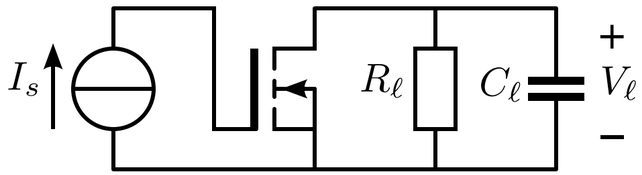
Structured Electronic Design
Pole-splitting (Miller effect) and Cascode Stages

Miller-effect and cascode stage

Miller-effect and cascode stage

Biased, current-driven CS-stage with RC load



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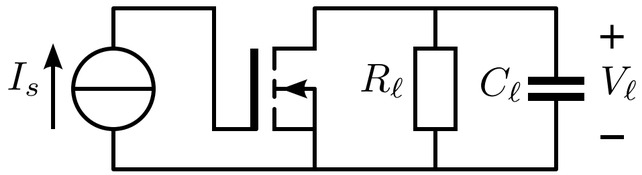
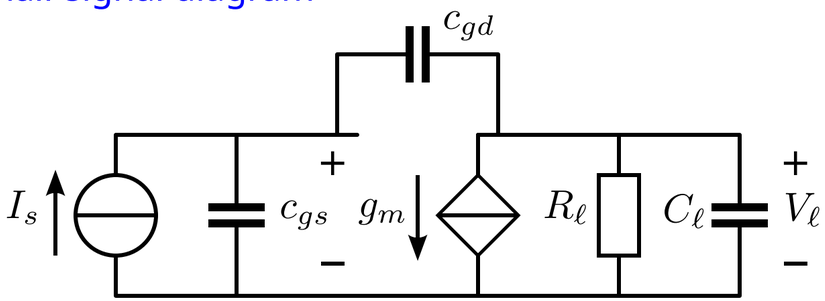


Small-signal diagram



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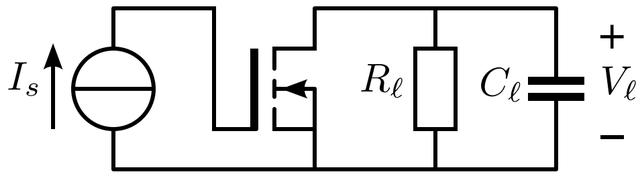

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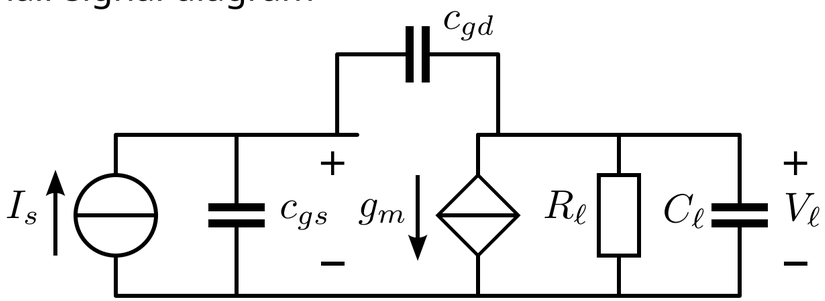

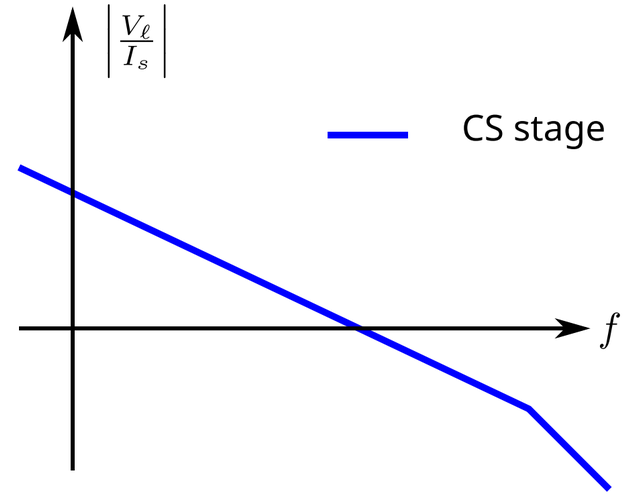

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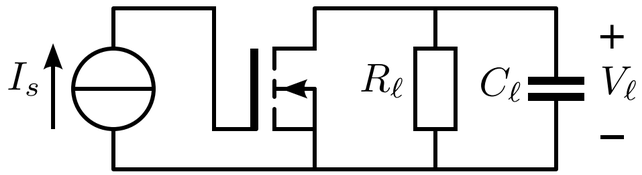

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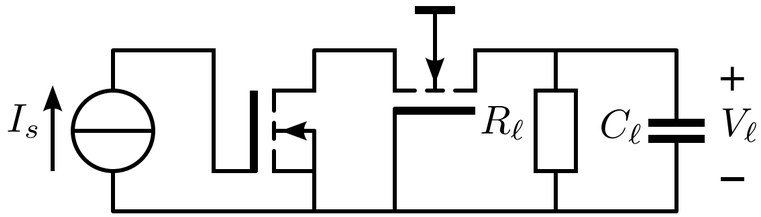

