

# Feedback and its Applications

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# TYPES OF NEGATIVE FEEDBACK:

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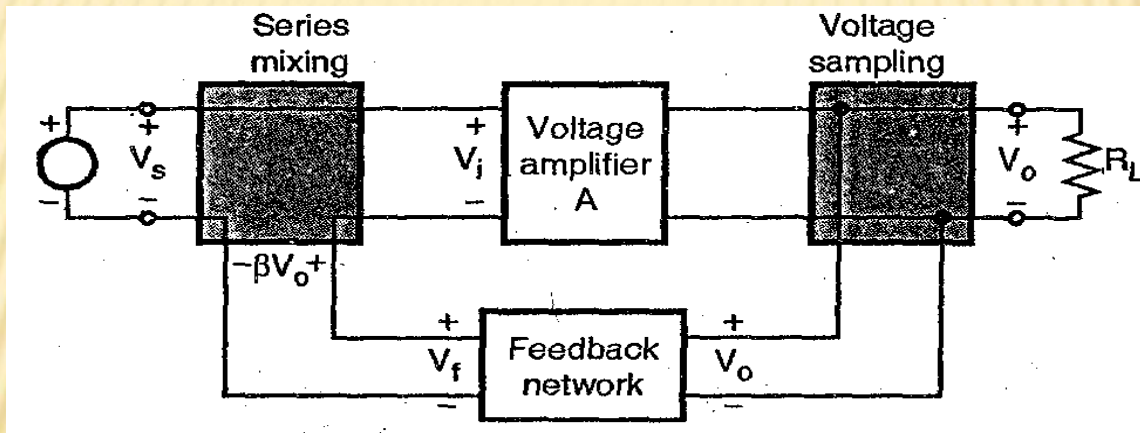
- + Depending on the type of sampling and mixing networks, the feedback amplifiers are classified into four categories:
  - × Voltage series feedback
  - × Current series feedback
  - × Current shunt feedback
  - × Voltage shunt feedback

# VOLTAGE SERIES FEEDBACK

Therefore,

voltage series feedback = voltage sampling + series mixing

The voltage series feedback is present in the voltage amplifiers.



A transistor amplifier which uses the voltage series feedback is the common collector or emitter follower amplifier:

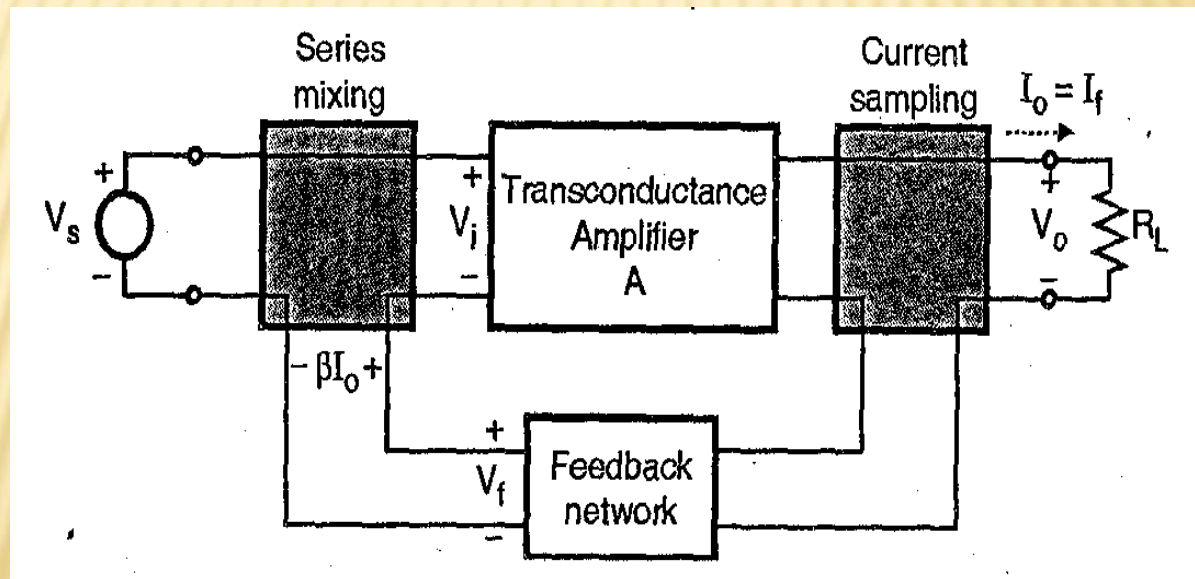
1. A common collector (or emitter follower) amplifier using BJT.
2. A common drain (or source follower) amplifier using FET.

# CURRENT SERIES FEEDBACK

Therefore

Current sampling + Series mixing.

