Virtuoso 23.1
Module 11 – Quantus (PVS) Parasitic Extraction

American University of Beirut (AUB)
Lebanon

Content

Quantus (PVS) Parasitic Extraction

Module Objective

In this module, we will run the Quantus Physical Verification System (PVS) Parasitic Extraction. When the extraction is done, we can view the parasitics clearly on the layout.

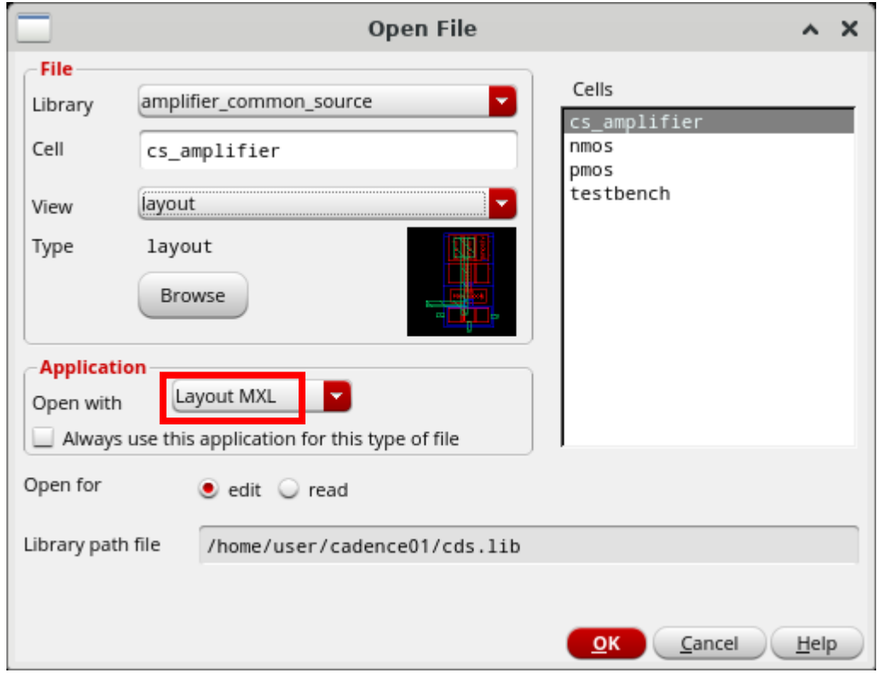
AMERICAN UNIVERSITY OF BEIRUT

Quantus (PVS) Parasitic Extraction

cadence

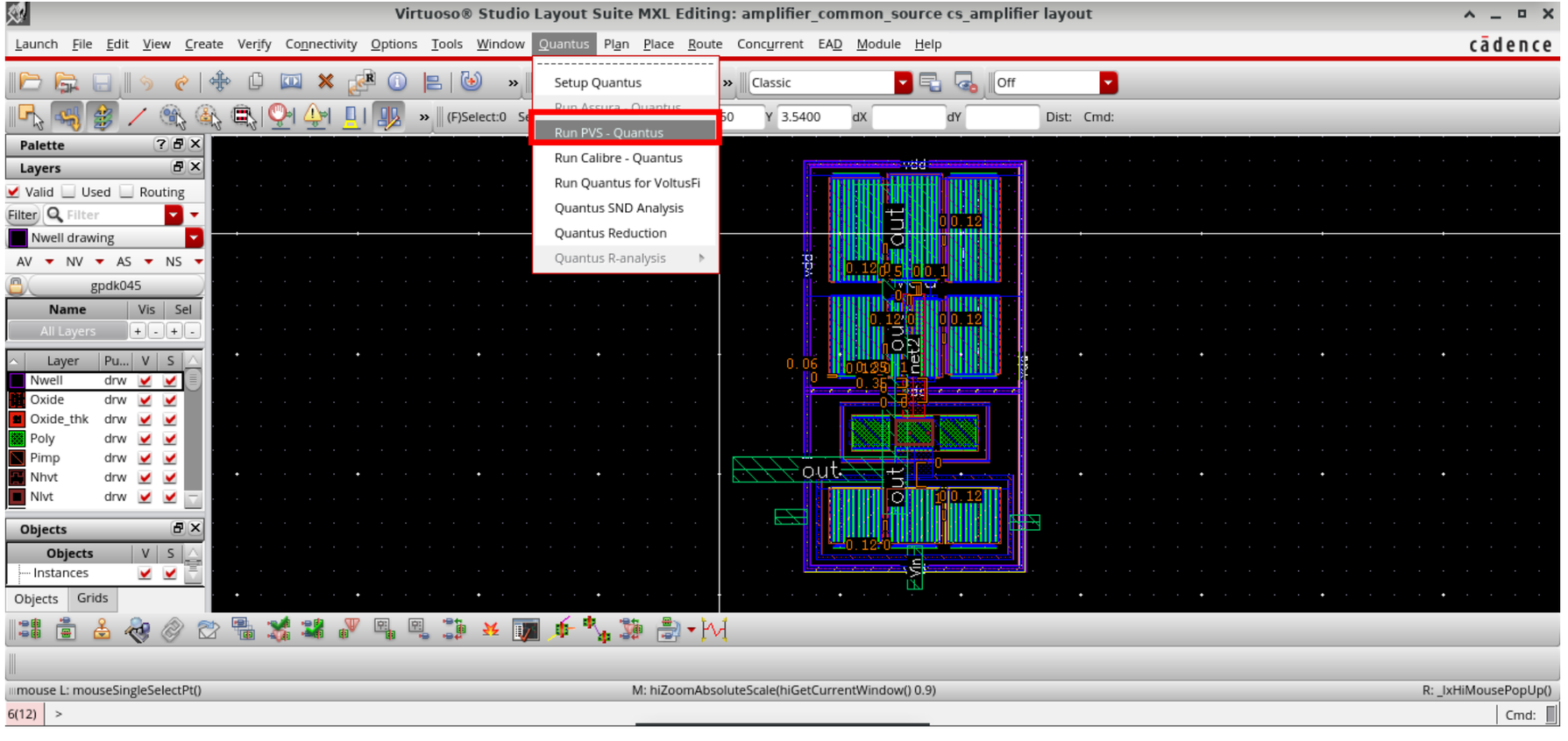
Quantus (PVS) Parasitic Extraction

- To study the behavior of the CS Amplifier circuit as a real design, we must extract the parasitics induced by the routing and the placement of the devices.
