

Structured Electronic Design

Reduction of biasing errors

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Error reduction techniques:

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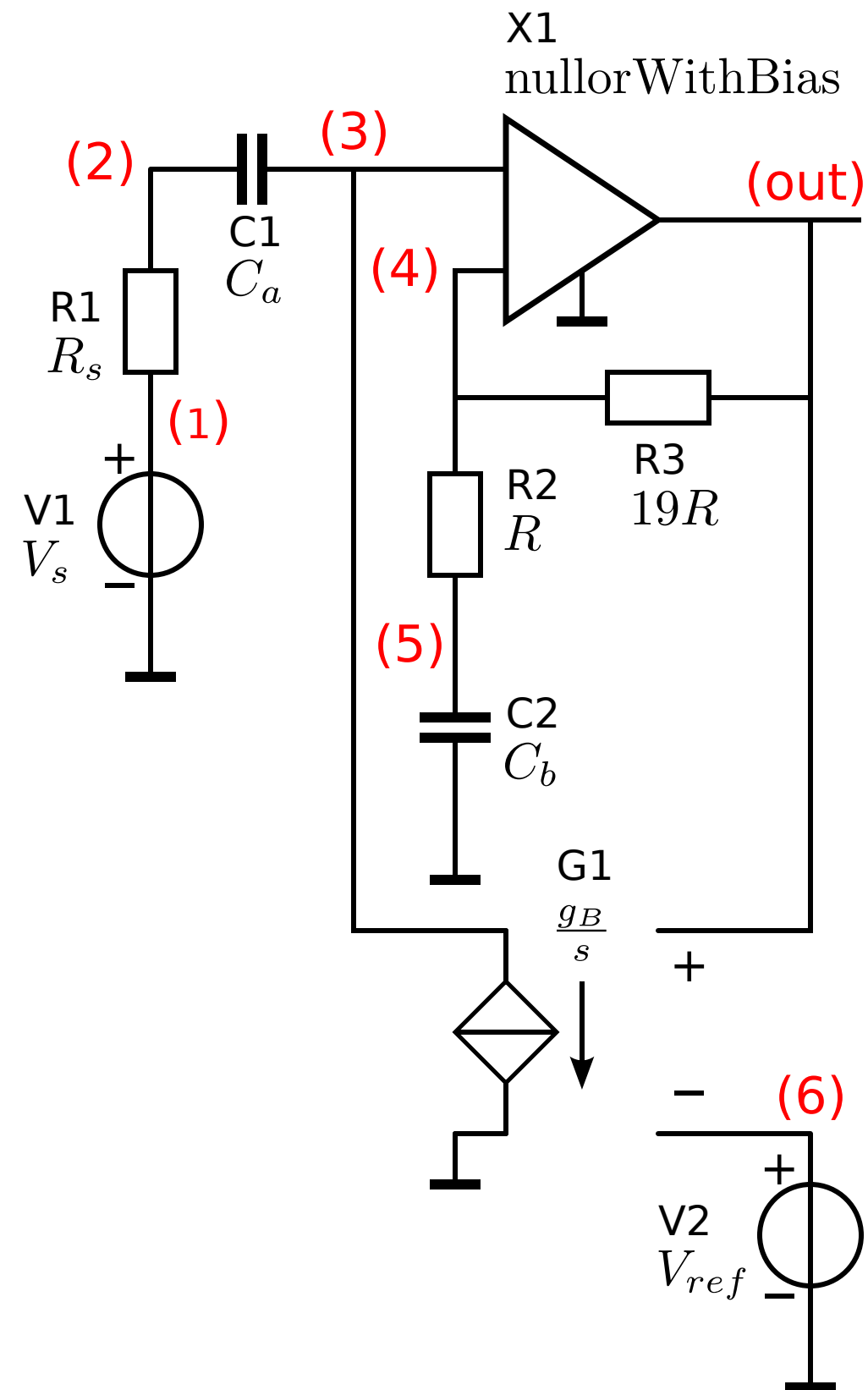
Negative feedback biasing

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Concept with integrating controller

