

triangle_2.ece

Attributes

```

mainnodes: p n
outvar: i1=brc_of_v0 v1=brv_of_v0
iparms: i0=0
rparms:
+ tperiod=1 t0=0 v_high=1.0 v_low=-1.0
+ epsl=1.0e-9

```

Description

triangle_2.ece is a symmetric triangular wave voltage source connected between nodes p and n. The parameters have the following meaning:

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

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

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

The output variables i1 and v1 are the branch current and branch voltage, respectively.

AC behaviour is not implemented.

The effect of the various parameters of triangle_2.ece on the waveforms is shown in Fig. 1. The corresponding circuit file (available as triangle_2_ece.in in the examples directory) is reproduced below.

```

title: testing of triangle_2.ece

begin_circuit
  eelement type=triangle_2 p=a n=0 tperiod=5 t0=0 i0=0
+   v_high=2 v_low=-2 epsl=1e-3

  eelement type=triangle_2 p=b n=0 tperiod=5 t0=0 i0=1
+   v_high=2 v_low=-2 epsl=1e-3

  eelement type=triangle_2 p=c n=0 tperiod=5 t0=1.5 i0=0
+   v_high=2 v_low=-2 epsl=1e-3

  eelement type=r p=a n=b r=1
  eelement type=r p=b n=c r=1

  refnode=0
  outvar:
+   va=nodev_of_a
+   vb=nodev_of_b
+   vc=nodev_of_c
end_circuit

begin_solve
  solve_type=startup
  initial_sol initialize
end_solve

begin_solve
  solve_type=trns
  initial_sol previous
  begin_output
    filename=triangle_2_ece.dat
    variables: va vb vc
  end_output
  method:
+   back_euler=yes
+   t_start=0 t_end=16 delt_const=0.5 delt_min=0.1
end_solve

end_cf

```

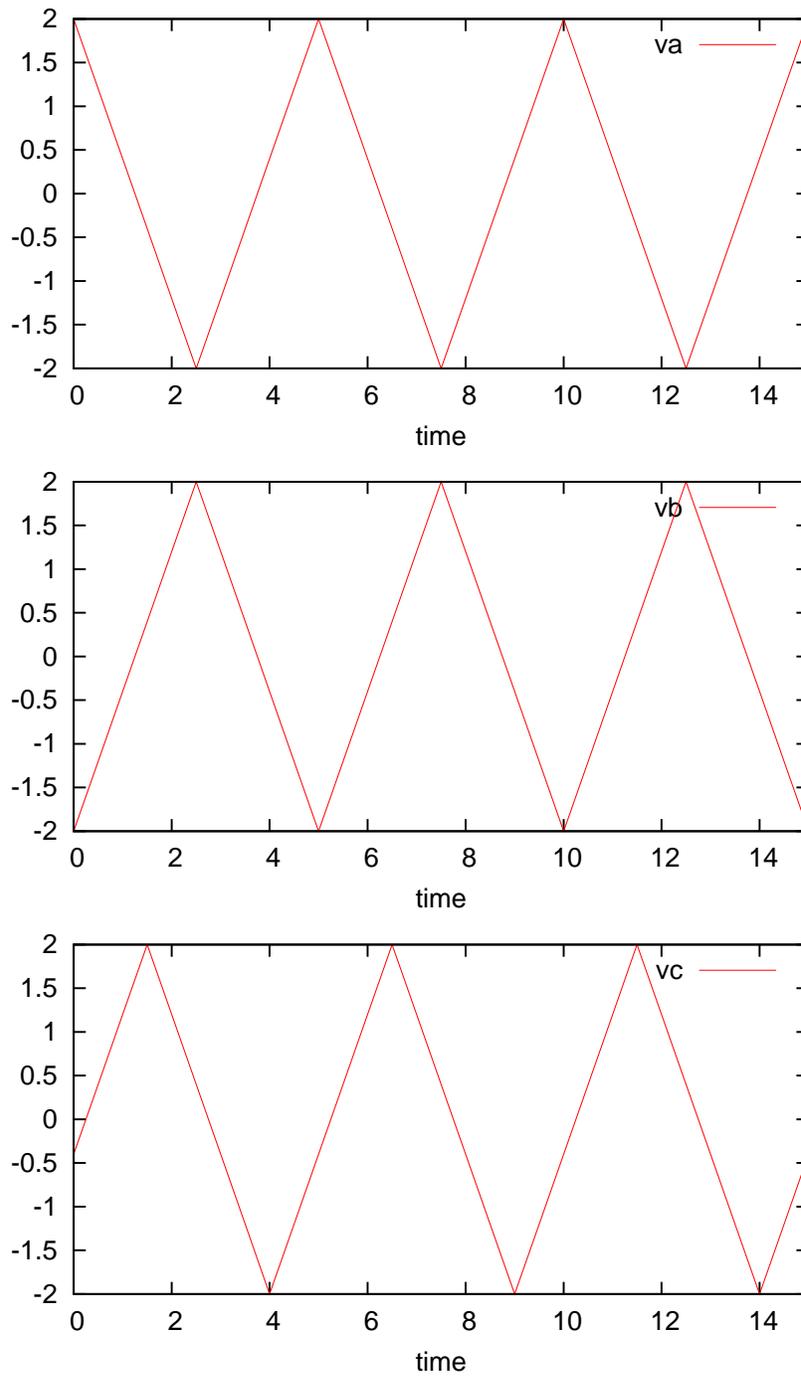


Figure 1: Waveforms obtained with `triangle_2.ece`: (a) `va`: `tperiod=5`, `t0=0`, `i0=0`, `v_high=2`, `v_low=-2`, (b) `vb`: `tperiod=5`, `t0=0`, `i0=1`, `v_high=2`, `v_low=-2`, (c) `vc`: `tperiod=5`, `t0=1.5`, `i0=0`, `v_high=2`, `v_low=-2`.