

Structured Electronic Design

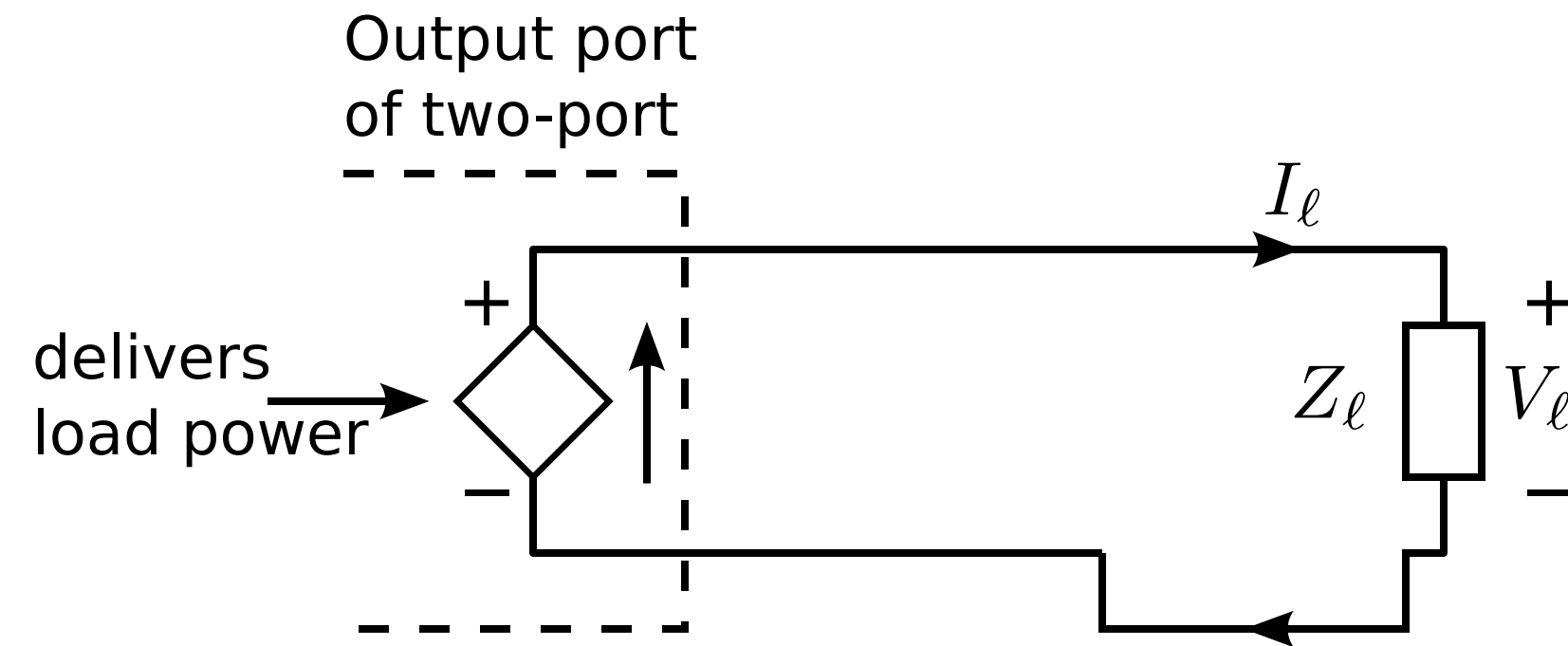
EE3C11

Amplifiers: modeling of power losses and energy storage

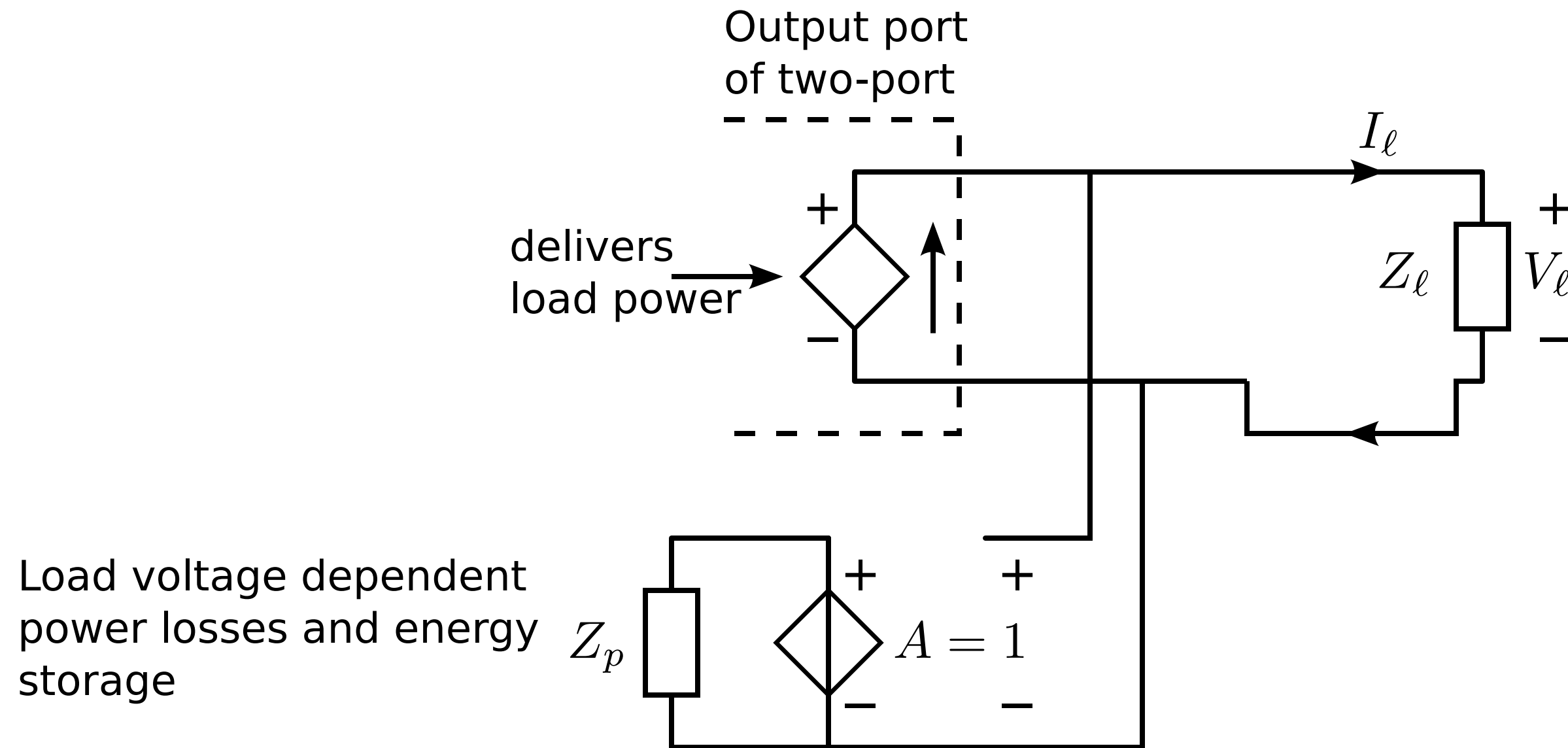
Anton J.M. Montagne

Power losses and energy storage

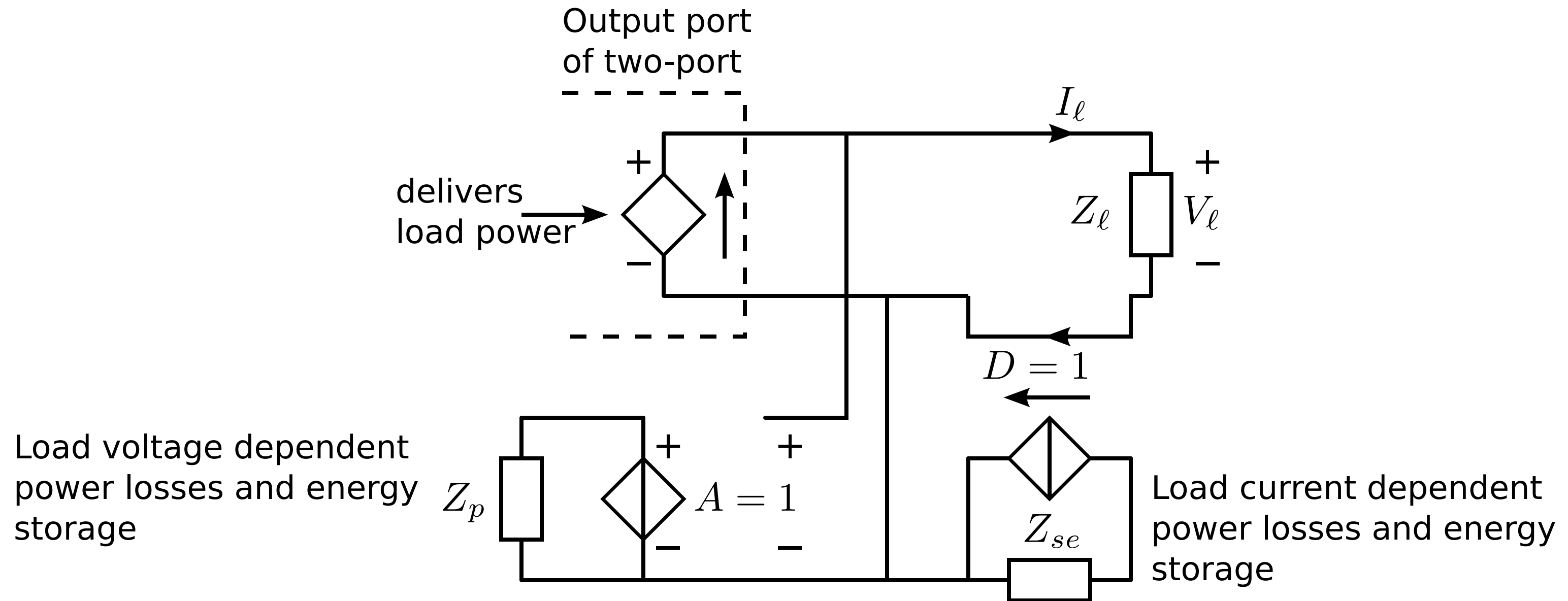
Power losses and energy storage



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Power efficiency

