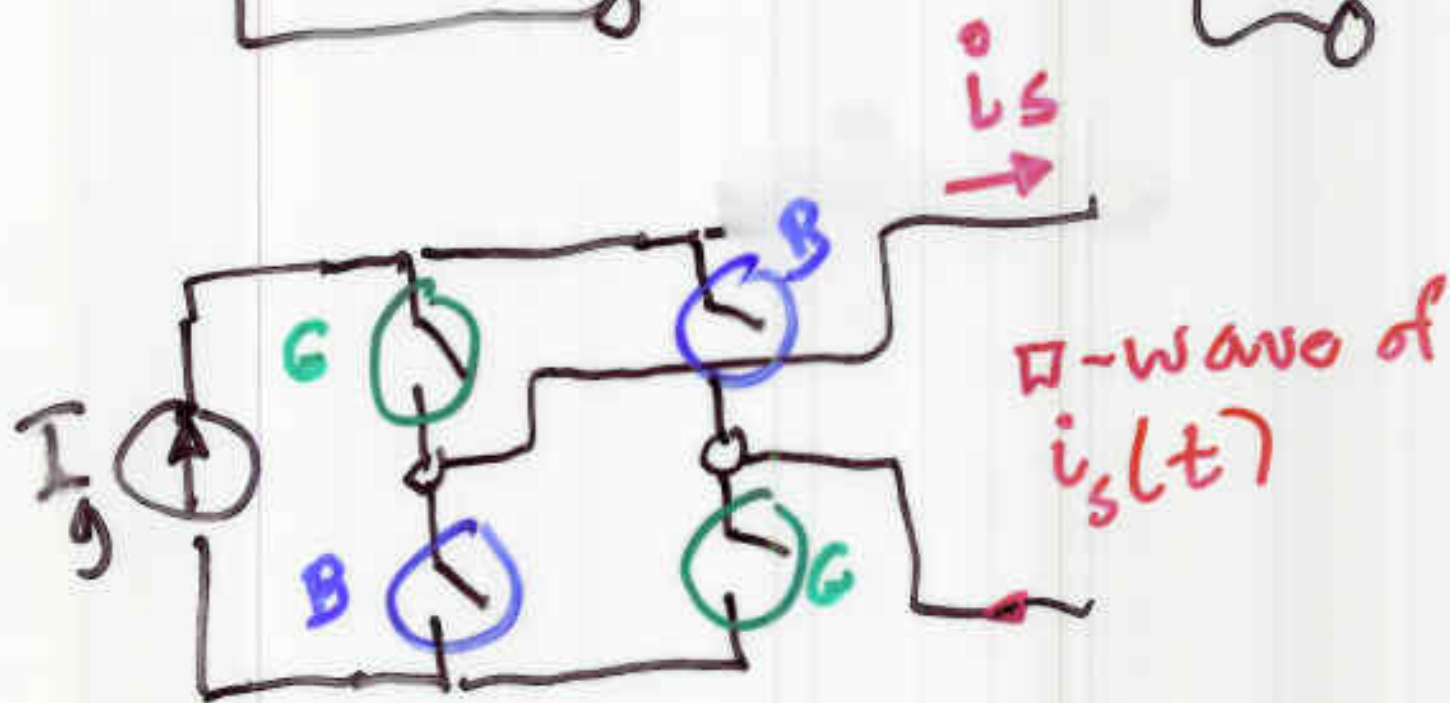


Dual



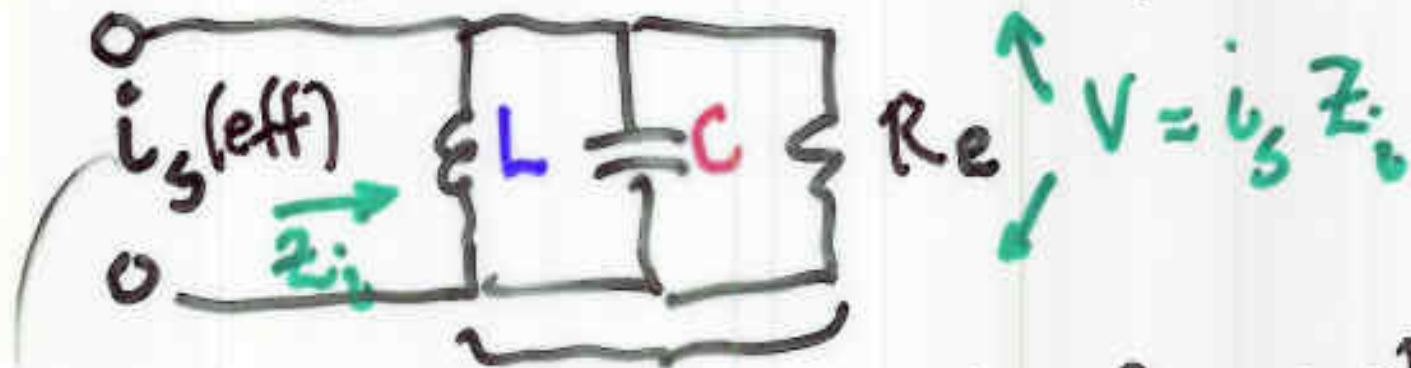
G closed : $i_s = I_g$
 B open

B closed : $i_s = -I_g$
 G open

