

# BSIMSOI REQUIREMENTS

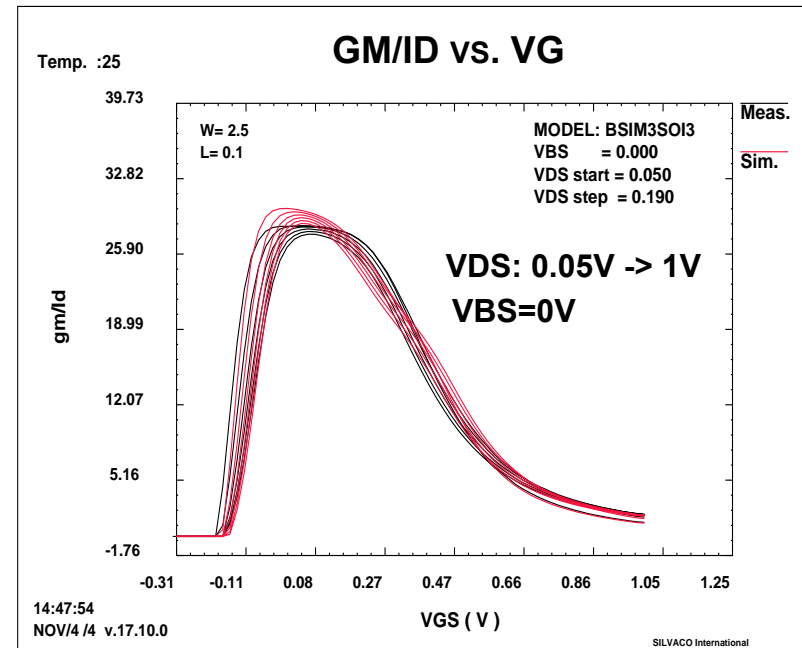
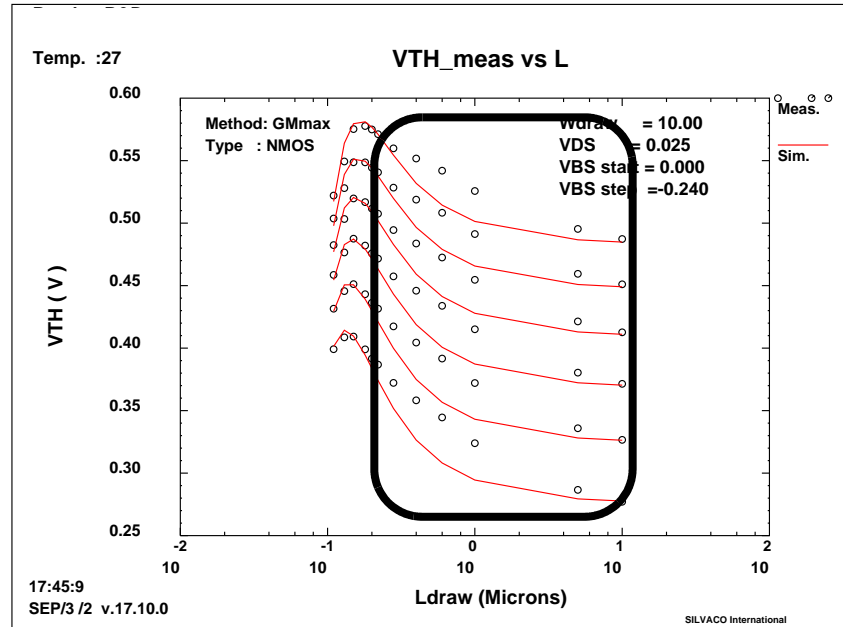
## FOR ADVANCED ANALOG AND RF TECHNOLOGIES (90NM, 65NM...)

SOI DEVICE MODELLING GROUP

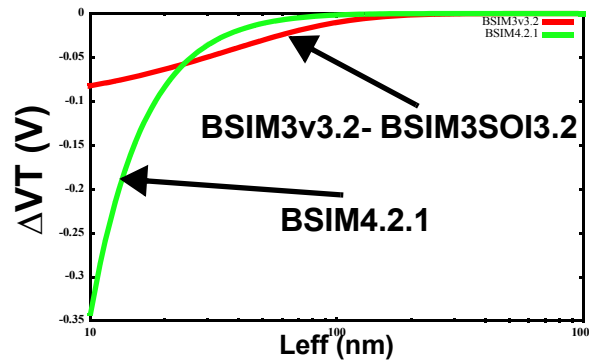
# BSIMSOI REQUIREMENTS

- ❑ **The actual BSIM3SOI3.2 model release is inaccurate for our applications in terms of current derivative (Gm, Gds), DIBL effect for long channel, short-channel effect and stress effect.**
  
- ❑ **For analog and RF SOI PD device modelling (90nm, 65nm ...), most of the BSIM4 features must be included in the BSIMSOI model which are**
  - DITS effect (Drain Induced Threshold Shift due to pocket implant for long channel) on VTH and Gds
  - New formulation of the early voltage for the Channel Length Modulation (CLM)
  - VBS-bias dependence (LPEB) on VTH and on the bulk charge effect (ABULK)
  - MINV parameter to improve accuracy of Gm, Gm/Id and Gm<sup>2</sup>/ID
  - Cosh formulation for short-channel effect and DIBL effect
  - Stress effect model
  - COXeff taking into account the finite charge thickness for I-V model
  
- ❑ **What's the development roadmap for the BSIMSOI model today ?  
BSIM4SOI, BSIM5SOI ?**

# BSIM3SOI3.2 MODEL (BC SOI TRANSISTORS)



## Short channel effect



BSIM3 expressions approaches a constant value when  $L_{eff} \rightarrow 0$