- QRC will generate, based on the log files of LVS, an **extracted view**, where we will be able to re-simulate the transient and AC analysis and compare the results.
- First open the layout view with Layout MXL.



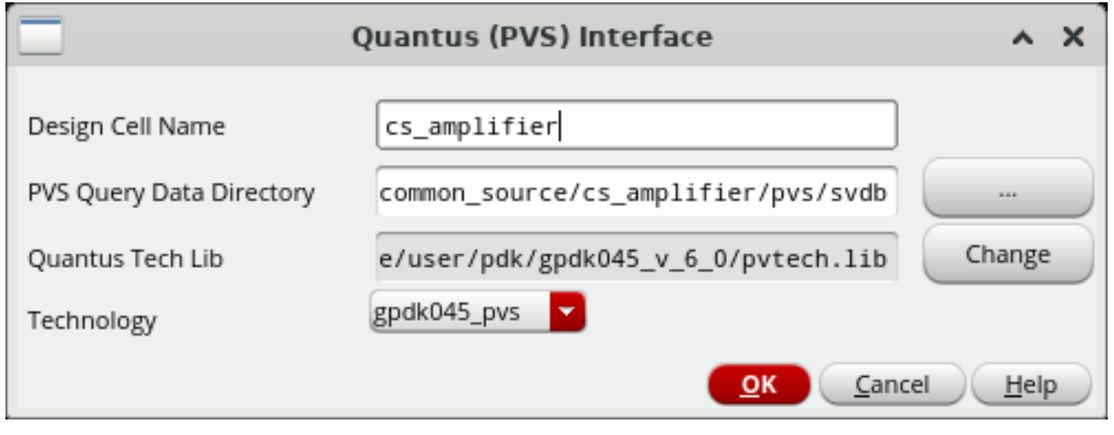
Quantus (PVS) Parasitic Extraction

- From the toolbar, select Quantus → Run PVS - Quantus.



Quantus (PVS) Parasitic Extraction

- The **Quantus (PVS) Interface** window pops-up.
- **Make sure the Cell Name is set to “cs_amplifier”**
- **Make sure Data Directory points to the folder “svdb” created by the LVS Run**. If not, click on … => amplifier_common_source => cs_amplifier => pvs => click on svdb and on OK.
- **Make sure the Tech Lib points to pvtech.lib.**
- Click OK to proceed.

