



Linear regime, $V_{GS} > V_T, V_{DS} < V_{DSsat}$:

$$I_D = \mu_n C_{ox} \frac{W}{L} (V_{GS} - V_T) V_{DS}$$

Saturation regime, $V_{GS} > V_T, V_{DS} > V_{DSsat}$:

$$I_D = \frac{1}{2} \mu_n C_{ox} \frac{W}{L} (V_{GS} - V_T)^2$$

Where L and W are the gate dimensions, μ_n is the electron mobility, C_{ox} is the capacitance per unit area of the gate, and V_T is the threshold voltage.
 $V_{DSsat} = V_{GS} - V_T$

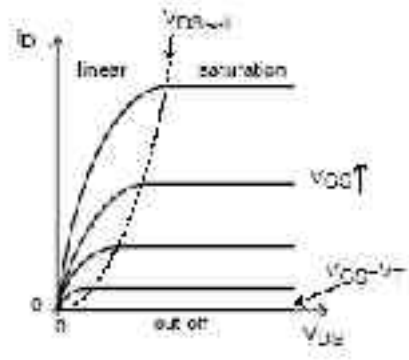


Figure 1: Sketch of ideal output characteristics of an n-channel MOSFET.

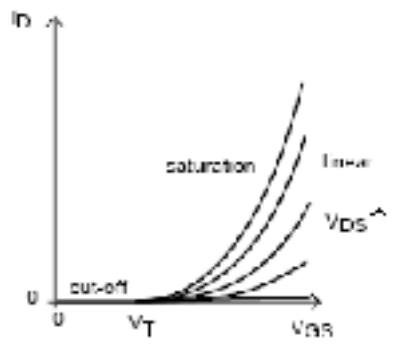


Figure 2: Sketch of ideal transfer characteristics of an n-channel MOSFET.