



# ELECTRONIC CIRCUITS

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# FEEDBACK AMPLIFIERS

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## DEFINITION:

The amplifier in which a part of output is sampled and fed back to the input of the amplifier is called feedback amplifier.

## TYPES:

Positive feedback:

When input signal and part of output signal are in phase, the feedback is called positive feedback.

## Negative Feedback:

When the input signal and part of output signals are in out of phase ,the feed back is called Negative feedback.

## APPLICATIONS:

Positive Feedback: used in oscillators

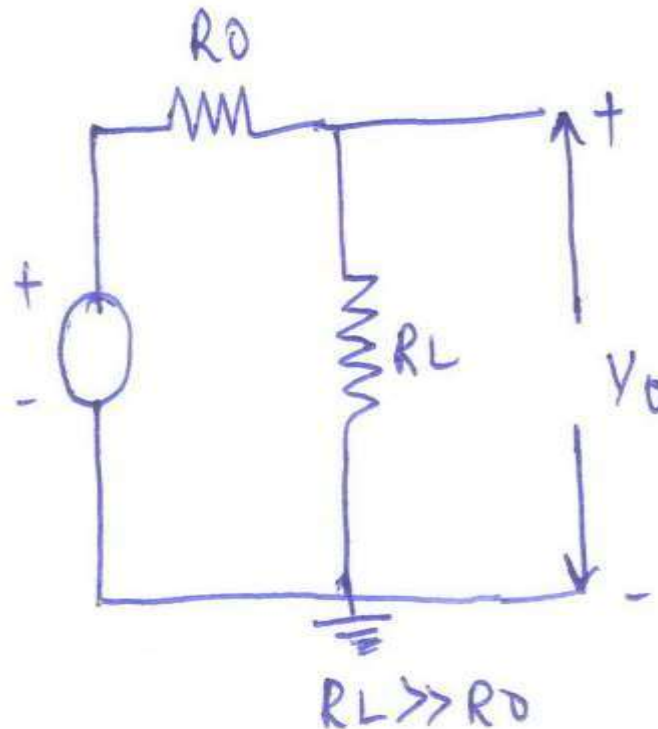
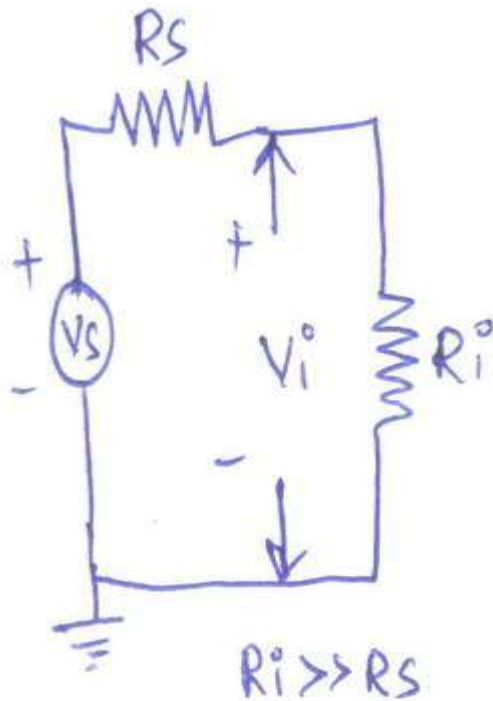
Negative Feed back: used in amplifiers

# CLASSIFICATIONS OF AMPLIFIERS

- Voltage amplifiers
- Current amplifiers
- Transconductance amplifiers
- Transresistance amplifiers