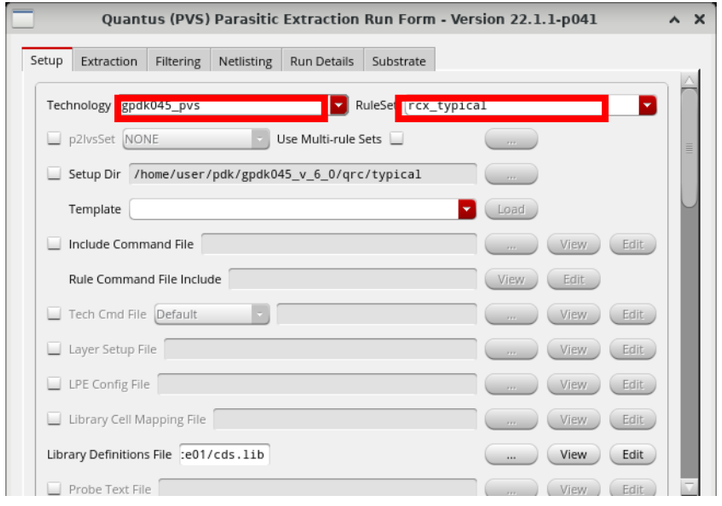


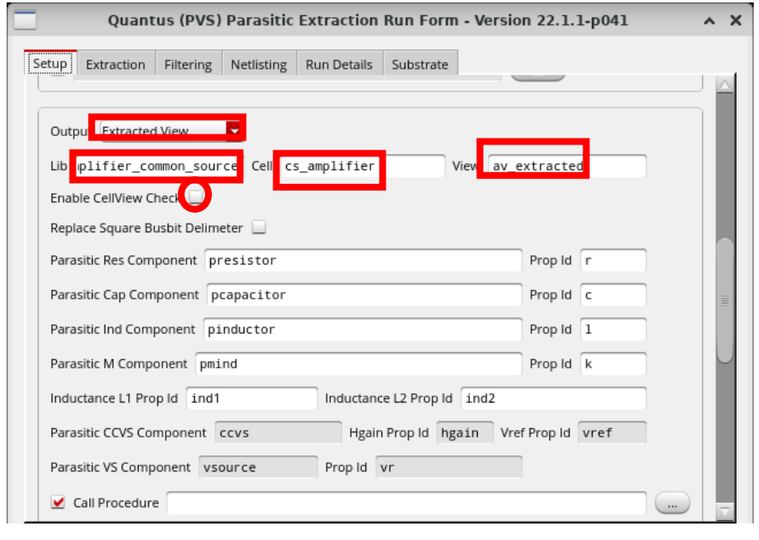
- It is important that the Directory points to the “svdb” folder created by the LVS Run, otherwise the tool would display an error when running QRC.
- Rule Set: LVS extraction and comparison rules used in the LVS run and needed for Quantus run.

Quantus (PVS) Parasitic Extraction *(continued)*

➢ **Setup**

- Select the Technology **gpdk045_pvs**.
- Select rcx_typical for the RuleSet.
- Output:
  - Extracted View
  - Lib: amplifier_common_source
  - Cell: cs_amplifier
  - View: av_extracted
- Disable the CellView Check.
- **Disable the Auto Accuracy Downgrade** (located at the lower half of the form).



