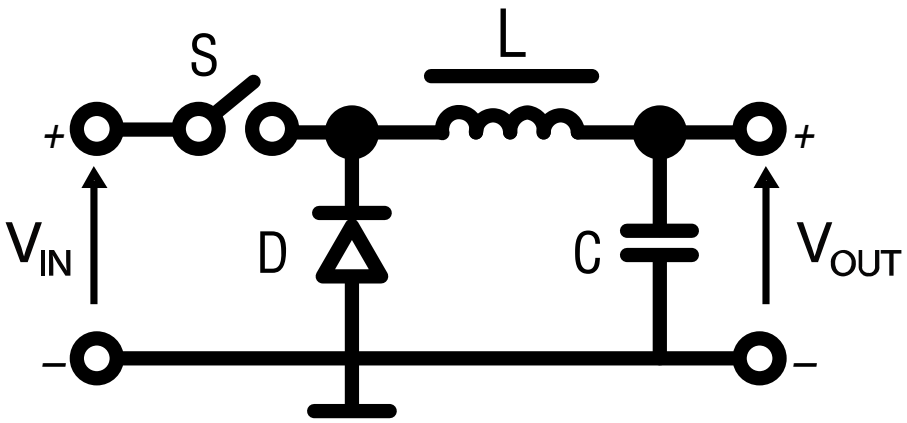
Non-isolated, non-inverting topologies, output voltage at same polarity as input.



Step-down or Buck converter

$0 \le V_{OUT} \le V_{IN}$ $V_{OUT} = d*V_{IN}$

Simple step down circuit with single switch (FET) and storage element (Inductor). The output capacitor C is needed to remove significant output ripple. Synchronous version replaces D with second FET.

Ref: https://www.mouser.com/applications/power-supply-topology-buck/

Step-up or Boost converter

$V_{OUT} \ge V_{IN}$ $V_{OUT} = V_{IN}/(1-d)$

Simple step up circuit with single switch and storage element. The output capacitor C is needed to remove significant output ripple. Synchronous version replaces D with second FET