Curtice Cubic Nonlinear Model Results Differ From ADS

Problem

The AWR Curtice nonlinear model does not match the Curtice Cubic model in ADS

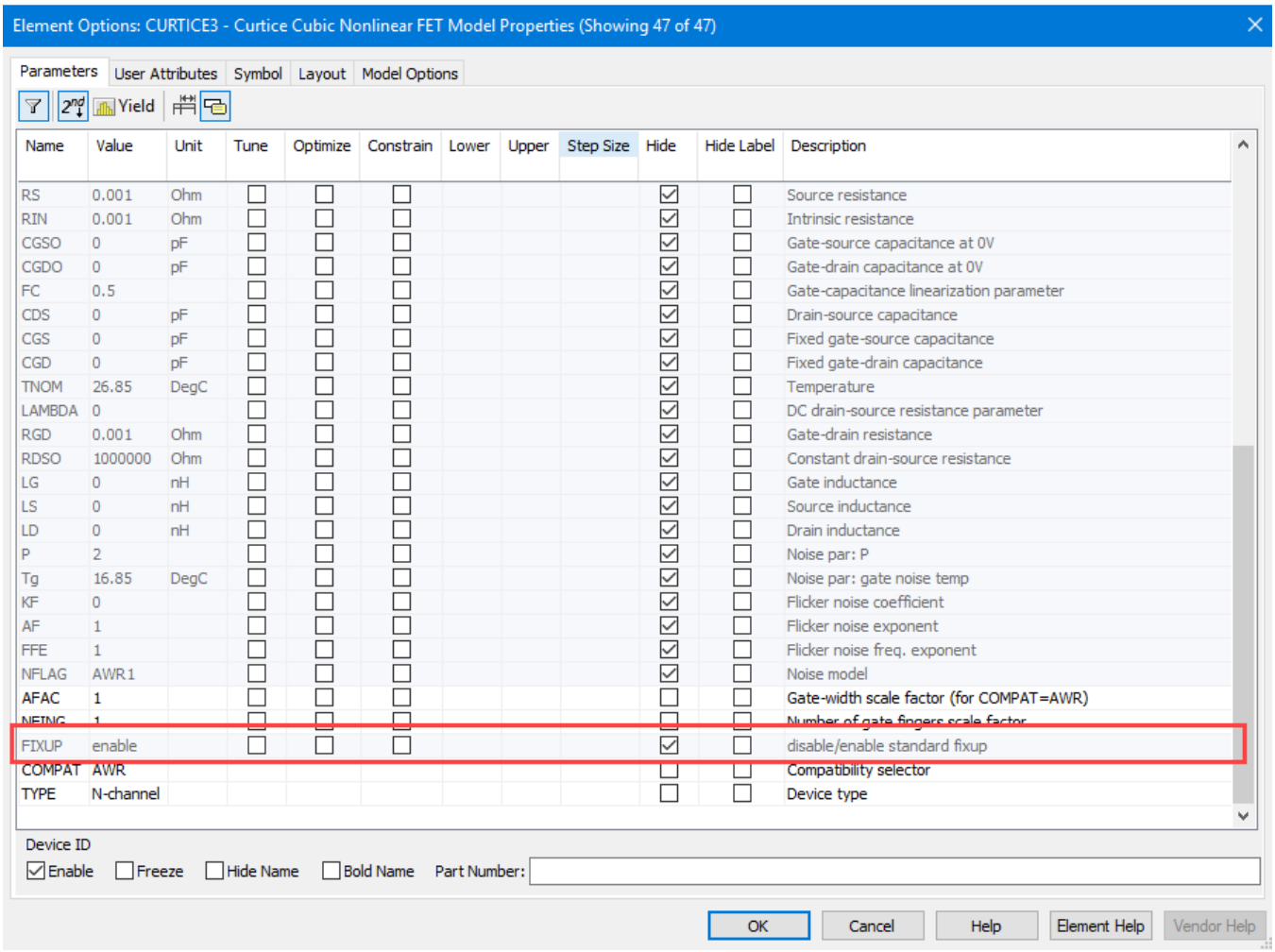
Solution

The AWR Curtice model is very similar to the ADS Curtice Cubic model, but they are not identical. Below are some of the common differences:

1. RDSO = 0 in ADS means RDSO = infinity If RDSO = 0 or is very large (>1e6), then the ADS Curtice Cubic model will match the AWR Curtice model. The ADS Curtice Cubic model implements an extra term [(Vds-VDSDC)/RDSO] in the I(v) equation that is not present in the AWR Curtice model.
2. In the ADS Curtice Cubic, Cgs and Cgd can be linear or nonlinear capacitance depending on the value of Gscap and Gdcap. The default mode for Gscap and Gdcap are linear. This corresponds to Gscap = 1, and Gdcap=1. If Gscap and Gdcap are missing, then they are using the default value. In the AWR Curtice model, CGSO and CGDO are used for the nonlinear capacitances and CGS and CGD are used for the linear capacitances. If you set CGSO to a non-zero value, then CGS = 0. Similarly, if you set CGS to a non-zero value, then CGSO = 0. CGS and CGSO should not both have a value. The same is true for CGD and CGDO.
3. There is no A5 parameter in the AWR Curtice model. As an approximation, set Tau = A5*Vdsdc.
4. AWR VBO = ADS Vbr, AWR BETA = ADS BETA2, AWR LAMBDA does not exist in ADS, leave LAMBDA = 0.

The above fix is based on on the attached referenced paper by Dr. Steve Maas and we have added a switch that enables/disables this **FIXUP** parameter.

By default this **FIXUP** is enabled. The user may elect to disable **FIXUP**, however, convergence issues may appear due to some inadequate polynomial values (A0, A1, etc). A benefit of disabling FIXUP is that simulation results will now have better correlation with those of ADS model, assuming the model converges. To enable/ disable the A1 parameter, double click on the Curtice Cubic Element to bring up its properties, click on Show Secondary in the bottom right hand corner of the dialog and scroll down to the bottom of the resulting list. The **FIXUP** switch is the last parameter in the list.



Downloads

Fixup in Curtice Model