

NEED OF SELF-HEATING MODEL IN BSIM4.X

CR&D DEVICE MODELLING TEAM

SELF-HEATING IN MOS COMPACT MODEL

- ❑ **Self-Heating is one of the effects listed in state-of-art compact models such as BSIM5.**

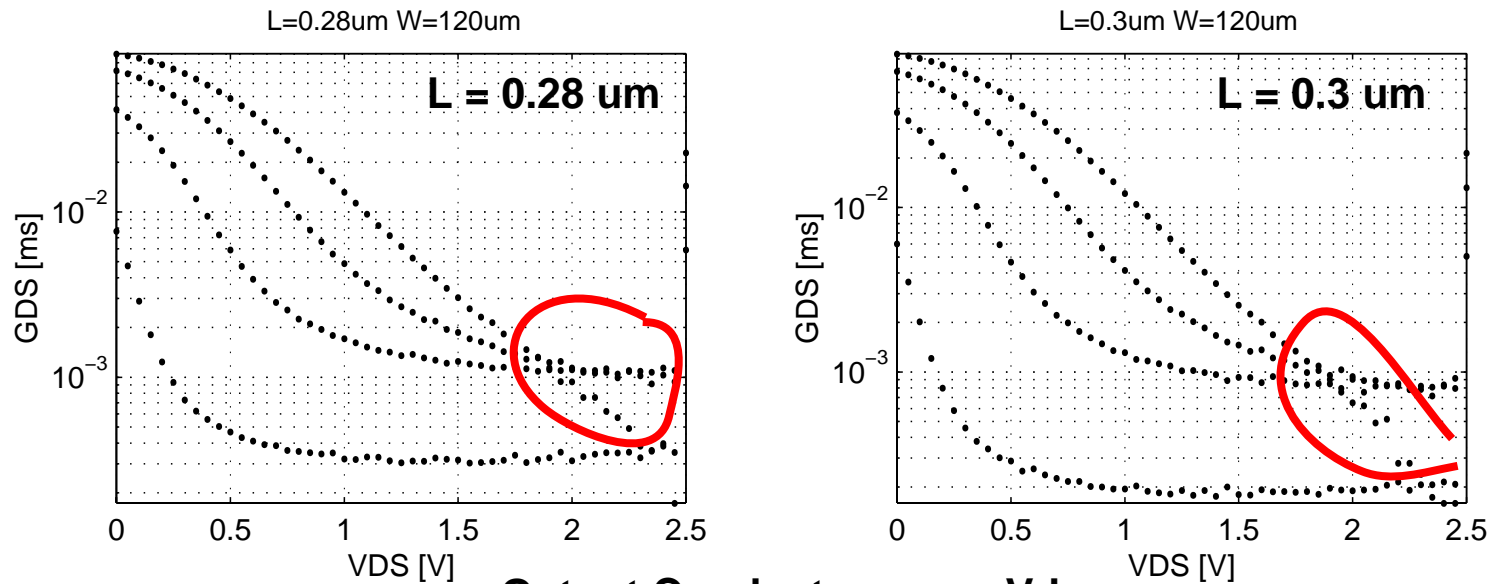
- ❑ **A Self-Heating model has been implemented in BSIM3SOI for SOI technologies.**

- ❑ **However, some of MOS devices available in current Bulk CMOS technologies do suffer from Self-Heating effects. For instance:**
 - I/O transistors for 1.8, 2.5 or 3.3V power supply (see Gds vs. Vds on next slide);
 - High Voltage MOS devices.

- ❑ **Today, BSIM4.x model is used to describe these devices.**

=> Implementation of a Self-Heating model in BSIM4.x is highly desirable.

SELF-HEATING IN CMOS 90nm I/O TRANSISTORS



Output Conductance vs. Vds