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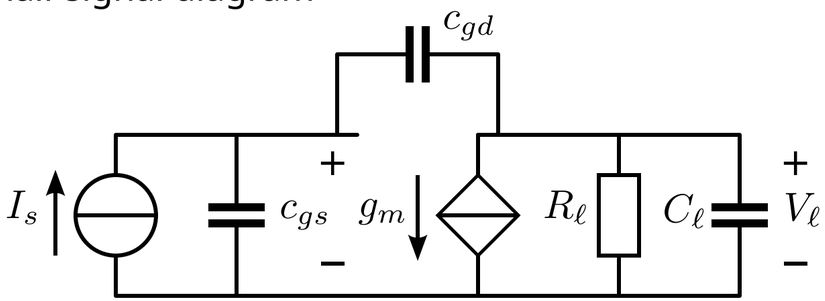

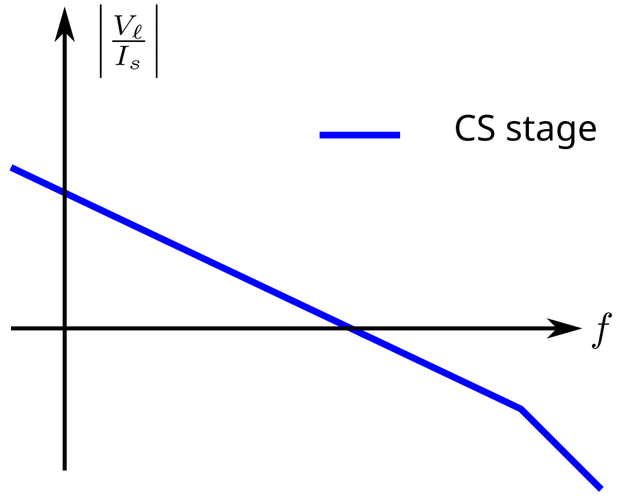

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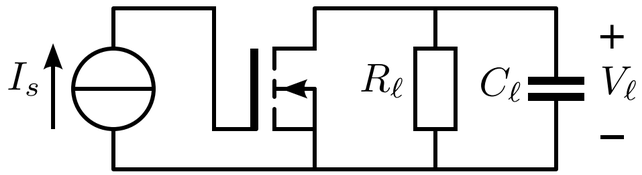

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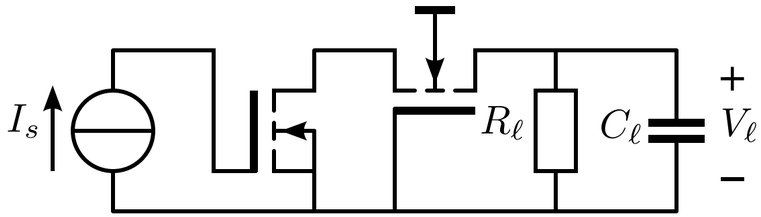

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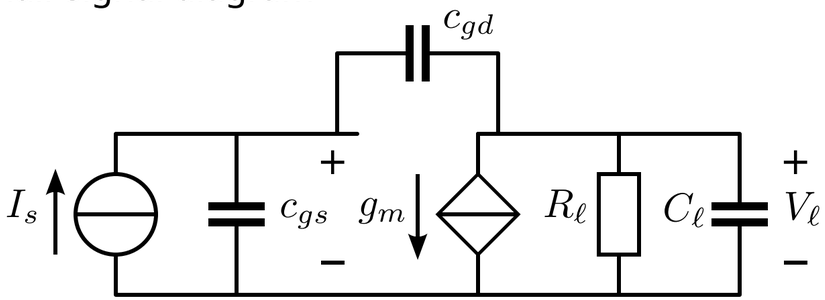

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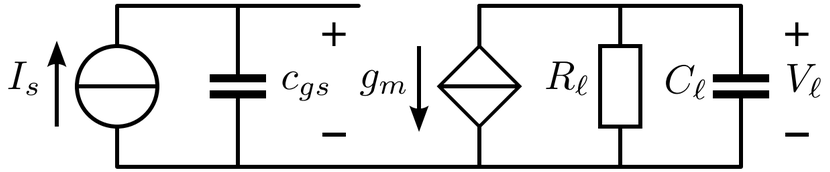

