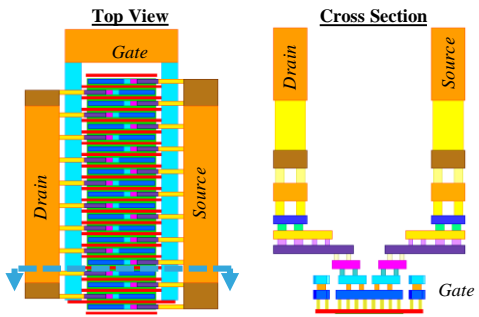
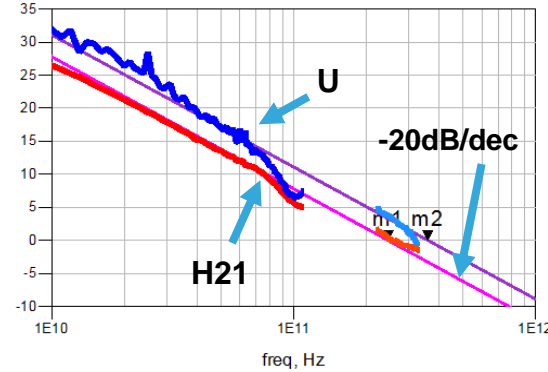


Enjoying remarkable analog/RF/mmW transistor performances and very wide range body biasing tuning schemes in 28FDSOI



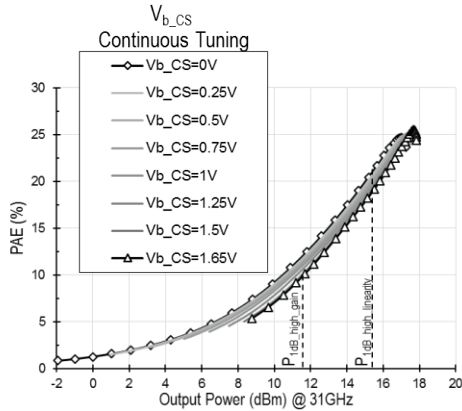
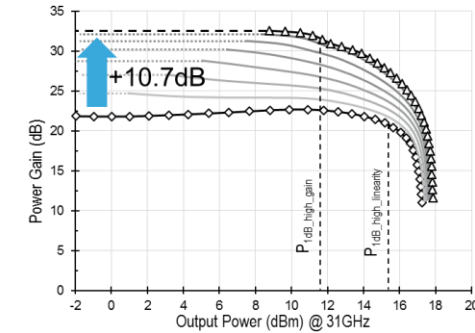
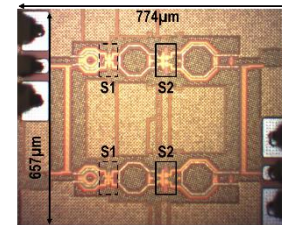
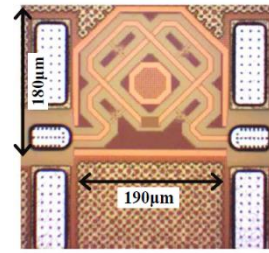
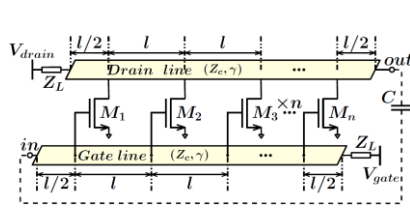
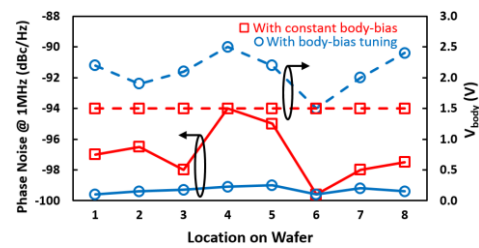
NLVT MOS in 10ML BEOL (Pcell up to Me1)

$L = 30\text{nm}$
 $W_{\text{finger}} = 800\text{nm}$
 $W_{\text{total}} = 16\mu\text{m}$
 $N_{\text{fingers}} = 20$
 $I_{\text{drain}} = 5.2\text{mA}$



	Simulation PCell	Simulation Pcell + Back End	Measurement
f_T	295 GHz	253 GHz	246 GHz
f_{max}	394 GHz	370 GHz	359 GHz

- **30GHz Balanced Power Amplifier for 5G application**
- **wide fine grain gain reconfigurability**
- Design techniques to improve bandwidth, isolation and power gain
- Fine grain power gain tuning with >10dB dynamic range, dynamic and continuous operating class switching thanks to body biasing
- No supplementary stage needed for gain control
- Robustness to temperature and process variations
- Highest figure of merit (FOM ITRS) around 30GHz



- **28FD-SOI Distributed Oscillator at 134 GHz**
- The highest Fosc topology proposed so far in a 28nm node
- Phase noise optimization through body bias tuning
- Oscillation frequency measurements, histogram over 8 locations on a wafer: <0.1% variation simulation vs measurements → Very small on wafer dispersion