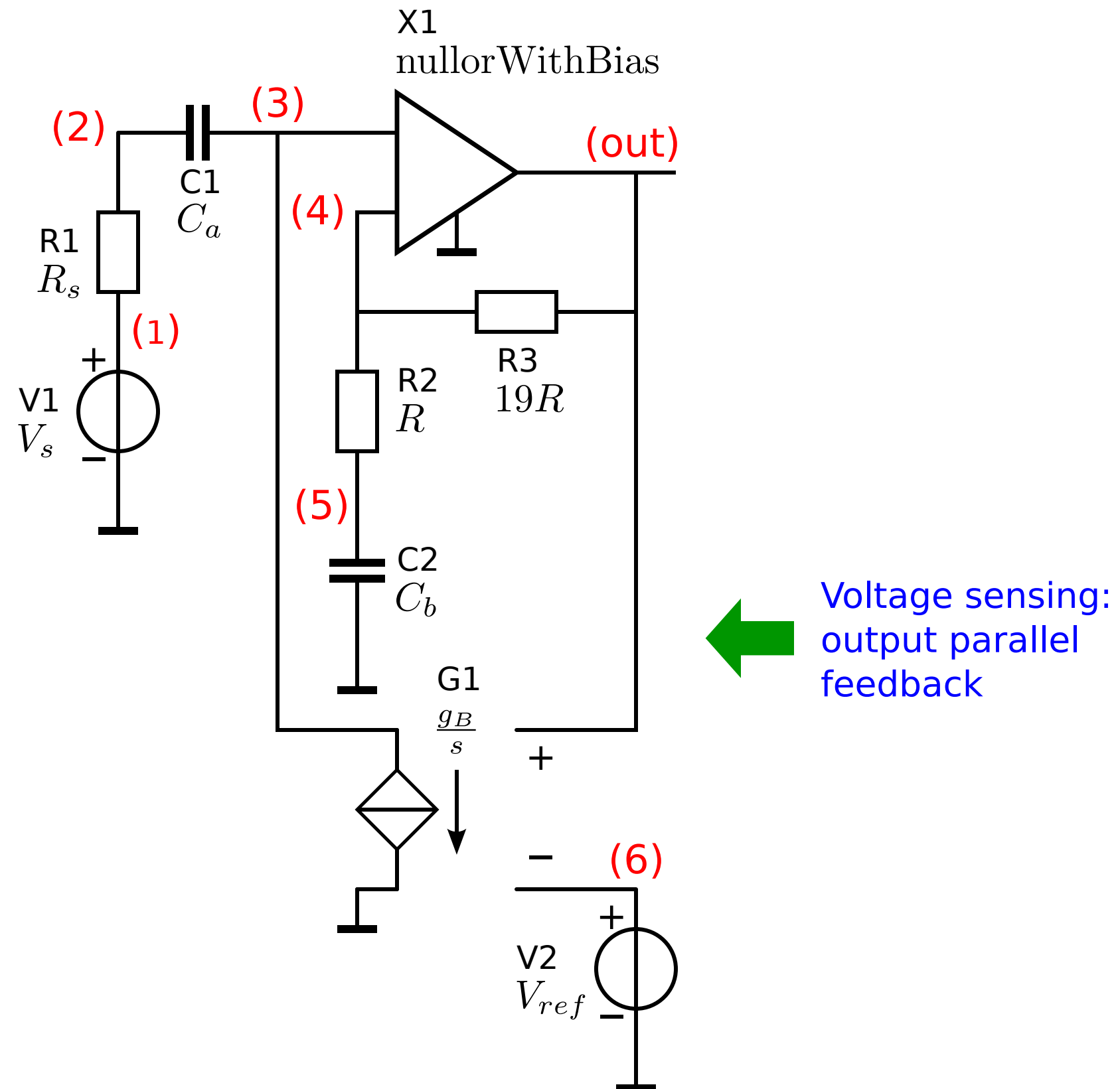
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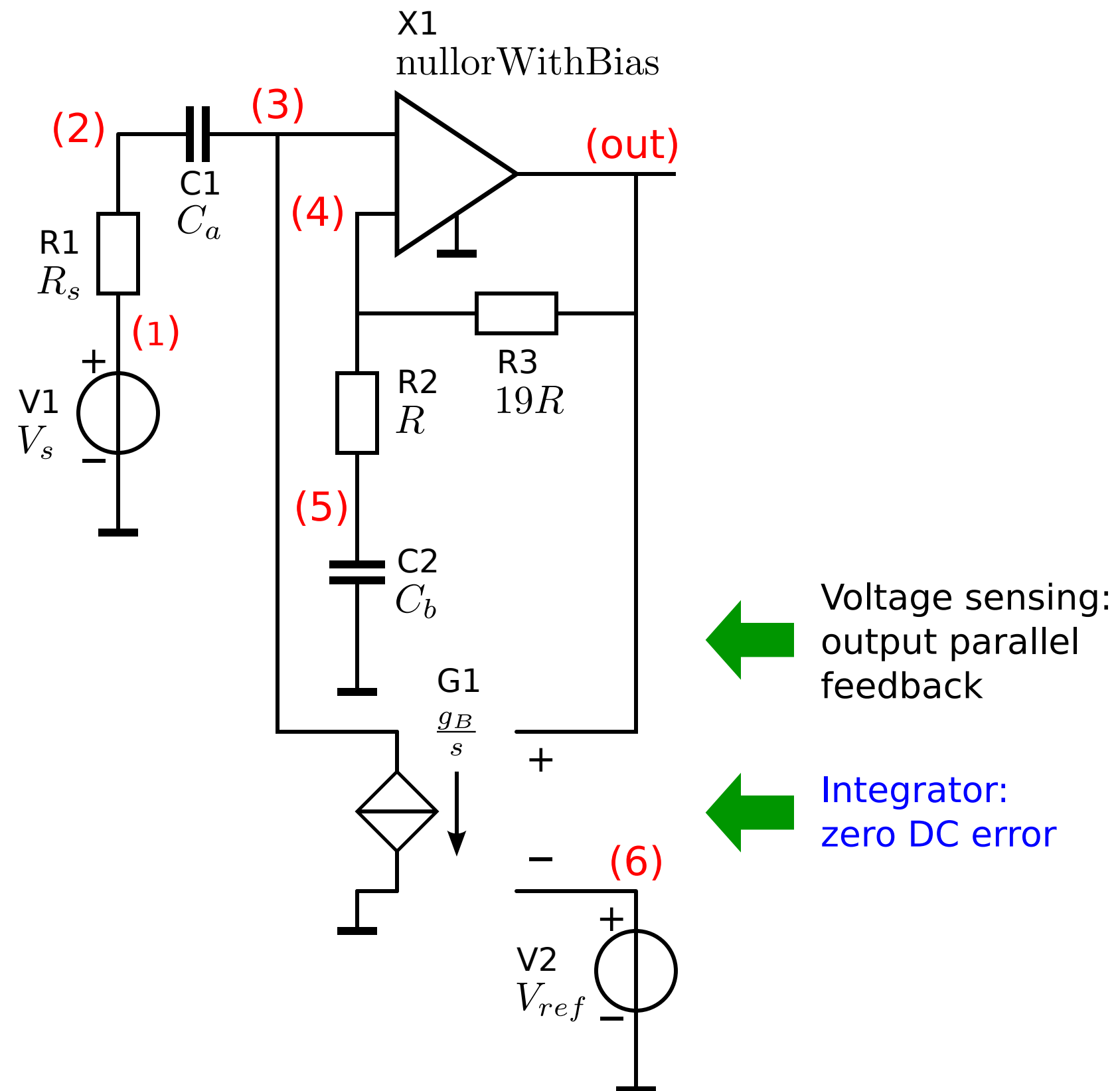