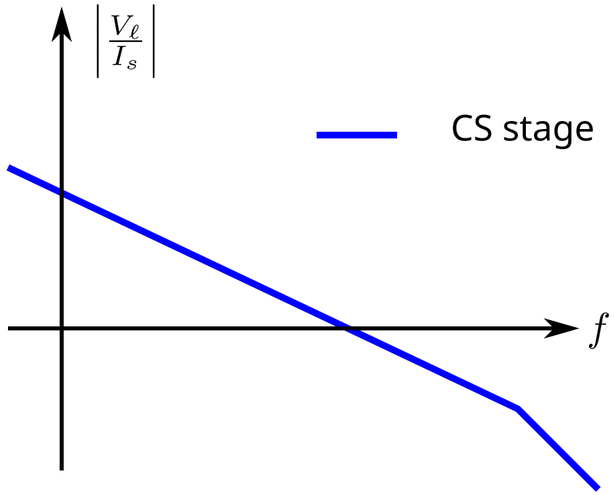

Miller-effect and cascode stage

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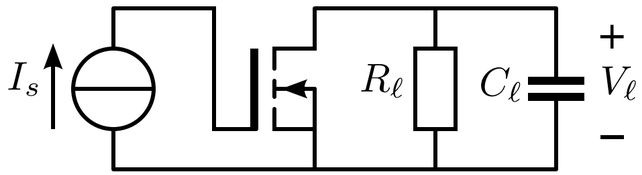

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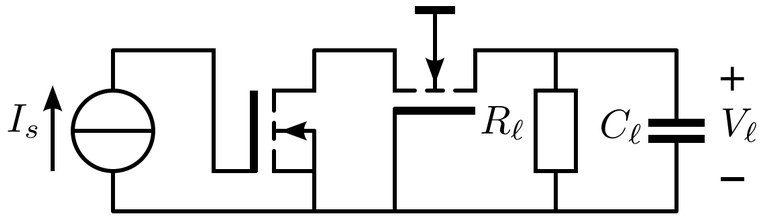

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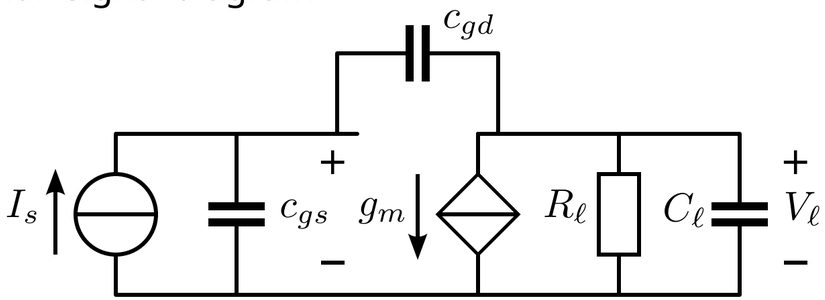

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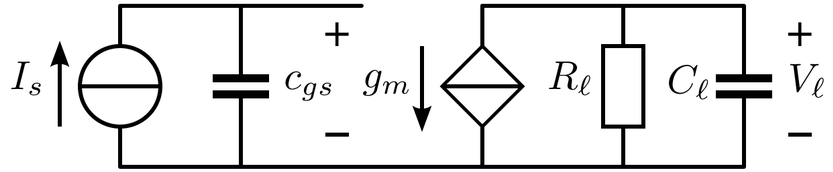

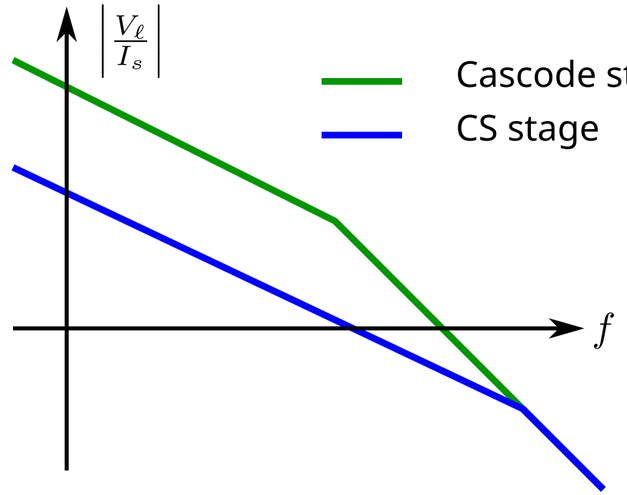

Cascode stage

CS stage

Miller-effect and cascode stage

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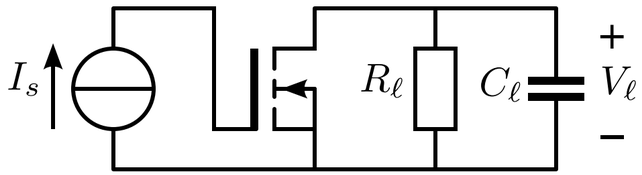

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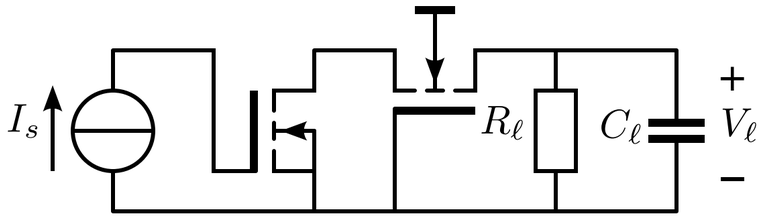

