For the op-amp of the figure:

Estimate the amplifier Gain-Bandwidth product.

\[ \frac{G_m}{C} = \frac{(10\text{uf}/27\text{mv})}{60\text{pf}} \approx 1E6 \]

Estimate the Amplifier slew rate.

\[ \frac{\text{d}v_o}{\text{d}t} = \frac{I_{\text{max}}}{C} = \frac{20\text{ua}}{60\text{pf}} = 0.33\text{v/us} \]

By simulation:

Plot the amplifier frequency response in DB between 10Hz and 10MHz.

Check the amplifier Gain-Bandwidth product at 1KHz and 100KHz.

At 100Hz \( Av = 1E4 \) \quad Gain Bandwidth = 1E6
At 100KHz \( Av = 1E2 \) \quad Gain Bandwidth = 1E6

Find the amplifier unity-gain frequency. 0.9MHz

Find the amplifier phase margin. \( 180-115 = 65^\circ \)

Find the amplifier gain margin. \( -29\text{DB} \) at 16.5MHz

Connect the amplifier as a Source Follower and find the amplifier slew rate with a 1V pulse having a rise time of 10ns.

\[ \text{Rise Time} = \frac{(1-0.2)^V}{(4-1.2)} = 0.29^V/\text{us} \]
Remove the 60pf capacitor.
Find the amplifier unity-gain margin. 13MHz
Find the amplifier phase at the unity gain frequency -155°
Connect the amplifier as a Source Follower and plot the response of the amplifier to a unit step.