

## Essentials of MOSFETs

### Lecture 2.3: MOSFET IV Theory

#### Short Problem

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Consider an N-channel MOSFET with the following parameters:

Equivalent oxide thickness: 1.0 nm (assume dielectric constant of SiO<sub>2</sub>, 4.0)

Electron mobility:  $\mu_n = 250 \text{ cm}^2/\text{V}\cdot\text{s}$

MOSFET width:  $W = 1.0 \text{ }\mu\text{m}$

Channel length:  $L = 20 \text{ nm}$

$V_{GS} = V_{DD} = 1.2 \text{ V}$

$V_T = 0.3 \text{ V}$

- 1) What is the channel resistance in Ohms?