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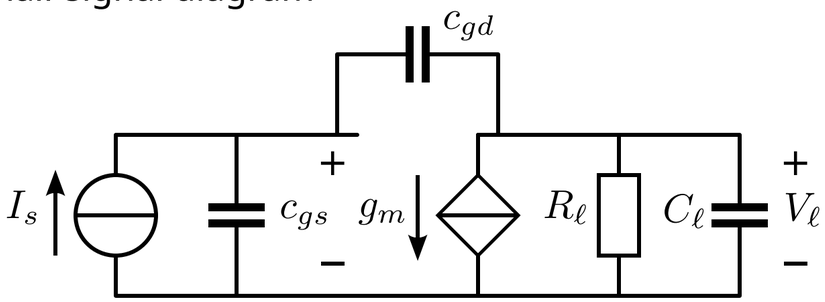

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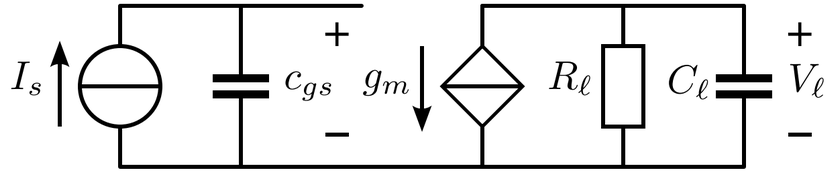
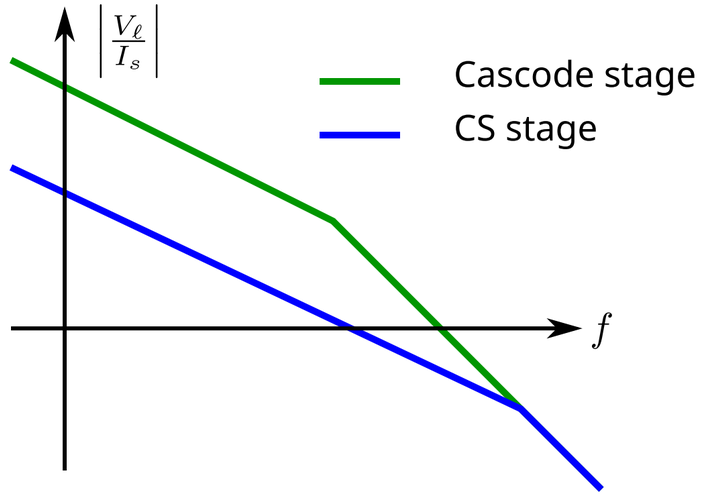


c_{gs} increases the sum of the poles: pole-splitting



Miller-effect and cascode stage

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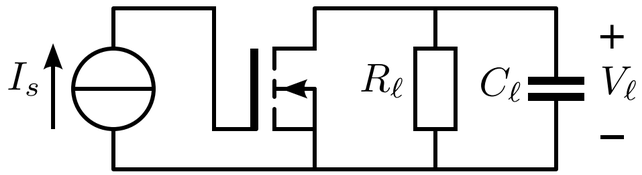

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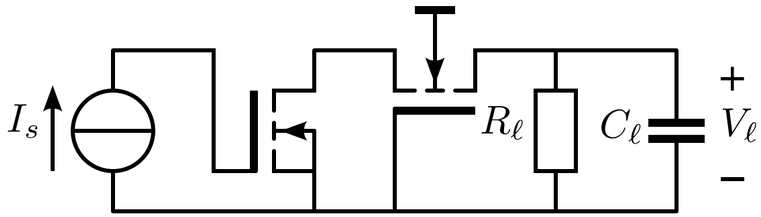

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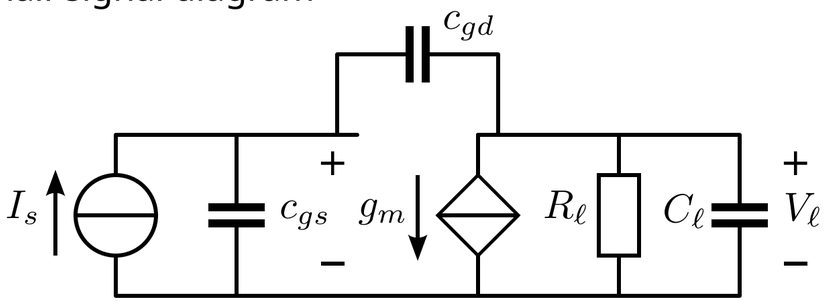

