

Figure 1: `spdt_boost.ece`: large-signal model.

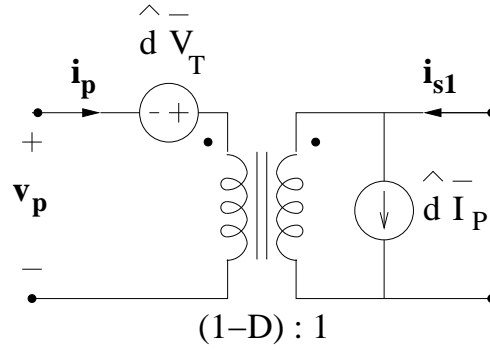


Figure 2: `spdt_boost.ece`: small-signal model.

spdt_boost.ece

Attributes

```

mainnodes: p s1 s2
main_var: g_in
rparms: g_high=1.0
+   tstart1=0 tend1=1 v_ss=0 i_ss=0
+   d=0.1 dcap=1

```

Description

`spdt_boost.ece` is a single-pole double-throw switch, with `p`, `s1`, and `s2` as the pole, throw, and common, respectively, as shown in Fig. 1. The switch is driven by the general variable `g_in`. If `g_in > g_high/2`, `p` and `s2` are connected; else, `p` and `s1` are connected; The switch is modelled as an ideal switch, i.e., a short circuit when two nodes are to be connected and an open circuit otherwise.

The real parameters `tstart1`, `tend1`, `v_ss`, `i_ss`, `d`, `dcap` are used to generate the small-signal model parameters shown in Fig. 2. In this model, average values $\overline{I_P}$ and $\overline{V_T}$ are required. This is done by averaging I_P and V_T between `tstart1` and `tend1`. The average quantities are stored in real parameters `v_ss`, and `i_ss` and passed to the small-signal template. `d` is the duty cycle D in Fig. 1, and `dcap` is the amplitude \hat{d} in Fig. 2.