

average_mv_1.xbe

Attributes

```
xbe name=average_mv_1 evaluate=yes limit_tstep=yes save_history=yes allow_ssw=no
#
# compute average value of x between active edges of clk.
#
Jacobian: variable
input_vars: clk x
output_vars: y
aux_vars:
iparms:
+ active_pos_edge=1
+ active_neg_edge=0
sparms:
rparms:
+ clk_high=1
+ dt=0.1u
+ clk_cross=0
+ clk_prev=0
+ t_lapsed=0
+ x_sum=0
+ t_prev=0
+ x_prev=0
+ y0=0
stparms:
igparms:
outparms: clk x y
```

Description

average_mv_1.xbe is used to compute the moving average (y) of the input signal (x). The averaging is performed between two active edges of the clock signal (clk). The parameters have the following meaning.

active_pos_edge: 1 if the positive clock edge is to be considered the active edge, 0 otherwise.

active_neg_edge: 1 if the negative clock edge is to be considered the active edge, 0 otherwise.

clk_high: high level of the clk signal.

dt: time interval used in restricting the simulation time step when an active edge is detected. It should be smaller than the clock period, say by a factor of 50 or 100.

clk, x, and y are made available as output variables. Fig. 1 illustrates the working of this element. Note that the average value lags behind the input waveform by one clock period.

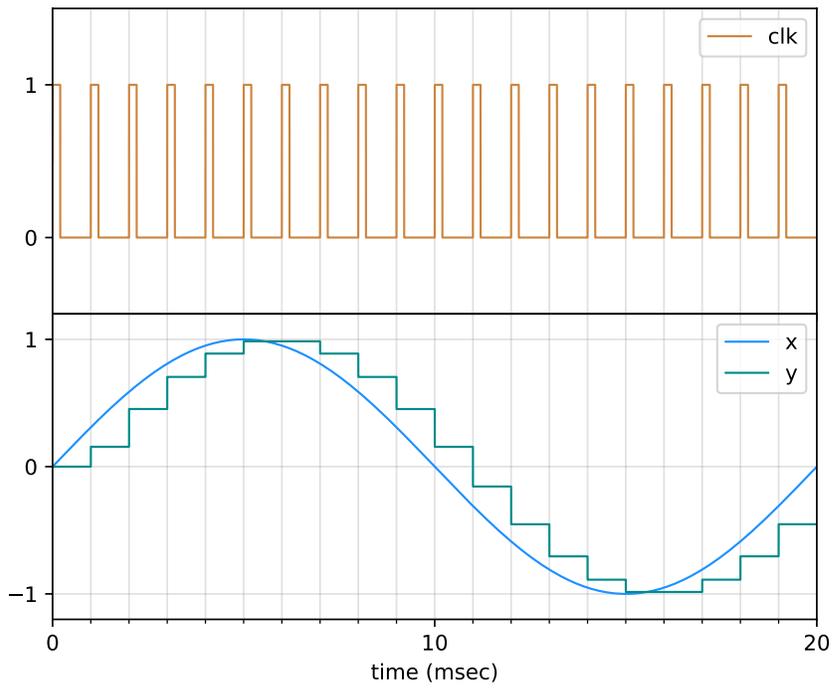


Figure 1: Sample clock, $x(t)$, $y(t)$ waveforms for average_mv_1.xbe.