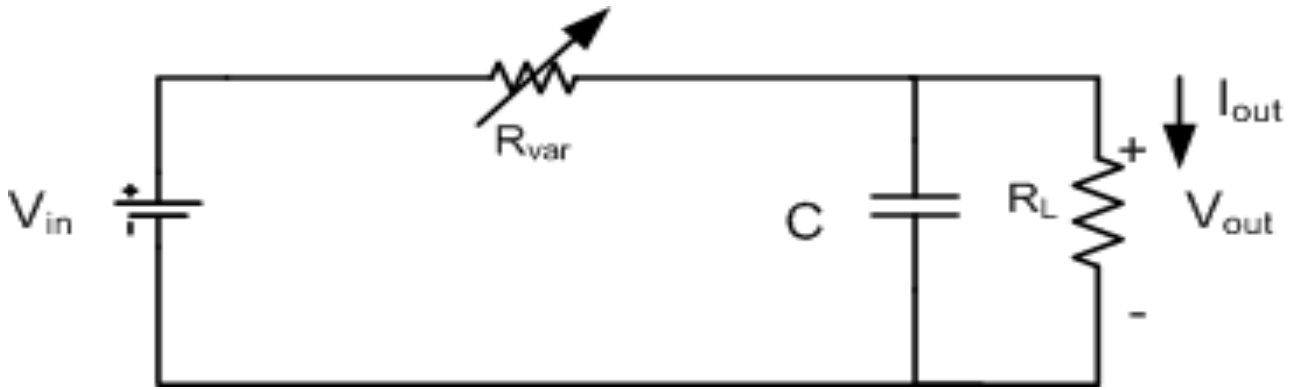
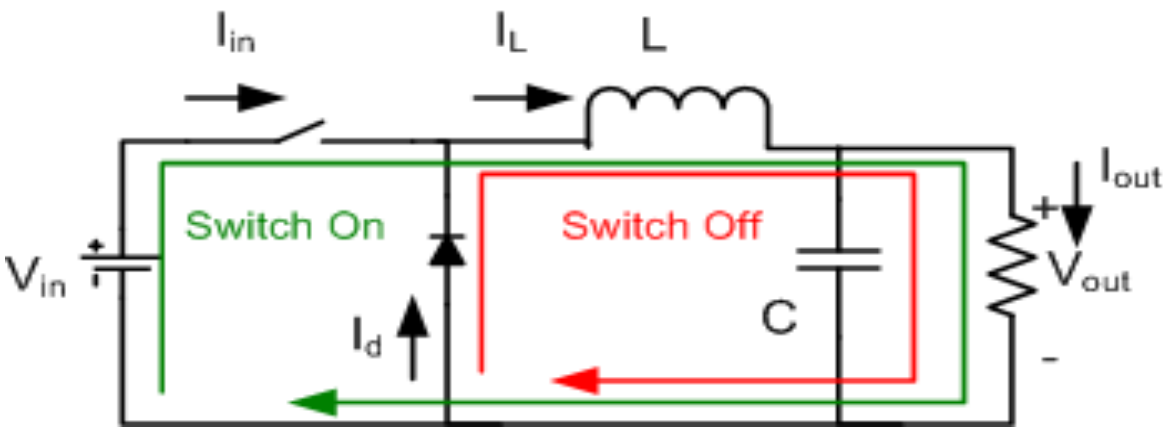
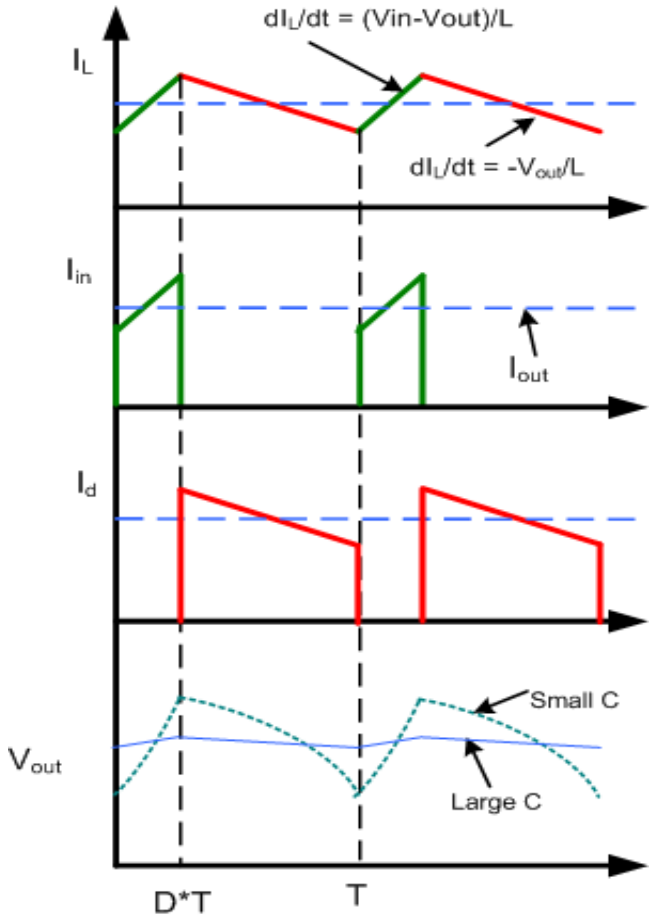
Linear (Step-Down) Converter