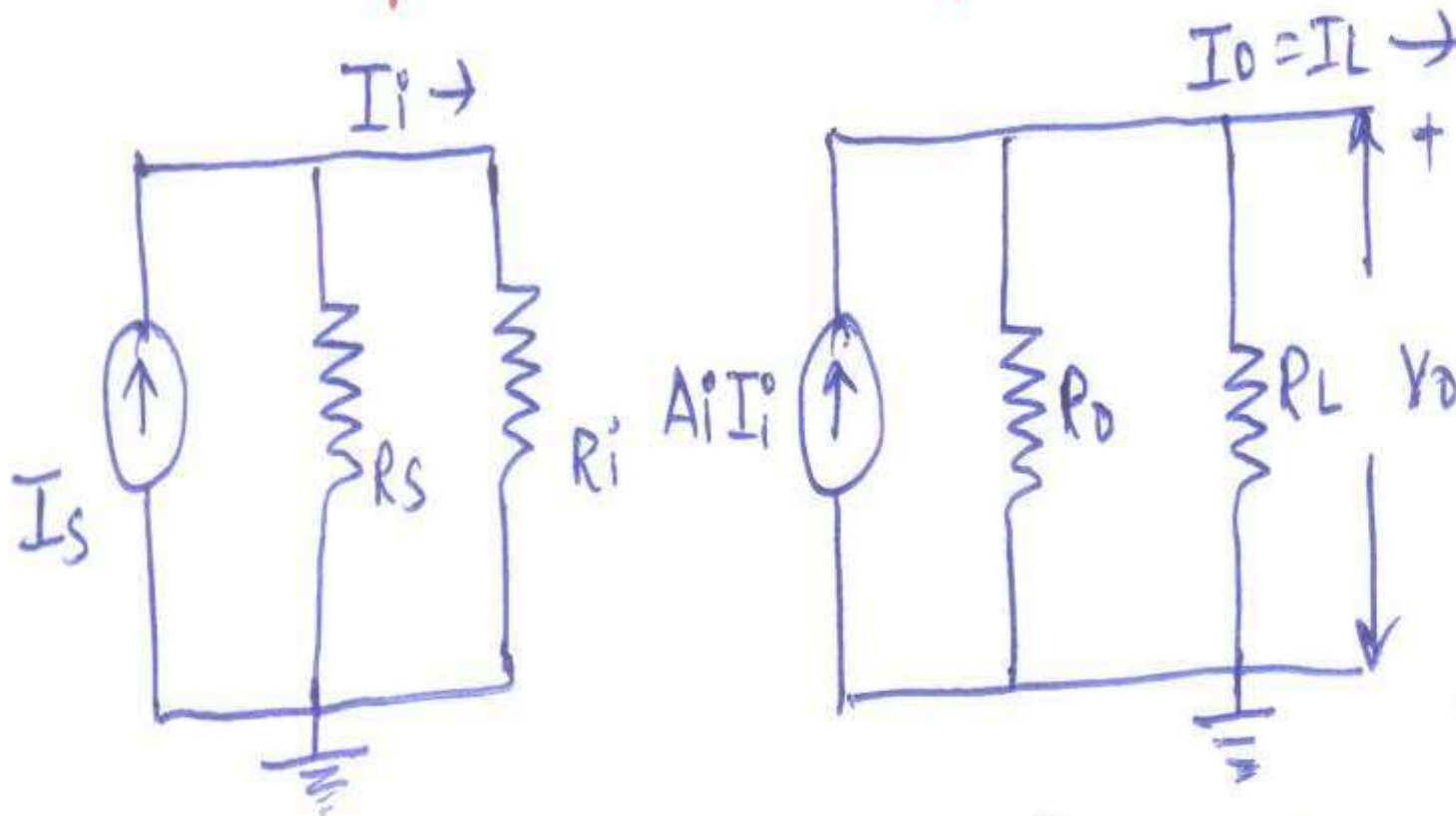
**VOLTAGE AMPLIFIERS** The voltage output proportional to the voltage input, and proportionality depends on the magnitude of the source and load resistances

*Thevenin's equivalent circuit of a voltage amplifier*



**CURRENT AMPLIFIERS** The current output proportional to the input current, and proportionality independent on source and load resistances

