Structured Electronic Design

Design Procedure
Negative Feedback Amplifier Types

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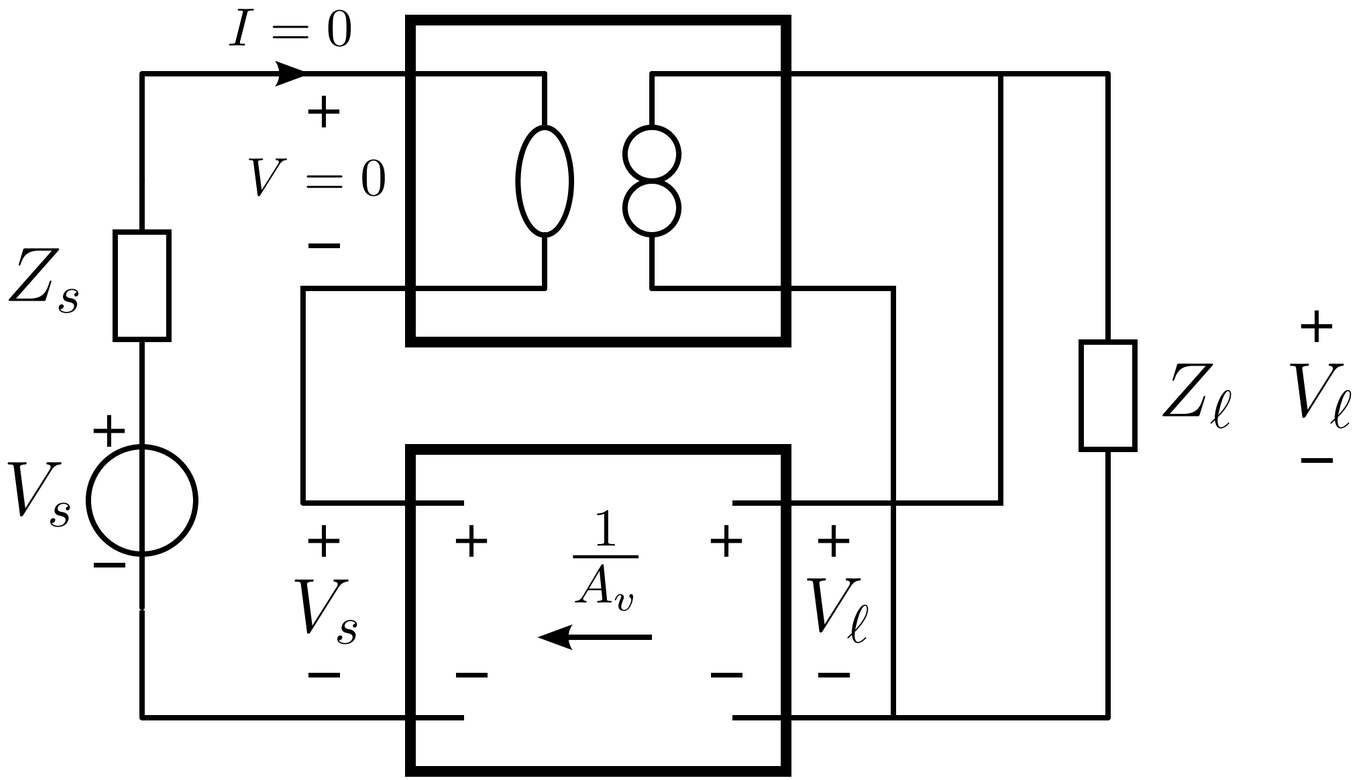
The Procedure

1. Measure the load signal (V or I)
   a. Voltage should be measured across (in parallel with) the load
   b. Current should be measured through (in series with) the load
2. Design a network that generates of copy of the source signal (V or I) from the measured load signal
   a. The transfer of this network is the reciprocal of the desired source-to-load transfer
3. Subtract the copy from the source signal
   a. In case of a voltage source signal, the signal source and the output of the feedback network should be connected anti-series
   b. In case of a current source signal, the signal source and the output of the feedback network should be connected anti-parallel
4. Nullify the difference
   a. In case of a voltage source signal, a nullator closes the loop of the above anti-series connection
   b. In case of a current source signal, a nullator is placed in parallel with the above anti-parallel connection
   c. In case of a voltage load signal, a norator is placed in parallel with the load
   d. In case of a current load signal, a norator closes the loop of the series connection of the load and the input of the feedback network

Negative Feedback Voltage Amplifier

Nullor is ideal controller

Nullator Norator



Starting point

We would like to establish a transfer:

$$\frac{V_\ell}{V_s} = A_v$$

1. Measure the voltage across the load
2. Generate a copy of the source voltage from V_ℓ
3. Subtract the copy from the source voltage
4. Nullify the difference

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