



Connector Model for VNA Tools II

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Outline

Mechanical properties

Half connector model

S-parameters

Sensitivity coefficients

Male interface

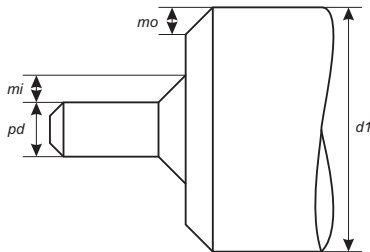


Figure: specified dimensions male interface

Female interface slotless connector

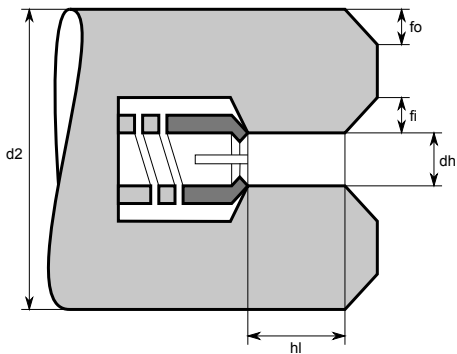


Figure: specified dimensions female interface slotless

Female interface slotted connector

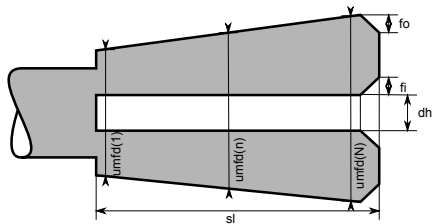


Figure: specified dimensions female interface slotted

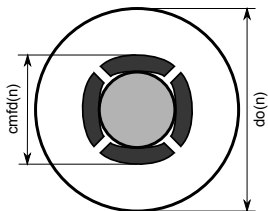


Figure: lateral cut through the slotted section

Assembled slotless connector

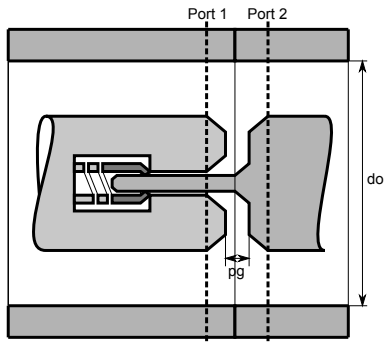


Figure: assembled slotless connector

Assembled slotted connector

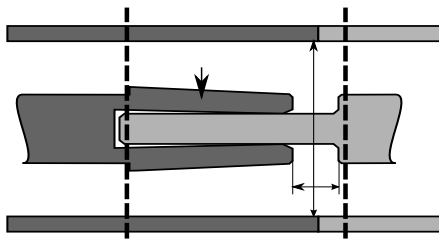
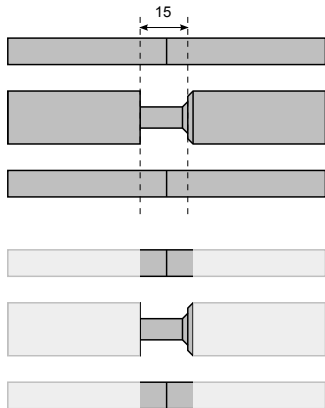


Figure: assembled slotted connector

Example: S-parameters of the male half connector

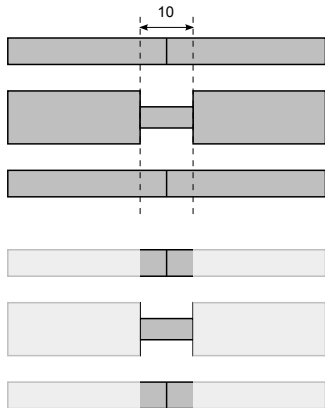


1st simulation:

- ▶ pin gap $15 \mu\text{m}$
- ▶ female side ideal
- ▶ perform simulation of the whole connector
- ▶ decascade access line sections

Figure: Male connector

Example: S-parameters of the male half connector



2nd simulation:

- ▶ pin gap $10 \mu\text{m}$
- ▶ perform simulation
- ▶ decascade access line sections
- ▶ variable length with additional parameter

$$\begin{pmatrix} S_{11} & S_{12} \\ S_{21} & S_{22} \end{pmatrix}, \quad \frac{l}{10 \mu\text{m}}$$

Figure: pin section to decascade

Example: S-parameters of the male half connector

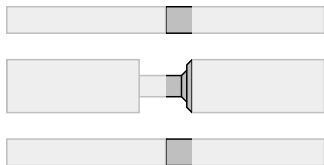


Figure: male half connector

- ▶ length: pin depth + outer male chamfer
- ▶ pin gap as additional parameter
- ▶ no further simulations necessary

S-parameters of typical connector families

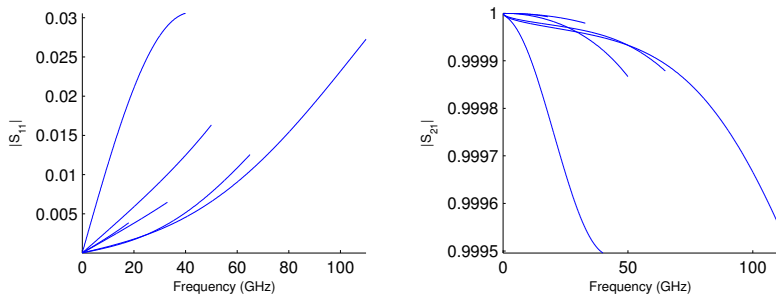


Figure: S-parameters full connector:
Type-N, 3.5 mm, 2.92 mm, 2.4 mm, 1.85 mm, 1 mm

Sensitivity to parameter pin gap in μm

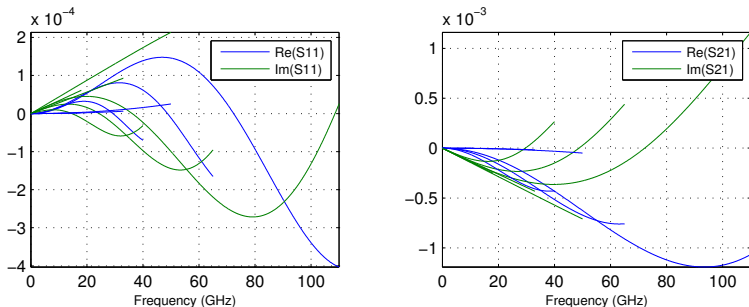


Figure: Sensitivity to parameter pin gap in μm