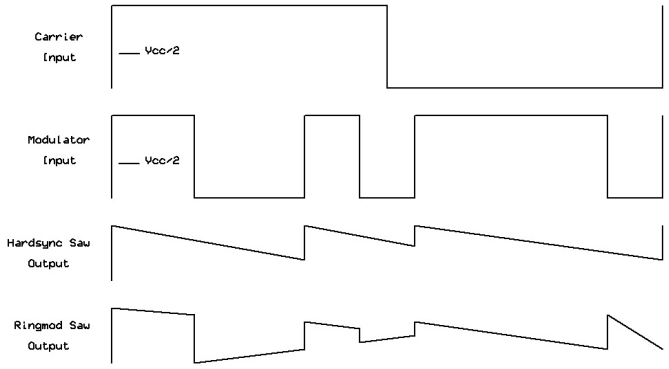
You can even sing into it if a microphone is amplified to pass the threshold level.

Example application circuit for the DWS chip

This is the minimum application circuit for the chip. Input levels are allowed between Gnd and Vcc. The output is analog and swings between Gnd and Vcc.







Technical Specifications

DSP platform	AVR ATmega 20 DMIPS
Supply power	2.7 – 5 volt
Supply current	~2.9mA
Input tolerance	2.7 – 5 volt depending on Vcc
Audio output	50 KHz 10-bit sigma-delta PDM, 1 channel mono audio
Synthesis method	Phaselocked PLL Digital Sawoscillator
Control method	Carrier signal, Modulator signal, Mode input

Contact & Support

For support and questions please use these contact addresses:
Website: http://www.dspsynth.eu
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