Compact Modeling at Infineon

MOS-AK in Munich
2018-03-13

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Modeling in Central Department

MDL: **Modeling**

- Responsible for CMOS incl. embedded flash and RF technologies
- Technology assessment (together with other departments)
- Technology target setting (together with other departments)
- Modeling (nom / variations (MonteCarlo) / corner)
- MHC = model hardware correlation
- RF-modeling
- Noise-parameter
- BEOL-extraction (metallization parasitics)
- Preparation for design flow usage
Automotive Power Modeling Group

Compact Models
› HiSIM-HV
› BSIM3/4/SOI
› VBIC, BJT
› JFET
› Sub-circuits
› VerilogA Models

Symbols: measurements
lines: simulations

Diode Reverse Recovery

V_{REV} = -5.16V
V_{REV} = -8.94V
V_{REV} = -16.40V
V_{REV} = -24.05V
V_{REV} = -31.63V

Self-Heating
Autom. S&C Radar Tech. Modeling Group

» In radar technology group, together with technology and RF circuit design experts

» Topics:
  - Active devices (SiGe HBTs: HICUM, BJT)
  - Passive devices: inductors, transformers, transmission Lines
  - Crosstalk mitigation, RF design methodology

![Image of semiconductor device and graph showing frequency parameters: $f_{\text{max}}$ and $f_T$. The area $A_E = 0.13 \times 2.73 \ \mu\text{m}^2$, BEBC.]}
Virtual Prototyping Group (IGBT)

Topics

- Data sheet simulations, Rth, Zth
- Electro-thermal simulations
- VP Roll-out on chip & module projects
- Transfer of models to new platforms
- L1 – L4 compact models IGBT/diode
- Model precision assessment
- Impact of fabrication tolerances

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CMC workgroup **Reliability Equations** is looking for candidates of aging equations for MOS, LDMOS and Bipolar. Effects like Hot Carrier Injection (HCI), Bias Temperature Instability (BTI), etc.
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