

IDEAL AC OP-AMP ASSUMPTIONS AND REALITY

1. Infinite open-loop voltage gain; $\therefore v_+ - v_- = v_{id} = 0$
2. Infinite open-loop bandwidth
3. Infinite input resistance at either input terminal; $\therefore i_+ = 0$, and $i_- = 0$
4. Zero output resistance
5. Infinite output current capability
6. Infinite slew rate
7. Infinite common mode rejection
8. Infinite power supply rejection
9. Infinite output voltage range [not limited by $-V_{EE} \leq v_o \leq V_{CC}$]

IDEAL DC OP-AMP ASSUMPTIONS AND REALITY

1. Zero input bias currents; $\therefore I_+ = 0$, and $I_- = 0$
2. Zero input offset currents; $\therefore I_+ - I_- = 0$
3. Zero input offset voltage; $\therefore V_+ - V_- = 0$

THE GOLDEN RULES of OP-AMP BEHAVIOR

[from Horowitz & Hill, page 177]

1. The output attempts to do whatever is necessary to make the voltage difference between the inputs zero. [The output “looks” at the input terminals and swings the output terminal around so that the external feedback network brings the input differential to zero, if possible.]
2. The inputs draw no current.

