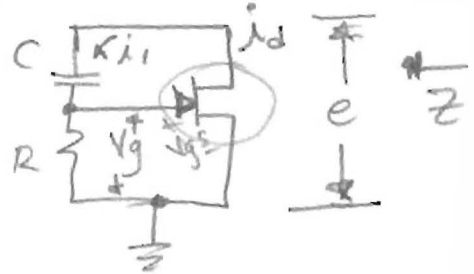
de reactancia




$$Z = \frac{e}{i_d} \qquad \text{pero } i_d = g_m V_g$$

$$\text{y } V_g = \frac{R}{R - jX_C} e$$

entonces:

$$Z = \frac{e}{g_m\left(\frac{R}{R-jX_C}e\right)} = \frac{R - jX_C}{g_m R}$$

$$Z = \frac{1}{g_m} - j\frac{X_C}{g_m R}$$

si $R << X_C$

entonces:

$$Z \cong -j\frac{X_C}{g_m R} = -j\frac{1}{g_m(2\pi f_o C)R}$$

$$\boxed{Z = -j\frac{1}{2\pi f_o C_{eq}}} \qquad \text{donde } \boxed{C_{eq} = g_m R C}$$

$$\text{y } g_m = \frac{2I_{DSS}}{|V_P|}\left(1 - \frac{V_{GS}}{V_{TO}}\right)$$

Para TBJ se sigue el mismo procedimiento, resultando:

$$Z = -j\frac{1}{2\pi f_o C_{eq}}$$

donde $\boxed{C_{eq} = \frac{\beta R C}{\beta r_e + R}}$