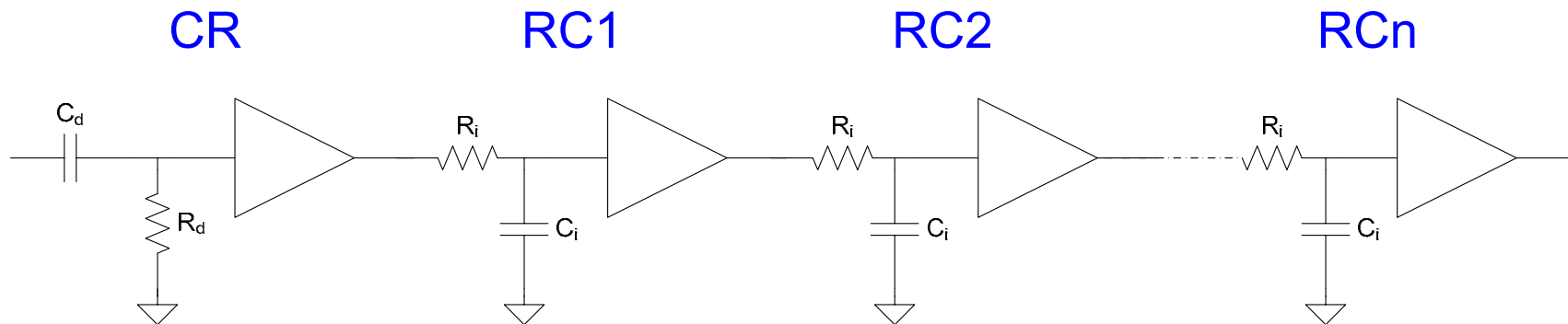




First thoughts about Semi Gaussian shaping

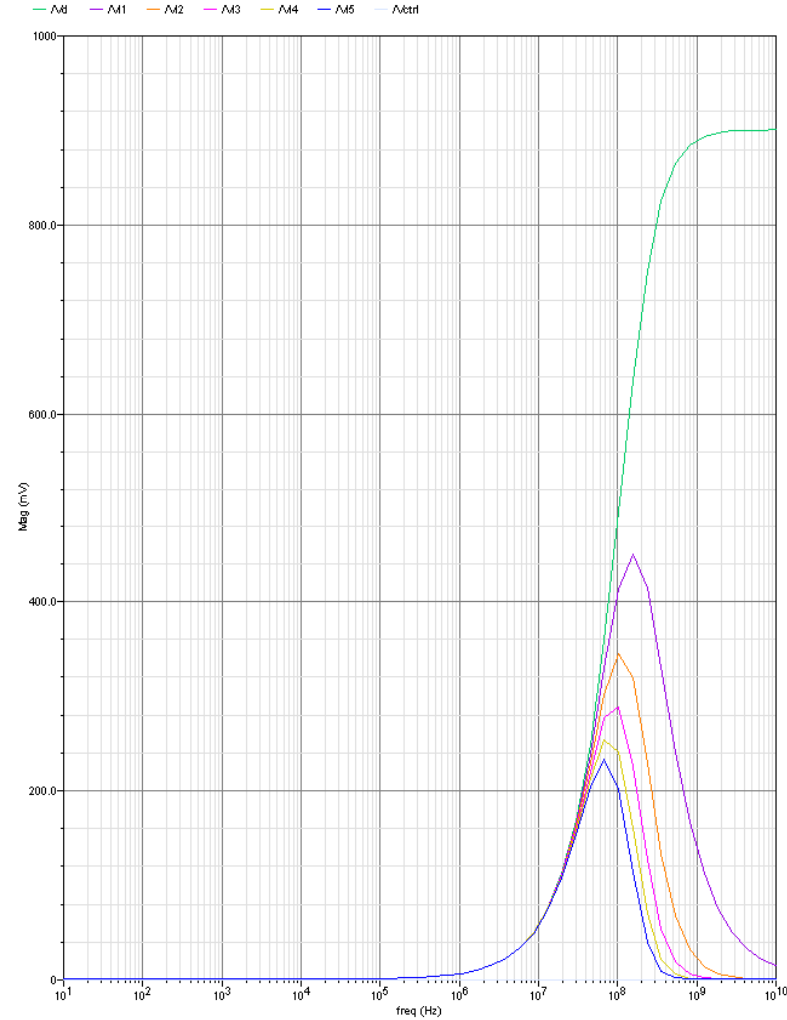
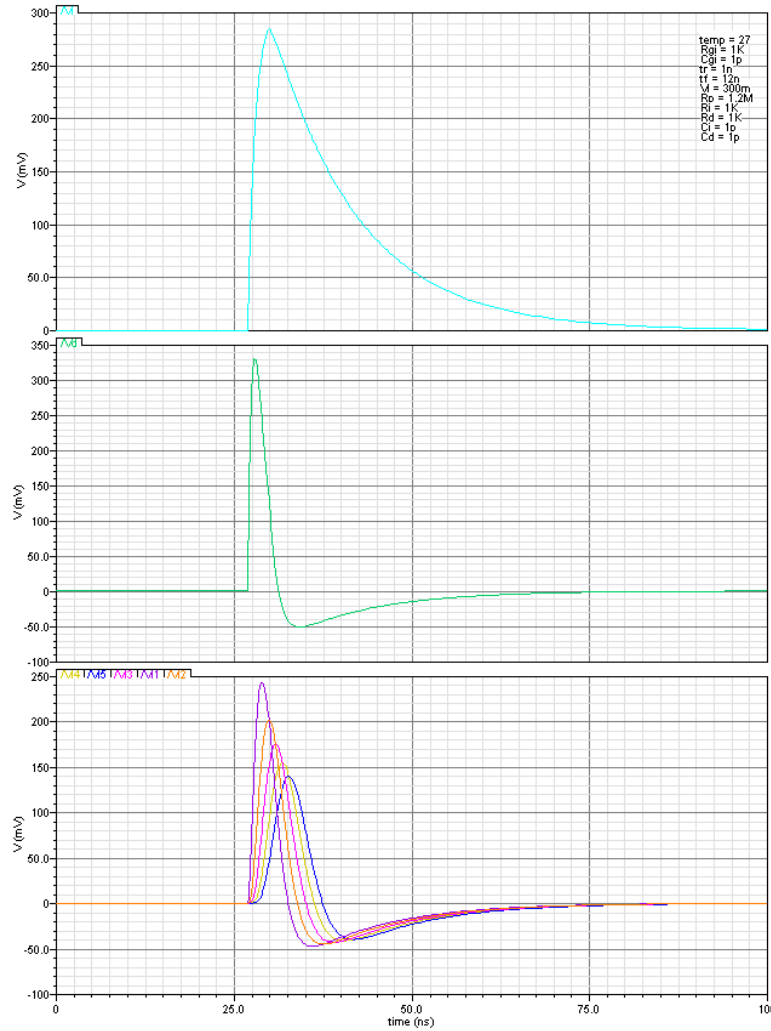
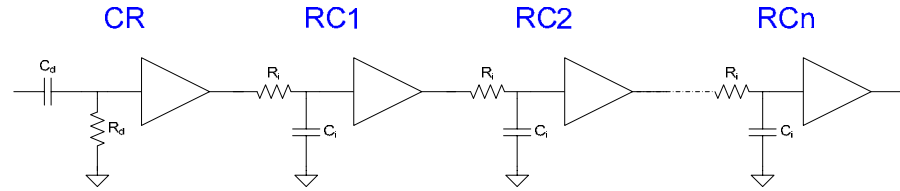
I. Introduction

- Semi Gaussian shapers are made out of 1 (2) differentiator and n integrators
- Alternative solution to delay line clipping
- Goal should be:
 - Shape the pulse to a width < 10 ns (plateau of 1% after integration).
 - Not to degrade SNR
- Can be "easily" integrated
 - CR and RC: 1 ns !



