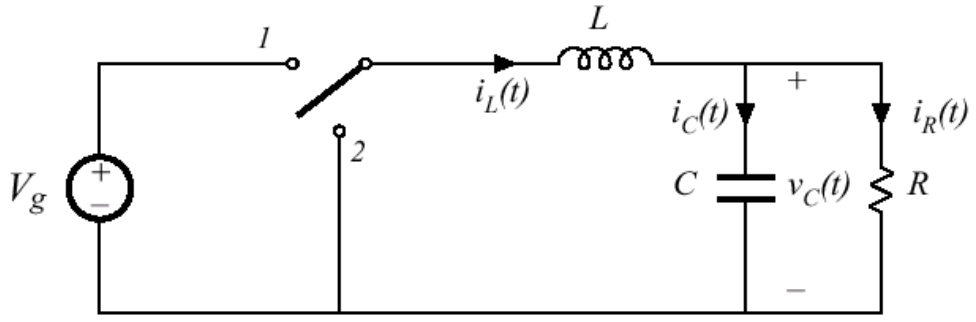
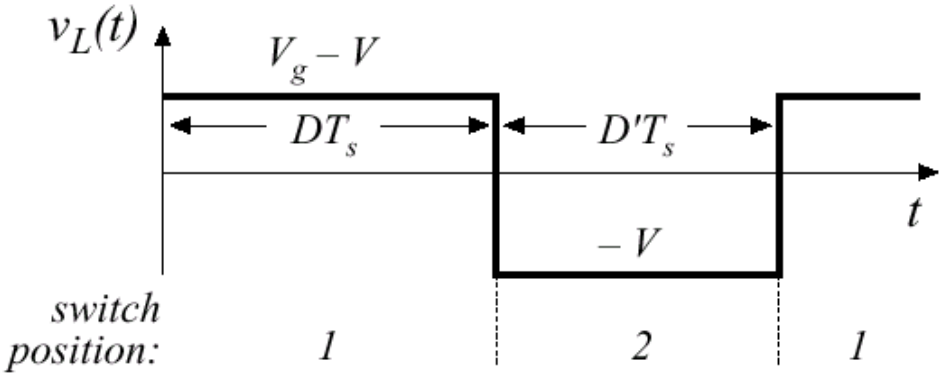
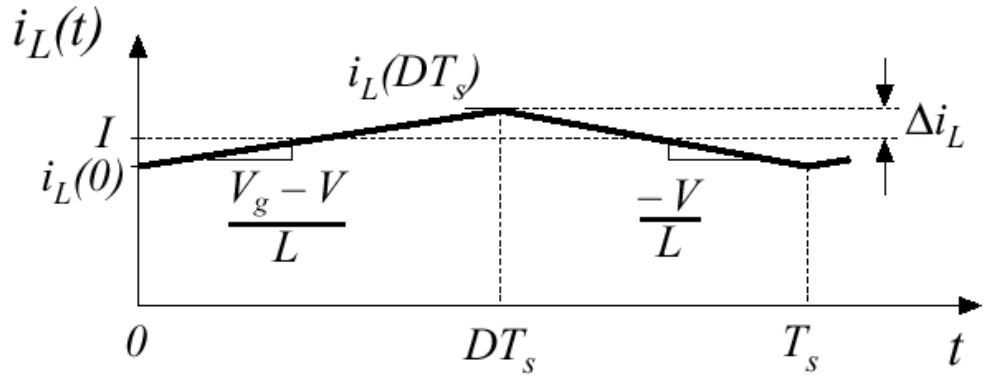
INDUCTOR CURRENT RIPPLE







