

Essentials of MOSFETs

Lecture 3.9: The VS Model Revisited

Short Problem

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In Lecture 3.9, we argued that:

$$\log_{10} I_{OFF} = c_1 + c_2 I_{ON} \quad (1)$$

Use the empirical expression valid for $V_{GS} > 0$

$$Q_n(V_{GS}) = -C_{inv} m (k_B T / q) \ln \left(1 + e^{q(V_{GS} - V_T) / m k_B T} \right) \quad (2)$$

and answer the following question.

- 1) Show that eqn. (1) is true and evaluate the constants, c_1 and c_2 .