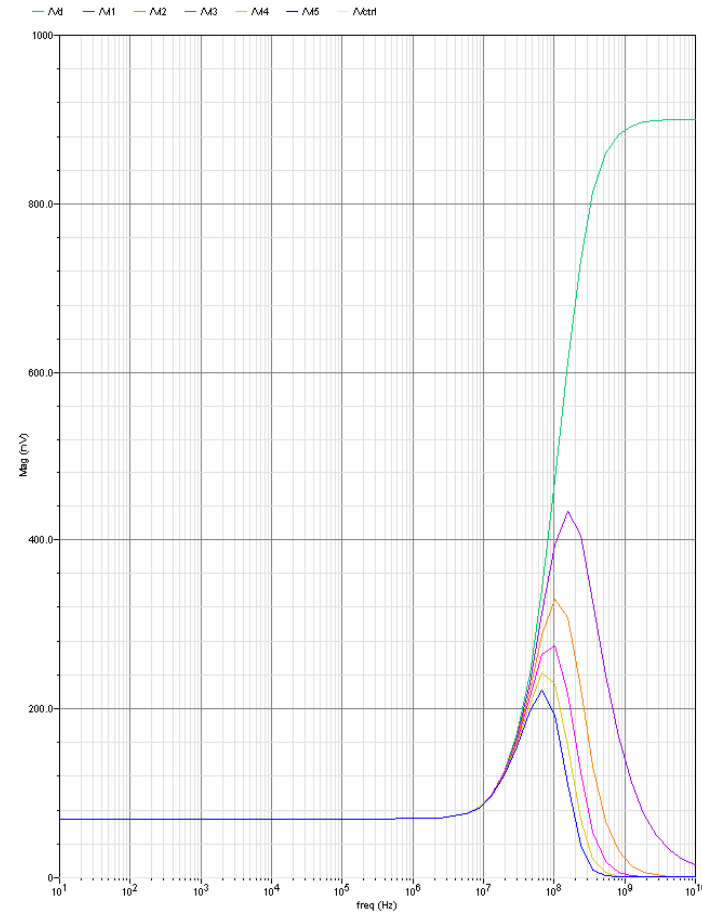
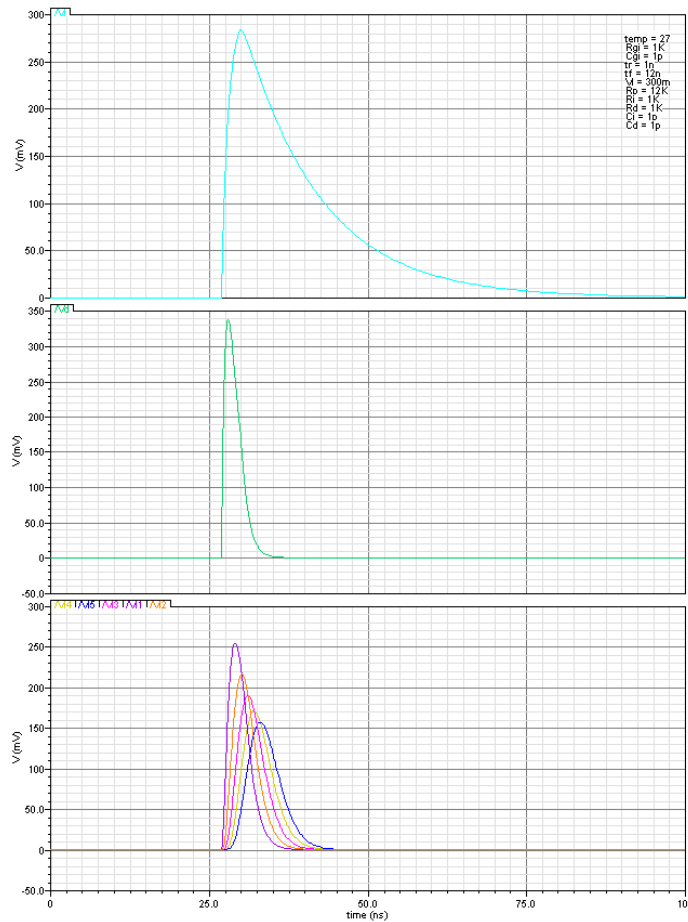
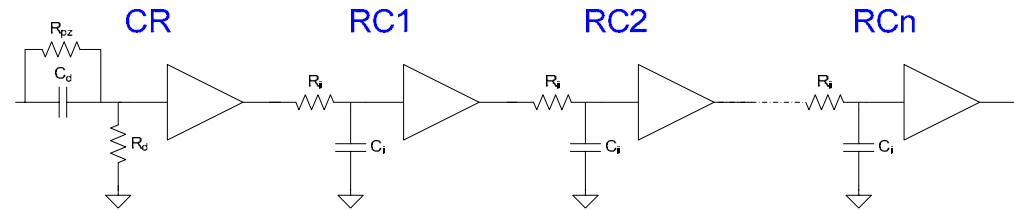
II. Pure SG shaper

- Undershoot !



