

### **NM6617 Advanced MOSEFT & Novel Devices**

Historical development of mainstream MOSFETs until today: economical, technological and physical fundamentals. Properties of long channel and short channel MOSFETs. Hot carrier effects, scaling rules, basic of charge carrier transport (quantum-mechanical, hydrodynamics, ballistics). Proposed new MOSFET structures (vertical MOSFETs, double-gate, fully-depleted MOSFETs). Hot-electron transistors, tunnelling transistors, low-dimensional devices, single-electron transistor, single-electron memories, quantum-electronics