

Single Stub matching

Demo Simulation: TLine

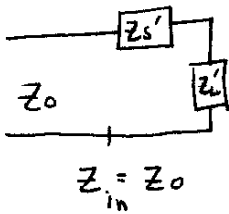
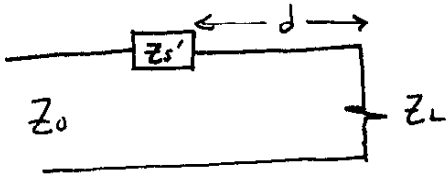
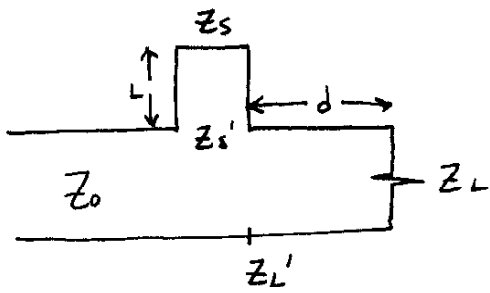
Handout: Single Stub Matching cookbook

Example: Series Single Stub Match
w/ different Z_0 .

Microstrip Design

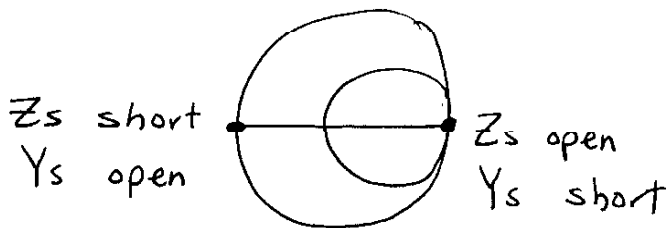
Demo: Libra.

Series Stub Matching

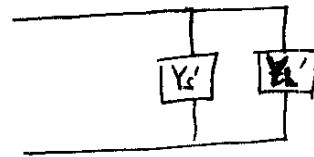
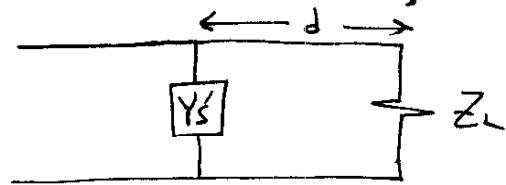
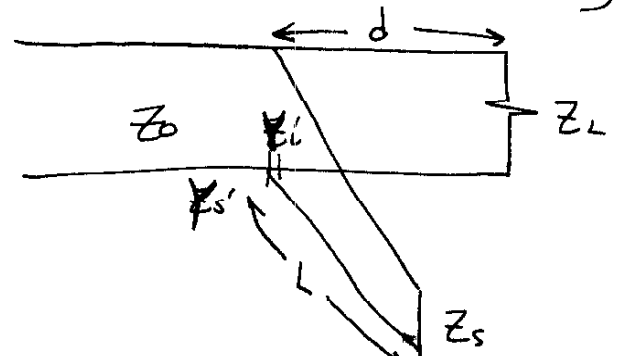


Plot Z_L normalized

2. Rotate TWG to matching circle $\rightarrow d$
3. Read $Z_L' = \text{Real} + j\text{Imag}$
 $= 1 + jX$
4. Plot $Z_s' = -jX$
5. Rotate TWL to Z_s

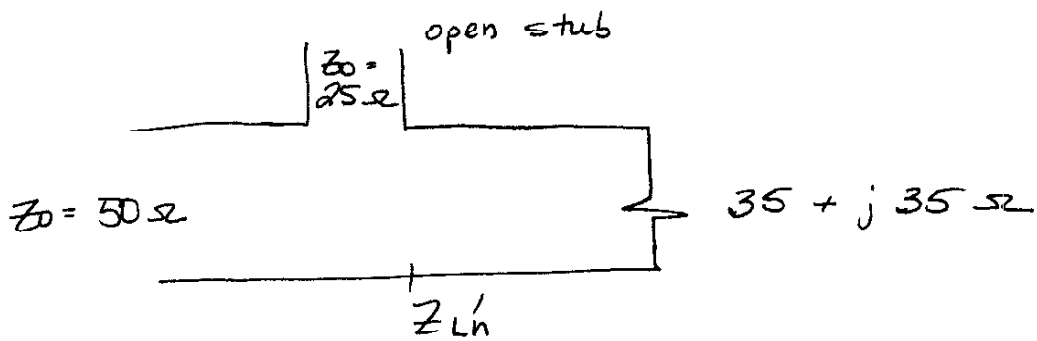


Parallel Stub Matching



1. Plot Z_L normalized
- 1b. Reflect through origin to Y_{Ln}
2. Rotate TWG to matching circle $\rightarrow d$
3. Read $Y_L' = \text{Real} + j\text{Imag}$
 $= 1 + jX$
4. Plot $Y_s' = -jX$
5. Rotate TWL to Y_s
(Y_s is reflection through origin of Z_s)

Example of Series stub matching w/ different Z_0



$$1. Z_{Ln} = \frac{Z_L}{Z_0} = \frac{35 + j35}{50} = 0.7 + j0.7 \quad (\text{Plot})$$

2. Rotate TWG to matching circle.

$$d = 0.16 - 0.124 \lambda = \boxed{0.036 \lambda = d}$$

$$3. \text{ Read } Z_{Ln}' = 1 + j0.9 \quad Z_L' = (1 + j0.9)(50) = 50 + j45$$

$$4. \text{ Plot } Z_{sn}' = \frac{-j45}{25} = -j1.8$$

(Want $Z_s' = -Z_L'$ imaginary part
Normalize w.r.t. stub line)