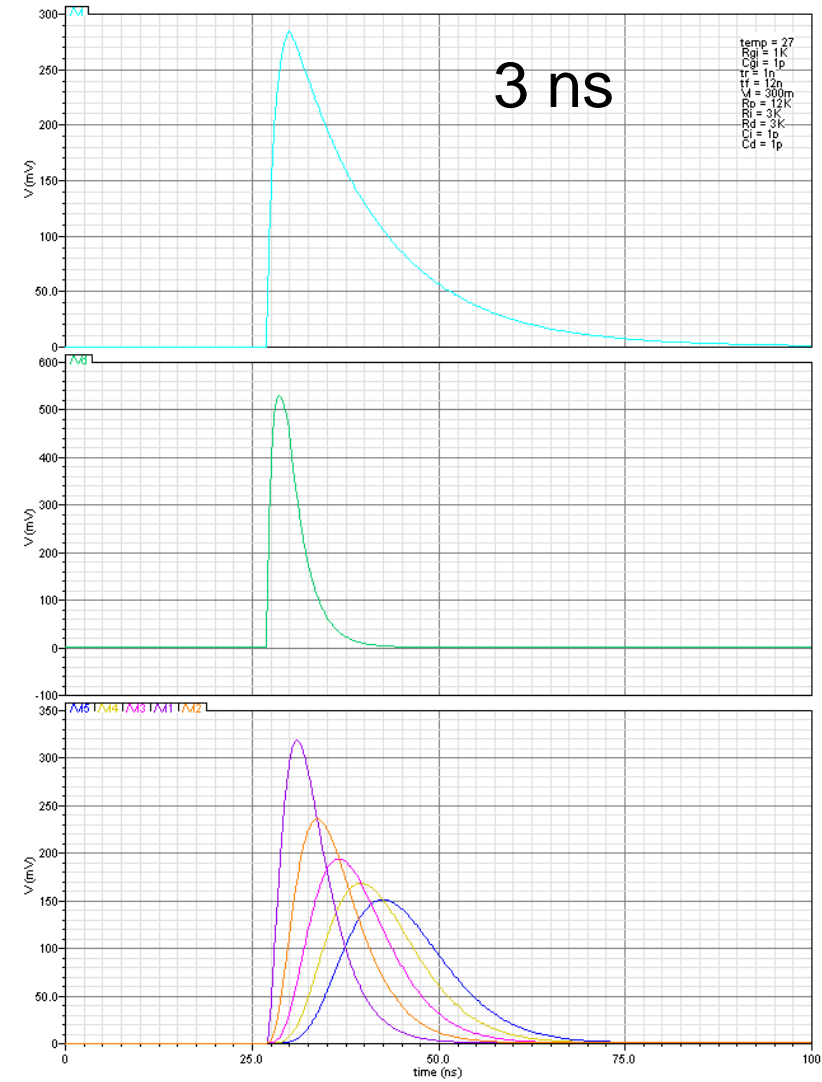
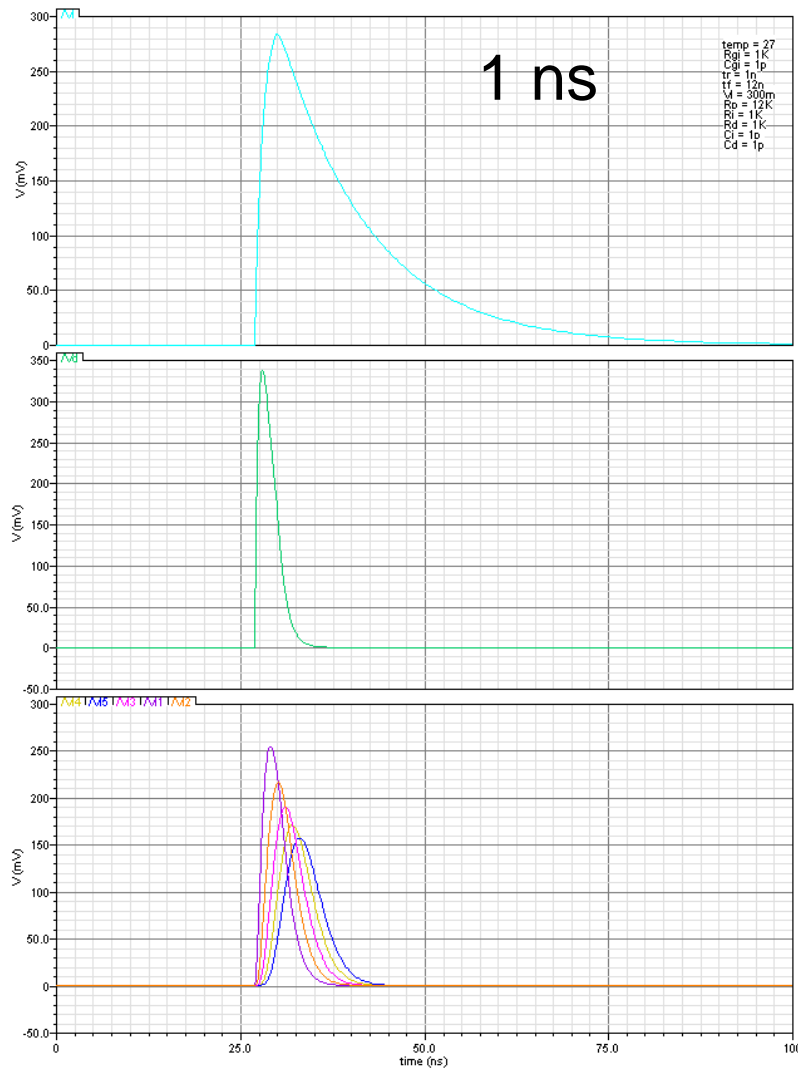
III. Pole zero cancellation

