

triangle_2.gce

Attributes

```
mainvars: y
iparms: i0=0
rparms:
+   tperiod=1  t0=0  v_high=1.0  v_low=-1.0
+   eps1=1.0e-9
```

Description

triangle_2.gce is a symmetric triangular wave source with the general variable `y` as its output.

The parameters have the following meaning:

`tperiod`: Period. In the first half, the voltage goes from `g_high` to `g_low` if `i0=0` (and from `g_low` to `g_high` if `i0=1`).

`t0`: An “offset” time interval. Its meaning will become clear in the following example.

`eps1`: Used in time step control. `eps1` can generally be set to be $0.001 \times \min(t1, t2)$.

AC behaviour is not implemented.

The effect of the various parameters of `triangle_2.gce` on the waveforms is shown in Fig. 1.

The corresponding circuit file (available as `triangle_2_gce.in` in the examples directory) is reproduced below.

```

title: testing of triangle_2

begin_circuit
  gelement type=triangle_2 y=y1 tperiod=5 t0=0 i0=0
+   g_high=2 g_low=-2 epsl=1e-3

  gelement type=triangle_2 y=y2 tperiod=5 t0=0 i0=1
+   g_high=2 g_low=-2 epsl=1e-3

  gelement type=triangle_2 y=y3 tperiod=5 t0=1.5 i0=0
+   g_high=2 g_low=-2 epsl=1e-3

  outvar:
+   y1=var_of_y1
+   y2=var_of_y2
+   y3=var_of_y3
end_circuit

begin_solve
  solve_type=startup
  initial_sol initialize
  method: t_startup=0
end_solve

begin_solve
  solve_type=trns
  initial_sol previous
  begin_output
    filename=triangle_2_gce.dat
    variables: y1 y2 y3
  end_output
  method:
+   back_euler=yes
+   t_start=0 t_end=15 delt_const=0.5 delt_min=0.1
end_solve

end_cf

```

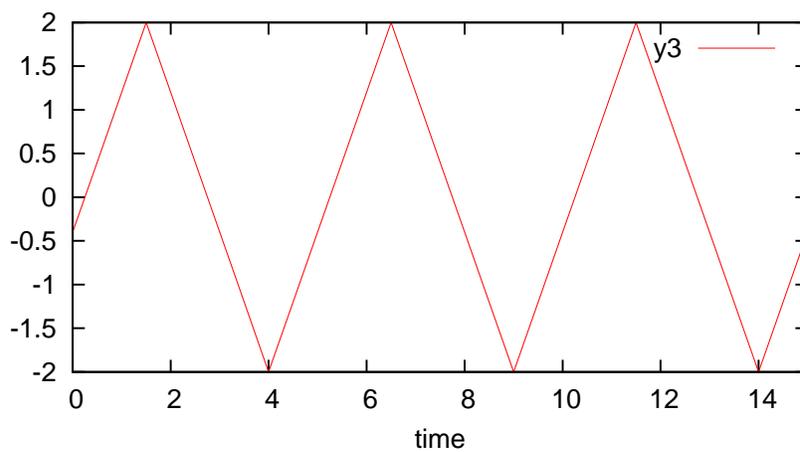
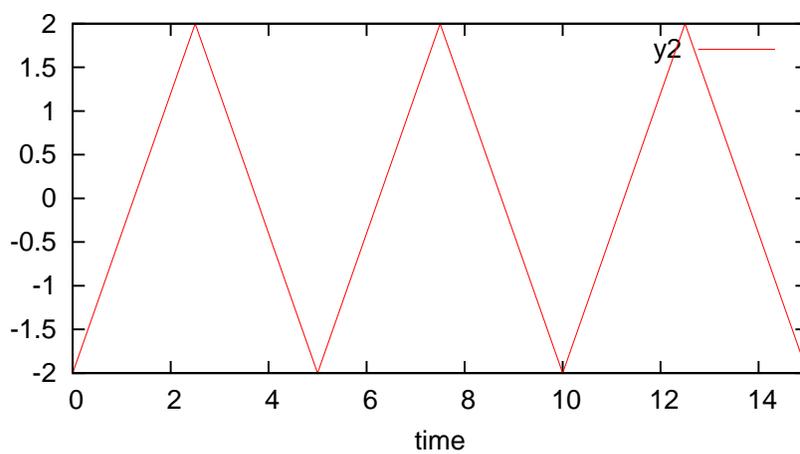
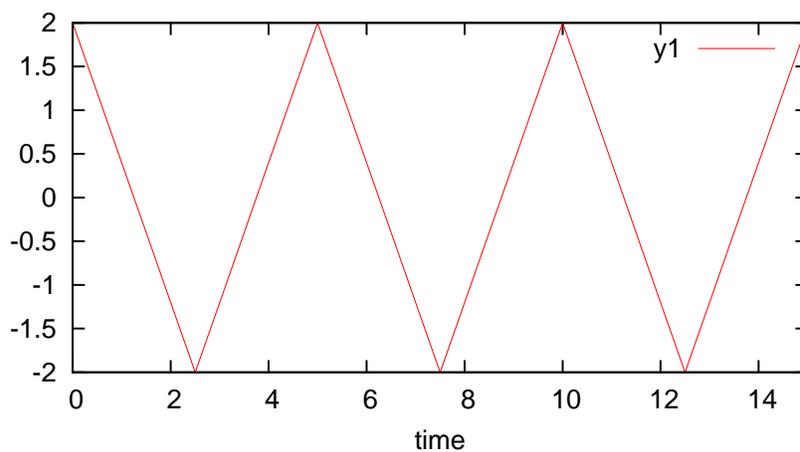


Figure 1: Waveforms obtained with `triangle_2.gce`: (a) y_1 : $t_{\text{period}}=5$, $t_0=0$, $i_0=0$, $g_{\text{high}}=2$, $g_{\text{low}}=-2$, (b) y_2 : $t_{\text{period}}=5$, $t_0=0$, $i_0=1$, $g_{\text{high}}=2$, $g_{\text{low}}=-2$, (c) y_3 : $t_{\text{period}}=5$, $t_0=1.5$, $i_0=0$, $g_{\text{high}}=2$, $g_{\text{low}}=-2$.