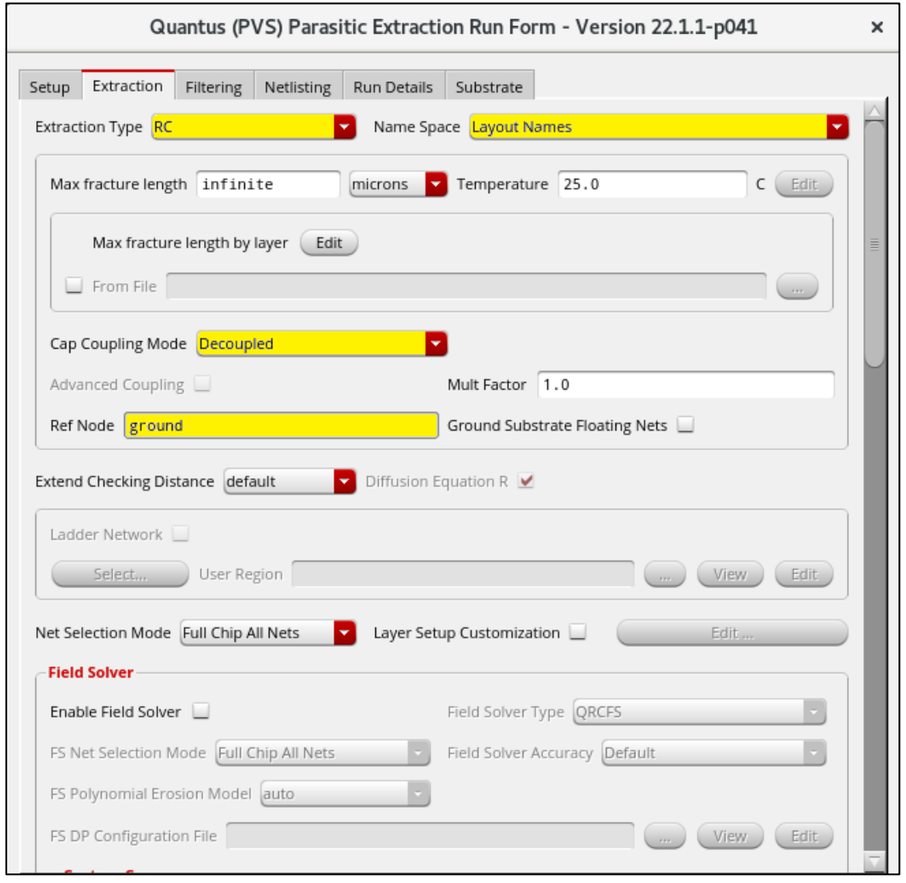


- The Setup Directory is set by default. The path to "../qrc/typical" might be different on your machine; however, it is found under the folder "pdk".

Quantus (PVS) Parasitic Extraction *(continued)*

➢ Extraction

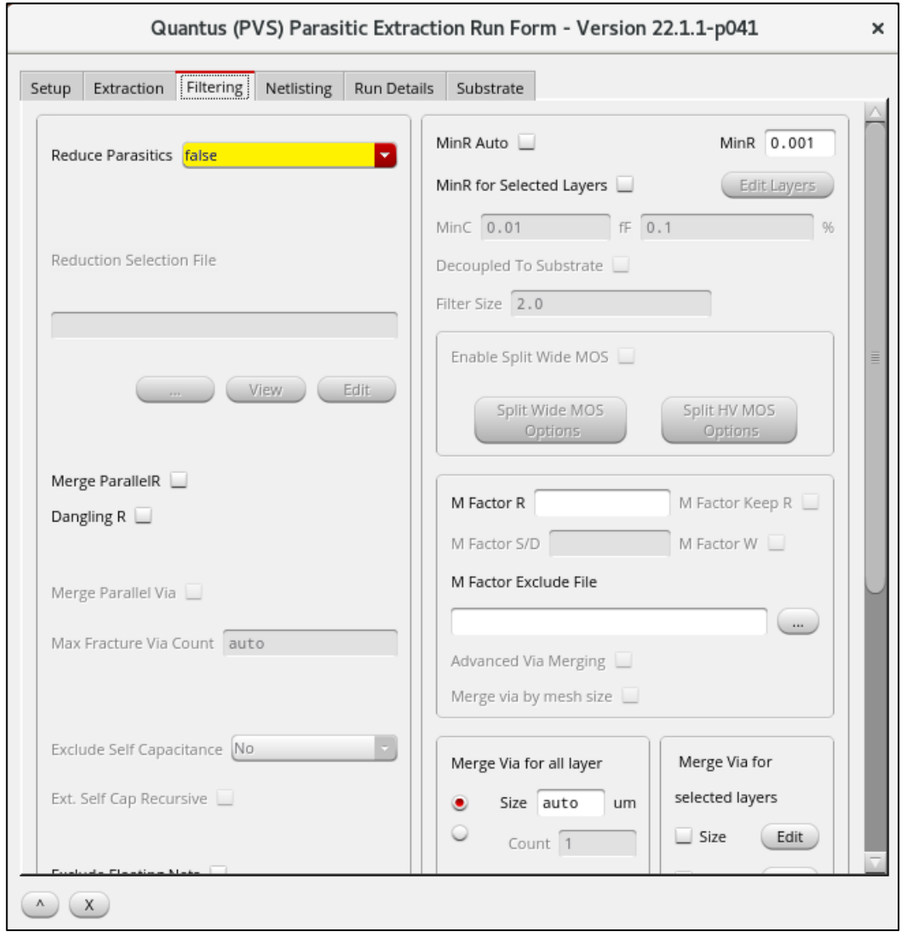
- Set the Extraction Type to **RC**.
- Set the Cap Coupling Mode to **Decoupled**.
- Set the Ref Node to **ground**.
- Make sure the Name Space is set to **Layout Names**.



