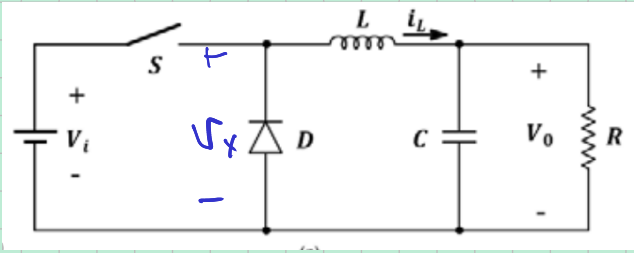


Discontinuous Conduction Mode for the Buck Converter



$$\frac{V_x - V_0}{L} = \frac{L}{L} \frac{di_L}{dt}$$

- $d_1 T_s = \text{ON Period time}$
- $d_2 T_s = \text{OFF Period time}$
- $T_s = \text{Total time period for one cycle}$
- $i_{pk} = \text{peak value of inductor current after ON period}$
- $\bar{i}_L = \text{Average value of current}$
- $V_{in} = \text{input voltage}$

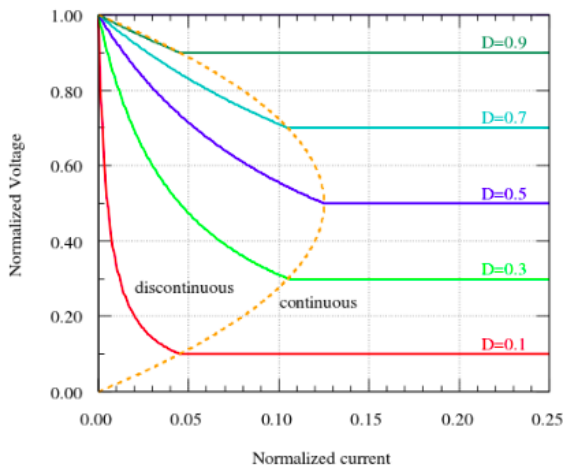
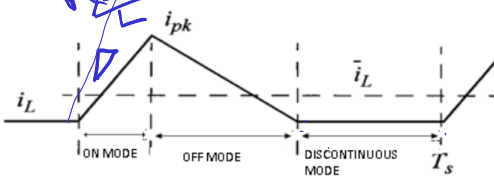


Fig. 6: Evolution of the normalized output voltages with the normalized output current.

$$L_{\min} = \frac{(1 - D)R}{2f} \quad \text{for continuous current}$$

References:

<https://www.ti.com/lit/an/slva057/slva057.pdf>

<https://core.ac.uk/download/pdf/53187372.pdf>

https://youtu.be/RZh9_WJ-dr0

<https://youtu.be/aJ-sGbjwjhA>