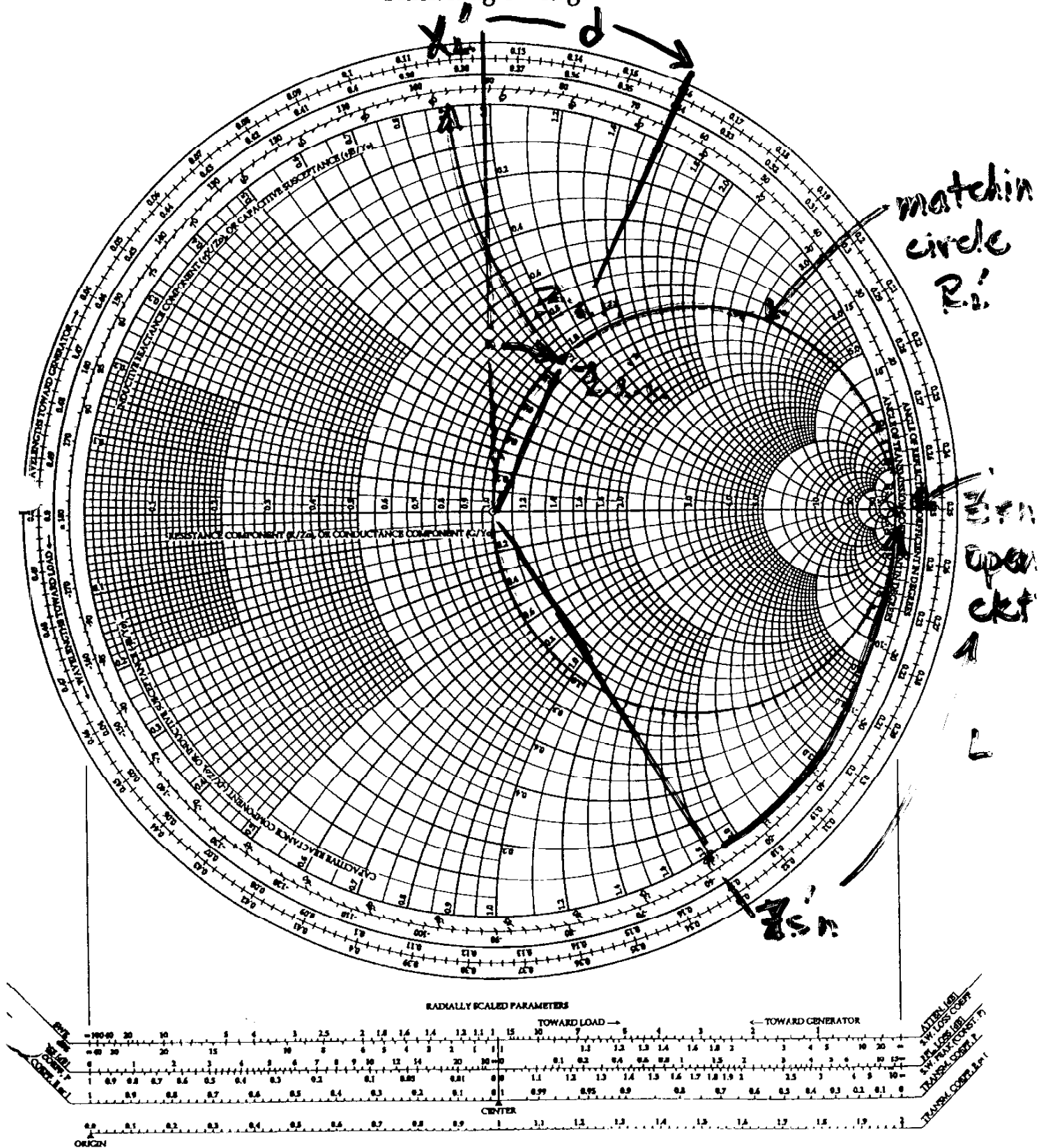
5. Rotate TWL (Load of Stub is open ckt.)

$$L = 0.25 - 0.17 \lambda = 0.08 \lambda$$

Example of Series Stub Match w/ different Z_0

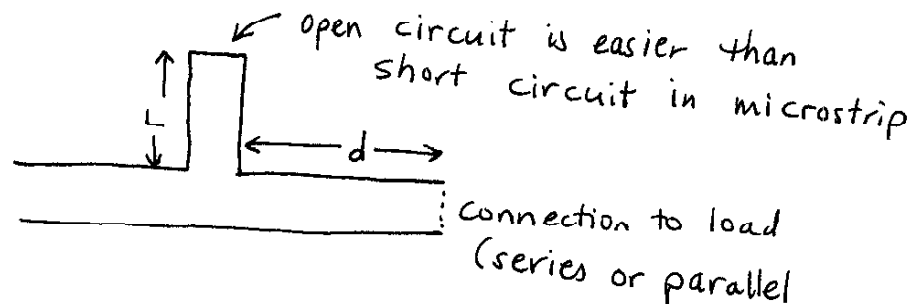
The Complete Smith Chart

Black Magic Design



Design of Microstrip matching networks

SERIES STUBS



Z_0 : Design as shown on pp. 162-163 of text

L, d : Design using Smith Chart
They will be f^{-n}

Calculate B from (3.194) and (3.195)

$$\lambda_g = \frac{Z_0}{\beta}$$

Now you can compute L and d in meters.

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