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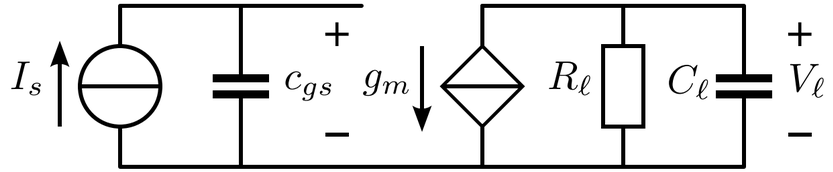

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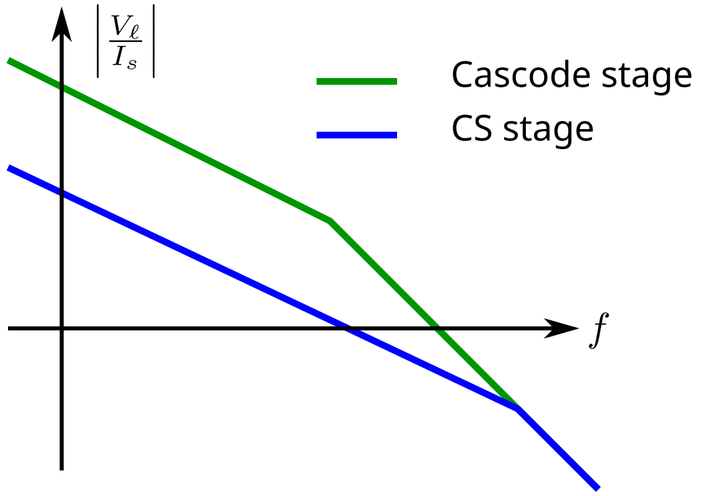

Miller-effect and cascode stage

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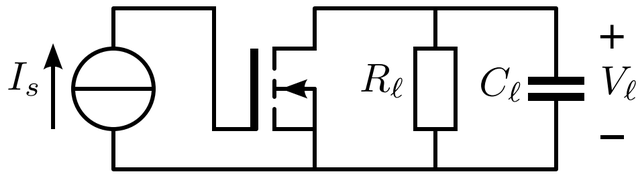

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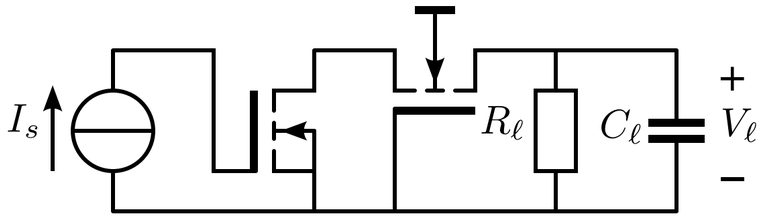

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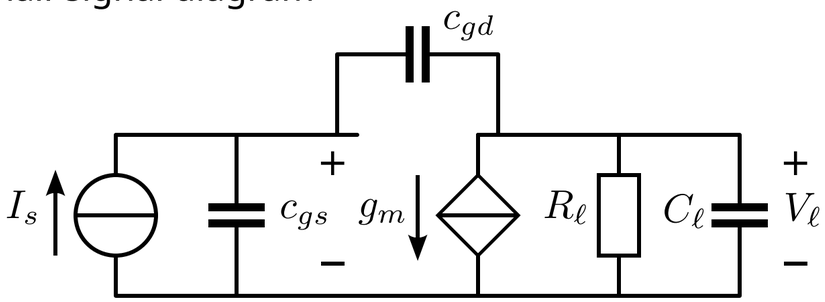

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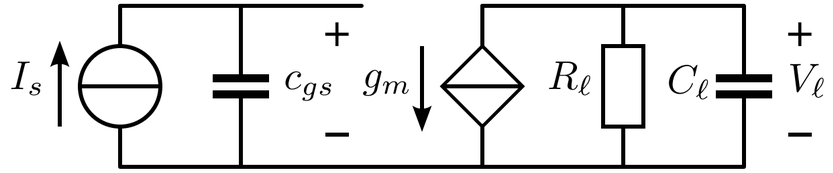

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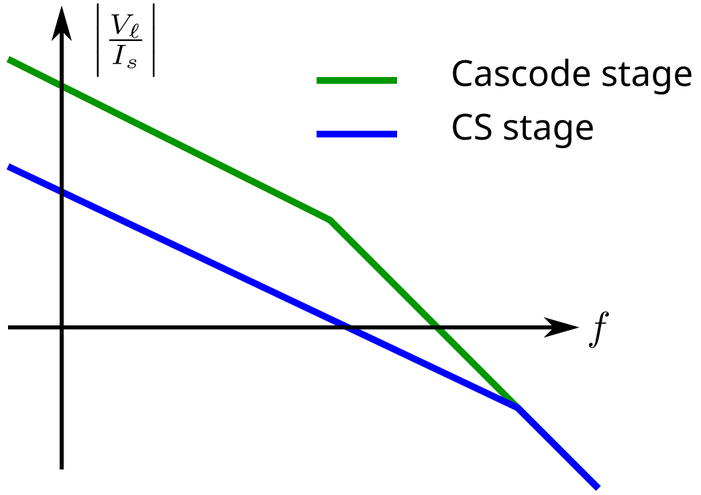