Quantus (PVS) Parasitic Extraction *(continued)*

➢ Filtering

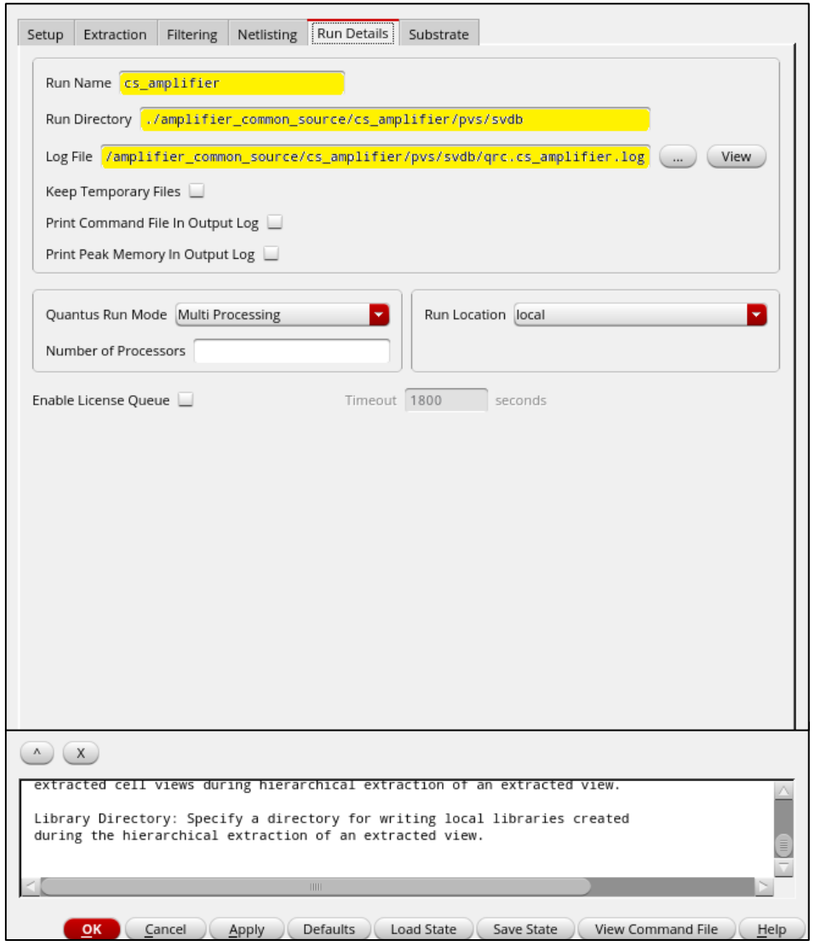
- Make sure the Reduce Parasitics is set to **false**.



Quantus (PVS) Parasitic Extraction *(continued)*

➢ Run Details

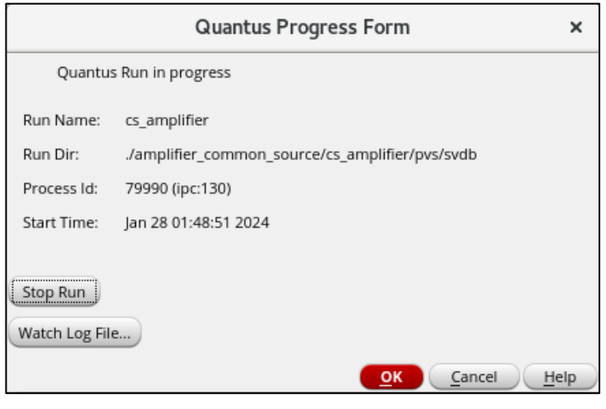
- The **Run Name, Run Directory,** and **Log File** should be set by default.
- Click **OK** to start the extraction.

