

clock6_a.gce

Attributes

```
mainvars: y1 y2 y3 y4 y5 y6
iparms: i0=0
rparms: t1=1 t2=2 alpha=0 g_high=1 dt1=0.01 dt2=0.01
```

Description

clock6_a.gce generates a set of six clock signals y_1 , y_2 , y_3 , y_4 , y_5 , y_6 . The six signals are related in a specific manner. y_2 has a phase shift of 60° with respect to y_1 , and so on. The parameters have the following meaning:

t1: The first part of one period. The value of the each of the six outputs is g_high in this interval.

t2: The second part of one period. The value of the each of the six outputs is 0 in this interval.

g_high: The amplitude of each of the six signals. The signals vary from 0 to g_high .

dt1: Width of the rising edges.

dt2: Width of the falling edges.

alpha: An “offset” angle (in degrees) with respect to $t = 0$. Each of the six waveforms get shifted by the corresponding time interval. (One period corresponds to 360° .)

Note that the rising and falling edge widths are included in **t1** and **t2**.

AC behaviour is not implemented.

The effect of the various parameters of `clock6_a.gce` on the waveforms is shown in Figs. 1 and 2. The corresponding circuit file (available as `clock6_a.gce.in` in the examples directory) is reproduced below.

```

title: testing of clock6_a.gce

begin_circuit
  gelement type=clock6_a
+   y1=y1 y2=y2 y3=y3 y4=y4 y5=y5 y6=y6
+   g_high=1 t1=0.4 t2=0.6 dt1=0.002 dt2=0.002
+   alpha=0
  gelement type=clock6_a
+   y1=y7 y2=y8 y3=y9 y4=y10 y5=y11 y6=y12
+   g_high=1 t1=0.4 t2=0.6 dt1=0.002 dt2=0.002
+   alpha=90
  outvar:
+   y1=var_of_y1   y2=var_of_y2
+   y3=var_of_y3   y4=var_of_y4
+   y5=var_of_y5   y6=var_of_y6
+   y7=var_of_y7   y8=var_of_y8
+   y9=var_of_y9   y10=var_of_y10
+   y11=var_of_y11 y12=var_of_y12
end_circuit

begin_solve
  solve_type=dc
  initial_sol initialize
end_solve

begin_solve
  solve_type=trns
  initial_sol previous
  begin_output
    filename=clock6_a_gce_1.dat
    variables: y1 y2 y3 y4 y5 y6
  end_output
  begin_output
    filename=clock6_a_gce_2.dat
    variables: y7 y8 y9 y10 y11 y12
  end_output
  method: back_euler=yes
+   t_start=0 t_end=3.0 delt_const=0.1
+   delt_min=0.001
end_solve

end_cf