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Power efficiency: ratio of power delivered to the load and power taken from the supply

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Application of matching networks

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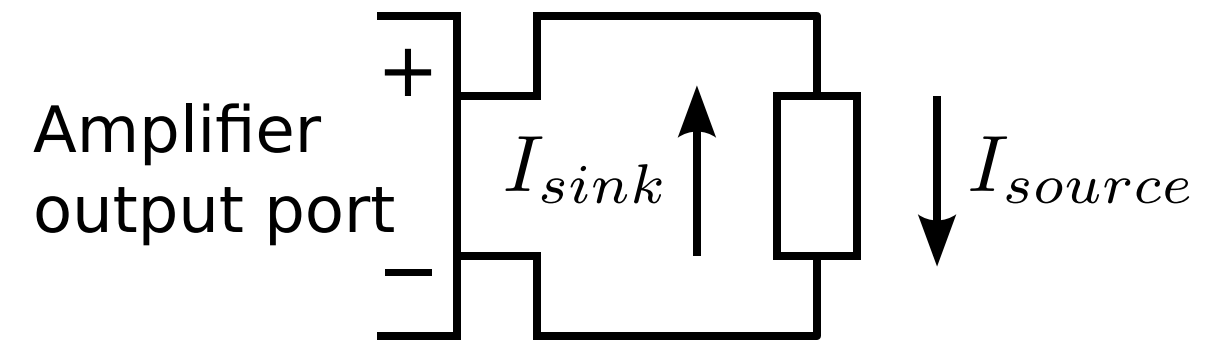
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- Application of matching networks