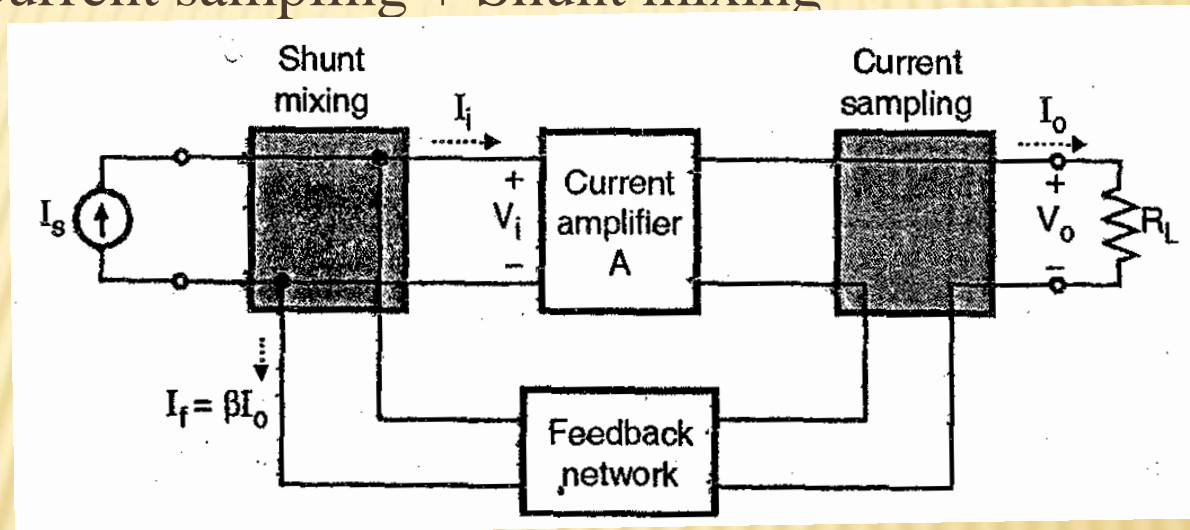
- ✘ Current series feedback is present in the transconductance amplifiers.



# CURRENT SHUNT FEEDBACK:

- ✘ This is a combination of current sampling and shunt mixing. The block diagram of a feedback amplifier with current shunt feedback is shown in Fig.

Current sampling + Shunt mixing



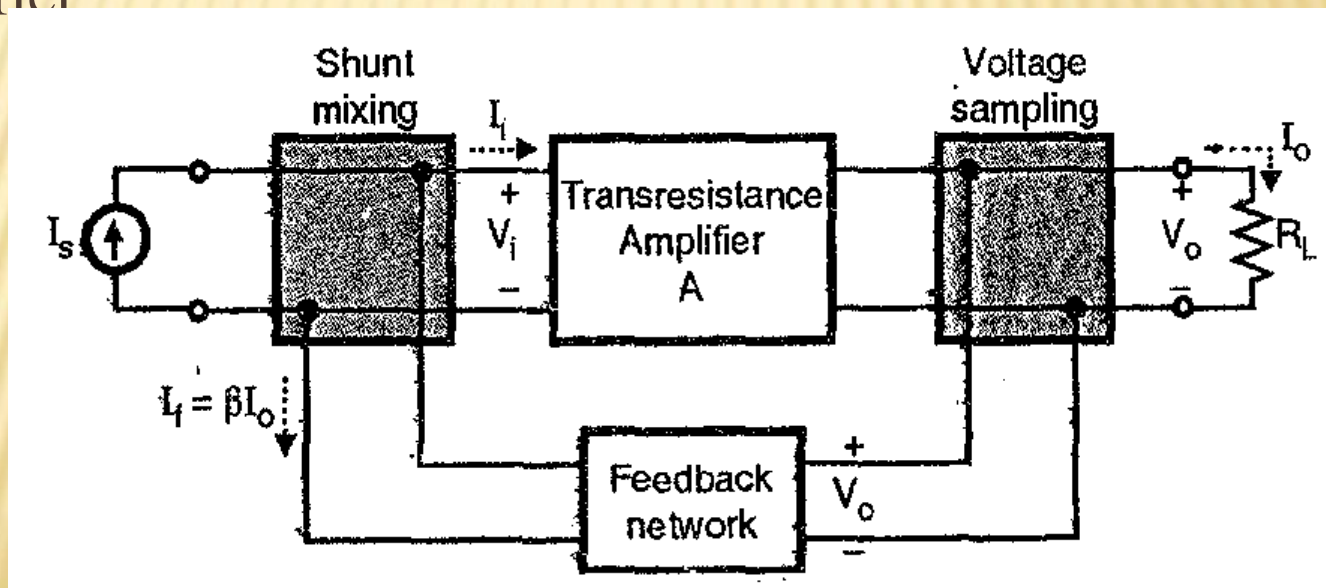
- ✘ Current shunt feedback is present in the current amplifiers.

# VOLTAGE SHUNT FEEDBACK

- ✗ The block diagram of an amplifier with voltage shunt feedback amplifier is shown in Fig.

Voltage Shunt Feedback = Voltage Sampling + Shunt Mixing.

- ✗ The voltage shunt feedback is present in the transresistance amplifier



# ADVANTAGES & DISADVANTAGES

## Advantages

- ✗ Negative feedback stabilizes the gain of the amplifier.
- ✗ Input resistance increases for certain feedback configurations.
- ✗ Output resistance decreases for certain feedback configurations.
- ✗ Operating point is stabilized.

## Disadvantage

- ✗ Reduction in gain.

## Applications of negative feedback

- ✗ In almost all the electronic amplifiers.
- ✗ In the regulated power supplies.
- ✗ In amplifiers (amplifiers having a large bandwidth)



# OSCILLATORS V/S AMPLIFIER

<i>Amplifier</i>	<i>oscillator</i>
1. Negative feedback is applied.	1. Positive feedback is applied.
2. It strengthens the input signal without any change in frequency.	2. It strengthen the input signal causing change in waveform.
3. Require an external wave signal to be applied.	3. It just require a dc signal.