- Pole zero-cancellation:
 - Zero: $R_p C_d =$ pulse decay time



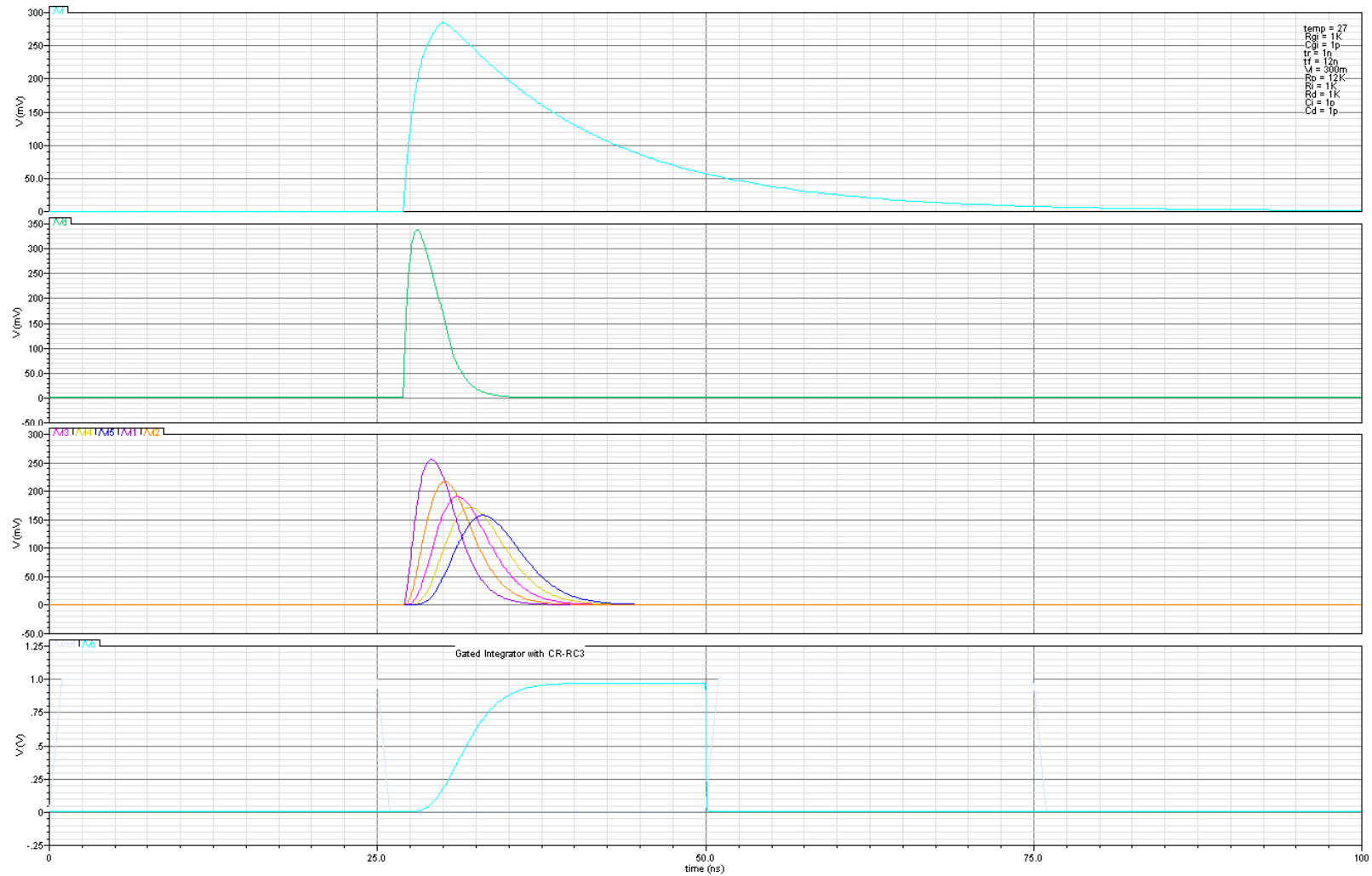
IV. Shaper time constant