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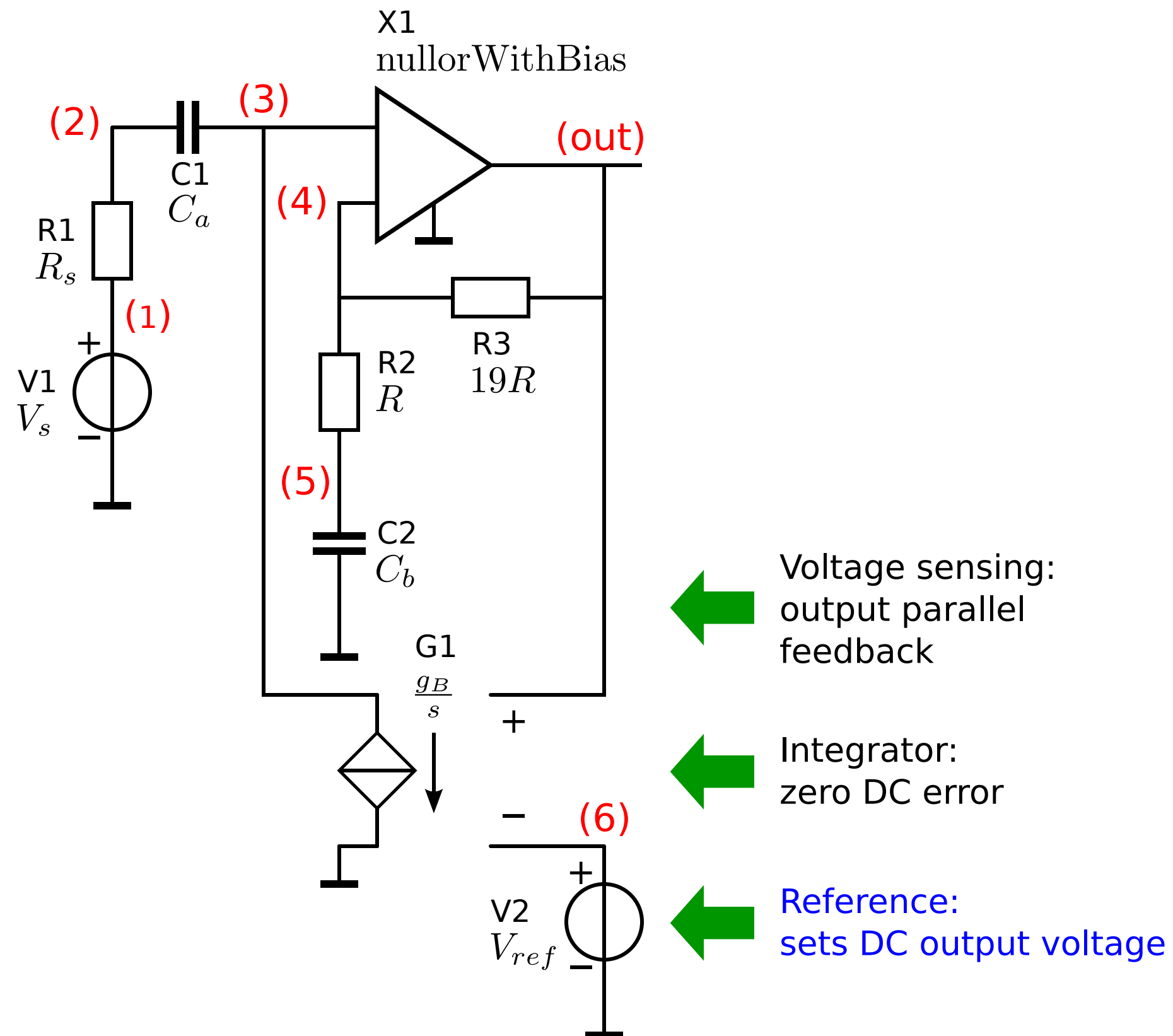
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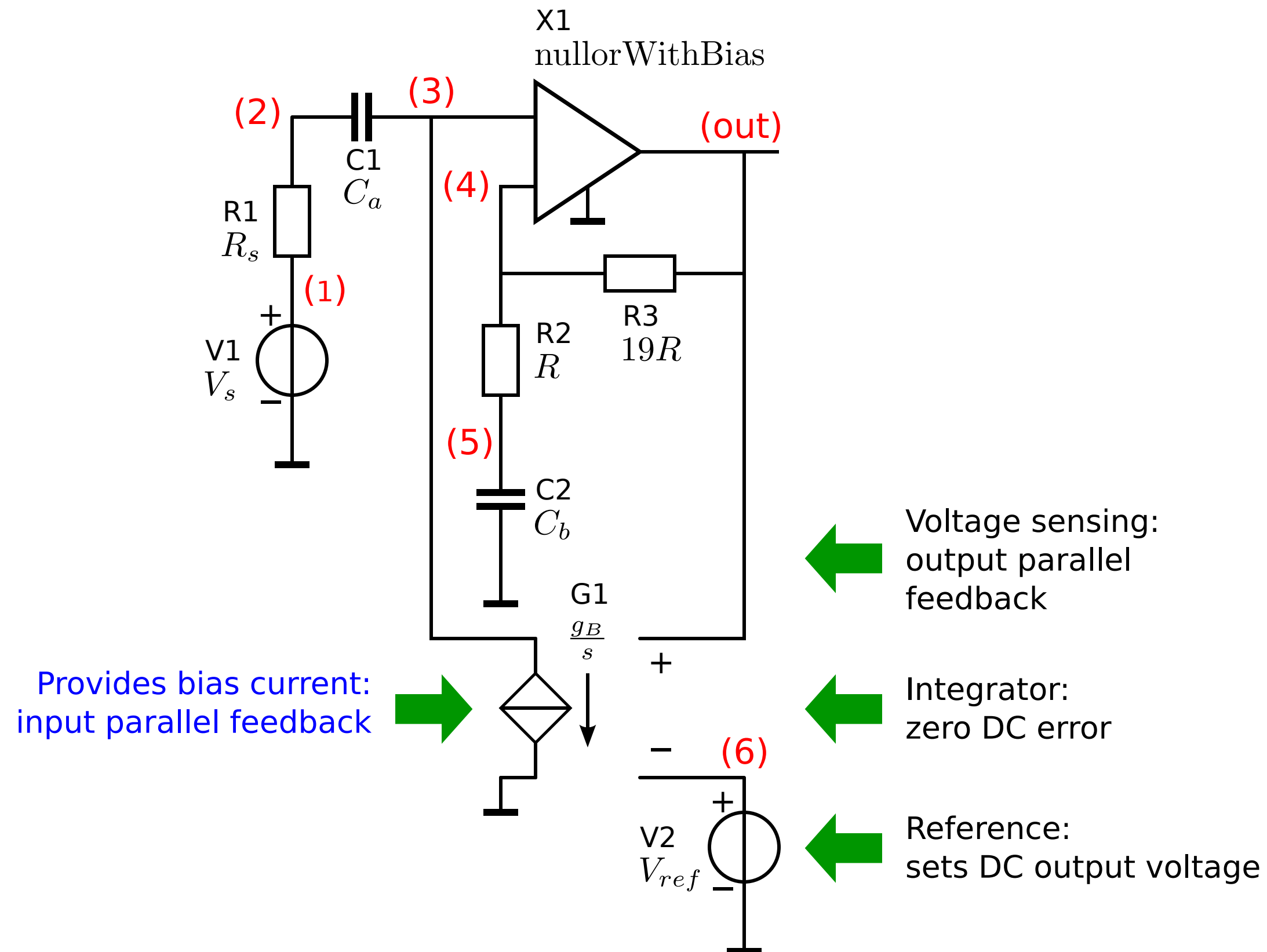
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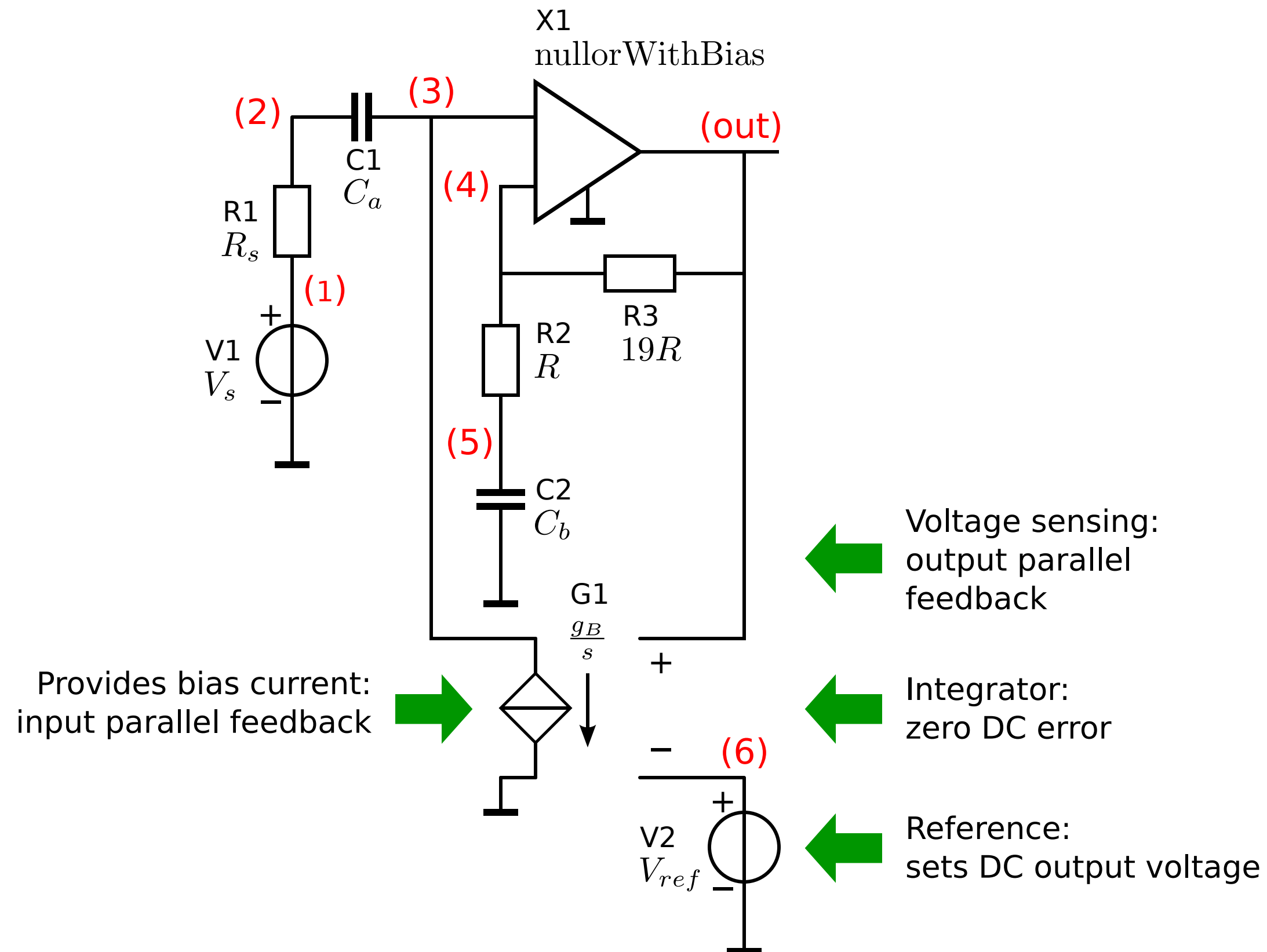
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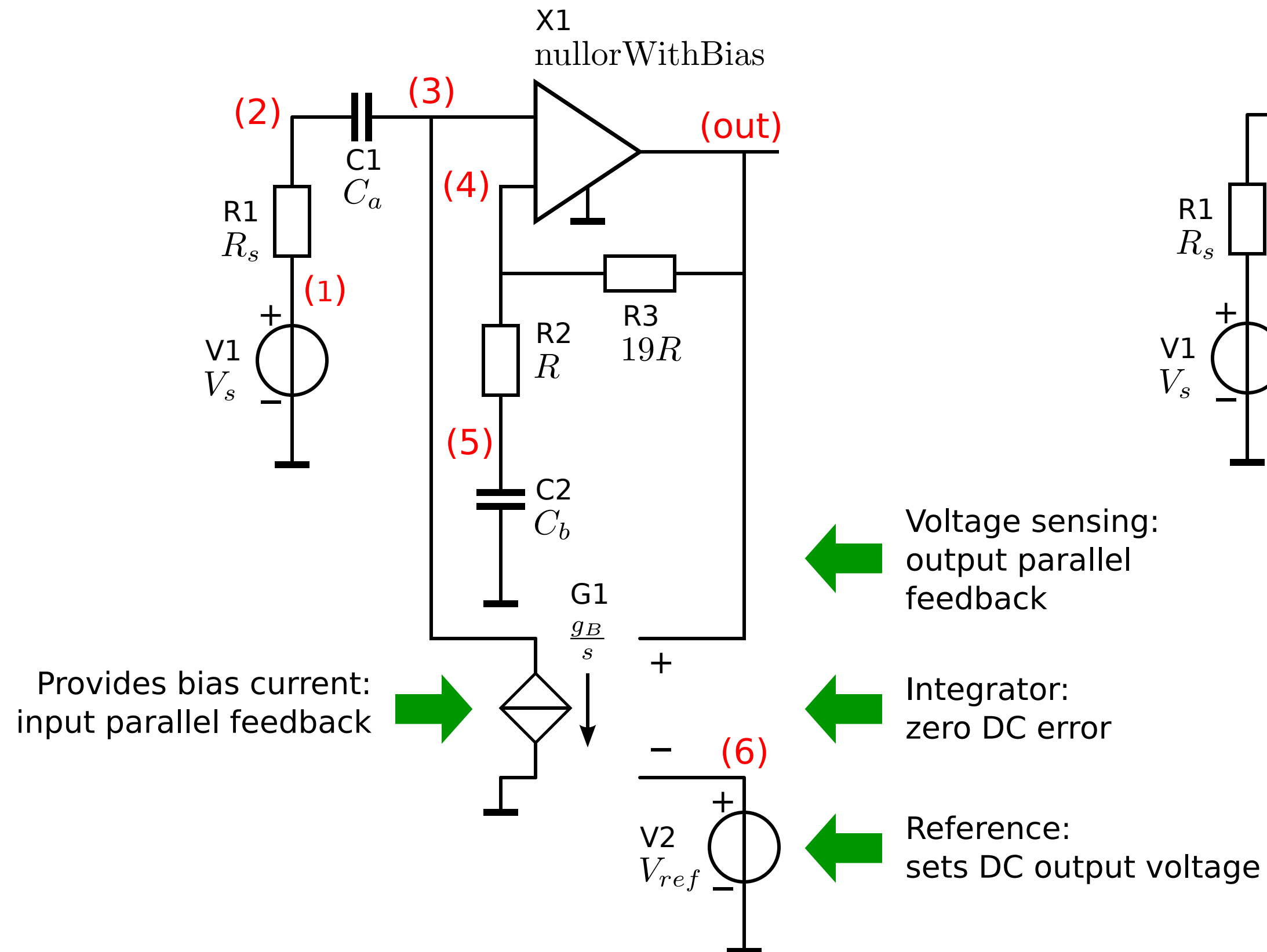
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Implementation with integrator

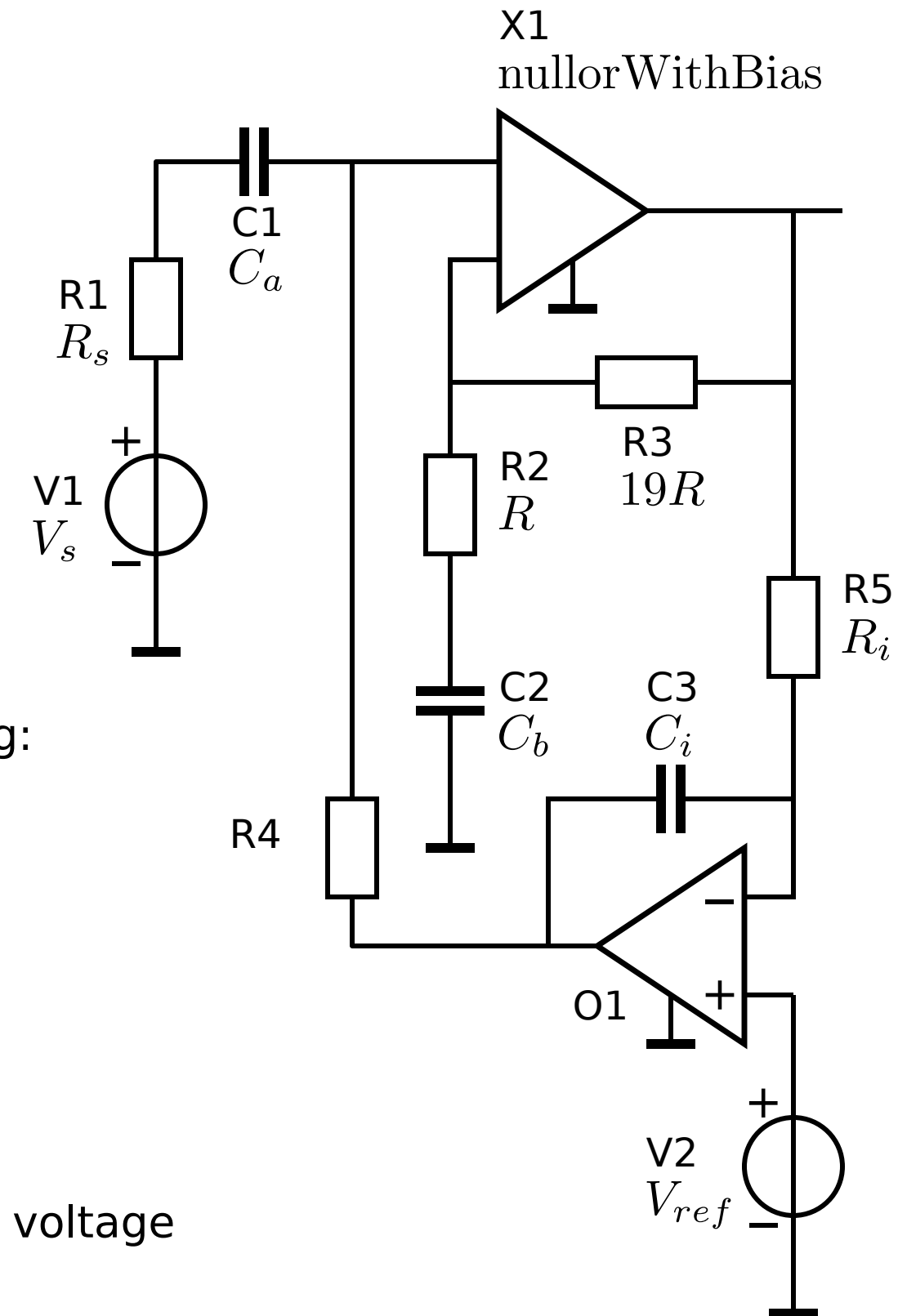


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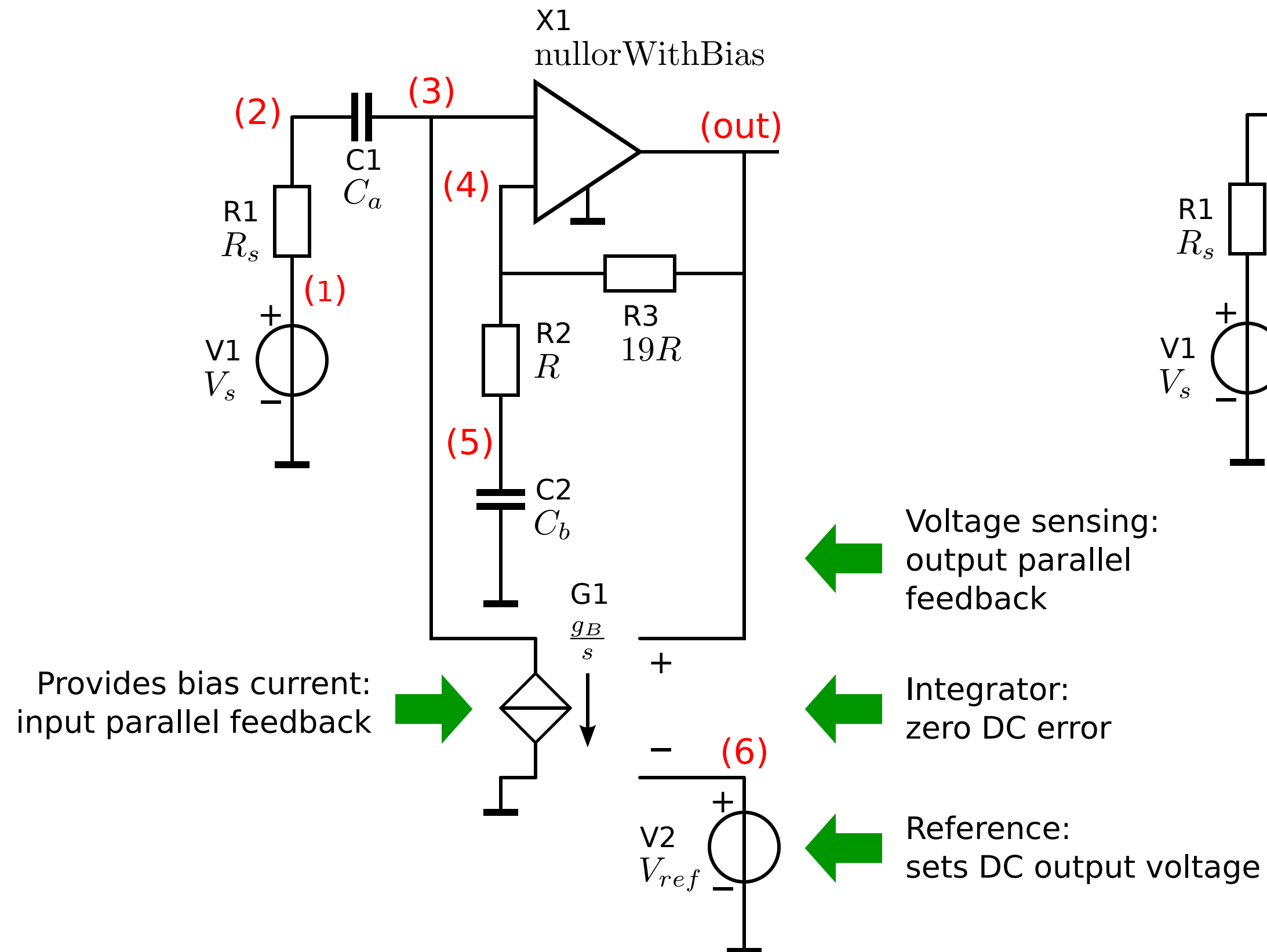


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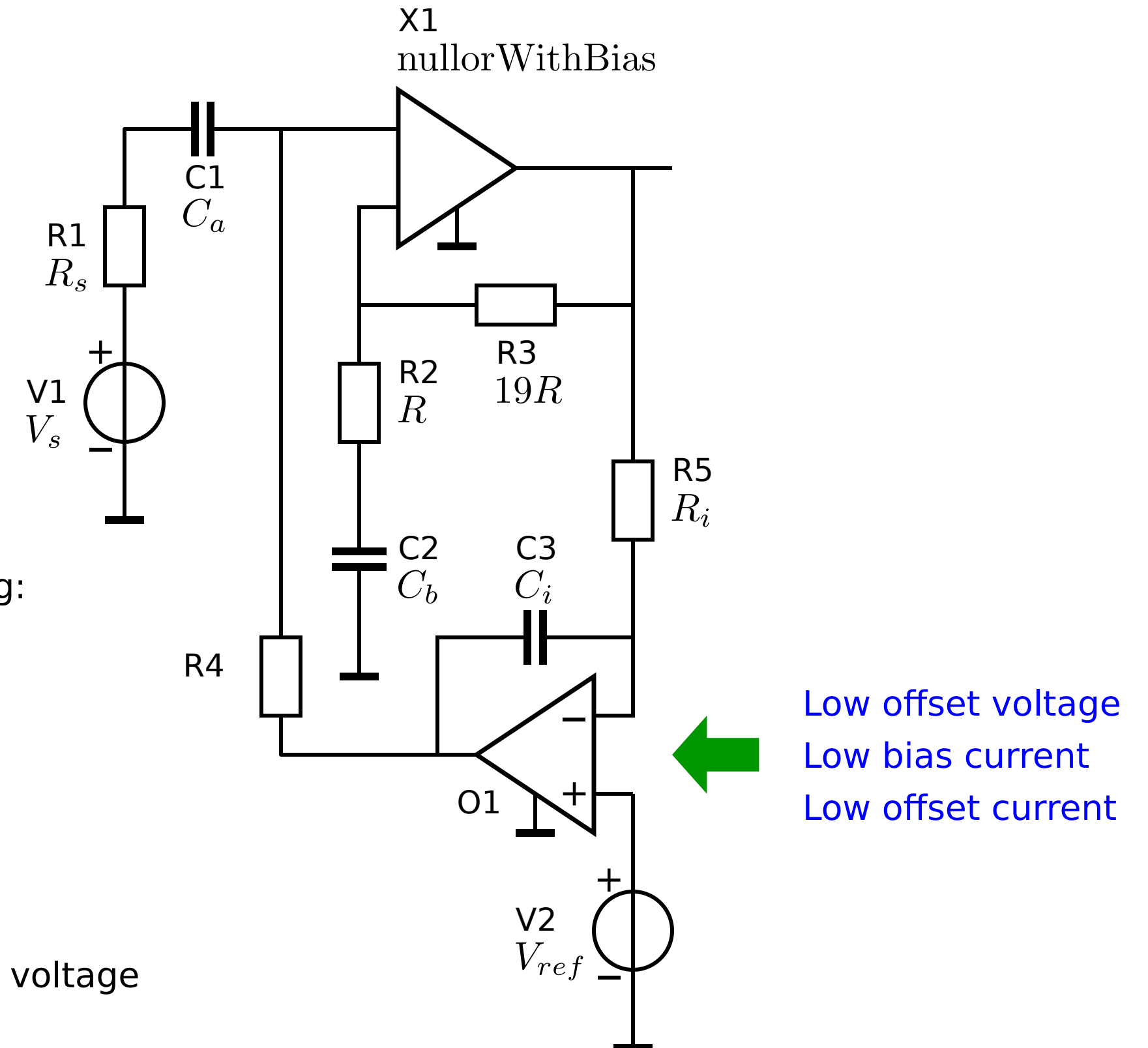


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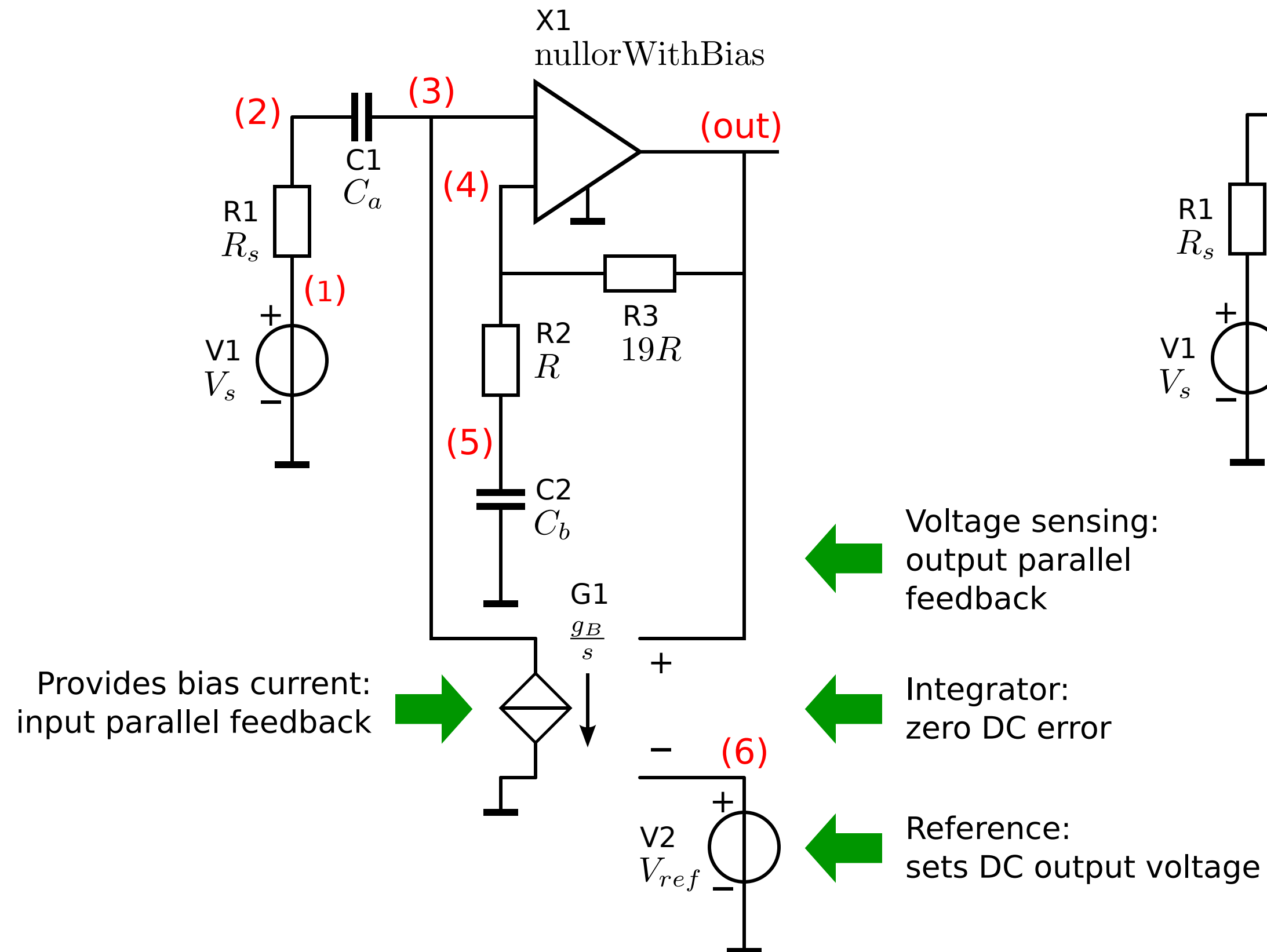


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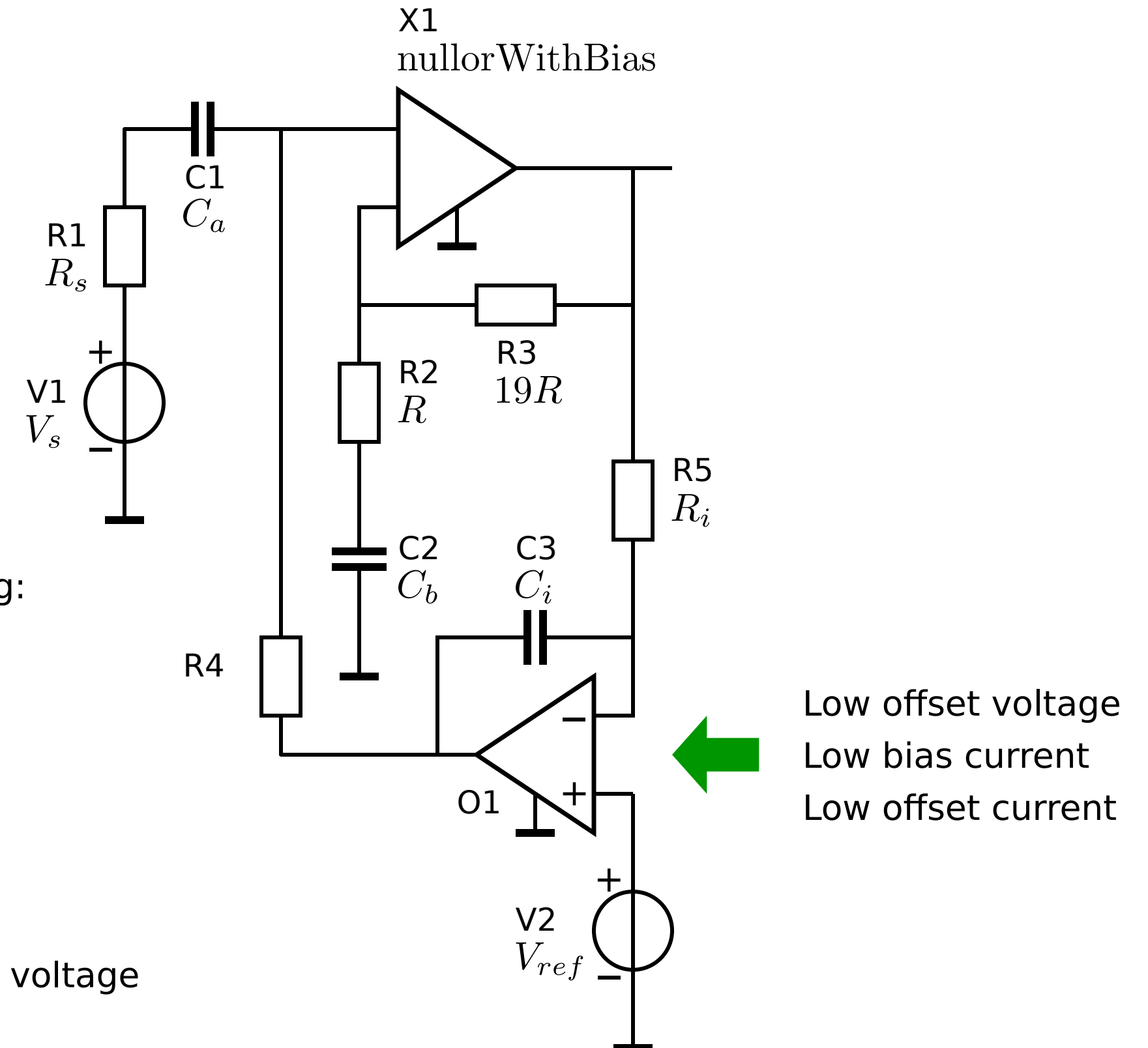


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Feedback biasing

The DC voltage V_{outDC} is:

$$V_{outDC} = 1.0 V_{ref} \quad (1)$$

The voltage transfer A_v from source to load is:

$$A_v = \frac{\frac{1.0 s^2 C_a}{g_B} + \frac{20.0 R s^3 C_a C_b}{g_B}}{\frac{s^2 (C_a + 20.0 R C_a C_b R_s g_B)}{g_B} + \frac{s (20.0 R C_b g_B + C_a R_s g_B)}{g_B} + \frac{R s^3 C_a C_b}{g_B} + 1} \quad (2)$$

For high frequencies, this transfer can be written as:

$$A_v = 20.0 \quad (3)$$