*Norton's equivalent circuit of a current amplifier*

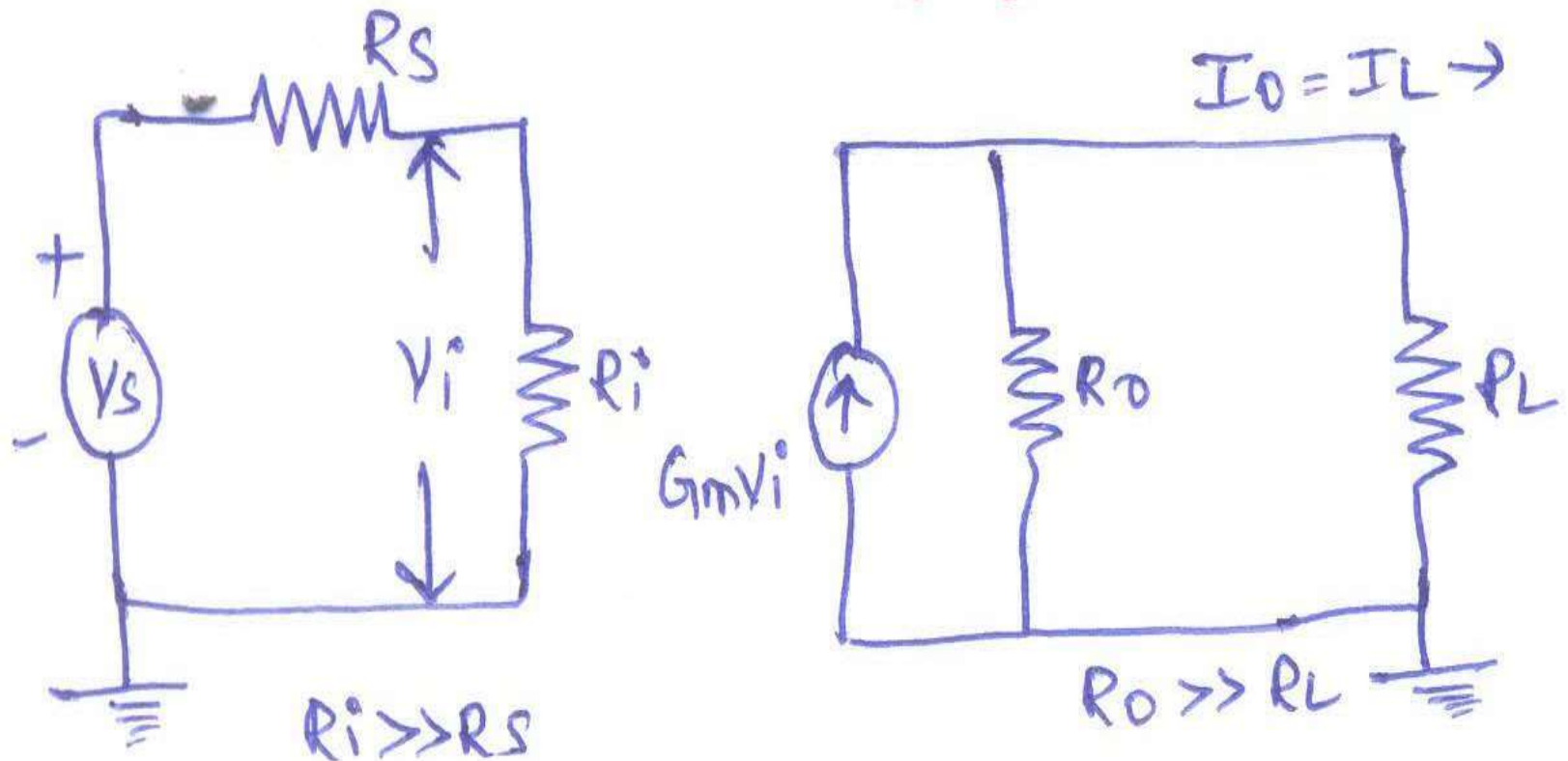


$R_i \rightarrow 0$  (or)  $R_i \ll R_s$

$R_L \ll R_o$  (or)  $R_o \rightarrow \infty$

**TRANSCONDUCTANCE AMPLIFIERS** The output current is proportional to the input signal voltage and the proportionality factor is independent of the magnitudes of the source and load resistances.

