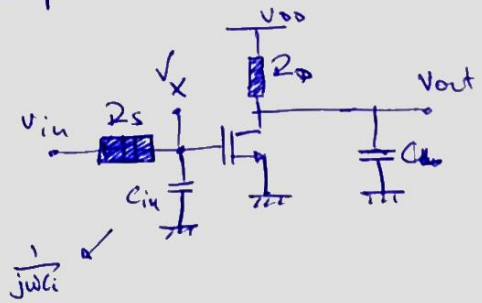
$$A_v = \frac{-g_m R_D}{1 + j\omega R_D C_L}\Bigg|_{\omega_0 = \frac{1}{R_D C_L}}$$ ← Resposta para baixas

→ A frequência do primeiro polo da resposta em frequência fica em $f_0 = \frac{1}{2\pi R_D C_L}$

Exemplo 4:

Suponha o circuito



A_v

$V_{out} = -g_m (R_D \| C_L) V_x$

$V_{out} = -g_m (R_D \| Z_{CL}) \frac{Z_{in}}{R_S + Z_{in}} V_{in}$

$$A_v = \frac{V_{out}}{V_{in}} = -g_m \frac{Z_{2D} Z_{CL}}{Z_{2D} + Z_{CL}} \frac{Z_{in}}{R_S + Z_{cin}}$$

$$= -g_m \frac{R_D}{1 + j\omega R_D C_L} \cdot \frac{\frac{1}{j\omega C_{in}}}{R_S + \frac{1}{j\omega C_{in}}}$$

$$A_v = -g_m \cdot \frac{R_D}{(1 + j\omega R_D C_L)} \cdot \frac{1}{(1 + j\omega R_S C_{in})}$$

$$A_v = \frac{-g_m R_D}{(1 + j\omega R_D C_L)(1 + j\omega R_S C_{in})}$$