Important Two Port Parameters Formulas PDF

Formulas
Examples
with Units

List of 24
Important Two Port Parameters Formulas

1) A-Inverse Parameter (A'B'C'D'-Parameter) Formula

Evaluate Formula

Formula

$$A' = \frac{V_2}{V_1}$$

Example with Units

$$0.5 = \frac{220\,\text{V}}{440\,\text{V}}$$

2) A-Parameter (ABCD Parameter) Formula

Evaluate Formula

Formula

$$A = \frac{V_1}{V_2}$$

Example with Units

$$2 = \frac{440\,\text{V}}{220\,\text{V}}$$

3) B Inverse Parameter (A'B'C'D'-Parameter) Formula

Evaluate Formula

Formula

$$B' = -\frac{V_2}{I_1}$$

Example with Units

$$-275\,\Omega = -\frac{220\,\text{V}}{0.8\,\text{A}}$$

4) B Parameter (ABCD Parameter) Formula

Evaluate Formula

Formula

$$B = \frac{V_1}{-I_2}$$

Example with Units

$$-431.3725\,\Omega = \frac{440\,\text{V}}{-1.02\,\text{A}}$$

5) C Inverse Parameter (A'B'C'D'-Parameter) Formula

Evaluate Formula

Formula

$$C' = \frac{I_2}{V_1}$$

Example with Units

$$0.0023\,\text{℧} = \frac{1.02\,\text{A}}{440\,\text{V}}$$

6) C Parameter (ABCD Parameter) Formula

Evaluate Formula

Formula

$$C = \frac{I_1}{V_2}$$

Example with Units

$$0.0036\,\text{℧} = \frac{0.8\,\text{A}}{220\,\text{V}}$$

7) D Inverse Parameter (A'B'C'D'-Parameter) Formula

Evaluate Formula

Formula

$$D' = -\frac{I_2}{I_1}$$

Example with Units

$$-1.275 = -\frac{1.02\,\text{A}}{0.8\,\text{A}}$$

8) D Parameter (ABCD Parameter) Formula

Evaluate Formula

Formula

$$D = -\frac{I_1}{I_2}$$

Example with Units

$$-0.7843 = -\frac{0.8\,\text{A}}{1.02\,\text{A}}$$

9) Driving Point Input Admittance (Y11) Formula

Evaluate Formula

Formula

$$Y_{11} = \frac{I_1}{V_1}$$

Example with Units

$$0.0018\,\text{℧} = \frac{0.8\,\text{A}}{440\,\text{V}}$$

10) Driving Point Input Impedance (Z11) Formula

Evaluate Formula

Formula

$$Z_{11} = \frac{V_1}{I_1}$$

Example with Units

$$550\,\Omega = \frac{440\,\text{V}}{0.8\,\text{A}}$$

11) Driving Point Output Admittance (Y22) Formula

Evaluate Formula

Formula

$$Y_{22} = \frac{I_2}{V_2}$$

Example with Units

$$0.0046\,\text{℧} = \frac{1.02\,\text{A}}{220\,\text{V}}$$

12) Driving Point Output Impedance (Z22) Formula

Evaluate Formula

Formula

$$Z_{22} = \frac{V_2}{I_2}$$

Example with Units

$$215.6863\,\Omega = \frac{220\,\text{V}}{1.02\,\text{A}}$$

13) G11 Parameter (G-Parameter) Formula

Evaluate Formula

Formula

$$g_{11} = \frac{I_1}{V_1}$$

Example with Units

$$0.0018\,\text{℧} = \frac{0.8\,\text{A}}{440\,\text{V}}$$

14) G12 Parameter (G-Parameter) Formula

Evaluate Formula

Formula

$$g_{12} = \frac{I_1}{I_2}$$

Example with Units

$$0.7843 = \frac{0.8\,\text{A}}{1.02\,\text{A}}$$

15) G21 Parameter (G-Parameter) Formula

Evaluate Formula

Formula

$$g_{21} = \frac{V_2}{V_1}$$

Example with Units

$$0.5 = \frac{220\,\text{V}}{440\,\text{V}}$$

16) G22 Parameter (G-Parameter) Formula

Evaluate Formula

Formula

