

## Essentials of MOSFETs

### Lecture 4.3: The ballistic MOSFET

#### Short Problem

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Modern MOSFETs deliver an on-current of about 1 milliamp per micrometer. Under on-state conditions, the number of inversion layer electrons at the VS is about  $10^{13}$  per  $\text{cm}^2$ .

- 1) What would be the on-current of a ballistic MOSFET with the same inversion layer density? (The appropriate effective mass to use is  $m^* = 0.19m_0$ .)