- $V_{out} = V_{in} * R_L/(R_{var}+R_L)$
- Capacitance smoothes out load and source transients

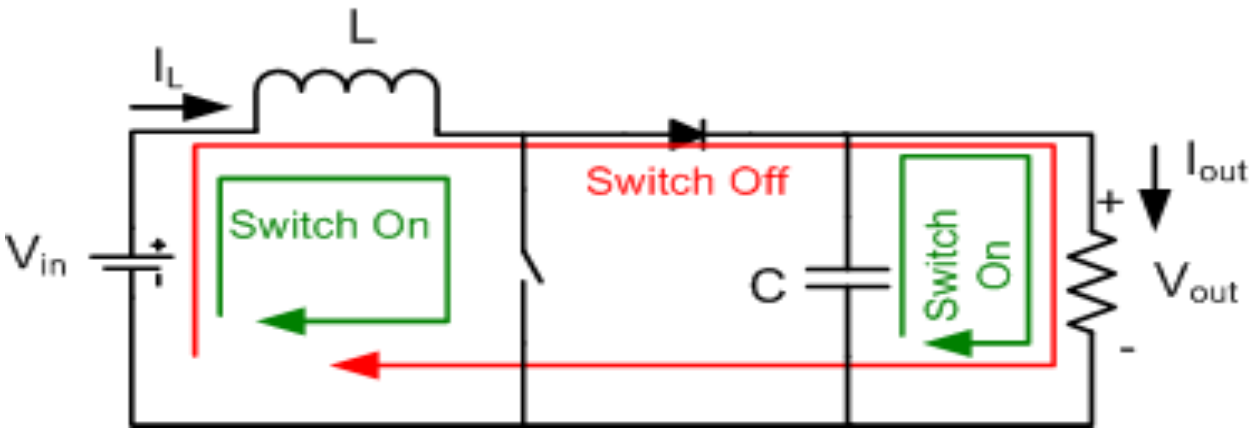
Buck (step-down) Converter

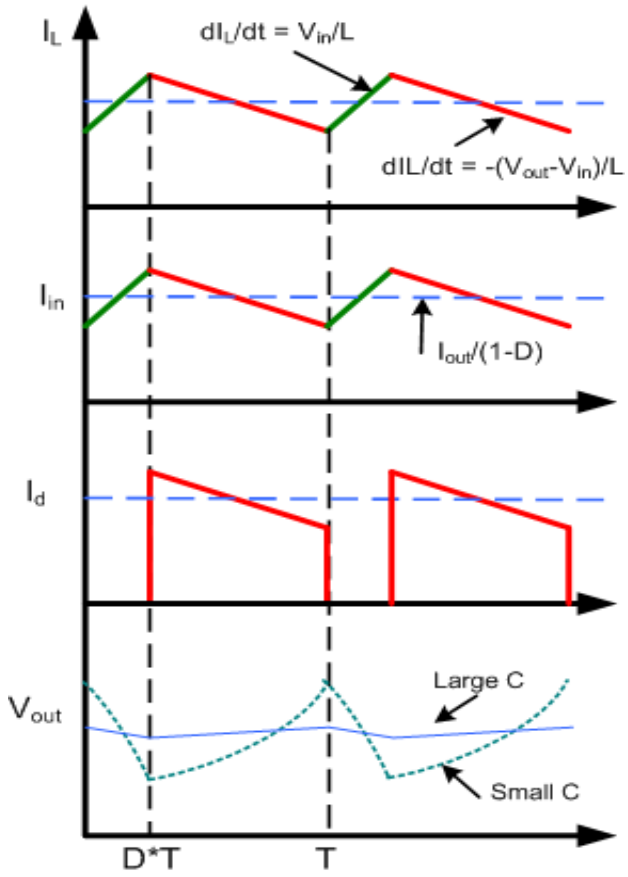




- $V_{out} = V_{in} * D$
- Capacitance smoothes out effects of inductor ripple current and load variations

