

# Libre Silicon

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## Current Situation

What is bad..

# Image you like to manufacture your own Chip.

- You're going to a Foundry,
- signing at least 3 NDAs (Non-disclosure Agreements), one for the Process Kit, one for the Standard Cell Library and one for Purchase details,
- invest a lot of money for the Layout development and the Mask Set,
- and have some reasons to change the Foundry Service..

You're f\*cked

# Reasons are

- the technology is completely different,
- the Standard Cells are mostly different,
- the mask the does not leave the foundry,
- and even do not match another technology in another foundry.
- Well, you've burned the costs for layout and mask set.

What to do??

# Make your self independend

- design a open and free process.
- You can help if you like :-)



What happens so far?

- David Lanzendörfer opens a possibility to rent a Clean Room at Hong Kong University of Science and Technology,
- got some foundations,
- gave a Lightning Talk in Leipzig at the 34. Chaos Communication Congress.

- We developed the first Version of our 1um Libre Silicon process.
- We are working on the Standard Cell Library.
- We already hold a Tool Chain Hackathon.
- We are layout a first Test Wafer for technology parameter measurement.
- Currently re-viewed the Test Wafer and compress them now for more Chips per Wafer.

# Links:

- Process <https://github.com/libresilicon/libresiliconprocess>
- Test Wafer <https://github.com/chipforge/PearlRiver>
- Standard Cell Library <https://github.com/chipforge/StdCellLib>
- Tool Chain <https://github.com/leviathanch/qtflow>

What still left

# To Do:

- Shrink PearlRiver Test Wafer
- Next Review before ordering the Masks
- Documentation about what and how we like to measure Parameters
- Transfer Parameters into Spice BSIM3v3 models
- Manufacture a couple of Wafers and doing Measurement at HKUST
- Process refinement
- Finish Standard Cells
- Install process Foundry for mass production
- Manufacture first Microcontroller Chip in 2019

## Targets

# License:

- Free and Open Source - while real Hardware GPL or BSD does not work.
- Others like CERN we already evaluated.
- We like that everybody can use the Process (even in your Basement),
- including Universities and real foundries.



- Everybody should have the possibility to transfer own designs into other foundries.
- Foundries can compete in production cost and / or corporate.
- Usable for Education also, while even analog designs heavy depends on process parameters.

## Contacts

# Mumble:

- Every Sunday 21 p.m Hong Kong Time
- Server 109.109.202.102, Port 64738

# Mailing List:

- <https://list.o2s.ch/mailman/listinfo/libre-silicon-devel>

# Thanks!

**Dziekuje!**  
**Thank you very much!**

once again:

- Mailing List <https://list.o2s.ch/mailman/listinfo/libre-silicon-devel>
- Process <https://github.com/libresilicon/libresiliconprocess>
- Test Wafer <https://github.com/chipforge/PearlRiver>
- Standard Cell Library <https://github.com/chipforge/StdCellLib>
- Layout Software <https://github.com/leviathanch/qtflow>

You can help :-)

# The End