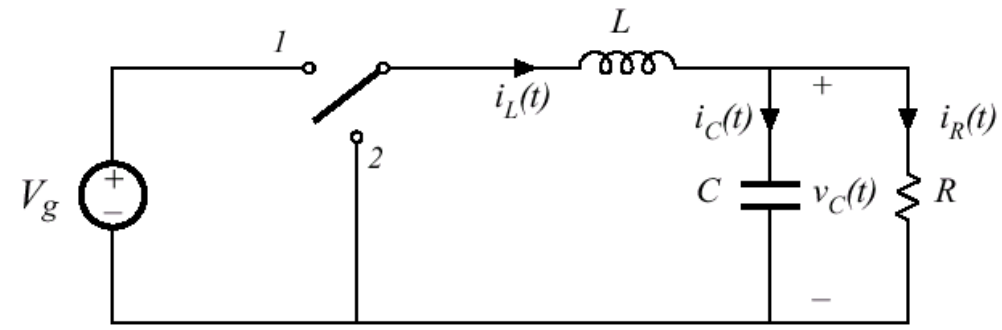
$V=V_o$

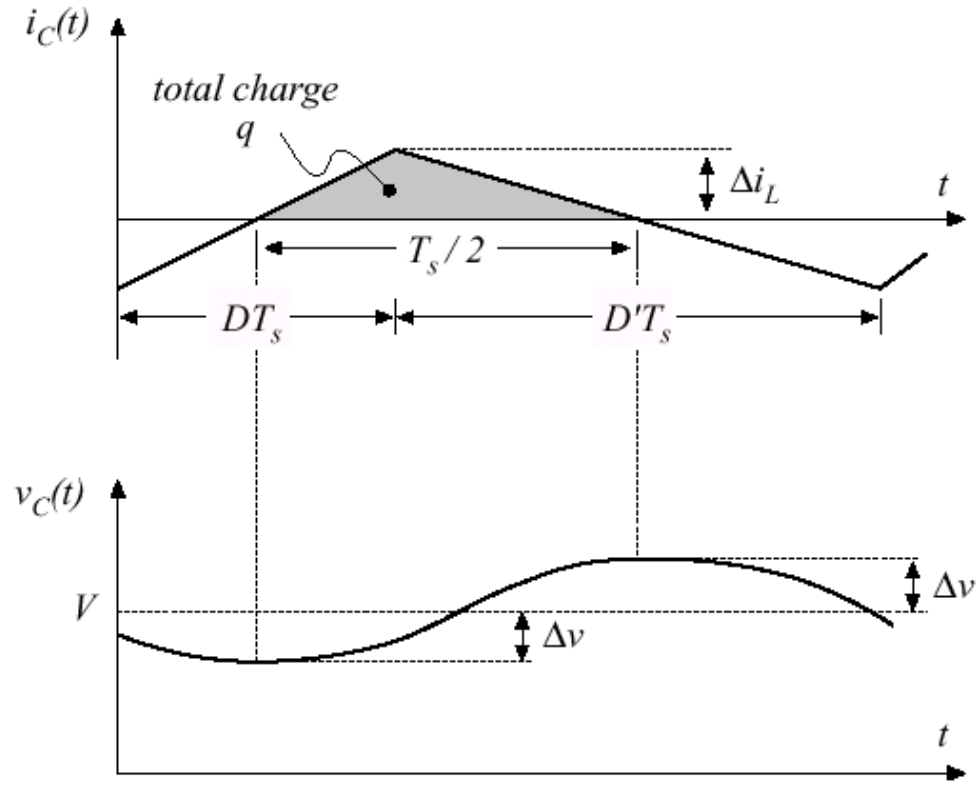
$$2\Delta i_L = D(V_g-V_o)/f_sL \le \Delta i_{Lpp}$$

