

Homework Four

Microwave Networks

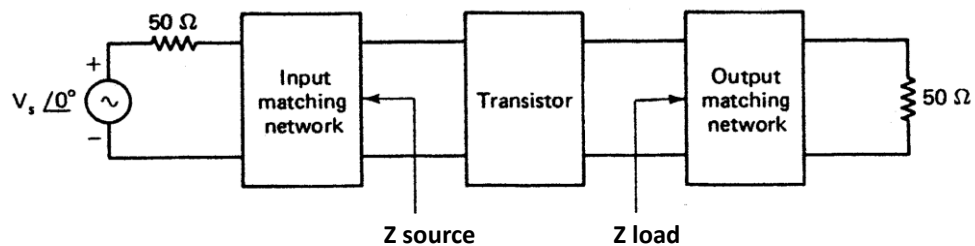
Text: Chapter 4, 4th Edition, Microwave Engineering, Pozar

I. Selected problems of the text book (Pozar - page 222):

1. P 4.5
2. P 4.9
3. P 4.14
4. P. 4.15
5. P. 4.18
6. P 4.24
7. P 4.26
8. P 4.28
9. P 4.35
10. P 4.37

II. Additional Problems (Reference: Chapter 2, Microwave Transistor Amplifier, Gonzalez)

1. Design two microstrip matching network for the amplifier shown in the below figure at frequency of 1100 MHz. The amplifier is Cree GaN transistor CGHV14250, whose source and load impedances for a good match are given as below. Use Duroid substrate RO4003 with $\epsilon_r = 3.38$ and $h = 0.8$ mm in your design.



Frequency (MHz)	Z Source	Z Load
900	$0.6 - j0.3$	$5.3 + j0.1$
1000	$0.7 - j0.8$	$4.3 + j0.8$
1100	$1.3 - j1.1$	$3.3 + j0.8$
1200	$1.8 - j1.1$	$3.0 + j0.4$
1300	$2.5 - j0.7$	$2.5 + j0.4$

2. Validate your design in Problem II.1 using ADS software and evaluate the bandwidth of your matching networks. (Note that the input and output impedance of the transistor can be approximated by the complex conjugate of the source and load impedance given in the above table.)