- The shaper must be very fast



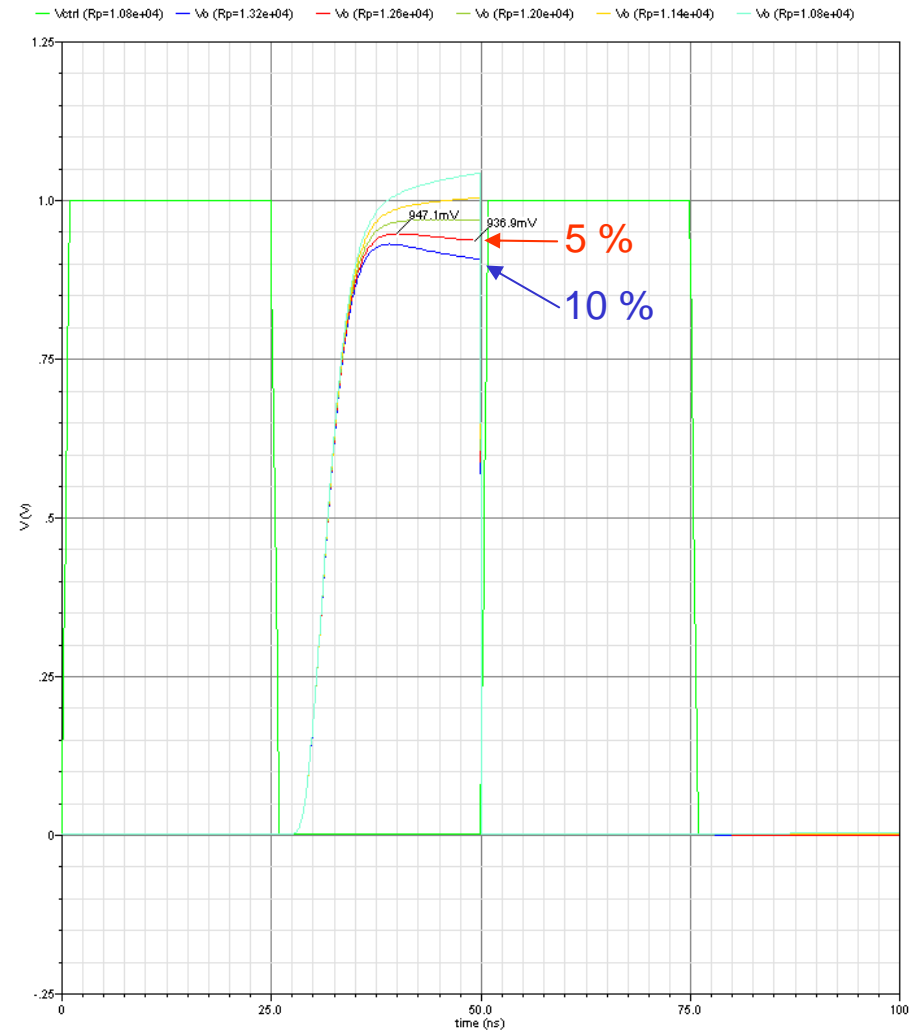
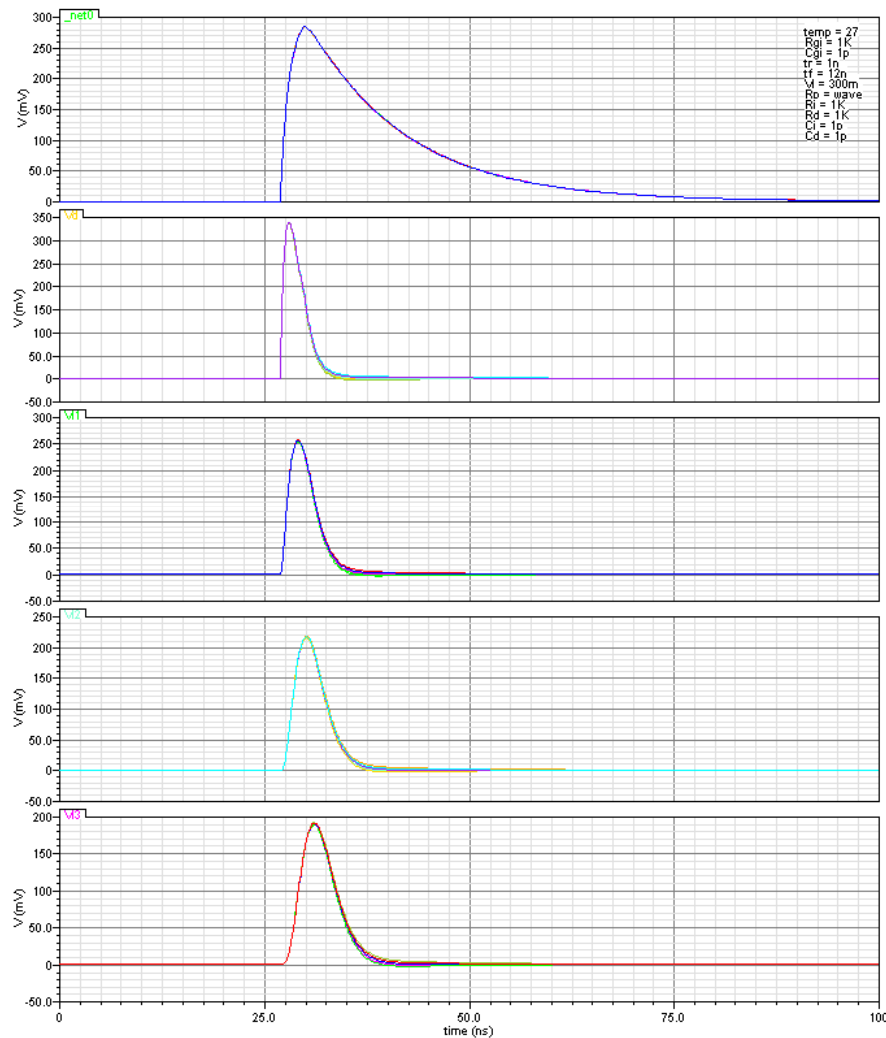
V. Gated integrator