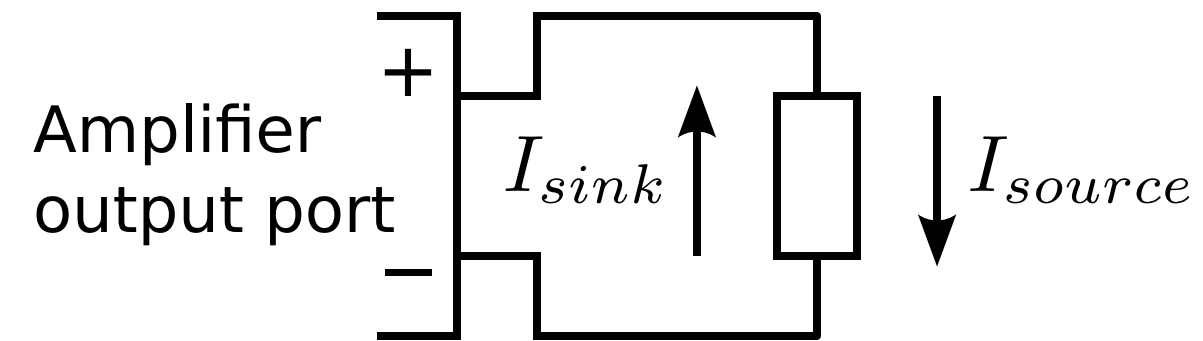
Amplifier output stages

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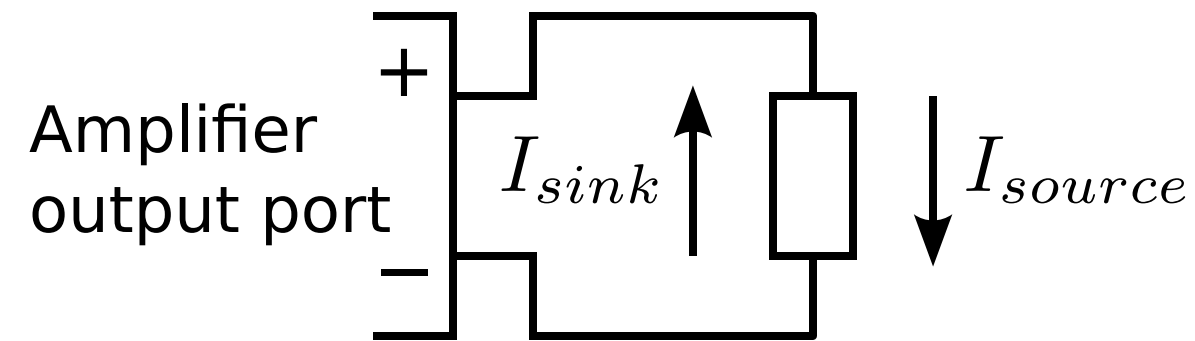


Amplifier output stages

Amplifier stages constructed with devices that operate in one quadrant of the v-i plane



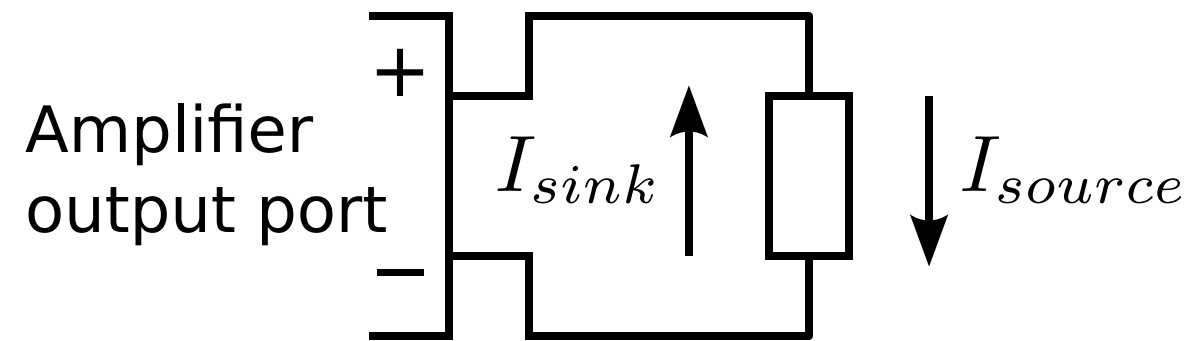
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Separate output device for source and sink current

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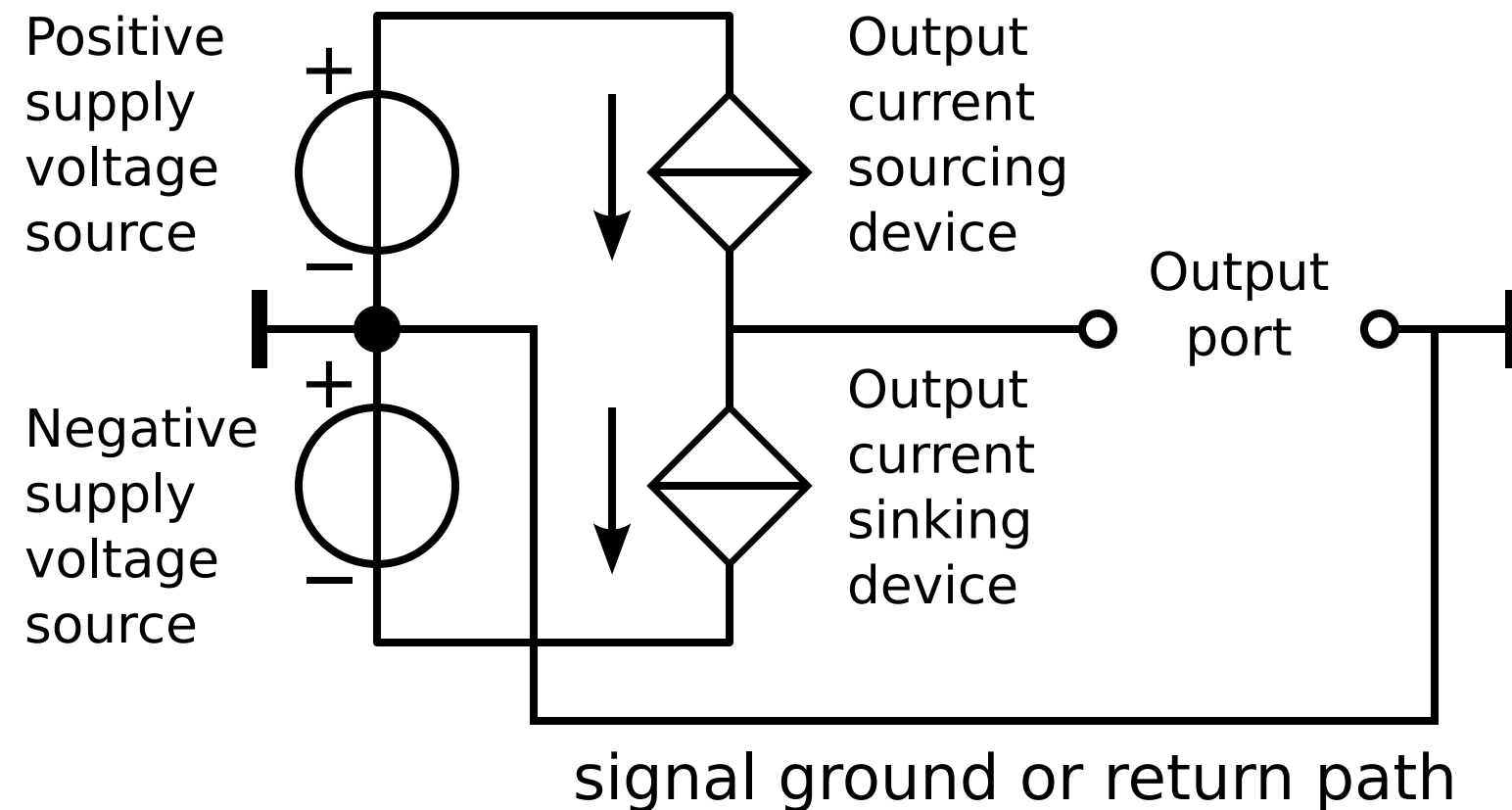
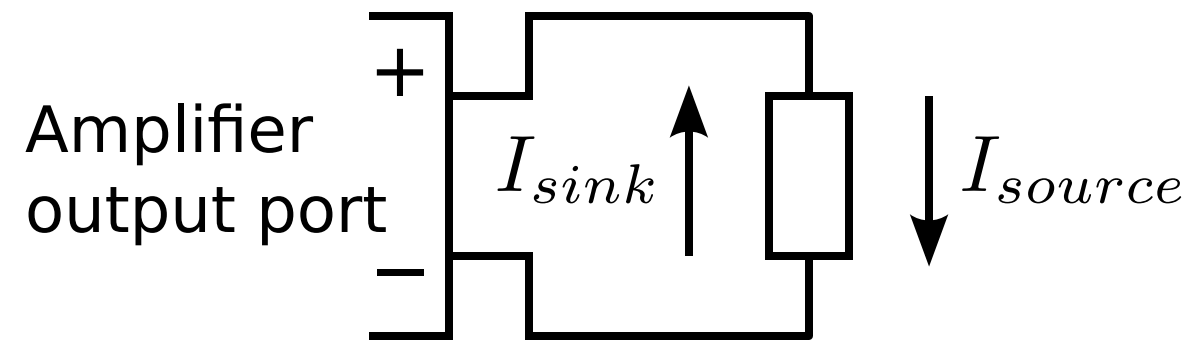
Amplifier classes relate to structure of output stage