```

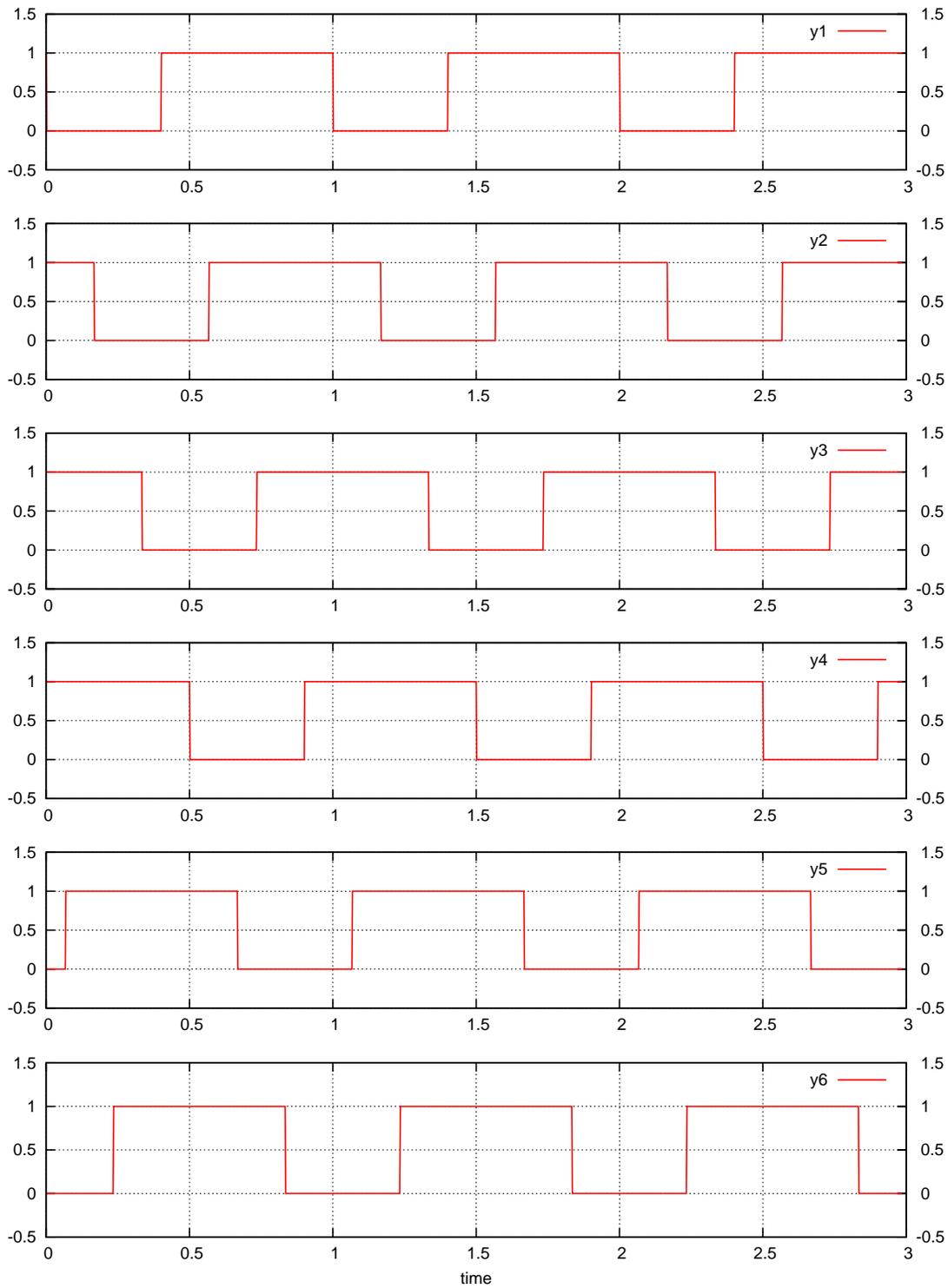


Figure 1: Waveforms obtained with `clock6_a.gce` with `g_high=1`, `t1=0.4`, `t2=0.6`, `dt1=0.002`, `dt2=0.002`, `alpha=0`,

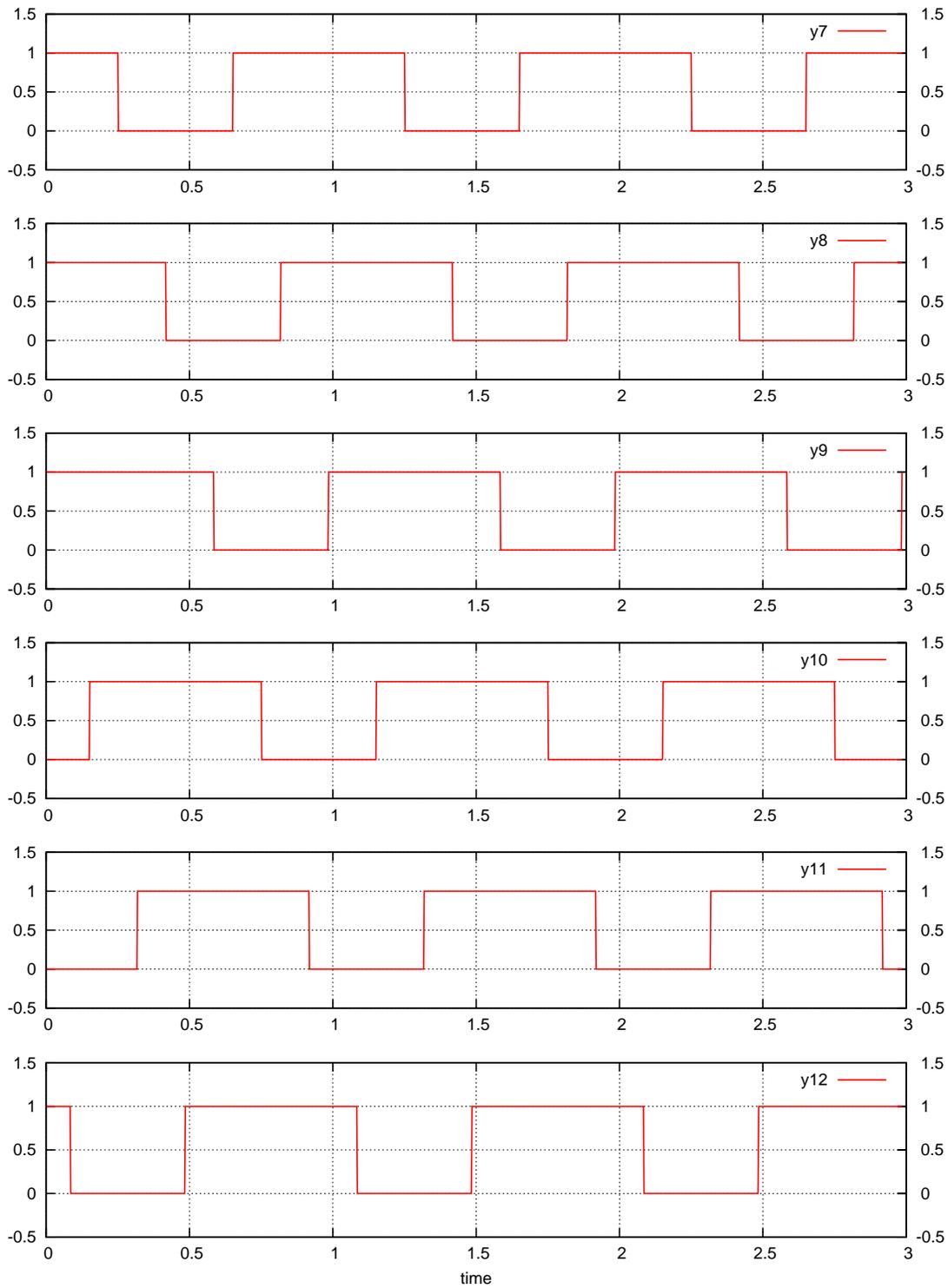


Figure 2: Waveforms obtained with `clock6_a.gce` with `g_high=1`, `t1=0.4`, `t2=0.6`, `dt1=0.002`, `dt2=0.002`, `alpha=90`.