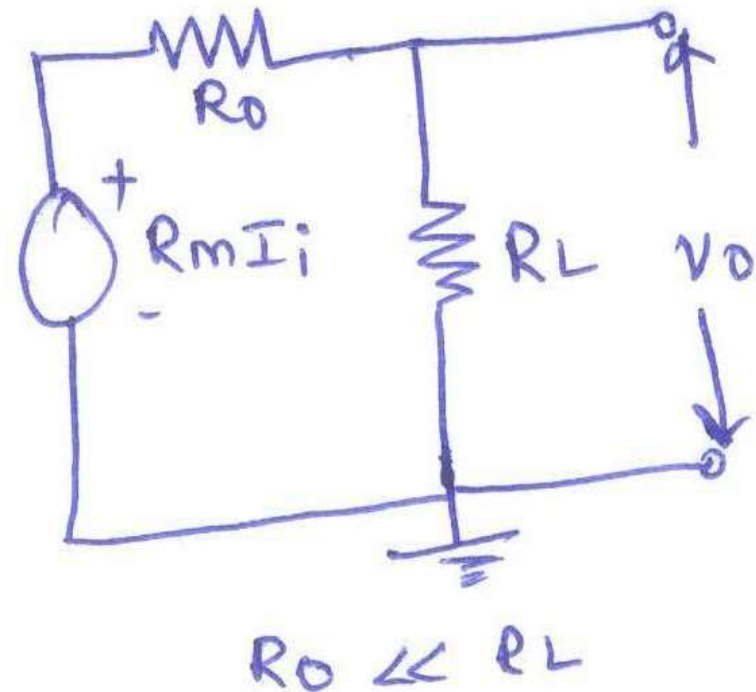
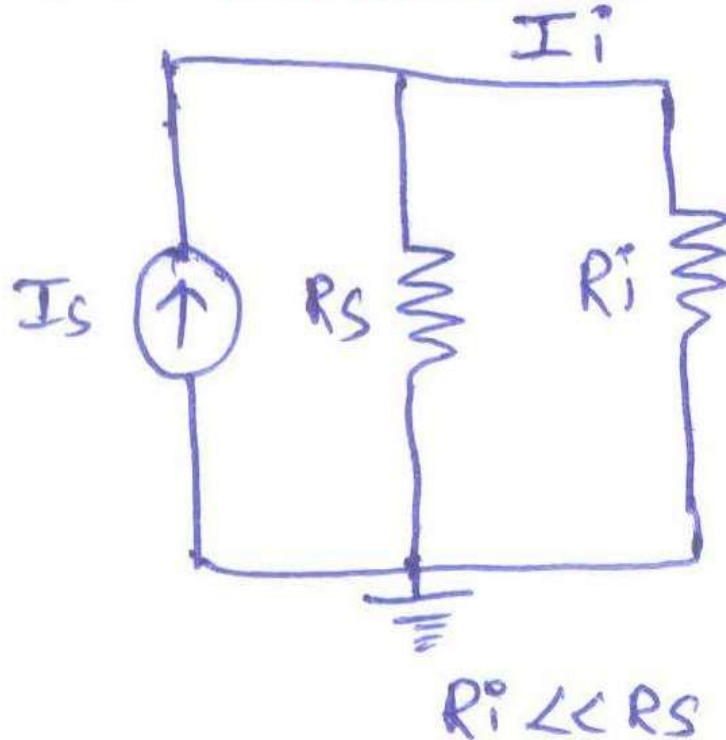
## Transconductance Amplifier





**TRANSRESISTANCE AMPLIFIER** The output voltage is proportionality factor is independent on the source and load resistances.

Transresistance Amplifier.



- Conclusion

From this presentation conclude that detailed analysis of different types of feedback amplifier.

- References

- ✓ Sedra and smith, “Microelectronic circuits”, 7<sup>th</sup> Ed., Oxford University Press.
- ✓ Thomas L.Floyd, “Electronic devices” Conventional current version, Pearson prentice hall.
- ✓ Robert L.Boylestad, “Electronic devices and circuit theory”