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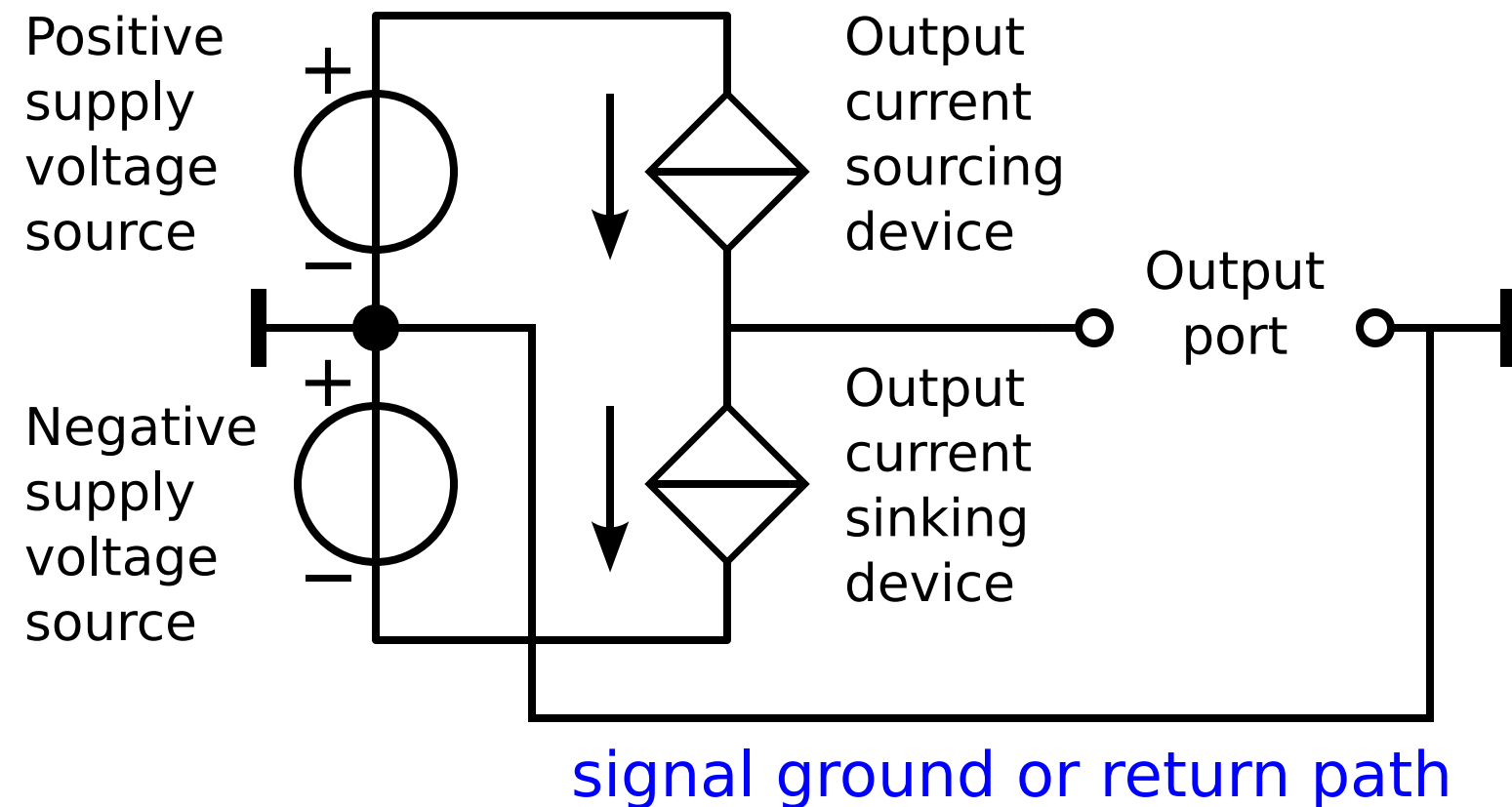
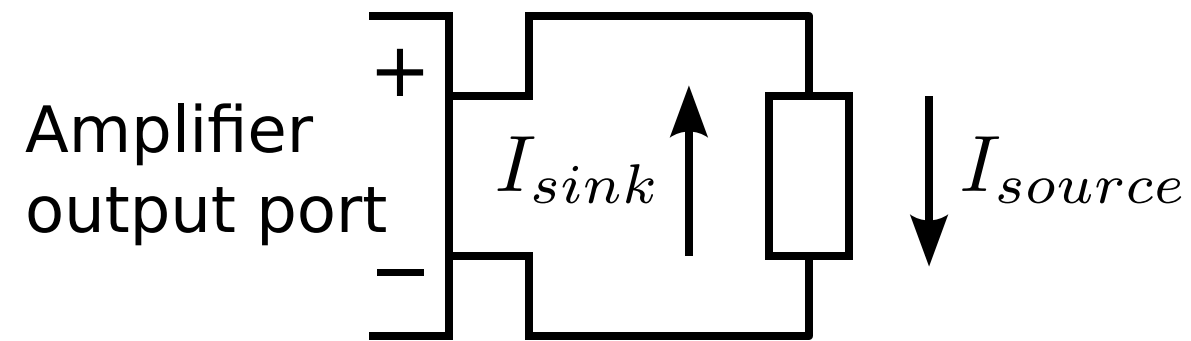


