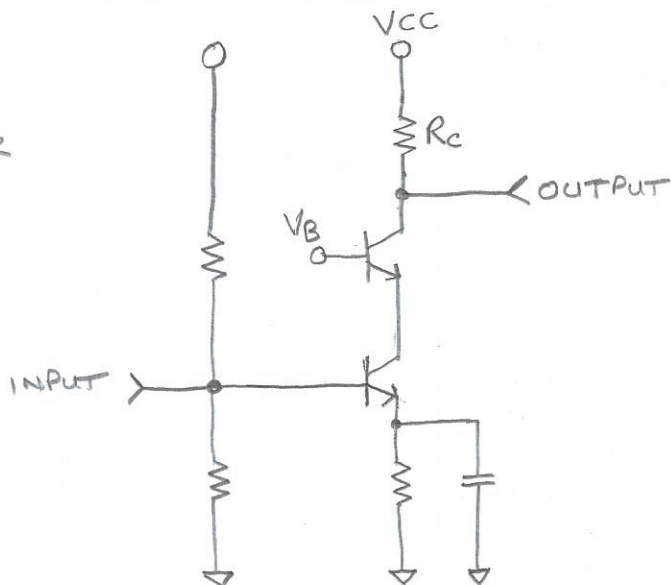
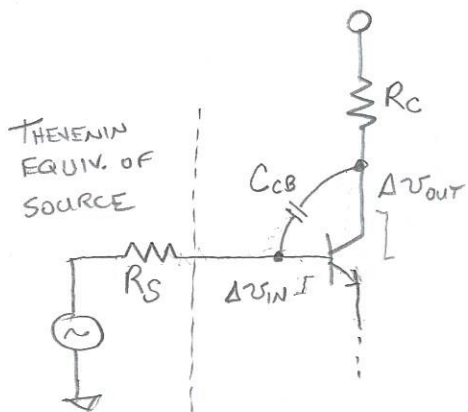


- COMBINATION OF CE AMPLIFIER AND CB AMPLIFIER
- GAIN \approx CE AMPLIFIER
- USED MAINLY TO REDUCE THE MILLER EFFECT



THE MILLER EFFECT



- MAIN BW LIMITING FACTOR
- C_{CB} IS MAGNIFIED BY GAIN
- BW LIMITED BY R·C FILTER ACTION OF R_S AND THE "MAGNIFIED" C_{CB}
- INPUT CAPACITANCE DUE TO C_{CB} LOOKS LIKE

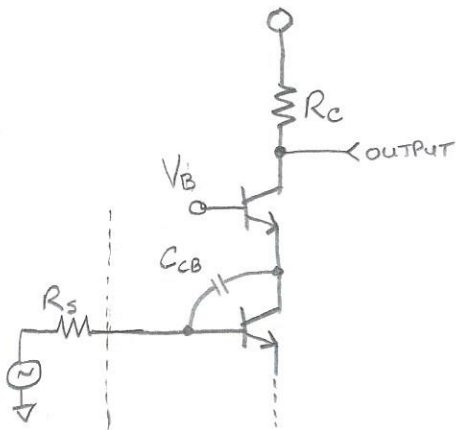
$$g_m = \frac{I_c}{V_T} = \frac{1}{r_e}$$