- Gated integration fo CR-RC3
- If pole zero cancellation is perfect: plateau is flat



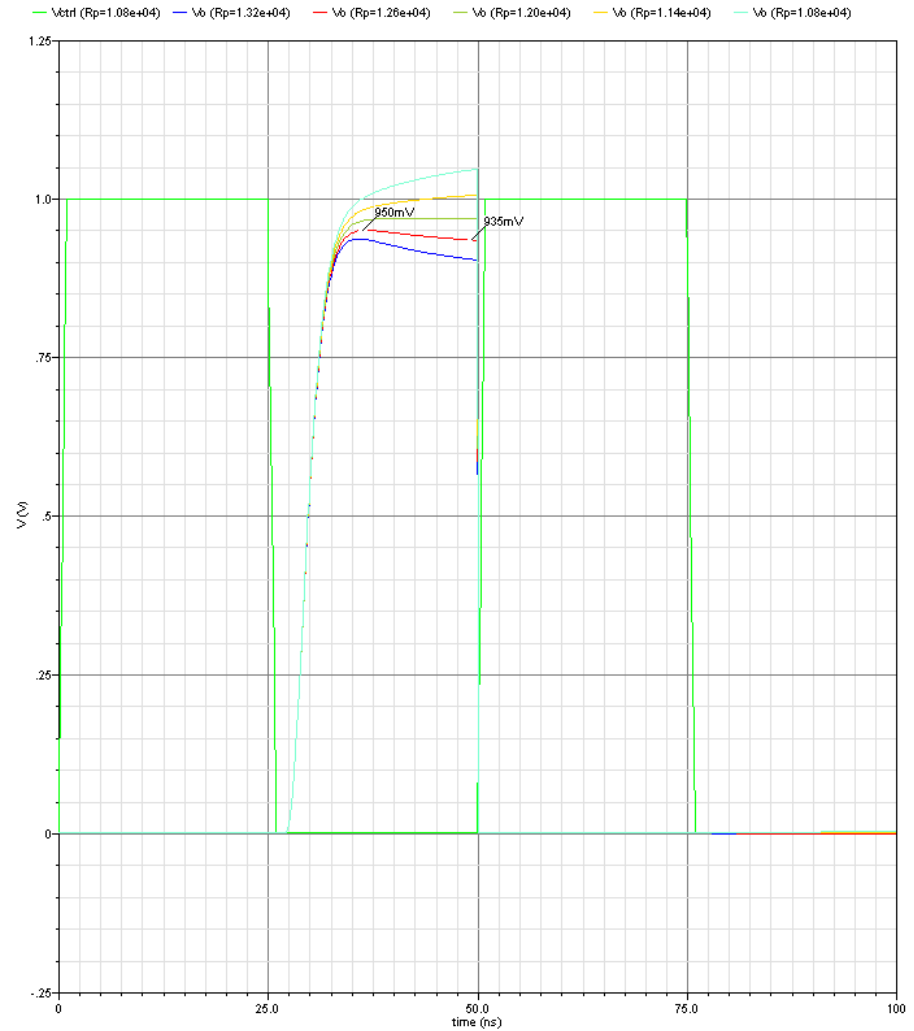
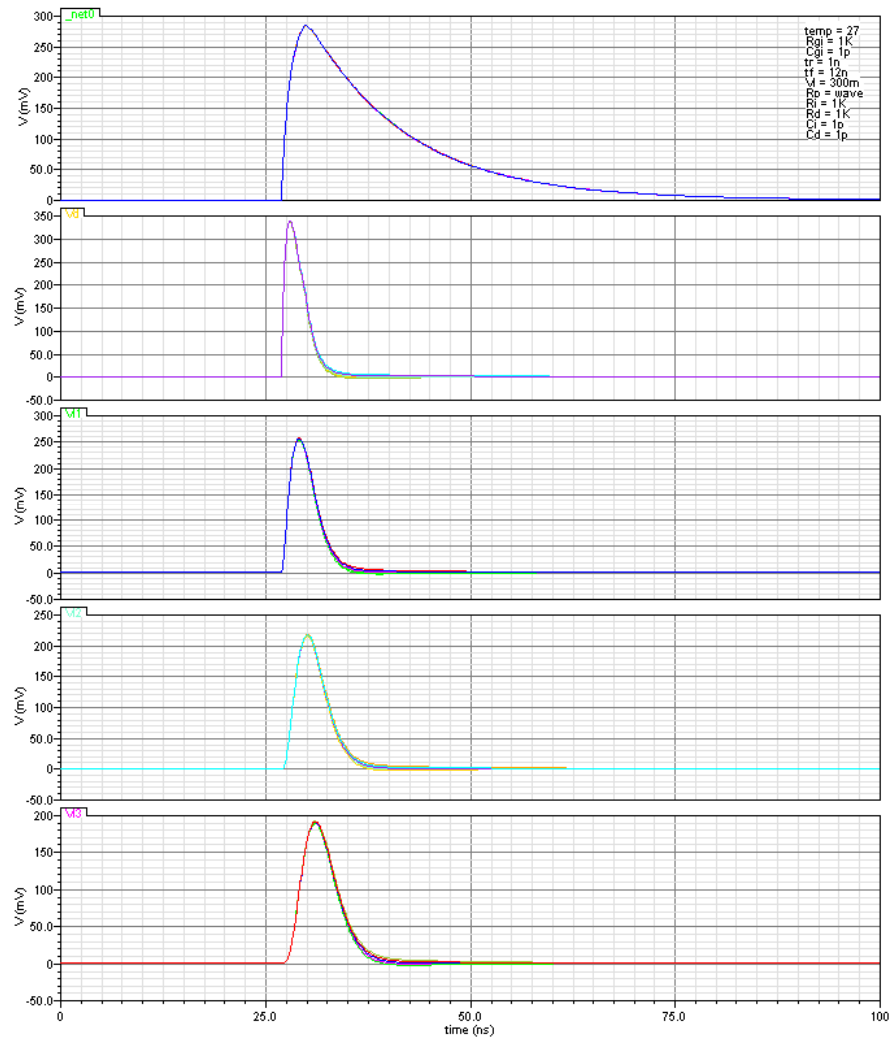
VI. Imperfect pole-zero cancellation

- Plateau is $< 1\%$ for 10 ns even with 5 % mismatch



VI. Imperfect pole-zero cancellation

- Taking CR-RC1 is worst !





Back-up