

clock2.xce

Attributes

```
main_vars: y
iparms: i0=0
rparms: t1=1 t2=2 alpha=0 x_high=1 dt1=0.01 dt2=0.01
```

Description

clock2.xce is a square wave source with `y` as the output. The parameters have the following meaning:

t1: The first part of one period. `y` is equal to 0 in this interval if `i0=0` and `x_high` if `i0=1`.

t2: The second part of one period.

alpha: `alpha` is used to compute the “offset” time interval, with one period corresponding to 360° . Its meaning will become clear in the following example.

dt1: Width of the transition at the beginning of the `t1` phase.

dt2: Width of the transition at the beginning of the `t2` phase.

Note that the transition width is included in `t1` or `t2`. For example, if `t1=10`, `dt1=1.5`, and `i0=1`, then the `t1` phase consists of a rising edge for 1.5 s and an interval of 8.5 s with a constant level equal to `x_high`.

AC behaviour is not implemented.

The effect of the various parameters of `clock2.xce` on the waveforms is shown in Fig. 1. The corresponding circuit file is given below.

```

begin_circuit
  xelement type=clock2 y=y1 x_high=1
+   t1=10 t2=20 dt1=1 dt2=1 i0=0 alpha=0
  xelement type=clock2 y=y2 x_high=1
+   t1=10 t2=20 dt1=2 dt2=4 i0=1 alpha=120
  xelement type=clock2 y=y3 x_high=1
+   t1=10 t2=20 dt1=0.1 dt2=0.1 i0=0 alpha=90

  outvar:
+   y1=xvar_of_y1
+   y2=xvar_of_y2
+   y3=xvar_of_y3
end_circuit

begin_solve
  solve_type=trns
  begin_output
    filename=clock2_xce.dat
    variables: y1 y2 y3
  end_output
  method: forward_euler=yes
+   t_start=0 t_end=100 delt_const_x=1
end_solve

```

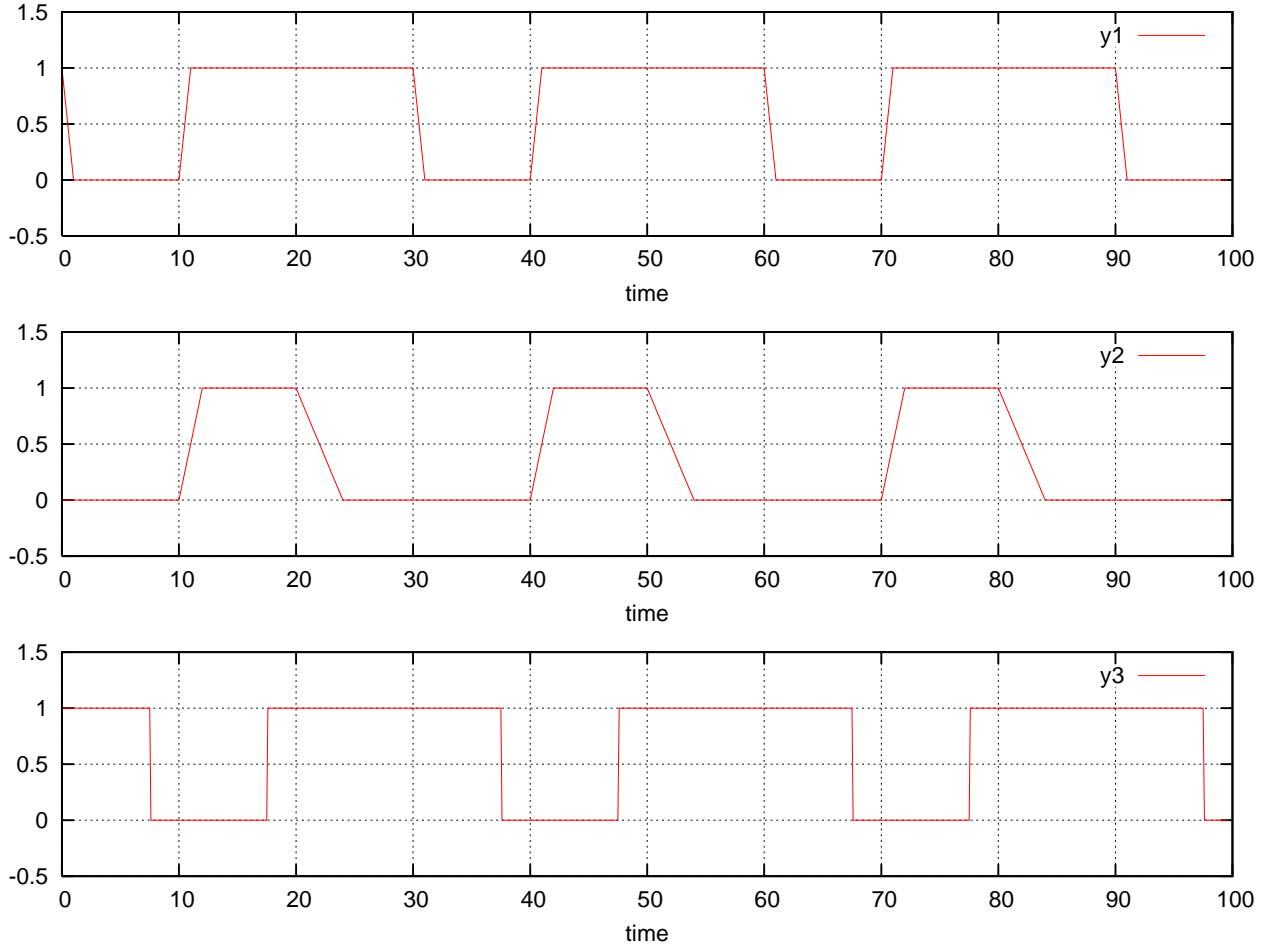


Figure 1: Waveforms obtained with `clock2.xce`: (a) `x_high=1`, `t1=10`, `t2=20`, `dt1=1`, `dt2=1`, `i0=0`, `alpha=0`, (b) `x_high=1`, `t1=10`, `t2=20`, `dt1=2`, `dt2=4`, `i0=1`, `alpha=120`, (c) `x_high=1`, `t1=10`, `t2=20`, `dt1=0.1`, `dt2=0.1`, `i0=0`, `alpha=90`.