control inputs

MODULATION PERIOD
16 bits

MODULATION FREQUENCY GENERATOR

mod_freq

MODULATION DEPTH
16 bits

UP/DOWN COUNTER

mod_out

PERIOD1
16 bits

+

period1_mod

FREQUENCY GENERATOR 1

fgen1_out

PERIOD2
16 bits

FREQUENCY GENERATOR 2

fgen2_out

MIXER

gen_out

0=AND
1=XOR

mix_mode

MIX MODE

START BIT

TIMER

out_ena

TIMER INTERVAL
16 bits

DIFFERENTIAL OUTPUT DRIVER

buz_outp

buz_outn

audio driver outputs

0=OUTPUT OFF
1=OUTPUT ON

BUZZER SIGNAL GENERATOR

Digital signal generator for simple buzzer tone generation. The sound generator features two frequency generators, which can be mixed together to achieve rich tones. Mixing can be selected from two options. AND mixing gives an additive effect, while XOR mixing gives a more radical ring modulated effect. The first frequency generator can be frequency modulated. Modulation depth and frequency can be programmed. The actual modulation frequency depends not only on the programmed modulation period, but also on the depth. Se provided software driver for details. The software driver functions hide the underlying complexity of the period register programming as it accepts actual frequency values in Hz. Finally the sound generator features a timer for generating output tones of specified lengths. This allows the software to start a tone and continuing with other tasks during the tone, not needing to track time and shut down the tone after a certain time. A continuous tone can be set by setting the timer interval to zero. A transition of the start bit from low to high starts the timer. Sound is immediately turned off if the start bit is set to zero. (Possibly the start bit has to be low for at least 1ms to have an effect.)

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