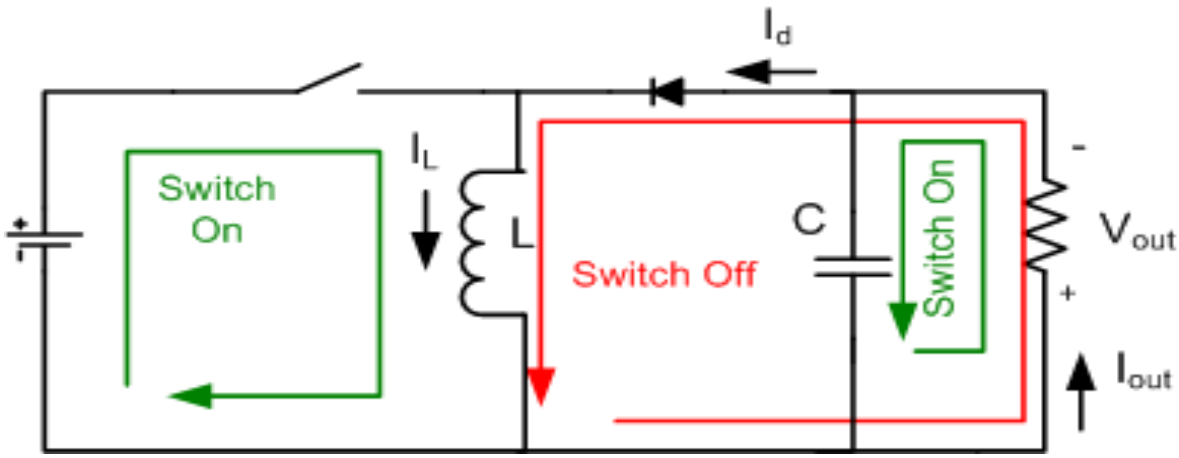
Boost (step-up) Converter

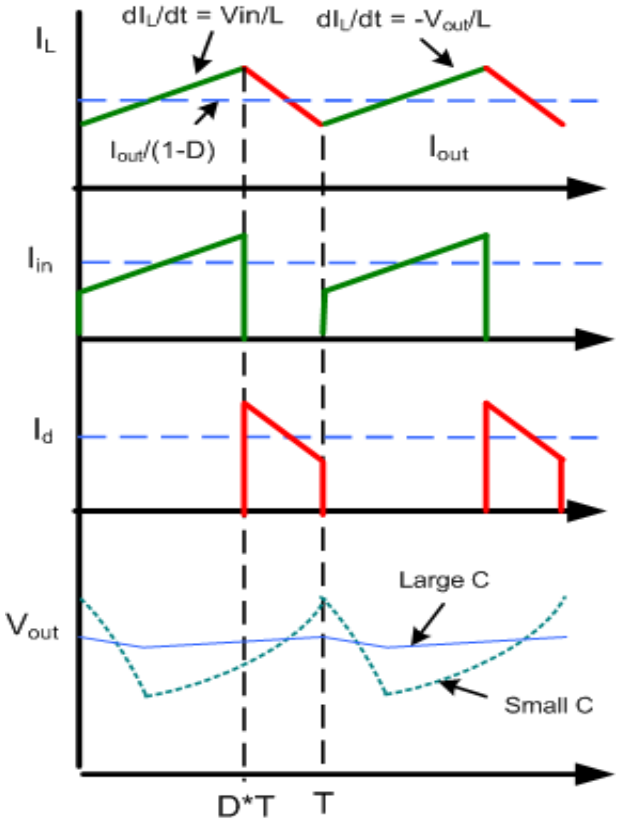




- $V_{out} = V_{in} /(1-D)$
- Capacitor C smoothes out effects of inductor ripple current and load variations

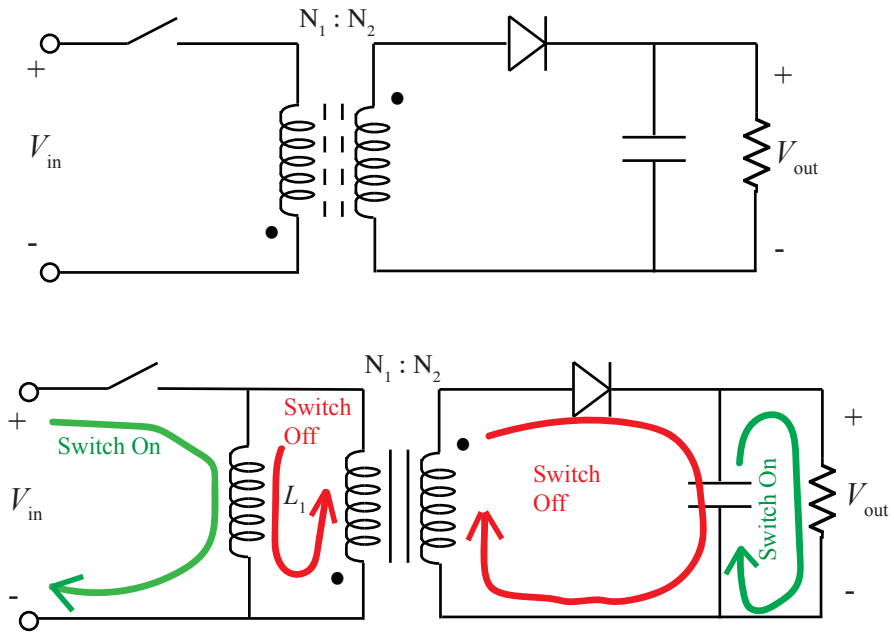
Buck-Boost (invert, step-up/down) Converter





- $V_{out} = V_{in} * D/(1-D)$
- Ripple current inversely proportional to inductance L
- Capacitance smoothes out effects of inductor ripple current and load variations
- $V_{out} > V_{in}$ requires D>1/2

Flyback Converter



$$V_{out} = V_{in} *(N_2/N_1)*D/(1-D)$$