For $t_G(\text{on}) = t_B(\text{on})$



Load for dual of series resonant
 $\square$ -wave of i @ input

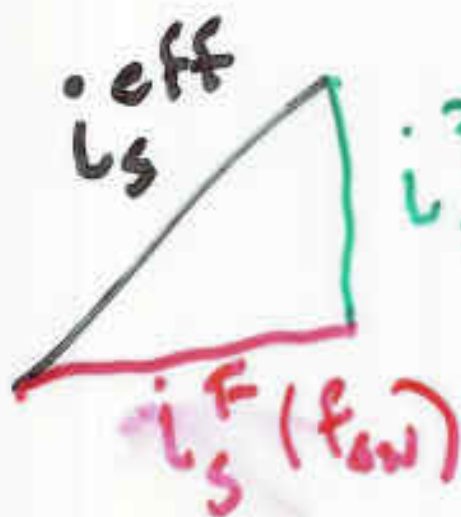


$\square$ -wave
 Approximate
 by $\sin f_{sw}$

Z_{IN} selects only
 some of the many
 components of $i(t)$

$$i_{tank} \equiv i_{s1}^{Fundamental}$$

$$2\pi f = \frac{1}{\sqrt{LC}}$$



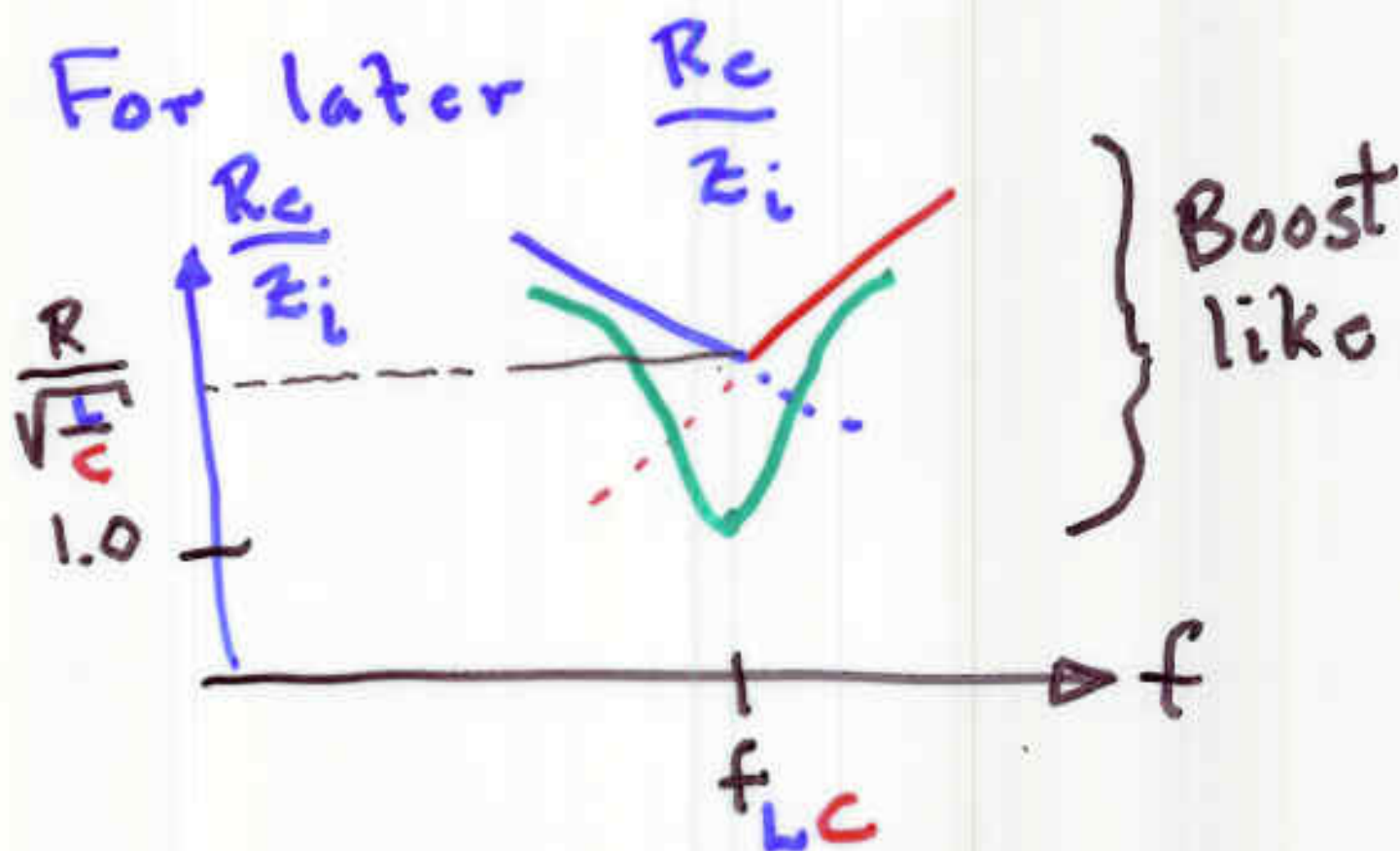
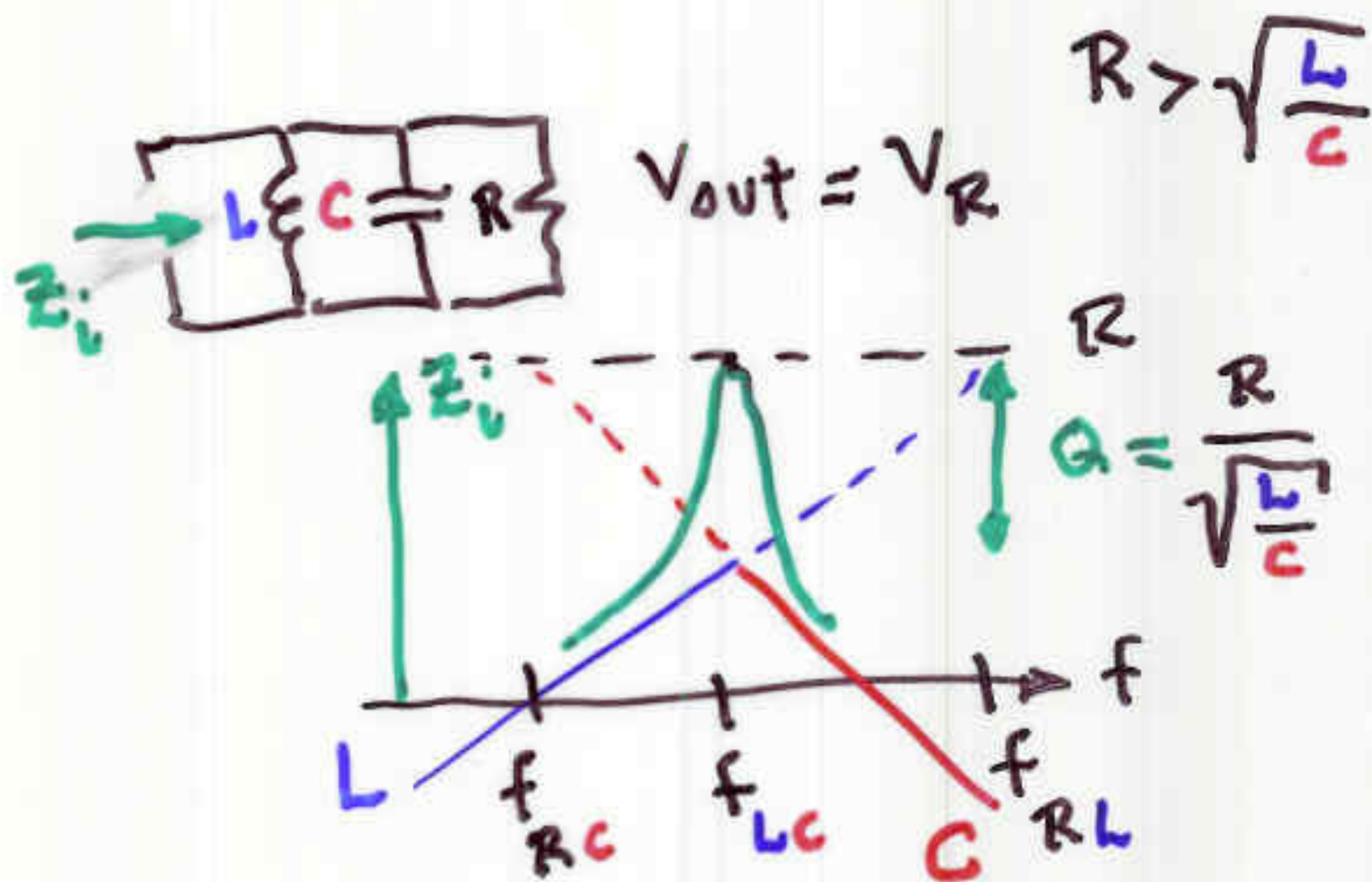
i_H } Total harmonic
 current at
 many $f = n f_{sw}$

