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Hierachical circuit diagrams for layout and PSpice with Capture

16.05.2017

Motivation:

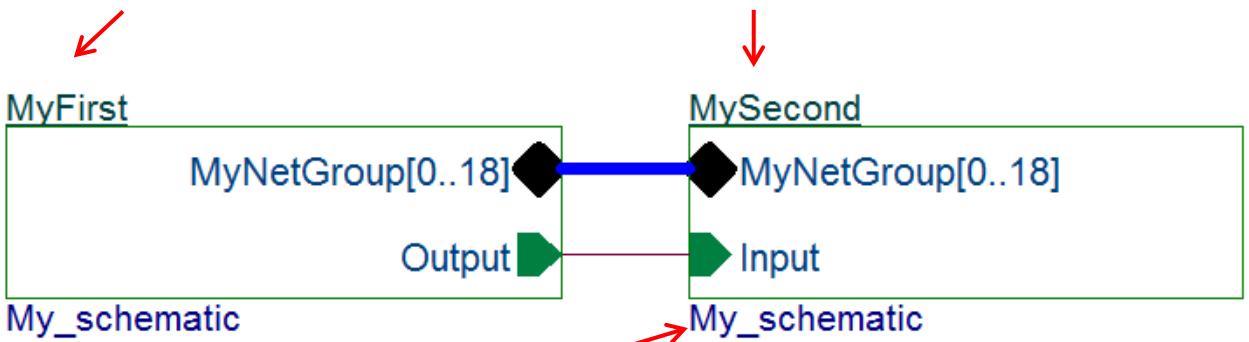
- Usually circuit diagrams are drawn with many A3 sized sheets on the same hierarchical level
- Very often a block diagram is drawn with a tool outside the schematic editor (PowerPoint, Visio)

Restrictions of these solutions:

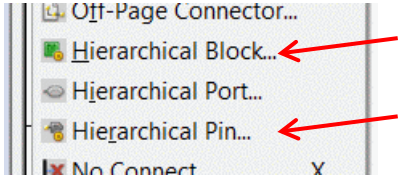
- It is difficult to get an entry point of the project
- Multiple sheets are necessary for the work on a detail
- Modifications have to be done on several copied circuits
- Block- and circuit diagrams are not consistent
- Detailed knowledge of the implementation is necessary for modifications (PSpice)

Orcad Capture elements for hierarchical designs:

Occurrence (Reference)

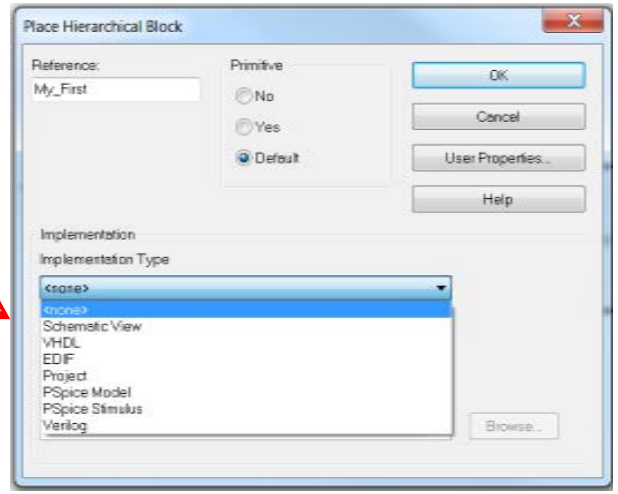


Capture Menue
➢ place



Instance
(Implementation)

Descend
Hierarchy
for Edit



Top Down Method:

- Place Block
- Define Instance
- Define Occurrence
- Place Pins
- Place Connections
- Descend Hierarchy

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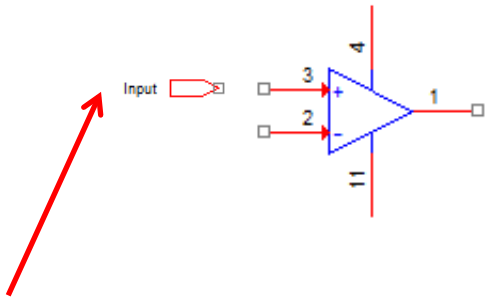
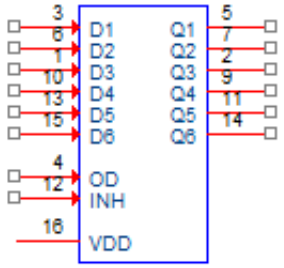
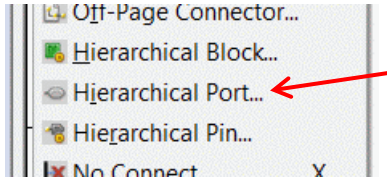
Capture elements for hierarchical designs:

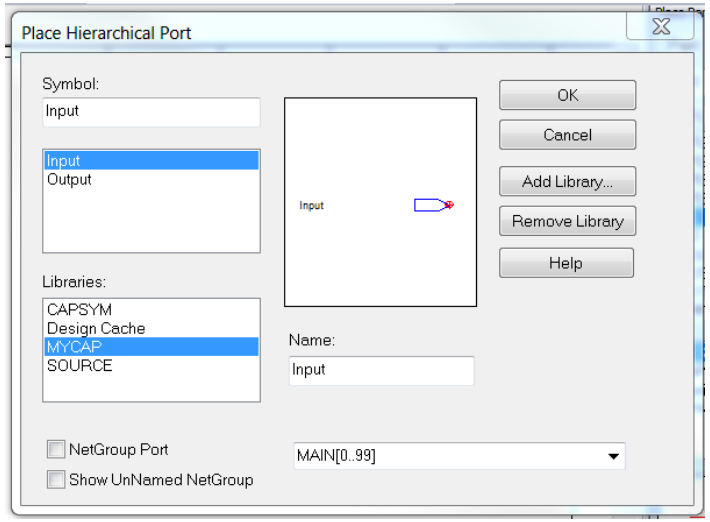




Capture Menue

- place

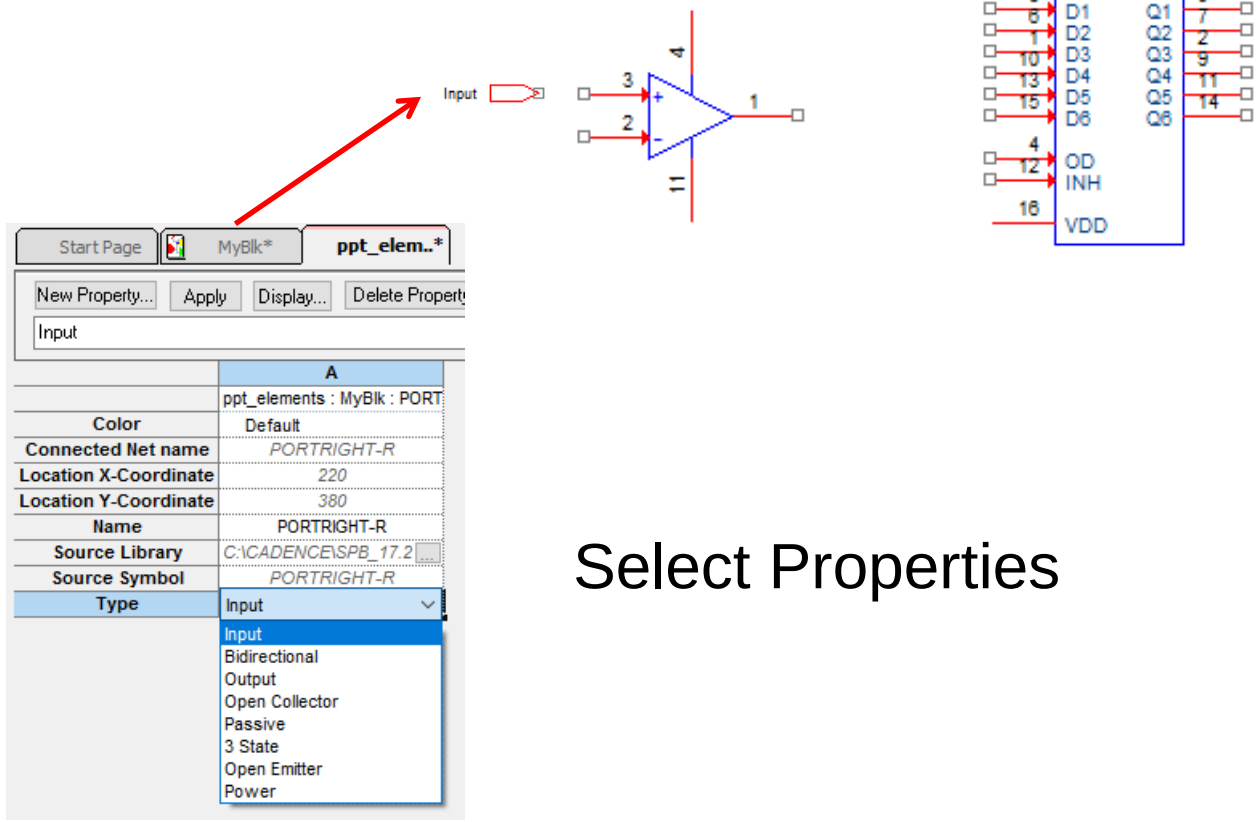




Bottom up Method (1):

- Open flat design
- Place Ports
- Select Symbol
- Place Symbols(s)

Capture elements for hierarchical designs:



Bottom up Method (2):

Select Properties

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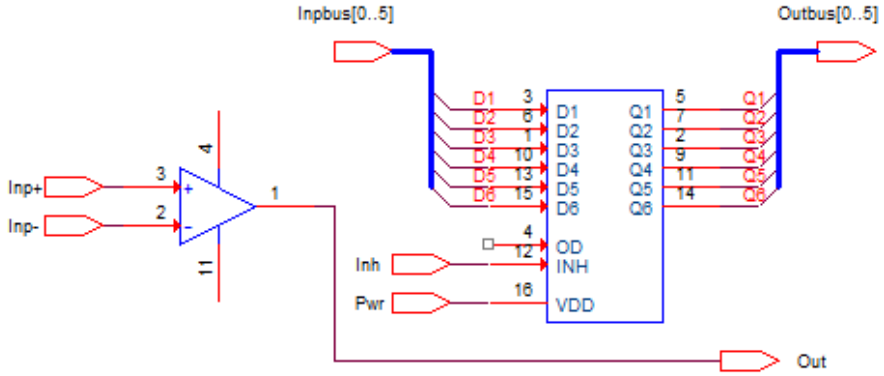
Capture elements for hierarchical designs:



Bottom up Method (3):