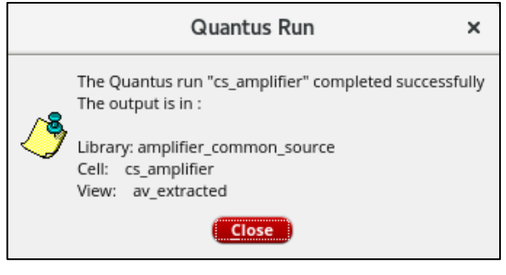


- Make sure the Run Directory is set correctly, it has to point to the “svdb” folder created by the LVS Run.

Quantus (PVS) Parasitic Extraction *(continued)*

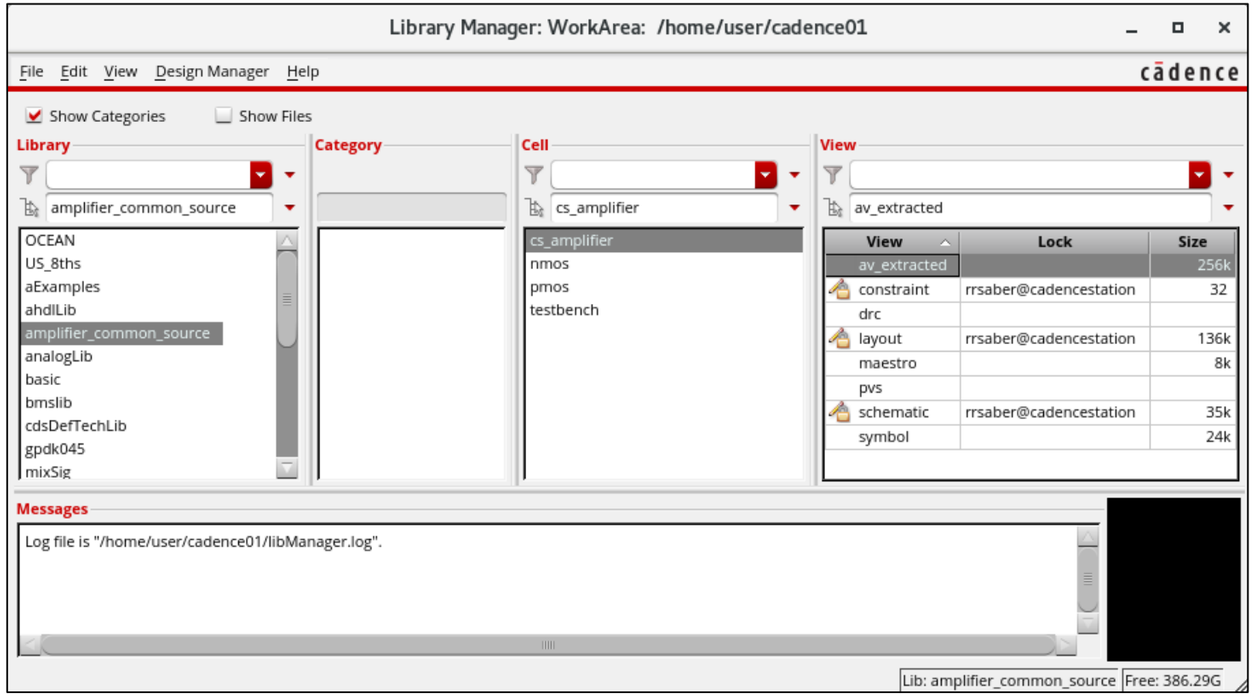
- The Quantus Progress Form opens at the bottom right of your screen.
- You can check the Log File by clicking on Watch Log File.
- After a while, the extraction should be done and the **Quantus Run** window will pop-up.
- Click Close.





Quantus (PVS) Parasitic Extraction *(continued)*

- Open the Library Manager and a new **View** should be available under the library amplifier_common_source called **av_extracted**.
- The **av_extracted** view is the layout that contains the parasitics.



Quantus (PVS) Parasitic Extraction *(continued)*

- If the parasitic are not shown, press **Shift+F**.
- The extracted view is the layout design showing the small parasitics (RC) and the folded transistors on top of each other.
- By zooming in, it is possible to see the parasitics.