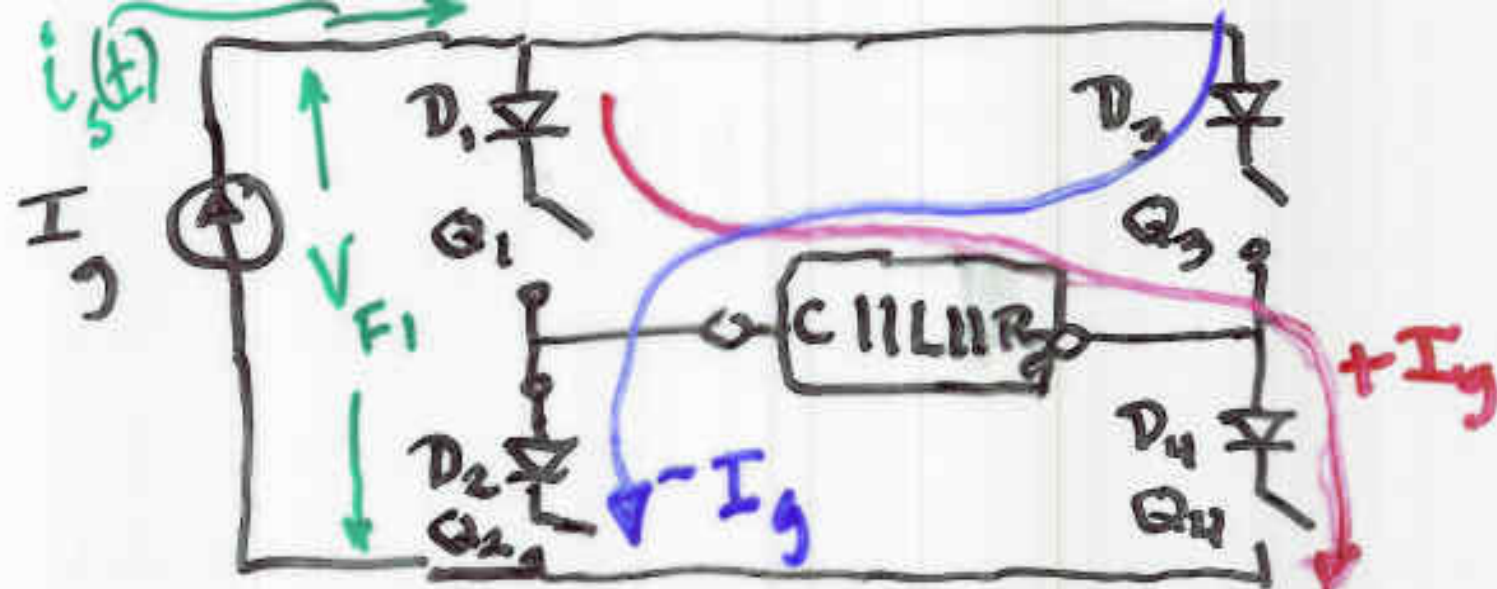
if Q of tank is high
 $V(tank) \sim \sin$