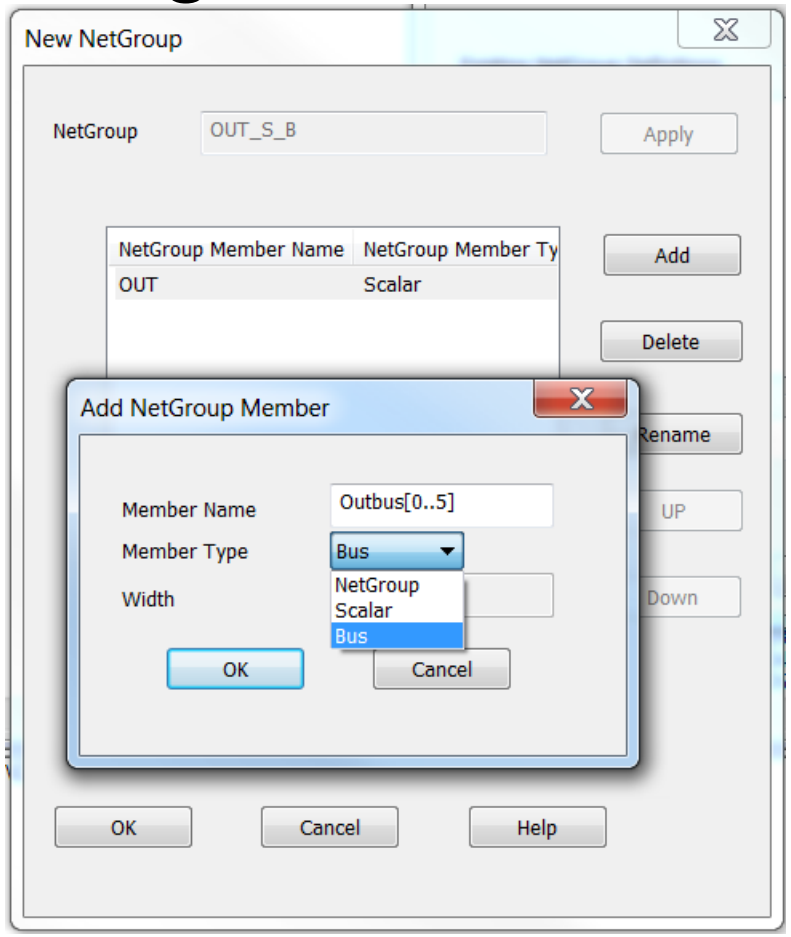
Repeat and Connect

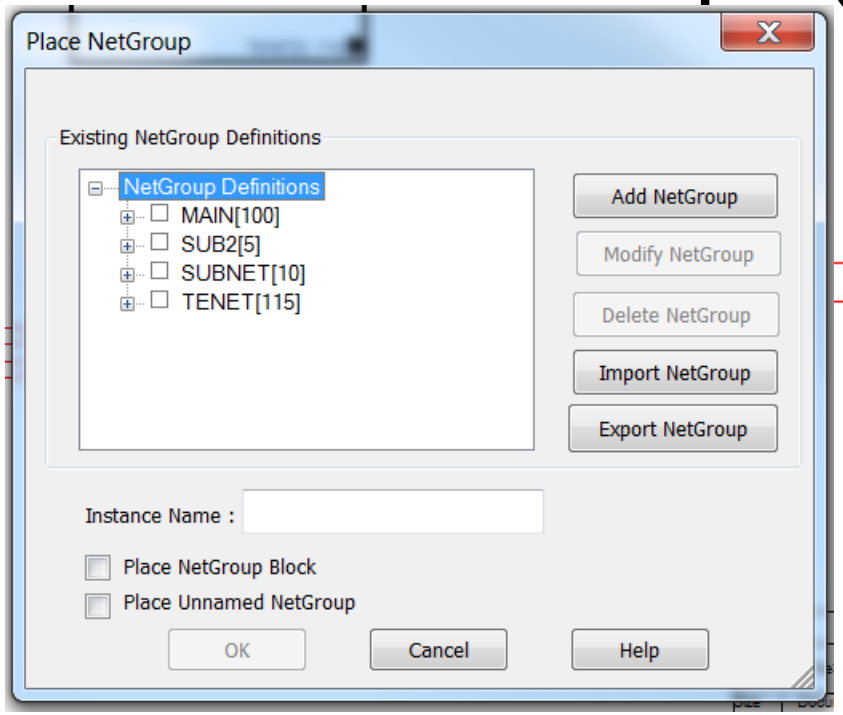
- Place Ports
- Select Symbol
- Place Symbols(s)
- Select Properties

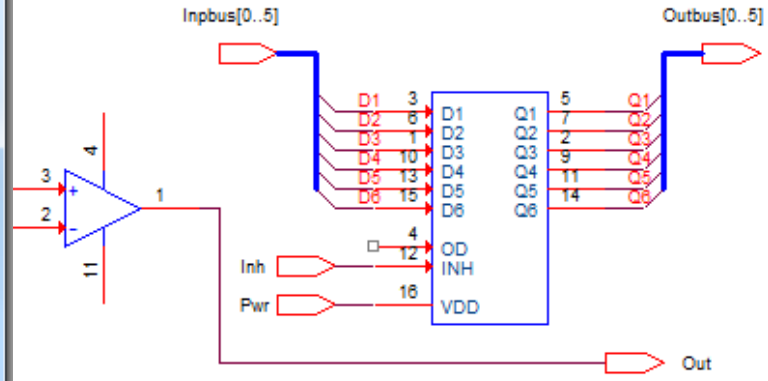
Placement of the Hierarchical Blocks in the upper levels like in Top Down Method

- Hierarchical Pins in the Block are generated based on the Hierarchical Ports

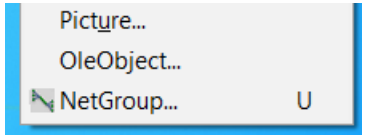
Single Lines, Busses and NetGroups (1):







Capture Menue
➢ place



NetGroup Connection:

Open design

Define NetGroup

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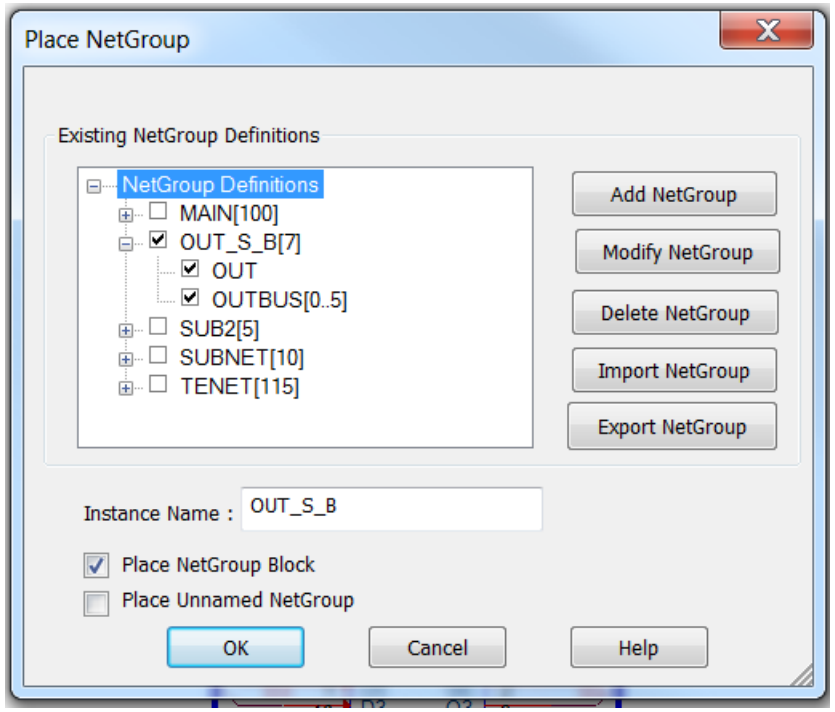
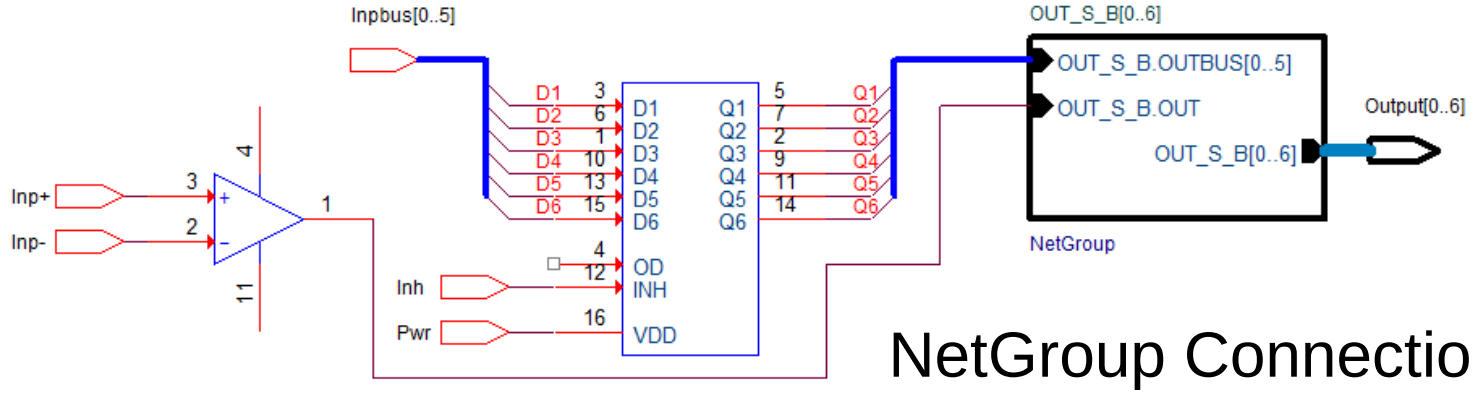
Single Lines, Busses and NetGroups (2):





NetGroup Connection:

