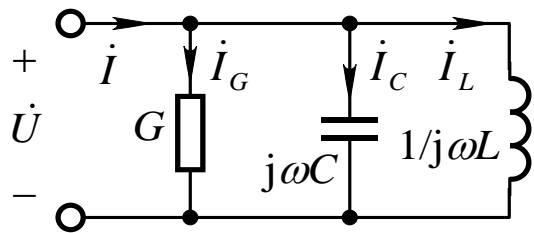


# 并联谐振特点



$$Y = G + j(\omega C - 1/\omega L) = G + jB$$

$$\omega_0 = 1/\sqrt{LC}$$

$$\omega_0 C = 1/\omega_0 L = \rho'$$

特性导纳

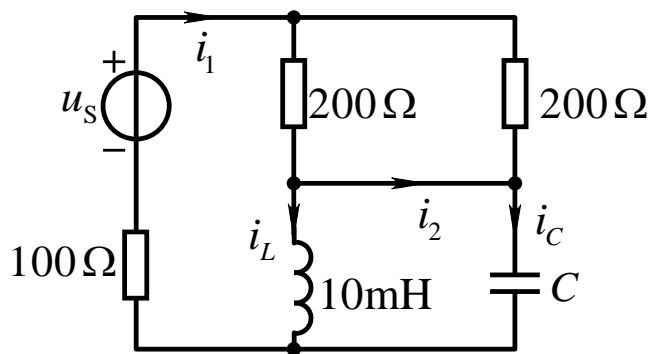
端口导纳  $Y = G \rightarrow \min$

端口电压  $\dot{U}_{\max} = \dot{I} / Y = \dot{I} / G = \dot{U}_0$

各元件  
电流  $\begin{cases} \dot{I}_R = \dot{U}_0 / R = G\dot{U}_0 = \dot{I} \\ \dot{I}_C = j\omega_0 C\dot{U}_0 = j\omega_0 C\dot{I} / G = jQ'\dot{I} \\ \dot{I}_L = \dot{U}_0 / (j\omega_0 L) = -j\dot{I} / (\omega_0 LG) = -jQ'\dot{I} \end{cases}$

# 并联谐振电路-例题

例1 已知图示电路处于谐振状态， $u_s = 10\sqrt{2} \cos \omega t \text{ V}$ ， $\omega = 10^4 \text{ rad/s}$   
试求电流  $i_1$ 、 $i_2$ 、 $i_L$  和  $i_C$ 。



解：电路并联谐振，电感、电容并联部分相当于开路

则有  $i_1 = 0$

$$i_L = \frac{\dot{U}_s}{j\omega L} = \frac{10\angle 0^\circ}{j10^4 \times 10 \times 10^{-3}} = 0.1\angle -90^\circ \text{ A}$$

$$\Rightarrow i_L = 0.1\sqrt{2} \cos(\omega t - 90^\circ) \text{ A}$$

$$i_2 = i_C = -i_L = 0.1\sqrt{2} \cos(\omega t + 90^\circ) \text{ A}$$