

Power MOSFET Model Standardization

[Report Presented at March 12, 2003 CMC Meeting]

- At December 2003 CMC meeting a team was formed to explore power MOSFET model standardization.
- Participants are Averill Bell (Agere), Michel Frei (Agere), Richard Cherne (Intersil), Bob Lomenick (Intersil), Dick Klaassen (Phillips), Seamus Power (ADI), Peggy Kniffin (Motorola), Peter Lee (Renesas), Yong Liu (TI), and Keith Green (TI/Lead)
- Participants provided a brief summary of their company's power MOSFET modeling needs.
- First team meeting (teleconference) was held on March 5, 2004.
 - Power MOSFET architectures and applications are widely diverse
 - The “one model” solution for all needs is not probable
 - Team will explore available public domain models and possible minor extensions to standard models.
 - Team will examine a forthcoming public-domain power MOSFET model from Philips to see how it compares with needs summaries.
 - Request CMC to consider adding a temperature node to the standard BSIM3 and BSIM4 models to facilitate dynamic heating simulations of power MOSFETs.

Power MOSFET Model Standardization

[Presented at July 1, 2004 Meeting]

- Team reviewed MOS Model 20.
 - Model includes charge dynamics of the drain extension region.
 - Model does not include the quasi-saturation (current-compression) effect. Philips currently has no plans to add this.
- Team inquired about release of TI's quasi-sat model.
 - Currently under development to improve scalability and convergence.
 - Will be implemented in Verilog-a.
 - TI's decision about releasing this to CMC members for evaluation for including it in the standard MOSFET model will be made later.

Power MOSFET Model Standardization

- Decision made to put this team into hibernation until model comes available to the public domain from TI or other provider.