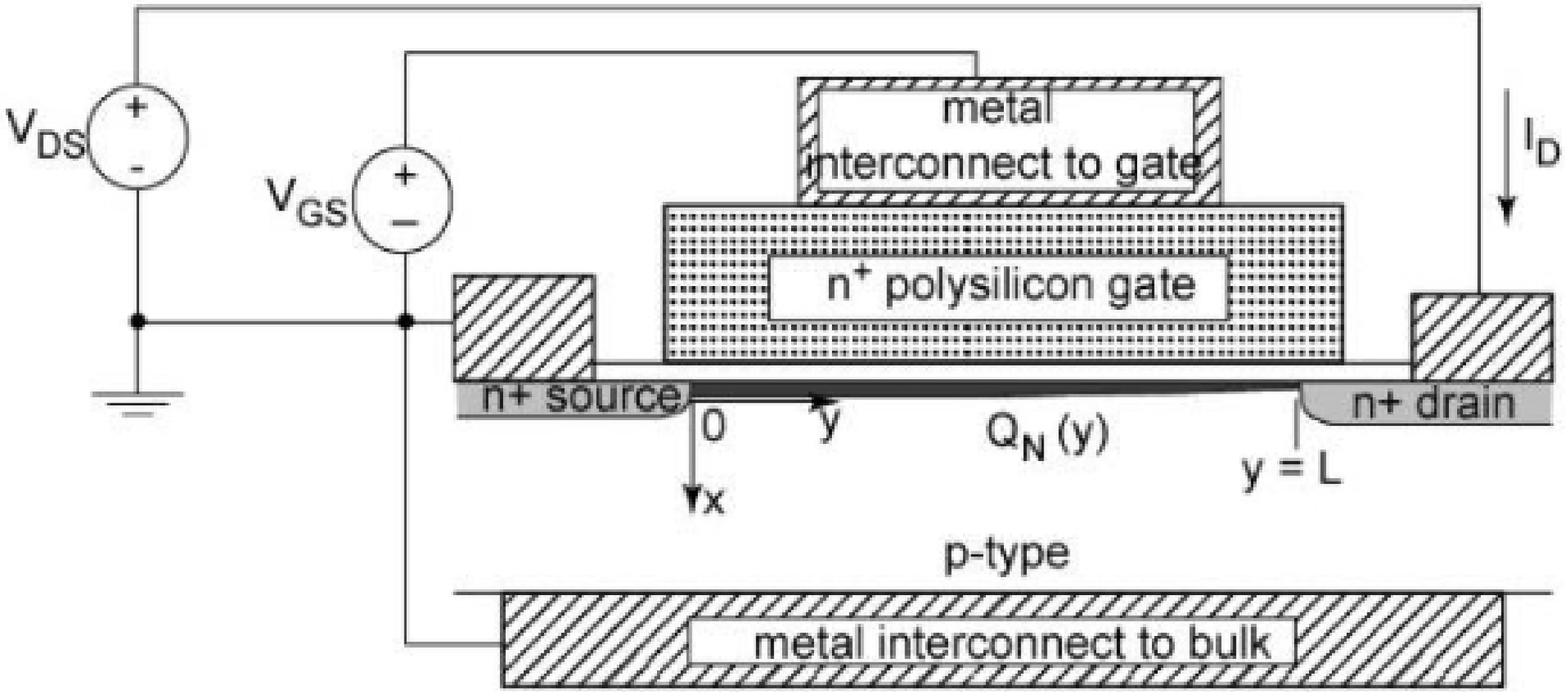
Lecture 14

- Last time:
  - MOS field effect transistor (MOSFET) current-voltage characteristics
- Today :
  - Square-law MOSFET model
  - Linear MOSFET model

Finding $I_D = f(V_{GS}, V_{DS})$

- Approximate inversion charge $Q_N(y)$: drain is higher than the source → less charge at drain end of channel



Inversion Charge

$$Q_N(y) \approx Q_N(y=0) + Q_N(y=L)$$

$$Q_N(y=0) = -C_{ox}(V_{GS} - V_{Tn})$$

$$Q_N(y=L) = -C_{ox}(V_{GD} - V_{Tn})$$

$$V_{GD} = V_{GS} - V_{DS}$$

Average inversion charge: