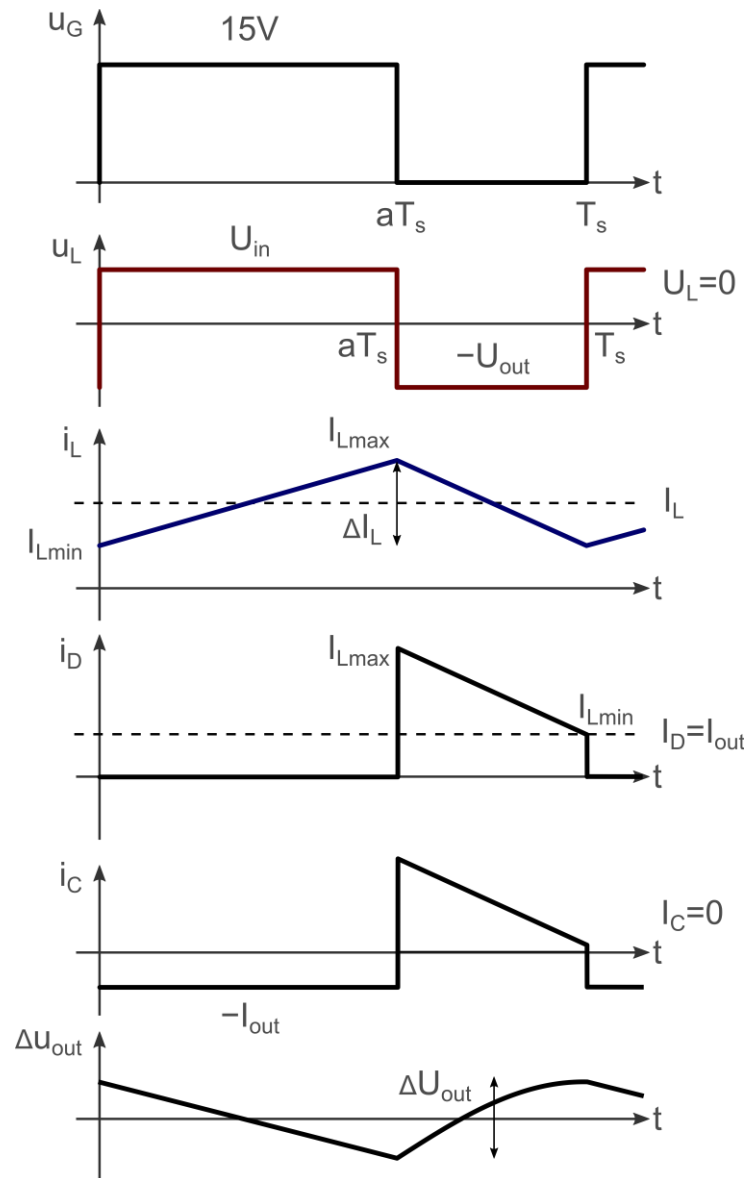


DC POWER SUPPLY

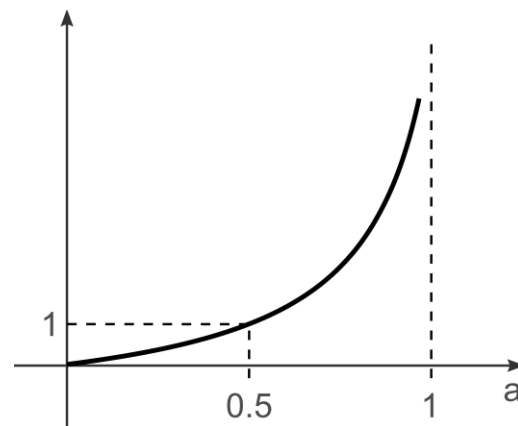
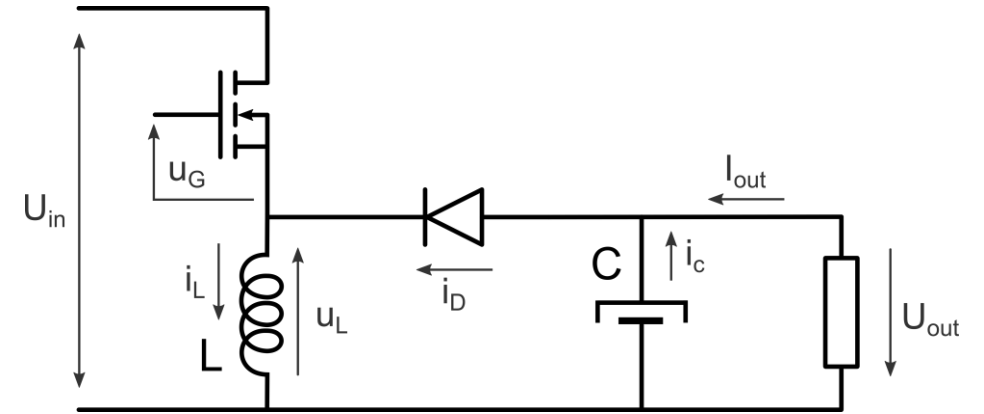
BUCK-BOOST CONVERTER

DC POWER SUPPLY

Buck-boost - CCM



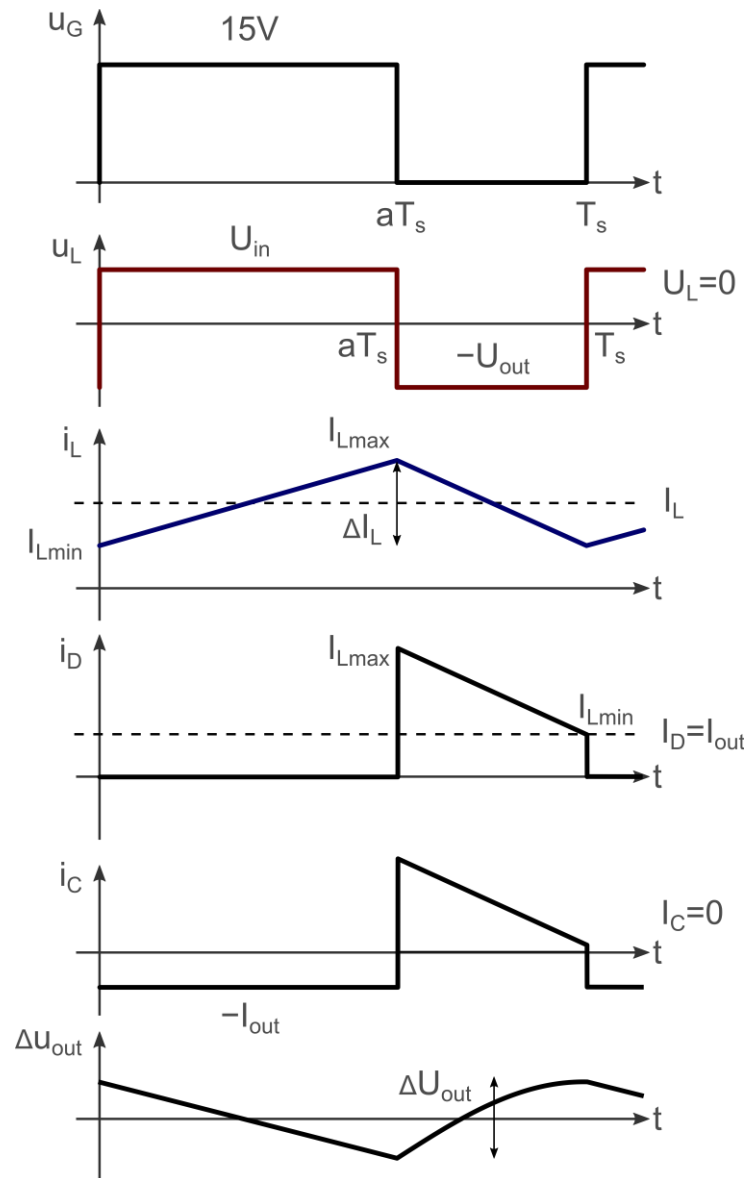
- Voltage “turns-ratio”



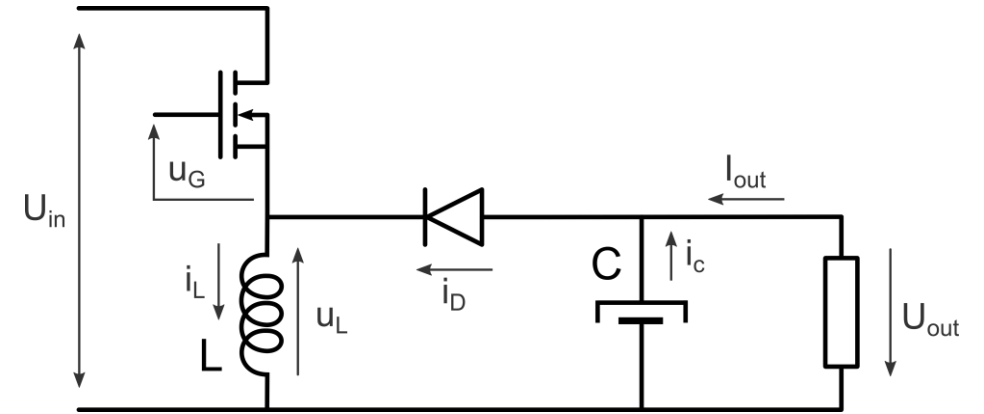
DC POWER SUPPLY

Buck-boost - CCM

Output filter (LC) design



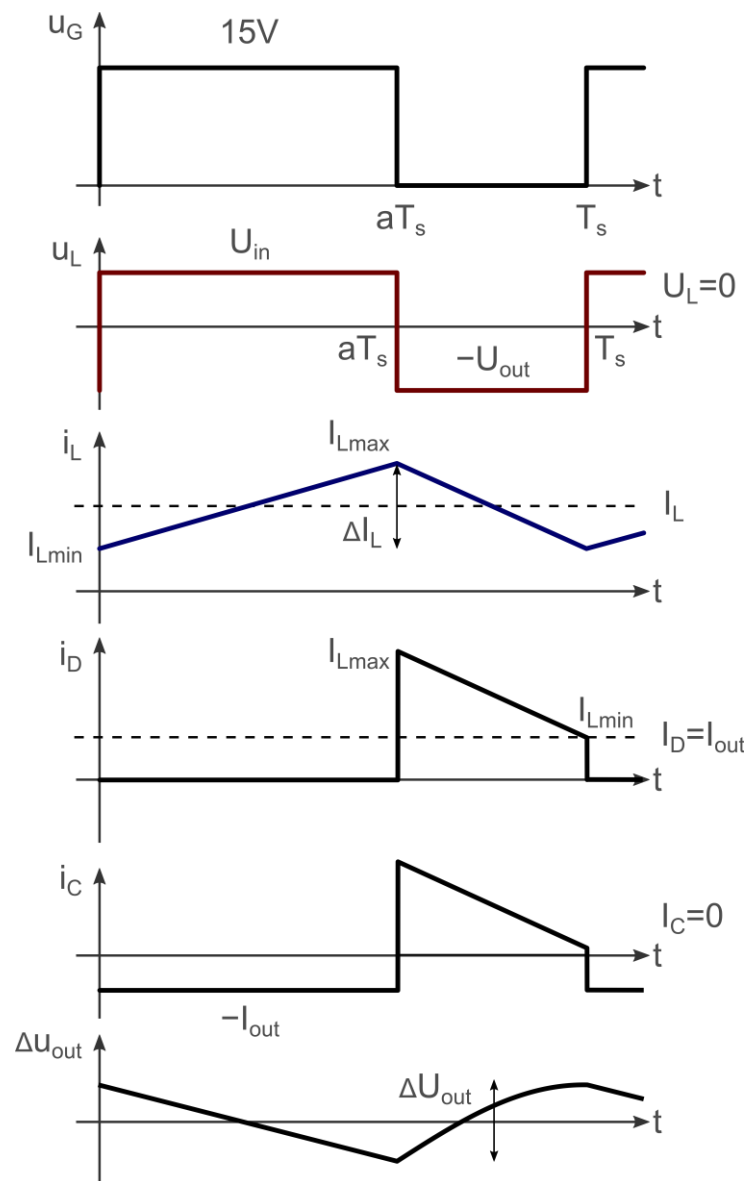
- $L = ?$



DC POWER SUPPLY

Buck-boost - CCM

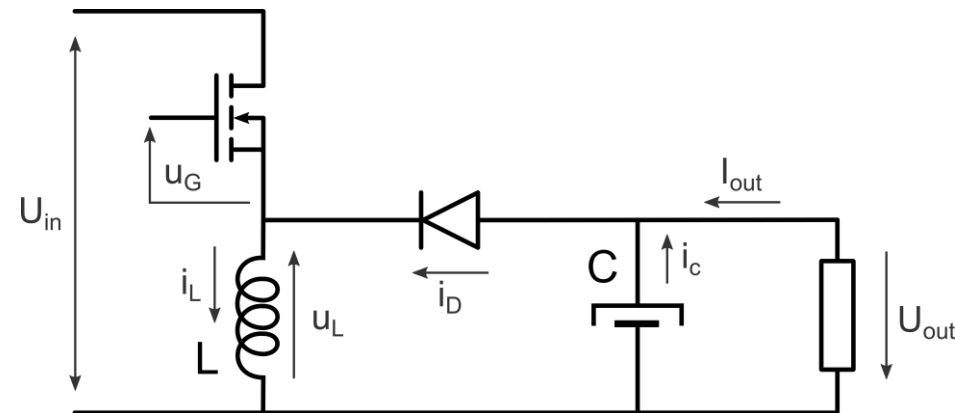
Output filter (LC) design



- $L = ?$

$$L \geq \frac{U_{out} \cdot (1 - a)^2 \cdot T_s}{2 \cdot I_{out}}$$

$$I_{Lmax} = I_L + \frac{\Delta I_L}{2} = \frac{I_{iz}}{1 - a} + \frac{U_{iz} \cdot (1 - a) T_s}{2 \cdot L}$$



DC POWER SUPPLY

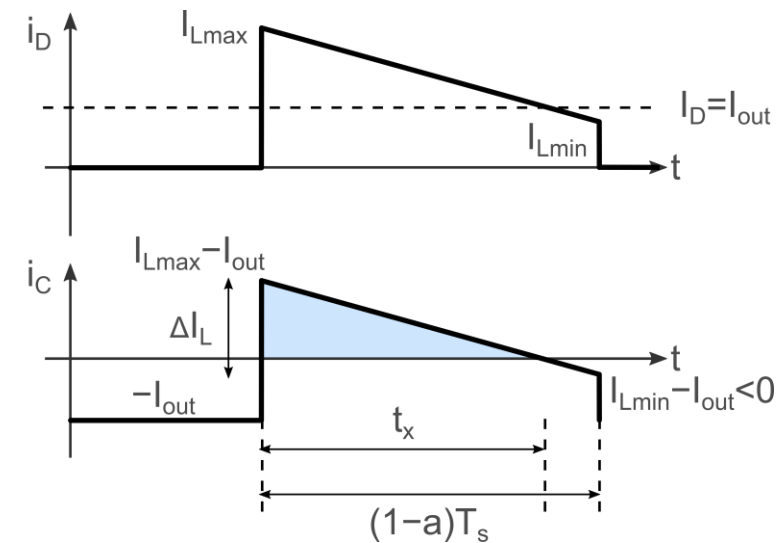
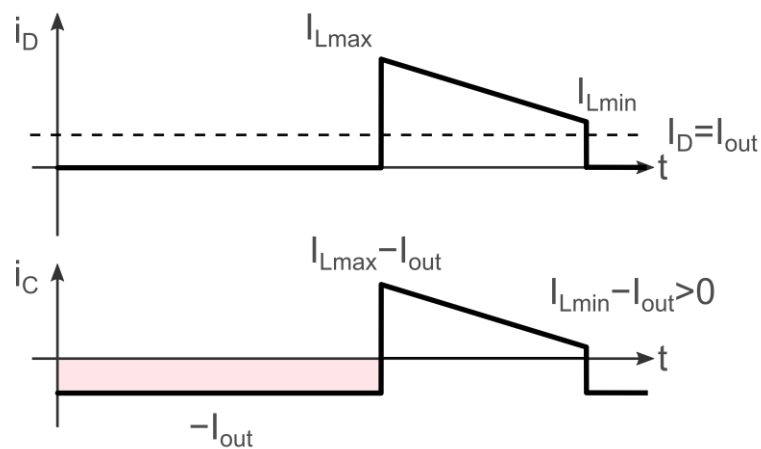
Buck-boost - CCM

Output filter (LC) design

- $C=?$

$$\Delta U_{out} = \frac{Q}{C} \leq \Delta U_{outmax}$$

$$I_{Lmin} = I_L - \frac{\Delta I_L}{2} = \frac{I_{out}}{1-a} - \frac{U_{out} \cdot (1-a)T_s}{2 \cdot L}$$



DC POWER SUPPLY

Buck-boost - DCM