Miller-effect and cascode stage

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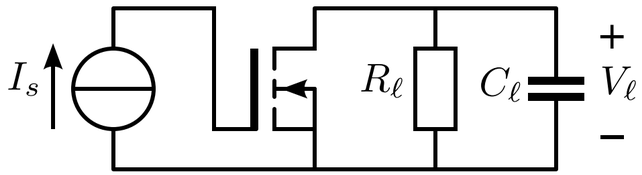

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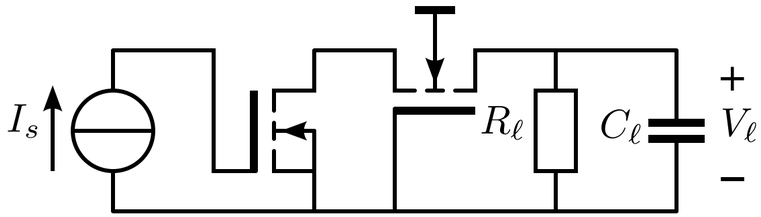

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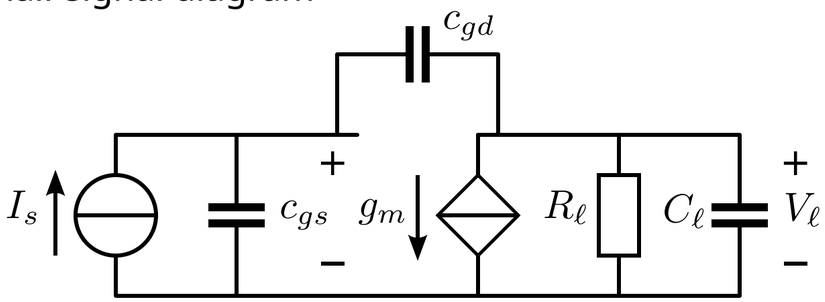

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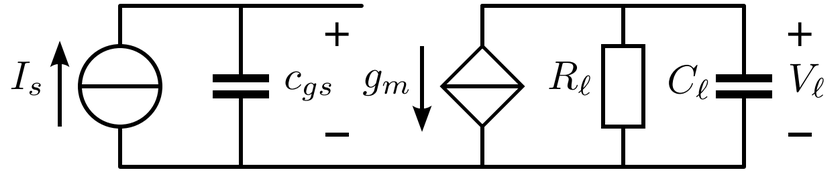

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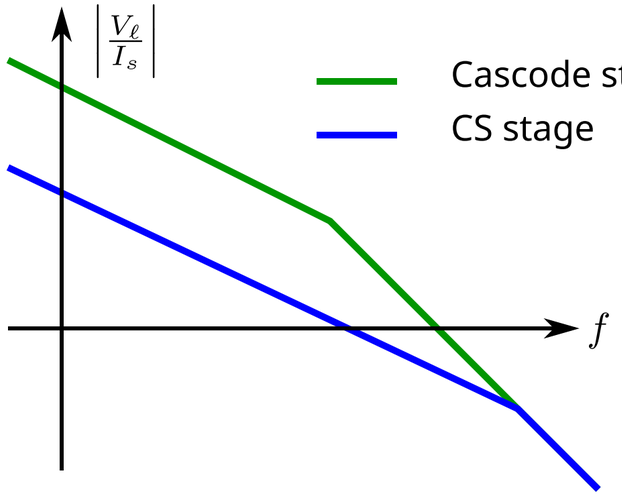


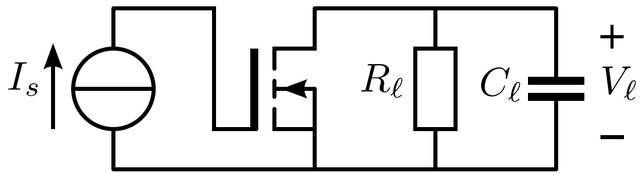
Cascode stage

CS stage

Cascode stage is considered a single stage

Miller-effect and cascode stage

Biased, current-driven CS-stage with RC load



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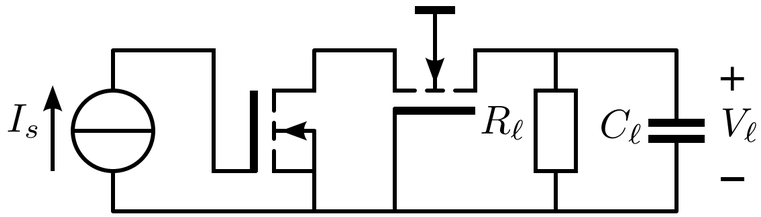