$$A_v = -g_m R_c$$

$$C_{IN} = (|A_v| + 1) C_{CB}$$

CASCODE TO THE RESCUE

W2AEW



- CE STAGE GAIN IS $-g_m \cdot R_{IN-CB}$

$$R_{IN-CB} = r_e = \frac{1}{g_m}$$

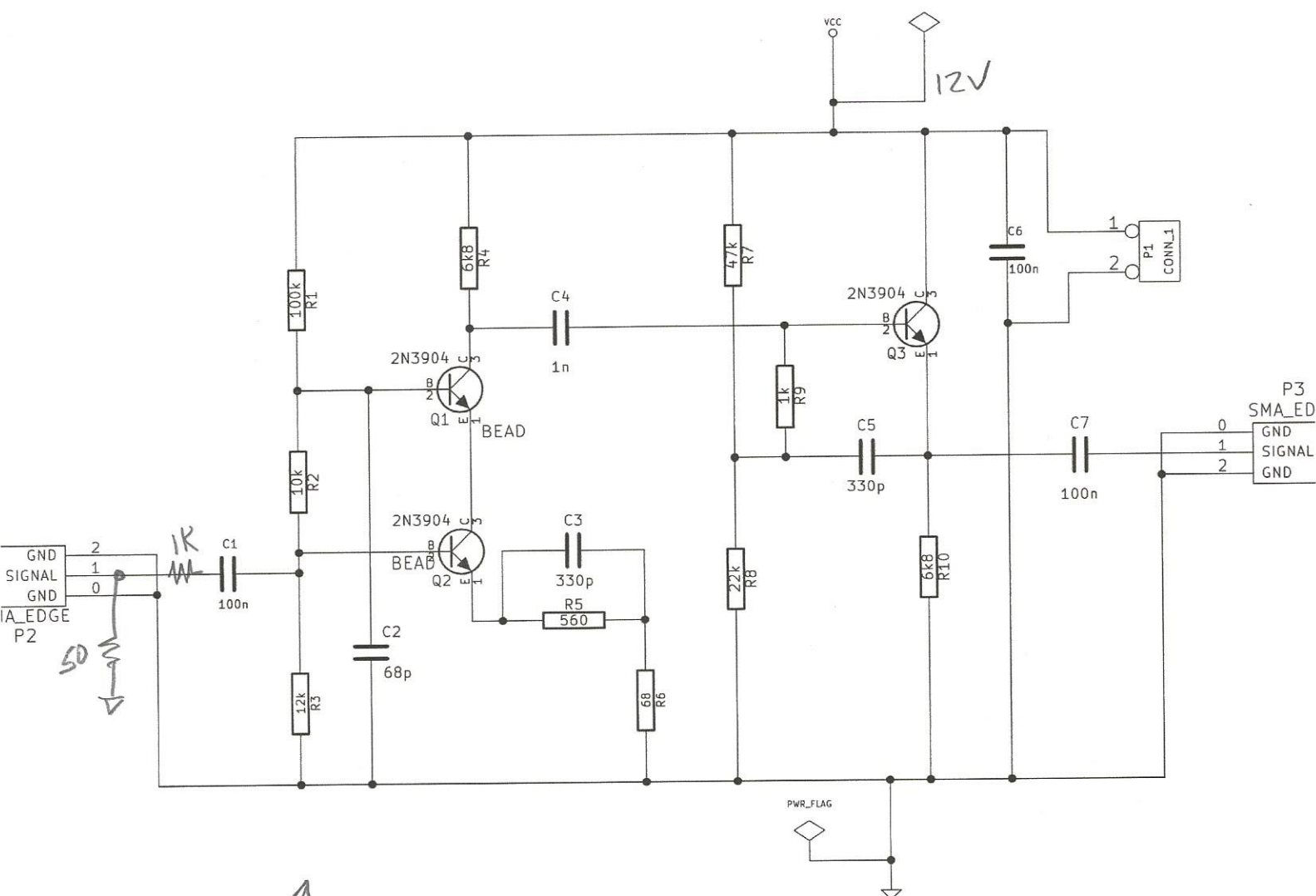
$$\text{THUS: } A_{V_{CE}} = -g_m \cdot \frac{1}{g_m} = -1$$

C_{CB} ONLY MAGNIFIED BY 2

- CB STAGE DOESN'T SUFFER FROM THE MILLER EFFECT

$$- A_{V_{CB}} = g_m \cdot R_C$$

THUS, OVERALL GAIN IS $\approx -g_m \cdot R_C$



SCHEMATIC OF MARCUS' PCB (NOT MY DESIGN)
 SEE MARCUS' BLOG FOR MORE INFO
 (LINK IN VIDEO NOTES ON YOUTUBE)