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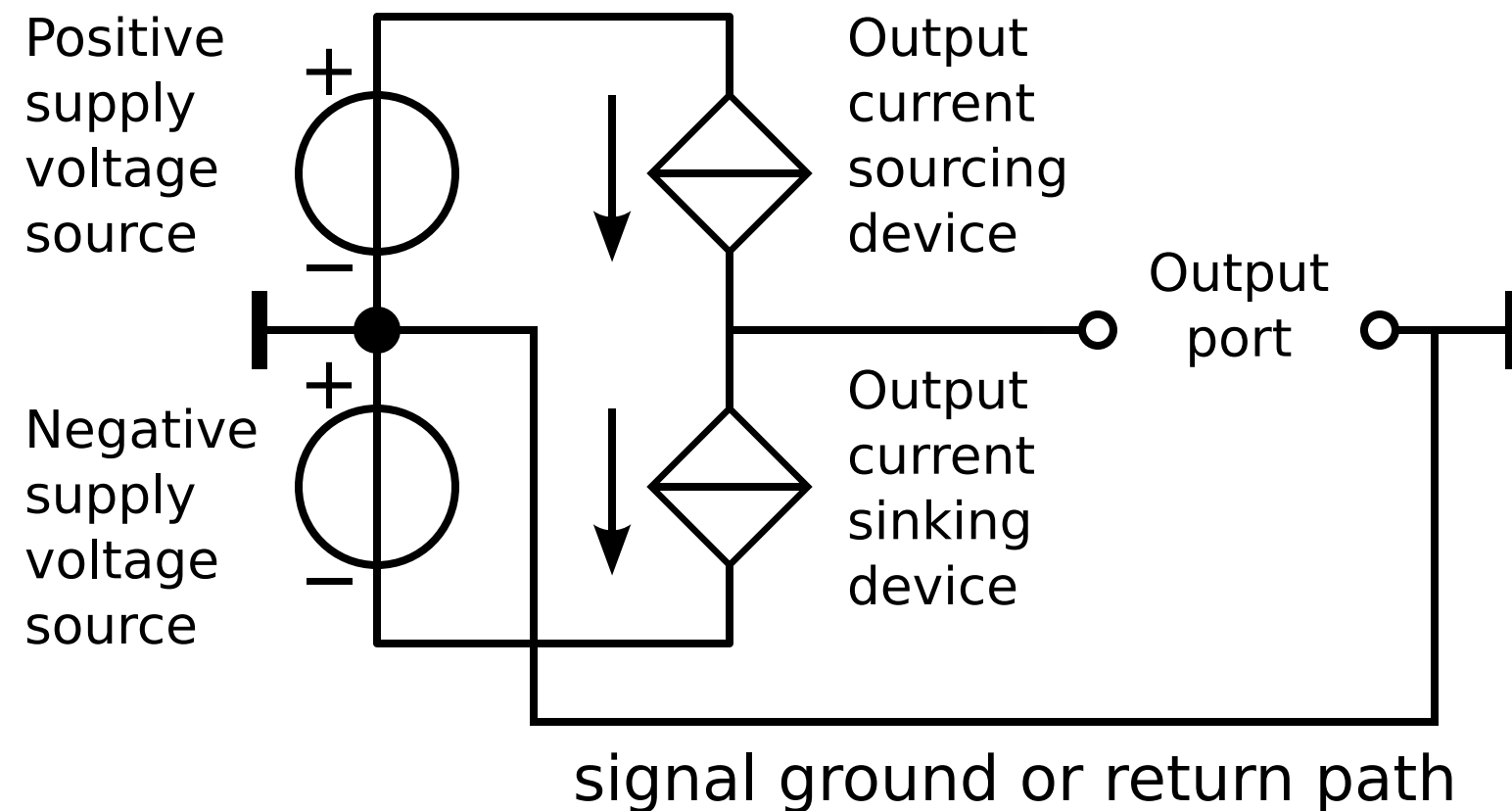
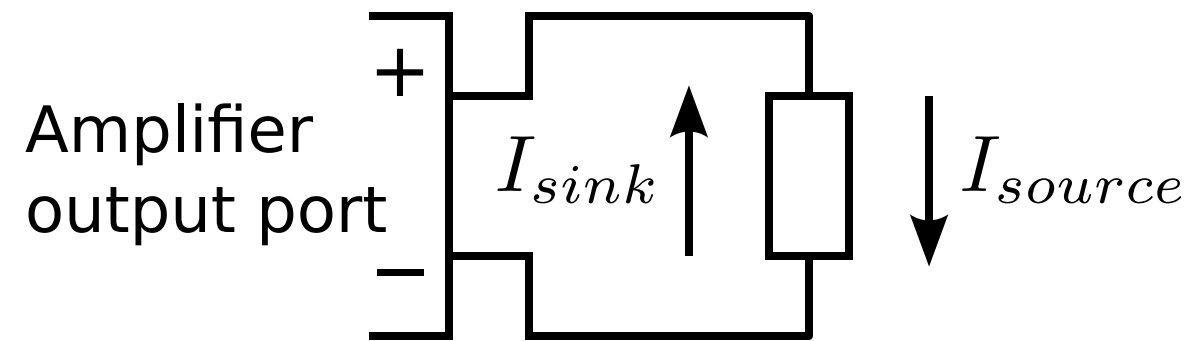