$$\Downarrow$$

$$L \ge D(V_g-V_o)/(f_s\Delta i_{Lpp})$$

CAPACITOR VOLTAGE RIPPLE





$$q = C\,2\Delta v = \Delta i_{Lpp}/(8f_s)$$

$$2\Delta v \le \Delta v_{opp}$$

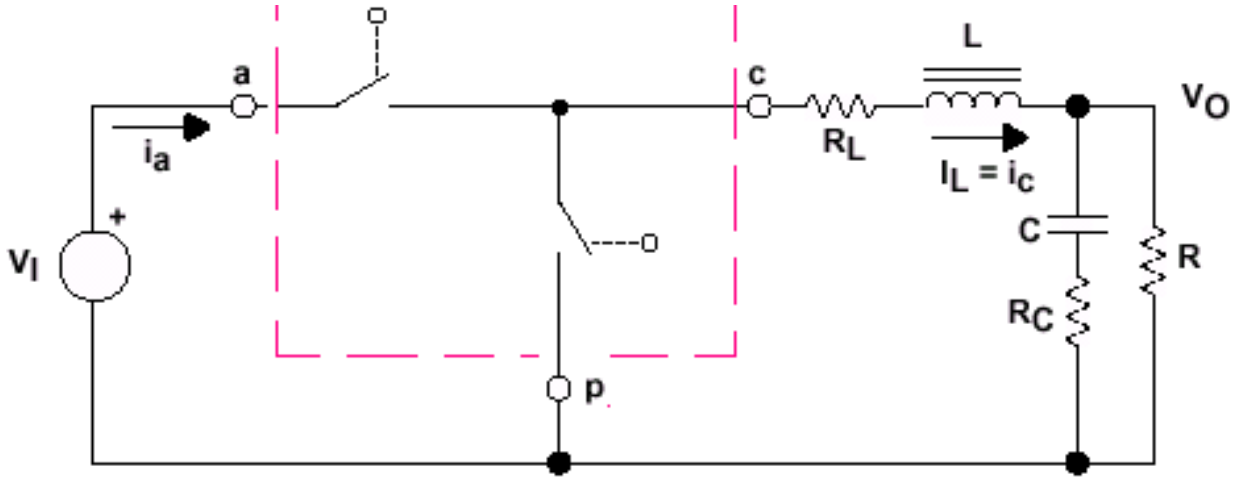
$$\Downarrow$$

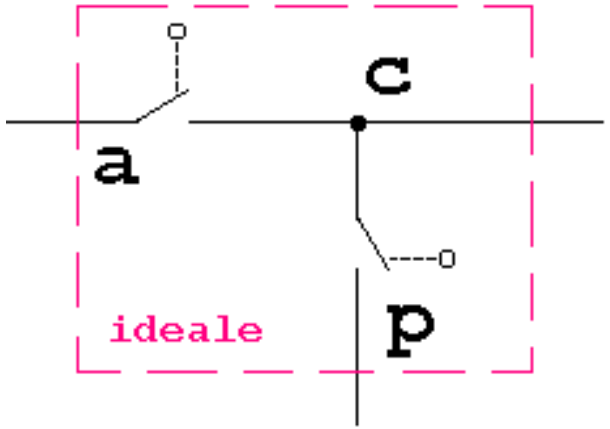
$$C \ge \Delta i_{Lpp}/(8f_s\,\Delta v_{opp})$$

