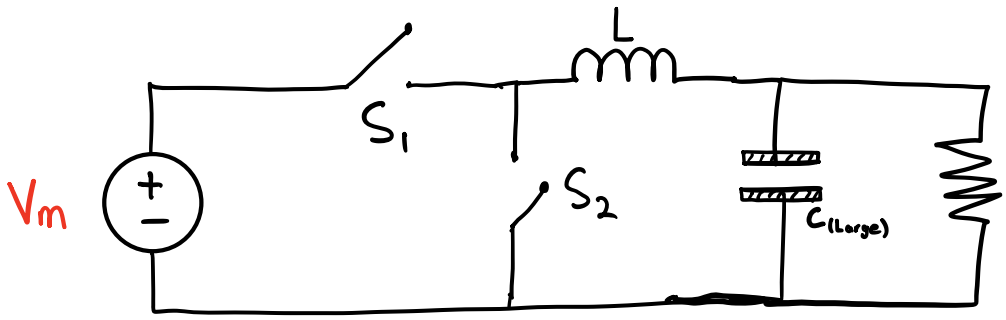
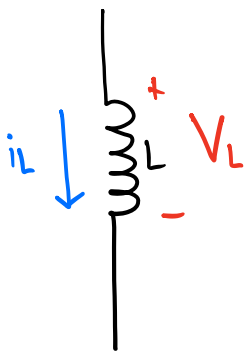
Buck Converter:

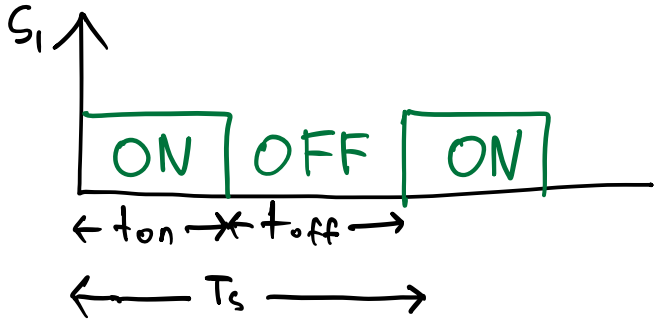


- S1 and S2 complementary, not on at the same time



Initial Conditions

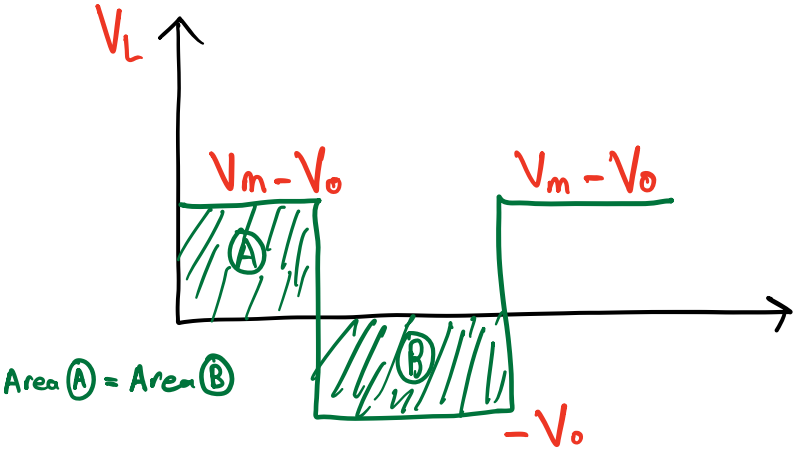
$$i_L = \frac{1}{L}\int V_L\,dt \rightarrow i_L(t) = \frac{V_L(t)}{L} + i_L(0)$$

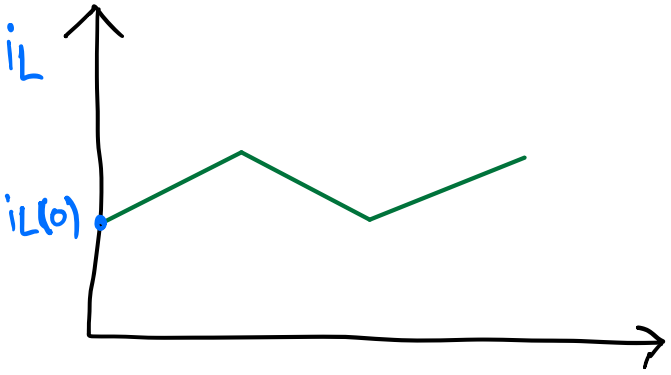


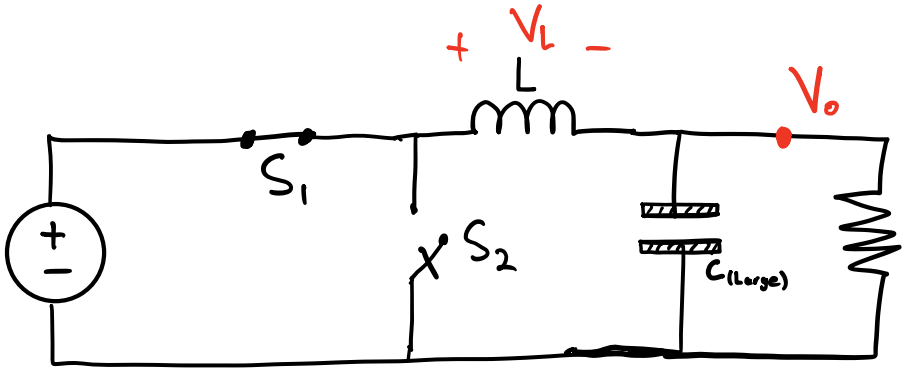
Duty Cycle:

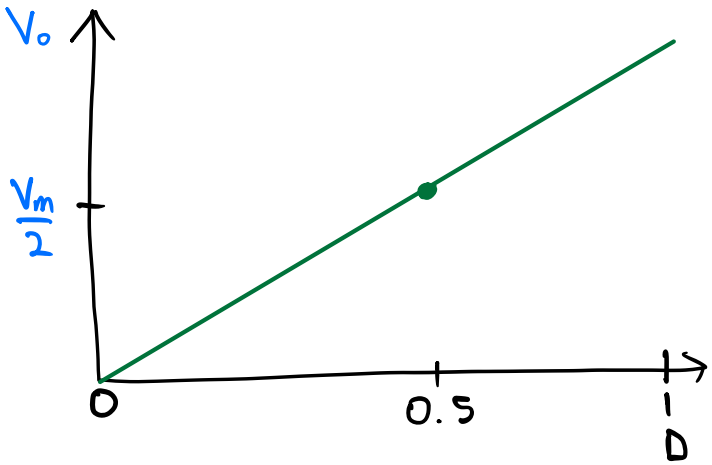
$D = t_{on}/T_s$

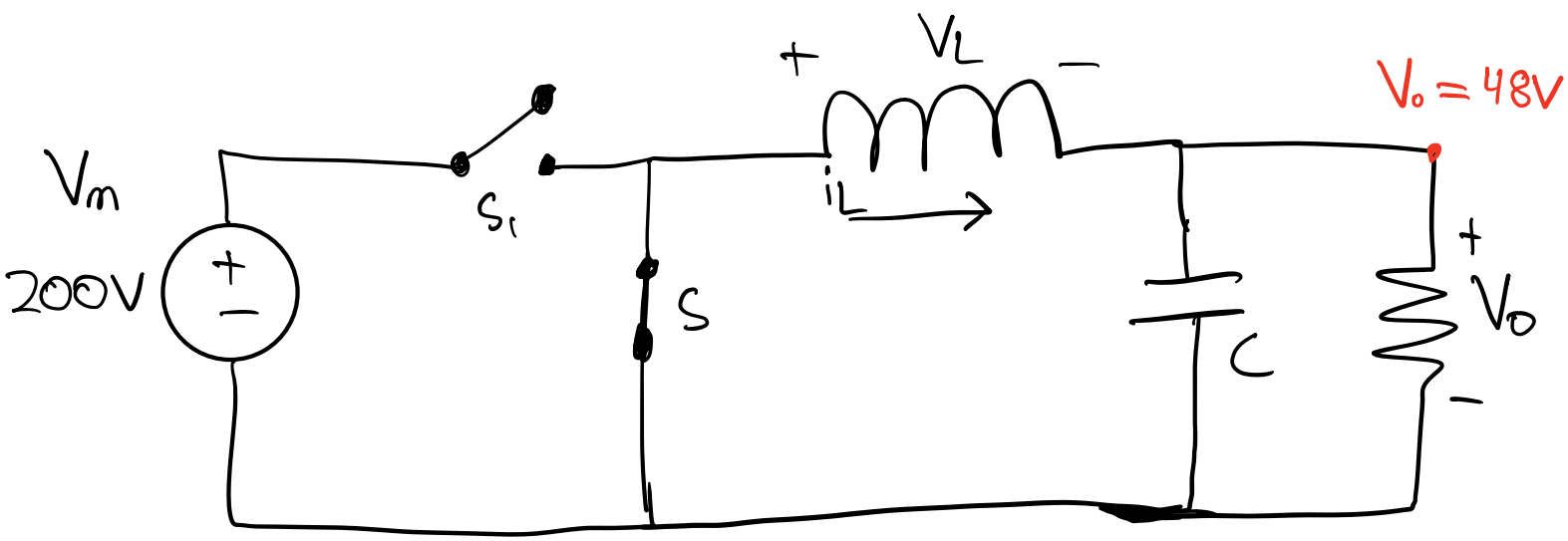
$V_o(D) = V_{in} \cdot D$






+ V_L −
L
V_o
S_1
S_2
$C_{(Large)}$


V_o
$\frac{V_m}{2}$
0
0.5
1
D


+ V_L −
$V_o = 48V$
V_m
200V
S_1
S
i_L
C
+
V_o
−