$$Z_{IN} \approx$$



only one
 frequency!





For $+I_g$ in $[C||L||R]$ D_1, Q_1 on
 D_4, Q_4 on
 D_3, D_2 off initially before $V_g > 0$
 For $-I_g$ in $[C||L||R]$ D_2, Q_2 on
 D_3, Q_3 on
 D_4, D_1 off initially before $V_g < 0$

Strong resonance: $f_{sw} \approx f_{LC}$



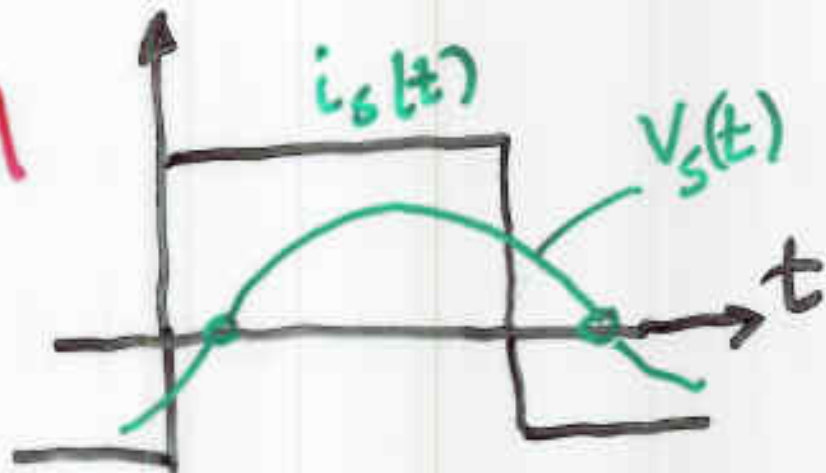
$+I_g$ interval

for
 $f > f_{LC}$

Capacitive Z_{iu}

$v_s(t)$ lags

$i_s(t)$ leads



$i_s(t)$

$v_s(t)$

$i_c e$

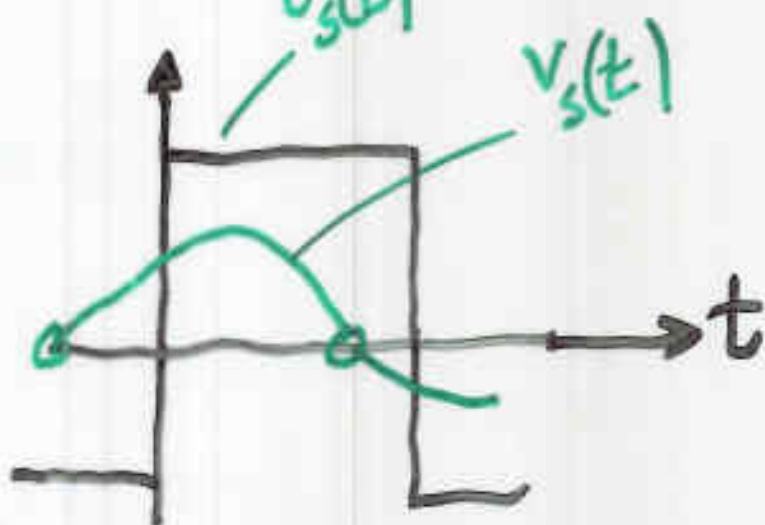
$+I_g$ interval

for
 $f < f_{LC}$

Inductive Z_{iu}

$v_s(t)$ leads

$i_s(t)$ lags



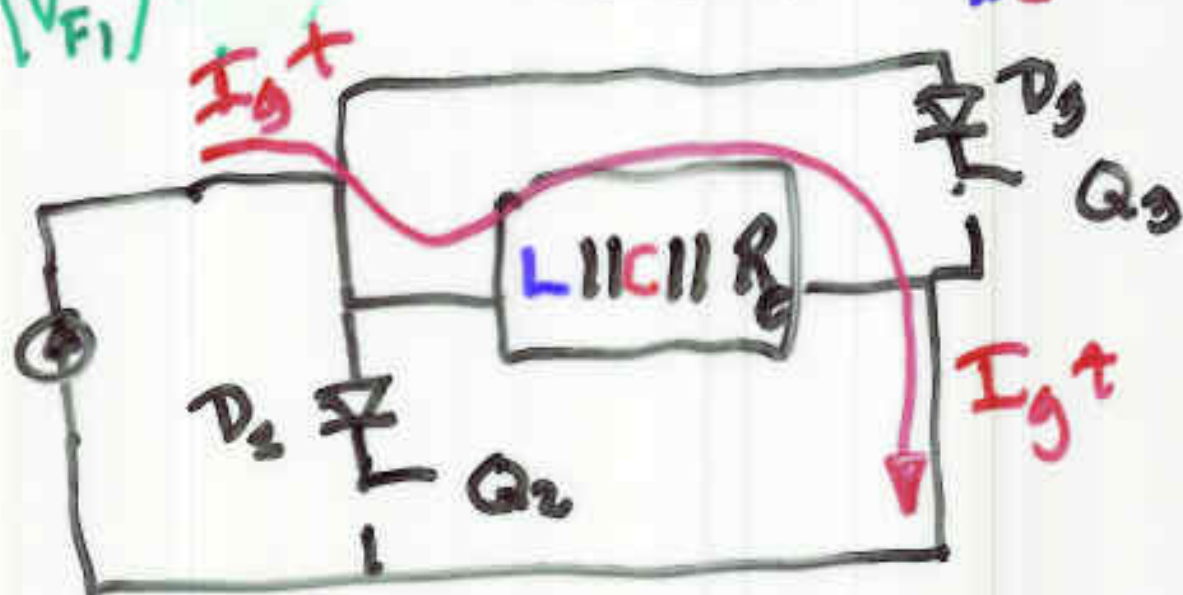
$i_s(t)$

$v_s(t)$

$e_L i$

$$\begin{pmatrix} V_s \\ V_{Fi} \end{pmatrix} > 0$$

Conditions when I_g^+
and $f < f_{LC}$



Q_2 and Q_3 block I_g flow

but if during I_g^+ condition

$$\begin{pmatrix} V_s \\ V_{Fi} \end{pmatrix} < 0$$

D_2 & D_3 block I_g
even if Q_2, Q_3 ON