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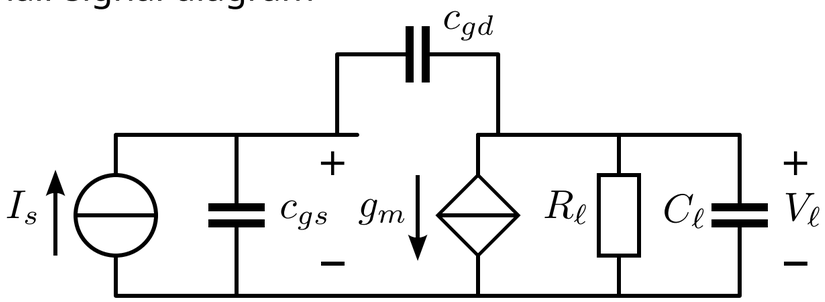

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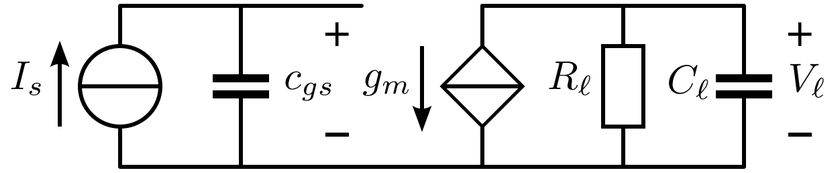

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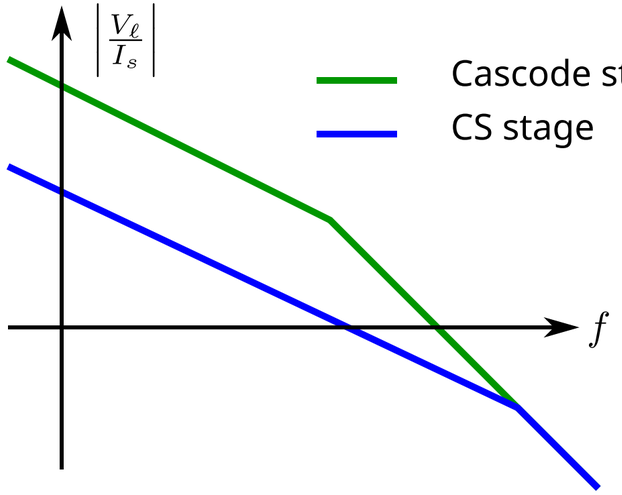
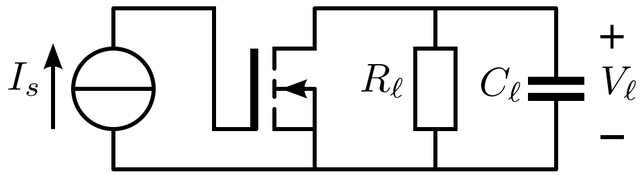


Cascode stage is considered a single stage

CG stage contributes a (non dominant) pole at f_T and unity current gain

Miller-effect and cascode stage

Biased, current-driven CS-stage with RC load



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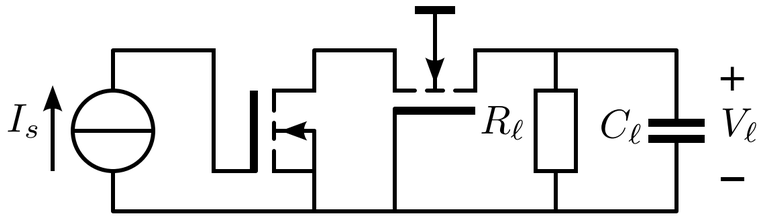

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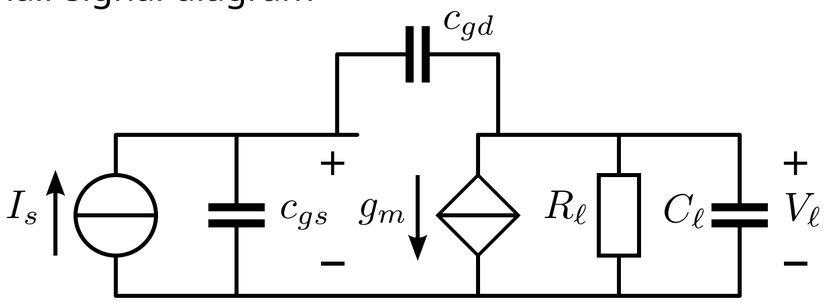

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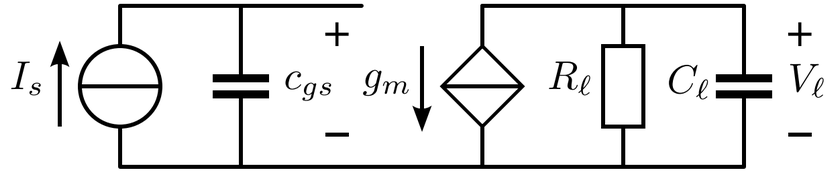

