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UIB Universitat de les Illes Balears

OpenPDK MOSFET Matching Matrix IC

IHP OpenPDK Tape-out

Juan Pablo Martinez Brito CEITEC (BR)
Jorge Marin; Mauricio Montanares; Fernanda Quintana Muñoz and Krzysztof Herman

IEEE SSCS Electron Devices Society CAS

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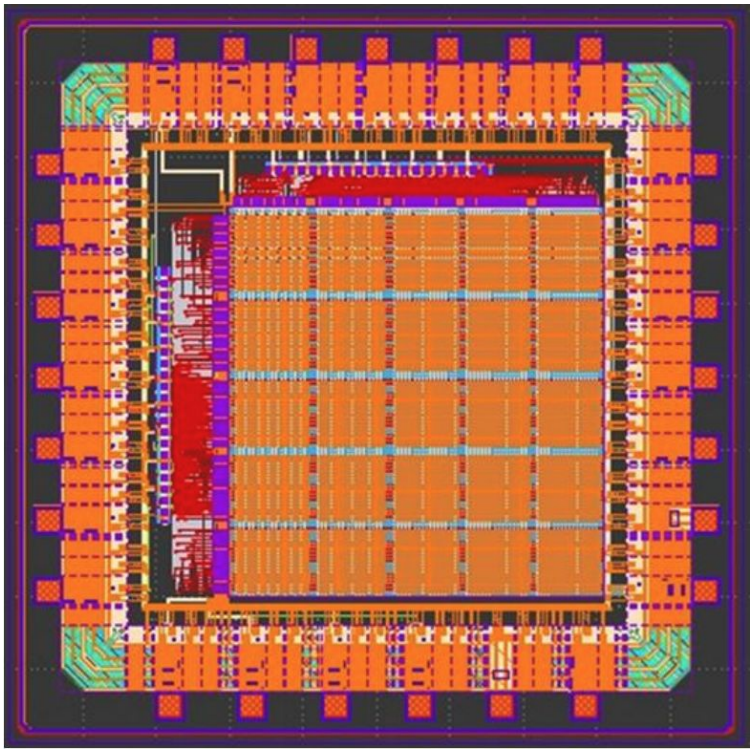

Complete 5×5 Matrix (25 subarrays)

- Each subarray contains 16×16 = 256 identical transistors
- Total devices per matrix: 25 × 256 = 6,400 devices
- W varies horizontally, L varies vertically
- Enables systematic mismatch analysis versus W, L, and W/L
- Scripts for automatic matrix test generation

[REF] Juan Brito, et al. “Statistical Analysis of MOSFET Extracted Parameters for n-MOS Mismatch Modeling”
<https://mos-ak.org/silicon_valley_2020/presentations/Brito_MOS-AK_SV_2020.pdf>
<https://github.com/IHP-GmbH/TO_Sep2025/tree/main/MissMatch>
F. Krummenacher "Matching Analysis of Analog Circuits" <https://www.mos-ak.org/lausanne/slides/fk_mos_ak.pdf>

Summary

- Addressable test structure that allows to measure devices using a parameter analyzer, power supplies, all connected to a PCB
- **No Probe Station Is Required**
- Structure designed to evaluate MOSFET mismatches
- Can be redesigned for any other purpose:
  - LDMOS,
  - Resistors,
  - Bandgaps, etc.
- IHP OpenPDK Tape-out <https://github.com/IHP-GmbH/TO_Sep2025/tree/main/MissMatch>