





耗尽型特性:  $i_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2$

$$g_m = \frac{\partial i_D}{\partial V_{GS}} \bigg|_Q = -\frac{2I_{DSS}}{V_P} \left(1 - \frac{V_{GSQ}}{V_P}\right) = -\frac{2}{V_P} \sqrt{I_{DQ} I_{DSS}}$$

增强型特性:  $i_D = I_{D0} \left(\frac{V_{GS}}{V_T} - 1\right)^2$

$$g_m = \frac{\partial i_D}{\partial V_{GS}} \bigg|_Q = \frac{2I_{D0}}{V_T} \left(\frac{V_{GSQ}}{V_T} - 1\right) = \frac{2}{V_T} \sqrt{I_{DQ} I_{D0}}$$