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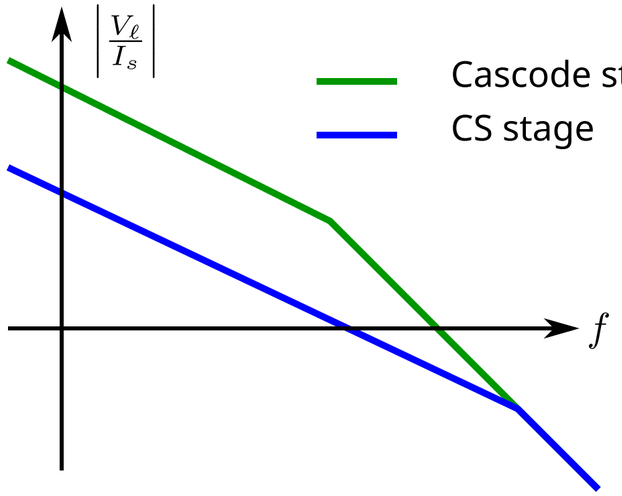

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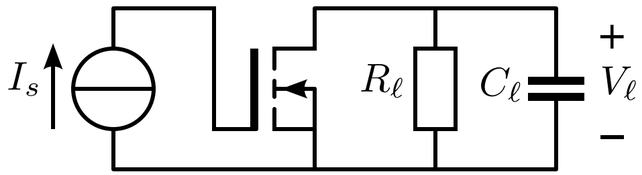
Uni-lateral stage

Miller-effect and cascode stage

Biased, current-driven CS-stage with RC load



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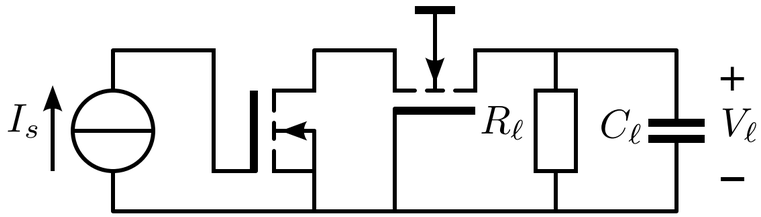

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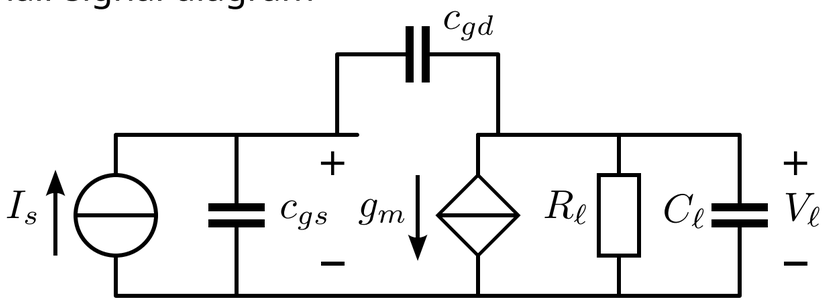

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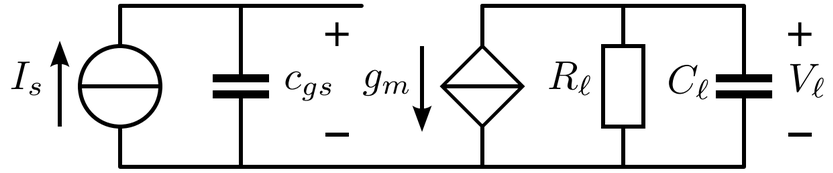

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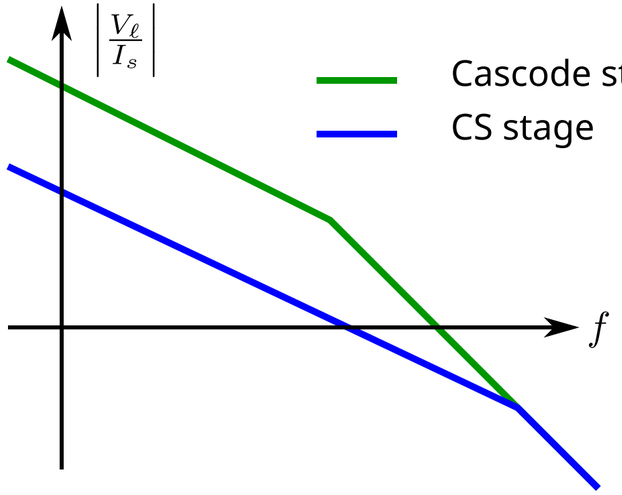
occurs if: $g_m R_\ell \gg 1$

product of the poles not affected by c_{gd} if $c_{gd} \ll c_{gs}$ and $c_{gd} \ll C_\ell$



Cascode stage is considered a single stage

CG stage contributes a (non dominant) pole at f_T and unity current gain

Uni-lateral stage

Structured Electronic Design
Pole-splitting (Miller effect) and Cascode Stages