Place Block

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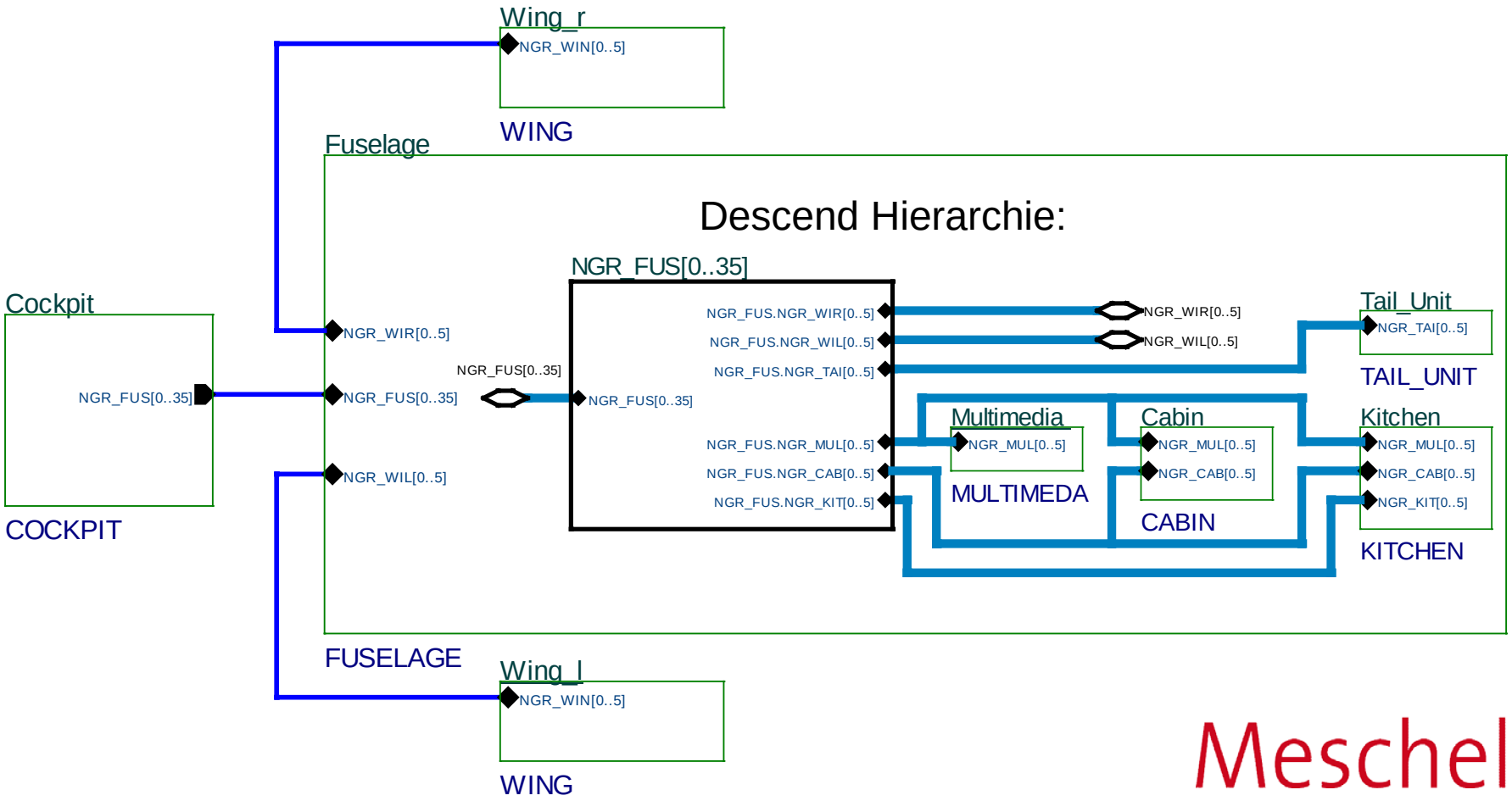
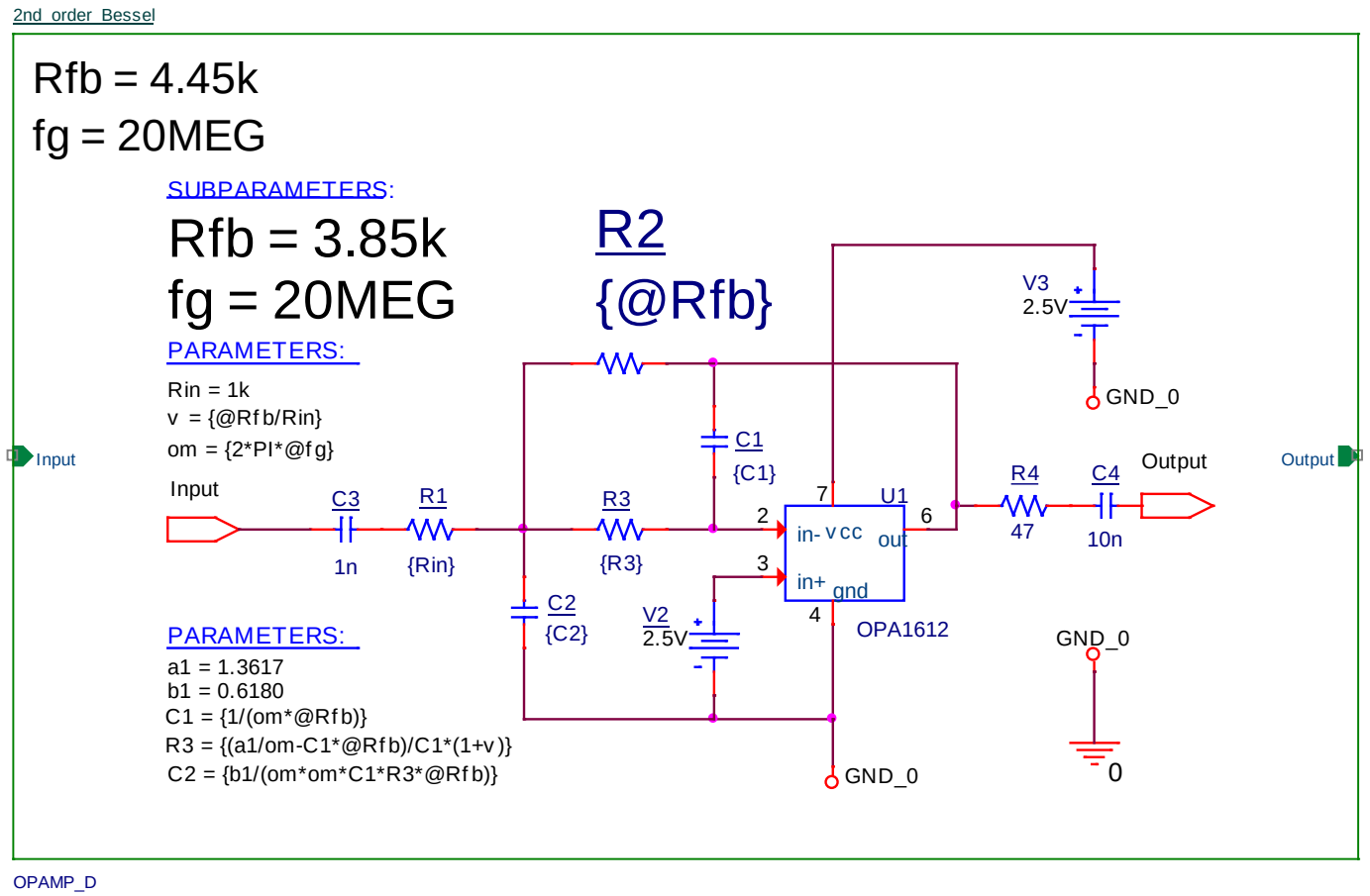
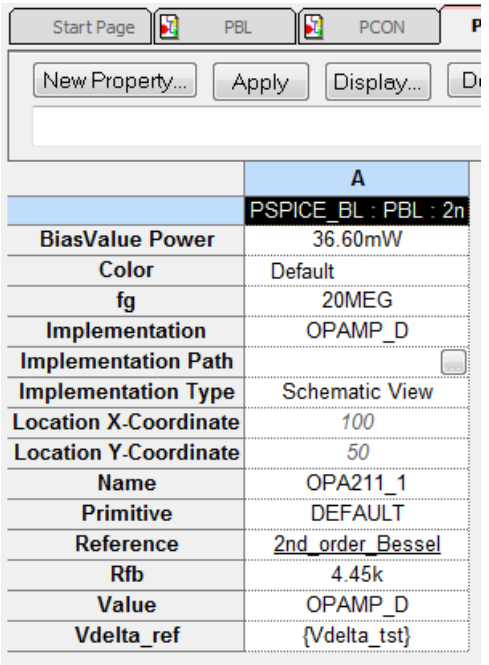
Main Page of a large Project (Airplane):



PSpice with local Parameters:





e.g.
Halbleiter-Schaltungstechnik
U. Tietze Ch. Schenk
Springer Verlag

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