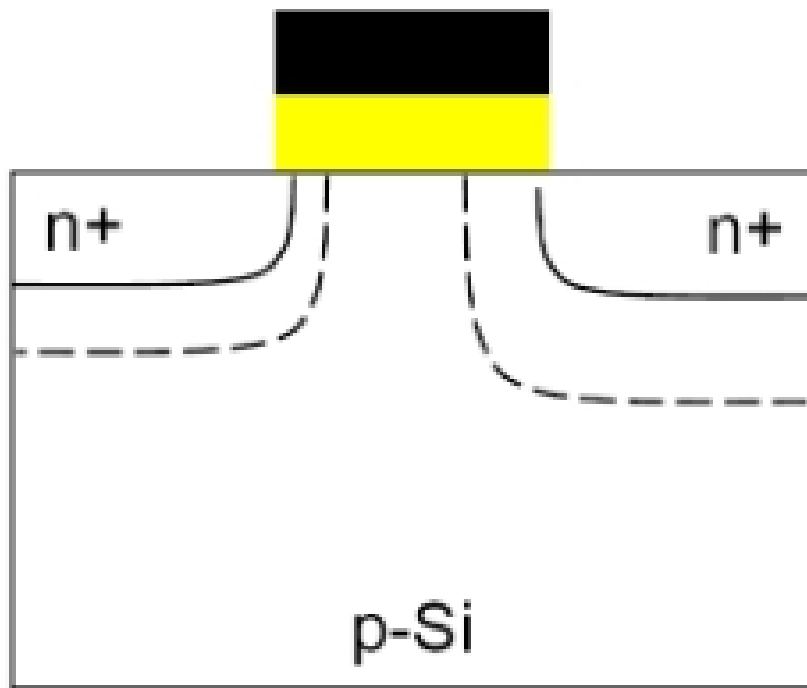
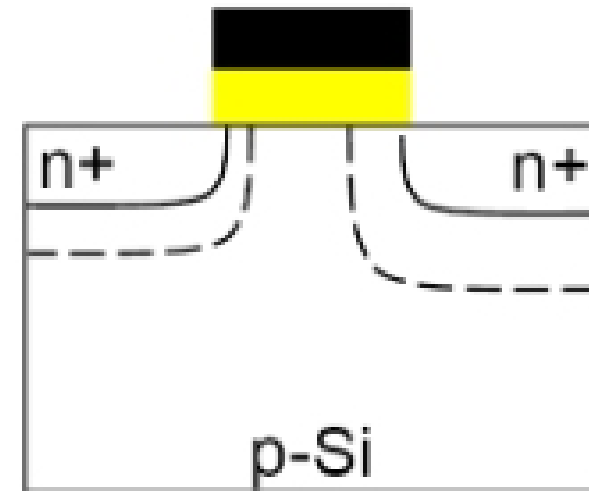


- S Takagi "On the Universality of Inversion Layer Mobility in Si MOSFET's: Part I-Effects of Substrate Impurity Concentration" IEEE TRANSACTIONS ON ELECTRON DEVICES, VOL. 41, NO. 12, DECEMBER 1994 2357

original device



scaled device



- dimensions reduced by κ
- area reduced by κ^2
- number per chip increased by κ^2



| | | | |
|------------|--------|---|--------------|
| Intel 4004 | (1971) | 2,250 transistors ($L \sim 5-10$ microns) | ~ 1 MHz |
| Itanium 2 | (2006) | $>1,700,000,000$ transistors ($L \sim 0.065$ microns) | ~ 2 GHz |