$$g_{22} = \frac{V_2}{I_2}$$

Example with Units

$$215.6863\,\Omega = \frac{220\,\text{V}}{1.02\,\text{A}}$$

17) H11 Parameter (H-Parameter) Formula

Evaluate Formula

Formula

$$h_{11} = \frac{V_1}{I_1}$$

Example with Units

$$550\,\Omega = \frac{440\,\text{V}}{0.8\,\text{A}}$$

18) H12 Parameter (H-Parameter) Formula

Evaluate Formula

Formula

$$h_{12} = \frac{V_1}{V_2}$$

Example with Units

$$2 = \frac{440\,\text{V}}{220\,\text{V}}$$

19) H21 Parameter (H-Parameter) Formula

Evaluate Formula

Formula

$$h_{21} = \frac{I_2}{I_1}$$

Example with Units

$$1.275 = \frac{1.02\,\text{A}}{0.8\,\text{A}}$$

20) H22 Parameter (H-Parameter) Formula

Evaluate Formula

Formula

$$h_{22} = \frac{I_2}{V_2}$$

Example with Units

$$0.0046\,\text{℧} = \frac{1.02\,\text{A}}{220\,\text{V}}$$

21) Input Transfer Admittance (Y12) Formula

Evaluate Formula

Formula

$$Y_{12} = \frac{I_1}{V_2}$$

Example with Units

$$0.0036\text{℧} = \frac{0.8\text{A}}{220\text{V}}$$

22) Input Transfer Impedance (Z12) Formula

Evaluate Formula

Formula

$$Z_{12} = \frac{V_1}{I_2}$$

Example with Units

$$431.3725\Omega = \frac{440\text{V}}{1.02\text{A}}$$

23) Output Transfer Admittance (Y21) Formula

Evaluate Formula

Formula

$$Y_{21} = \frac{I_2}{V_1}$$

Example with Units

$$0.0023\text{℧} = \frac{1.02\text{A}}{440\text{V}}$$

24) Output Transfer Impedance (Z21) Formula

Evaluate Formula

Formula

$$Z_{21} = \frac{V_2}{I_1}$$

Example with Units

$$275\Omega = \frac{220\text{V}}{0.8\text{A}}$$

Variables used in list of Two Port Parameters Formulas above

- **A** A Parameter
- **A'** A Inverse Parameter
- **B** B Parameter *(Ohm)*
- **B'** B Inverse Parameter *(Ohm)*
- **C** C Parameter *(Mho)*
- **C'** C Inverse Parameter *(Mho)*
- **D** D Parameter
- **D'** D Inverse Parameter
- g_{11} G11 Parameter *(Mho)*
- g_{12} G12 Parameter
- g_{21} G21 Parameter
- g_{22} G22 Parameter *(Ohm)*
- h_{11} H11 Parameter *(Ohm)*
- h_{12} H12 Parameter
- h_{21} H21 Parameter
- h_{22} H22 Parameter *(Mho)*
- I_1 Current in Port 1 *(Ampere)*
- I_2 Current in Port 2 *(Ampere)*
- V_1 Voltage Port 1 *(Volt)*
- V_2 Voltage Port 2 *(Volt)*
- Y_{11} Y11 Parameter *(Mho)*
- Y_{12} Y12 Parameter *(Mho)*
- Y_{21} Y21 Parameter *(Mho)*
- Y_{22} Y22 Parameter *(Mho)*
- Z_{11} Z11 Parameter *(Ohm)*
- Z_{12} Z12 Parameter *(Ohm)*
- Z_{21} Z21 Parameter *(Ohm)*
- Z_{22} Z22 Parameter *(Ohm)*

Constants, Functions, Measurements used in list of Two Port Parameters Formulas above

- Measurement: **Electric Current** in Ampere (A)
  Electric Current Unit Conversion
- Measurement: **Electric Resistance** in Ohm (Ω)
  Electric Resistance Unit Conversion
- Measurement: **Electric Conductance** in Mho (℧)
  Electric Conductance Unit Conversion
- Measurement: **Electric Potential** in Volt (V)
  Electric Potential Unit Conversion

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