47 Взаимни връзки м/у пасивните елементи в 4П

1. $[Z]=[Y]^{-1}$

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2.

$[A],[Y]$

$$[A]=\begin{bmatrix} A & B \\ C & D \end{bmatrix}$$

$$[Y]=\begin{bmatrix} Y_{11} & Y_{12} \\ Y_{21} & Y_{22} \end{bmatrix}$$

$$[A]=\begin{bmatrix} \dfrac{Y_{22}}{Y_{21}} & \dfrac{1}{Y_{21}} \\ \dfrac{Y_{11}Y_{22}-Y_{12}Y_{21}}{Y_{21}} & \dfrac{Y_{11}}{Y_{21}} \end{bmatrix}$$

У параметри чрез А

$\dot{U}_1=A\dot{U}_2+B\dot{I}_2$

$\dot{I}_1=C\dot{U}_2+D\dot{I}_2$

$\dot{I}_1=\dfrac{1}{R}\dot{U}_1-\dfrac{A}{B}\dot{U}_2$

$\dot{I}_1=C\dot{U}_2+D(\dfrac{1}{B}\dot{U}_1-\dfrac{A}{B}\dot{U}_2)$

$\dot{I}_1=C\dot{U}_2+\dfrac{D}{B}\dot{U}_1-\dfrac{AD}{B}\dot{U}_2$

$\dot{I}_1=\dfrac{D}{B}U_1-\dfrac{AD-BC}{B}U_2=Y_{11}\dot{U}_1-Y_{12}\dot{U}_2$

$\dot{I}_2=\dfrac{1}{B}\dot{U}_1-\dfrac{A}{B}\dot{U}_2=Y_{21}\dot{U}_1-Y_{22}\dot{U}_2$

$$[Y]=\begin{bmatrix} Y_{11} & Y_{12} \\ Y_{21} & Y_{22} \end{bmatrix}=$$

$$\begin{bmatrix} \dfrac{D}{B} & \dfrac{AD-BC}{B} \\ \dfrac{1}{B} & \dfrac{A}{B} \end{bmatrix}$$

за взаимен 4П
AD-BC=1

$$[Y]=\begin{bmatrix} \dfrac{D}{B} & \dfrac{1}{B} \\ \dfrac{1}{B} & \dfrac{A}{B} \end{bmatrix}$$