$$\Downarrow$$

$$\boxed{C \ge \Delta i_{Lpp}/(\Delta v_{opp} 8f_s)}$$

$$\boxed{L \ge D(V_g - V)/(f_s \Delta i_{Lpp})}$$

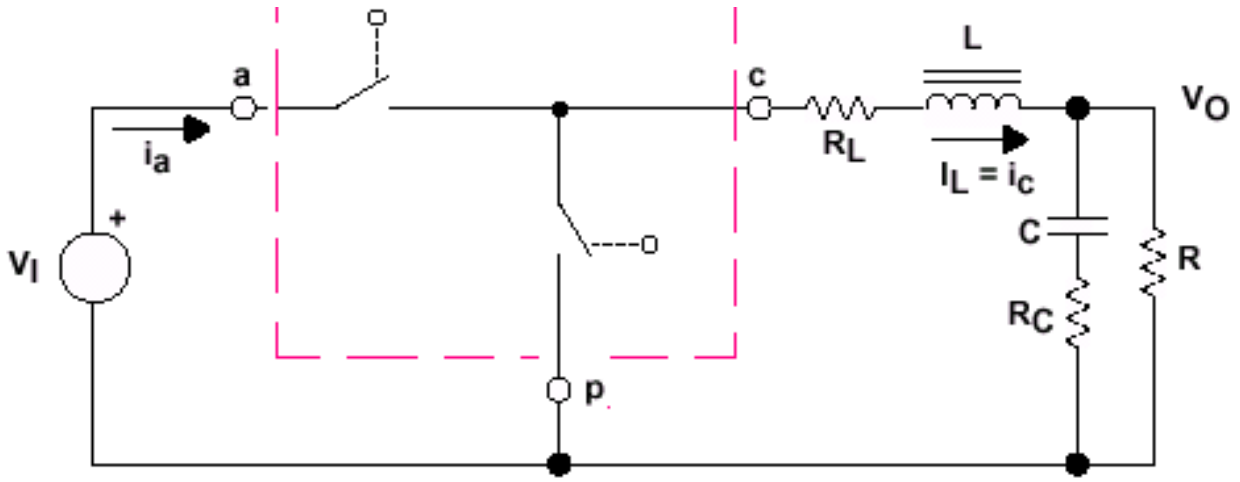




$$i_c = i_a + i_p \quad v_{ap} = v_{ac} + v_{cp}$$

$$\langle i_a \rangle = d \times \langle i_c \rangle$$

$$\langle v_{cp} \rangle = d \times \langle v_{ap} \rangle$$

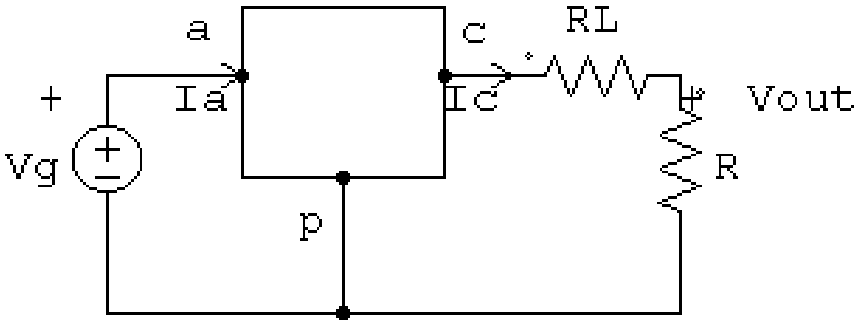


a regime (dc)

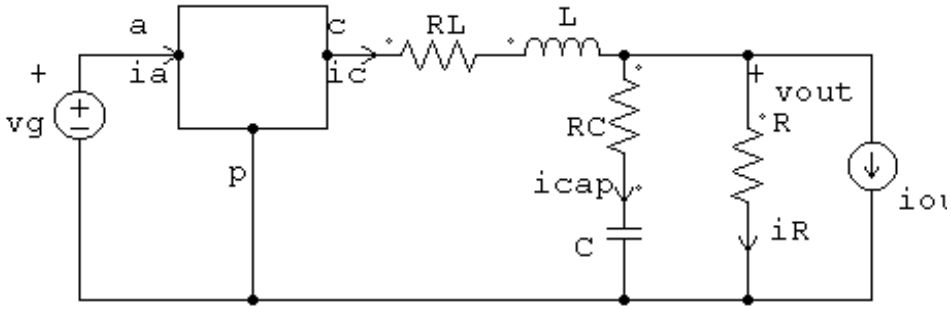
$$I_a = D \cdot I_c$$
$$V_{cp} = D \cdot V_{ap}$$

alle variazioni (ac)

$$\hat{i}_a = D \cdot \hat{i}_c + I_c \cdot \hat{d}$$
$$\hat{v}_{cp} = D \cdot \hat{v}_{ap} + V_{ap} \cdot \hat{d}$$



modello statico



modello dinamico

LKT1: $V_g = V_{ap}$
LKT2: $V_{cp} = R_L*I_c + V_{out}$
LKC: $I_{out} = I_c$
EQC1: $V_{out}= R*I_{out}$
EQC2: $I_a = D*I_c$
EQC3: $V_{cp} = D*V_{ap}$
EQC3: $V_{cp} = D*V_{ap}$

lkt1: $v_g = v_{ap}$
lkt2: $v_{cp} = (R_L+s*L)*i_c + v_{out}$
lkt3: $v_{out} = (R_C+1/(s*C))*i_{cap}$
lkc: $i_c = i_{cap} + i_R + i_o$
eqc1: $v_{out}= R*i_R$
eqc2: $i_a = D*i_c + I_c*d$
eqc3: $v_{cp} = D*v_{ap} + V_{ap}*d$