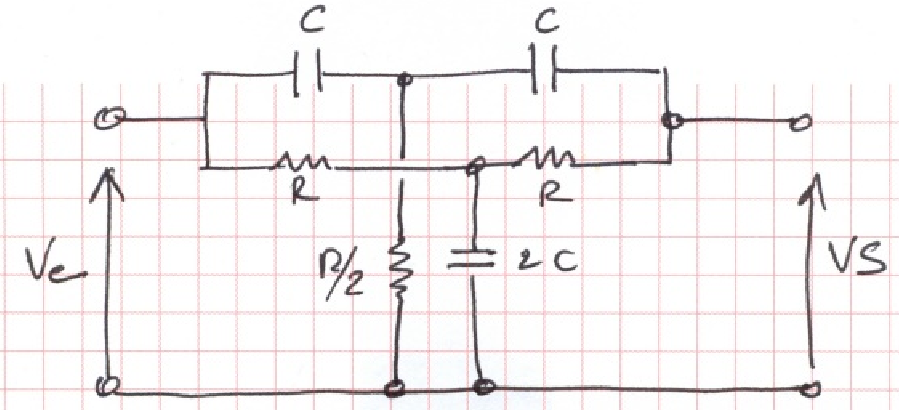
Filtre réjecteur double T ponté



On transforme chaque T en π :

$$\left\{\begin{array}{l} \sum \underline{Y}_i = \dfrac{2}{R} + 2jC\omega \\ \underline{Y}_{13} = jC\omega jx/2(1+jx) \\ \underline{Y}_{23} = \underline{Y}_{21} = jC\omega/(1+jx) \end{array}\right. \qquad \left\{\begin{array}{l} \sum \underline{Y}'_i = \dfrac{2}{R} + 2jC\omega \\ \underline{Y}'_{13} = \dfrac{1}{2R(1+jx)} \\ \underline{Y}'_{23} = \underline{Y}'_{21} = jC\omega/(1+jx) \end{array}\right.$$

On réunit les 2 quadripoles qui sont reliés en // :

les admittances s'aditionnent 2 à 2 :

$$\underline{Y}''_{13} = \underline{Y}_{13} + \underline{Y}'_{13} = \frac{(1-x^2)}{2R(1+jx)}$$

$$\underline{Y}''_{23} = \underline{Y}''_{21} = \underline{Y}_{21} + \underline{Y}'_{21} = \frac{j4x}{2R(1+jx)}$$

On obtient $\underline{T} = \dfrac{\underline{V_S}}{\underline{V_E}} = \dfrac{\underline{Y}''_{13}}{\underline{Y}''_{13} + \underline{Y}''_{23}} = \dfrac{(1-x^2)}{1+4jx-x^2}$

$$\boxed{\underline{T} = \frac{1+\left(j\frac{\omega}{\omega_0}\right)^2}{\left(1+j\frac{\omega}{\omega_1}\right)\left(1+j\frac{\omega}{\omega_2}\right)}}$$

avec $\omega_0 = \dfrac{1}{RC}$

$\omega_1 = \dfrac{1}{(\sqrt{3}+2)RC}$

$\omega_2 = \dfrac{1}{(2-\sqrt{3})RC}$

$\boxed{\text{CQFD}}$