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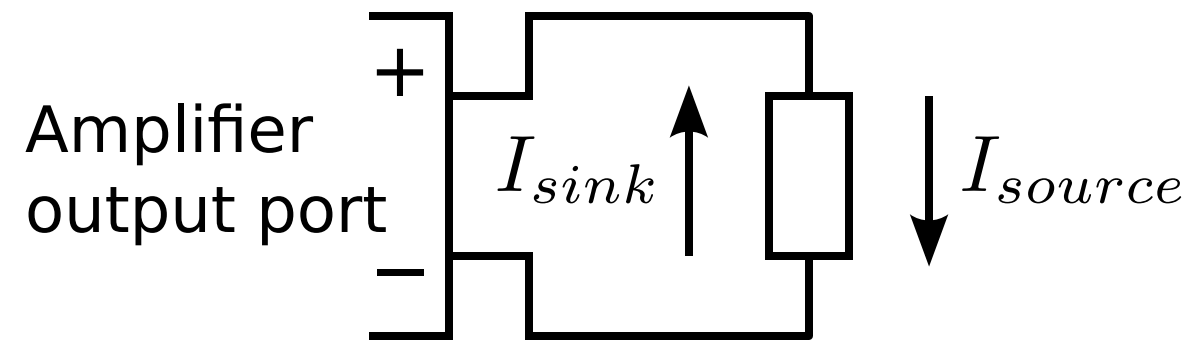
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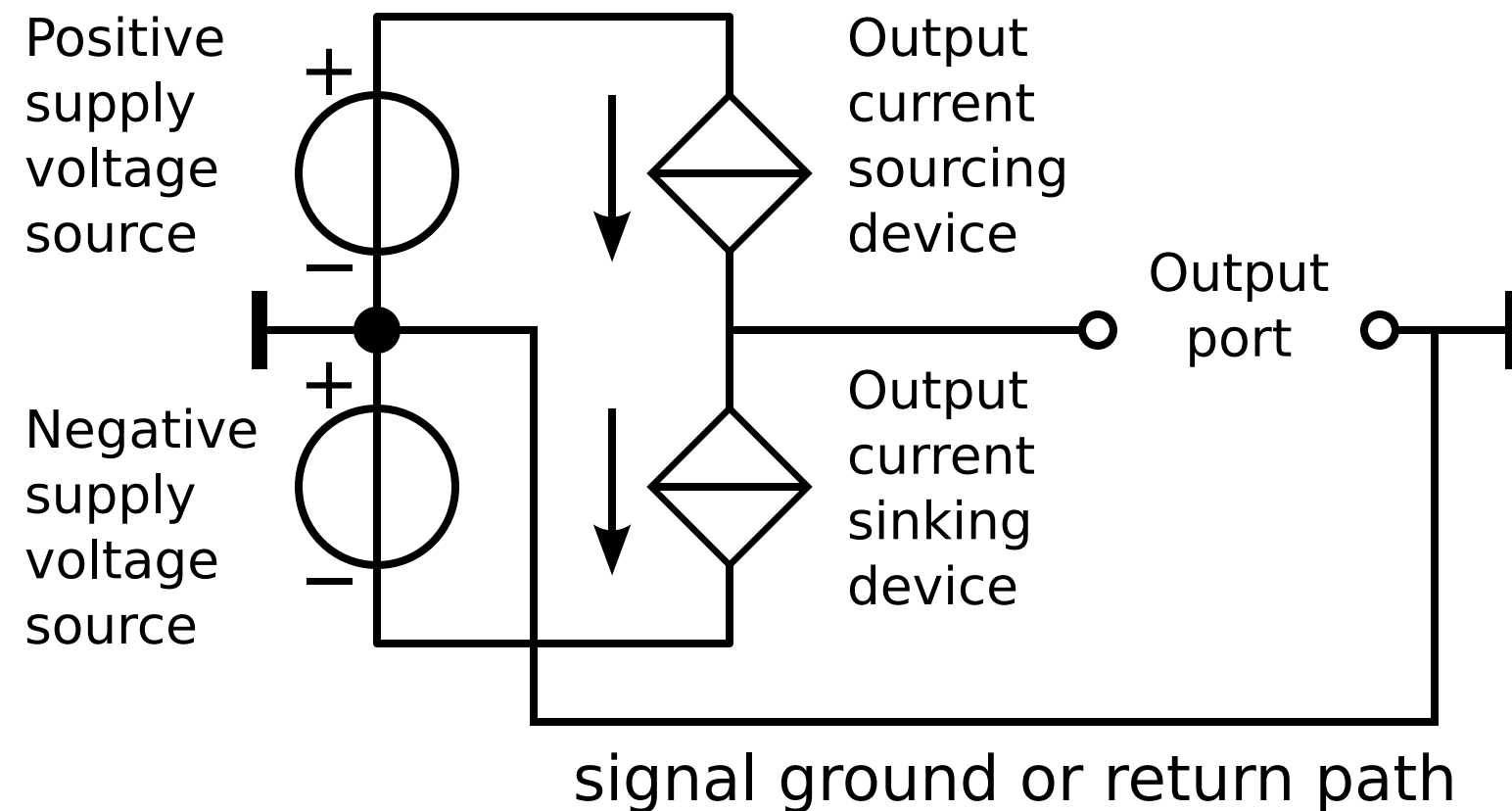
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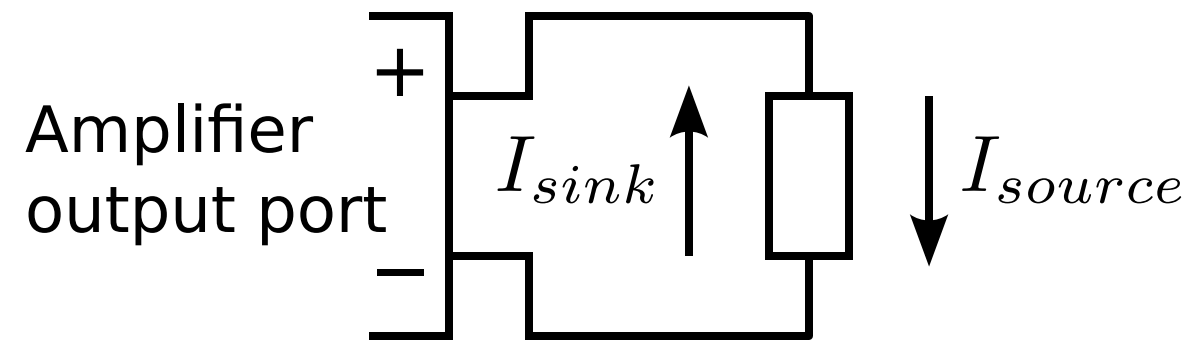
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Sourcing phase:

Current through sourcing device larger than current through sinking device

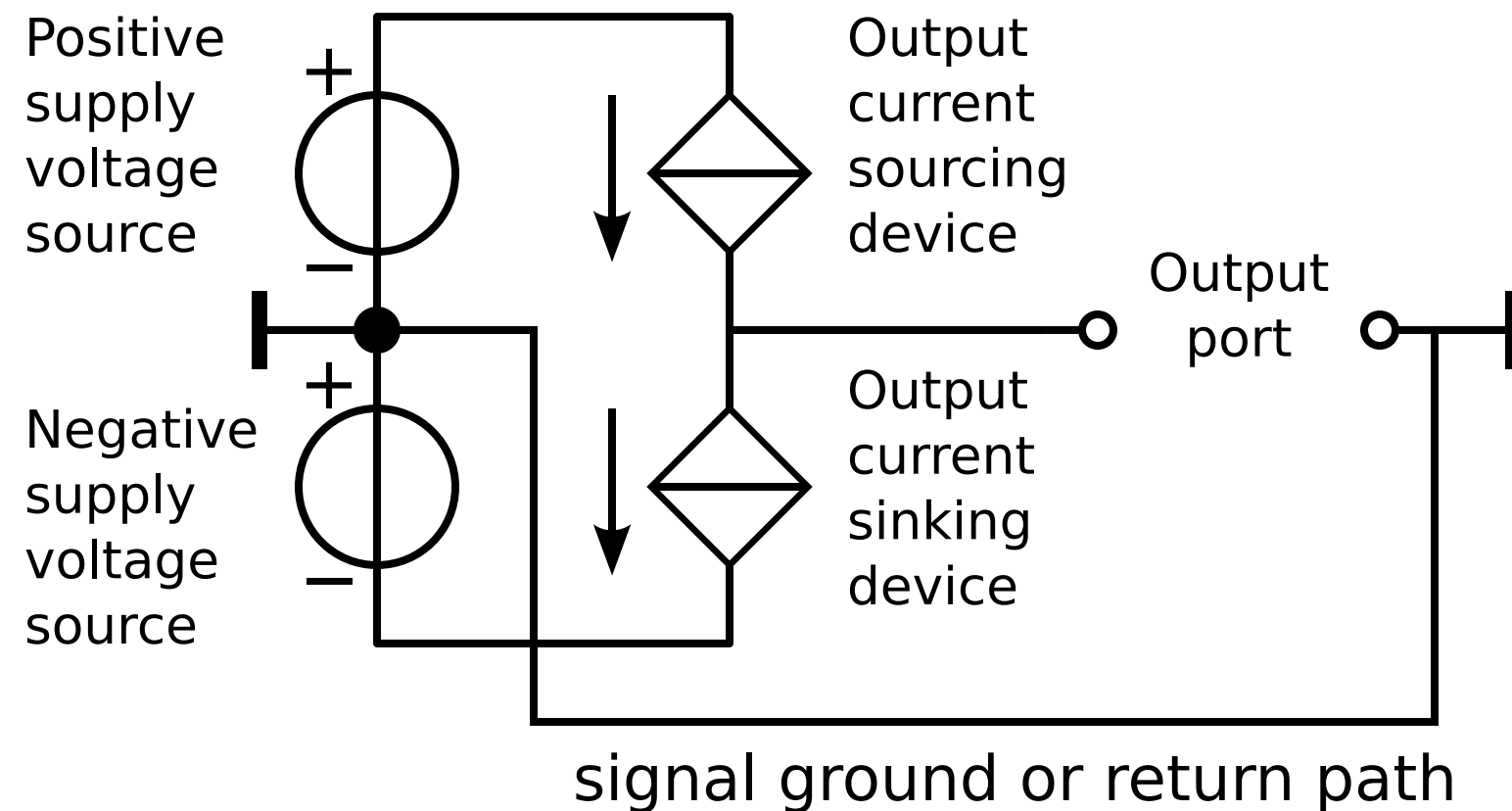
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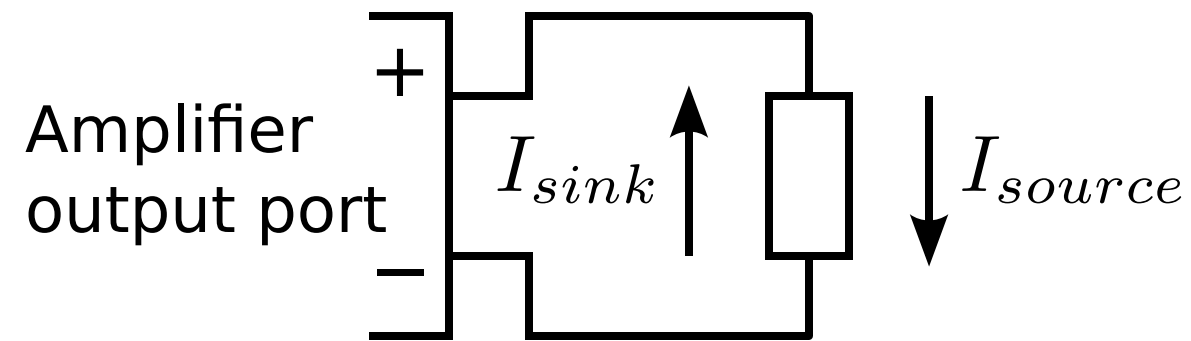


Sourcing phase:

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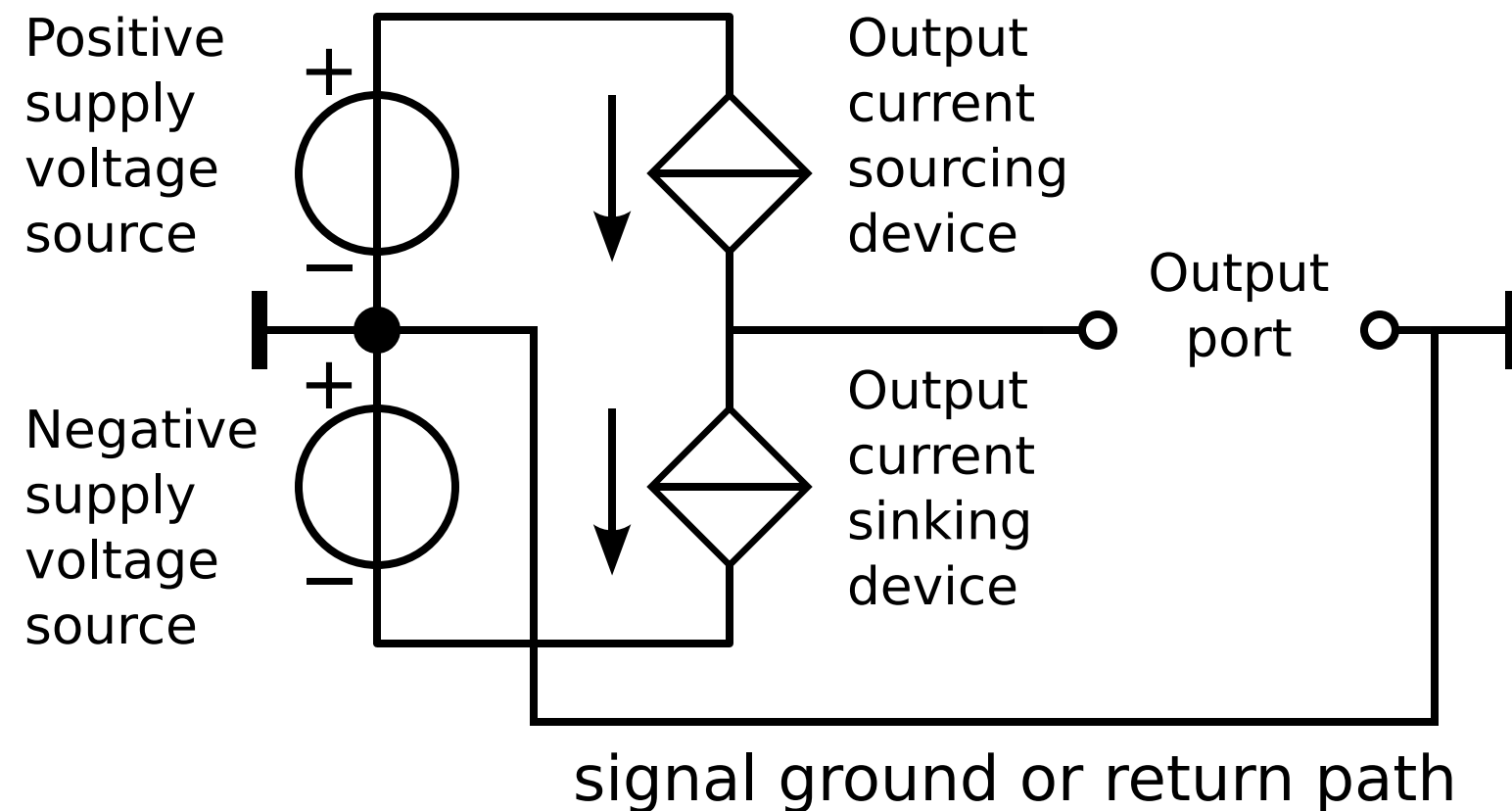
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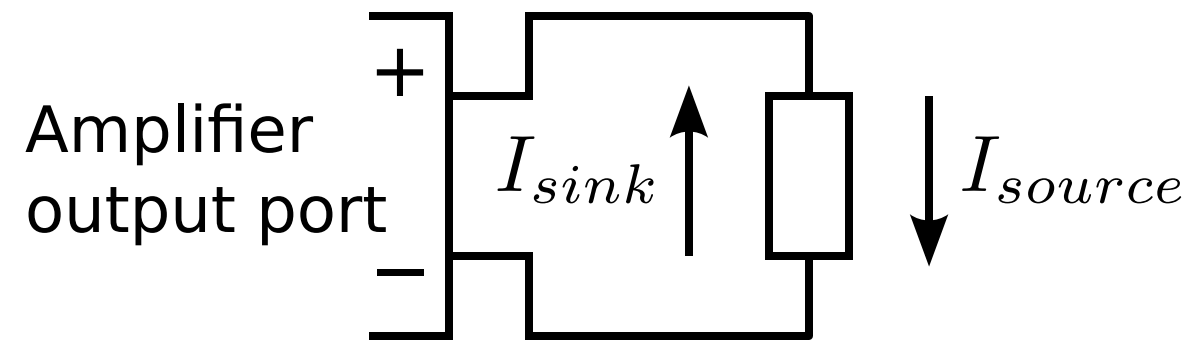
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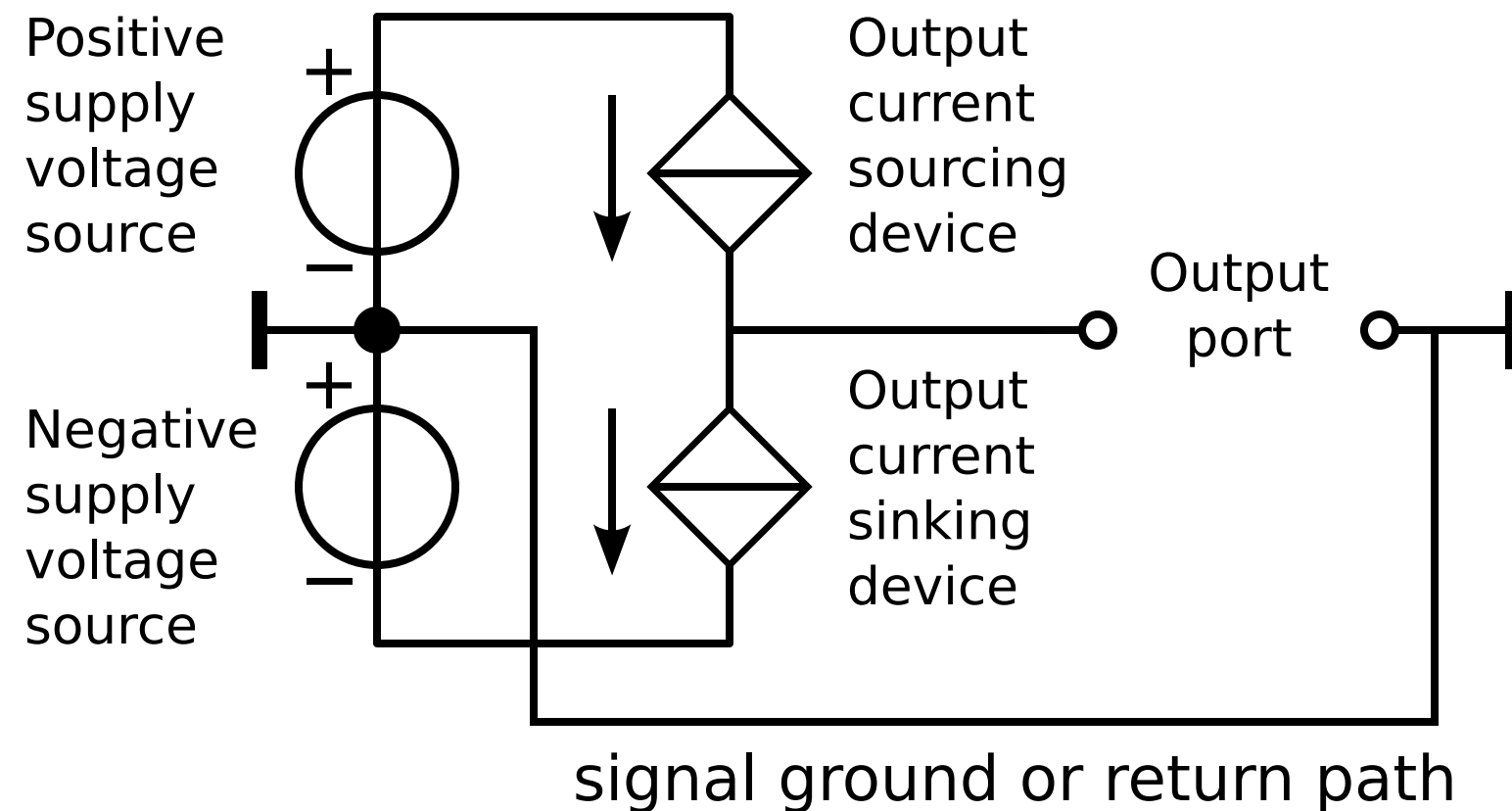
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Amplifier classes

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class A: Source and sink device both conduct during source and sink phase

Amplifier classes

class A: Source and sink device both conduct during source and sink phase

class B: Source device conducts during source phase and sink device during sink phase

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class D: Non resonant switching output stage

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class E: Resonant switching narrow-band output stage

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class G: As AB but with step-wise adaption of power supply voltage

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