

EE 3113

INTRODUCTION TO RF

CIRCUIT DESIGN

Lecture Notes for A-term 1999

LECTURE 20

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Matching Networks

- MNs are critical for at least two critical reasons

- maximize power transfer: $P_t = P_i - P_r = P_i(1 - |\Gamma_{in}|^2)$

- minimize $SWR = \frac{1 + |\Gamma_{in}|}{1 - |\Gamma_{in}|}$

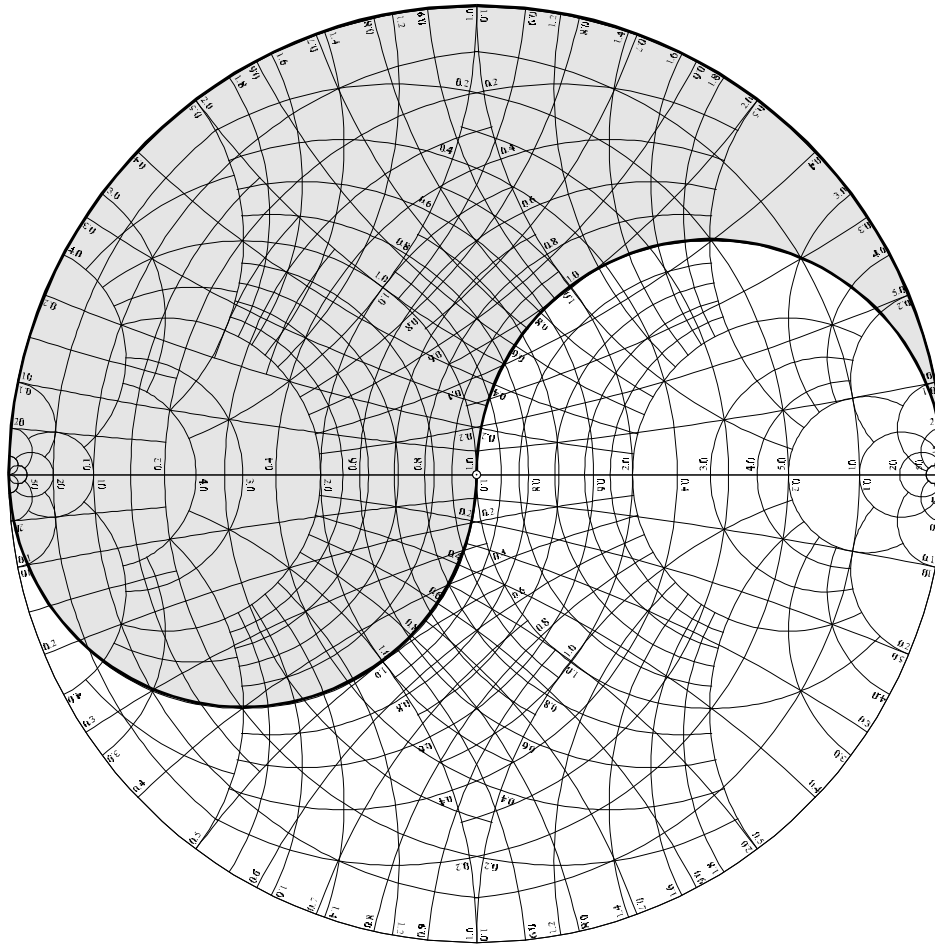
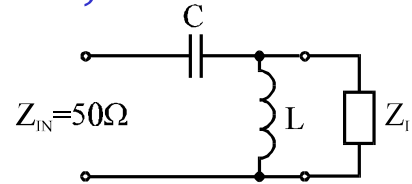
- Primary goal of a MN is to achieve

$$\Gamma_{in} = 0$$

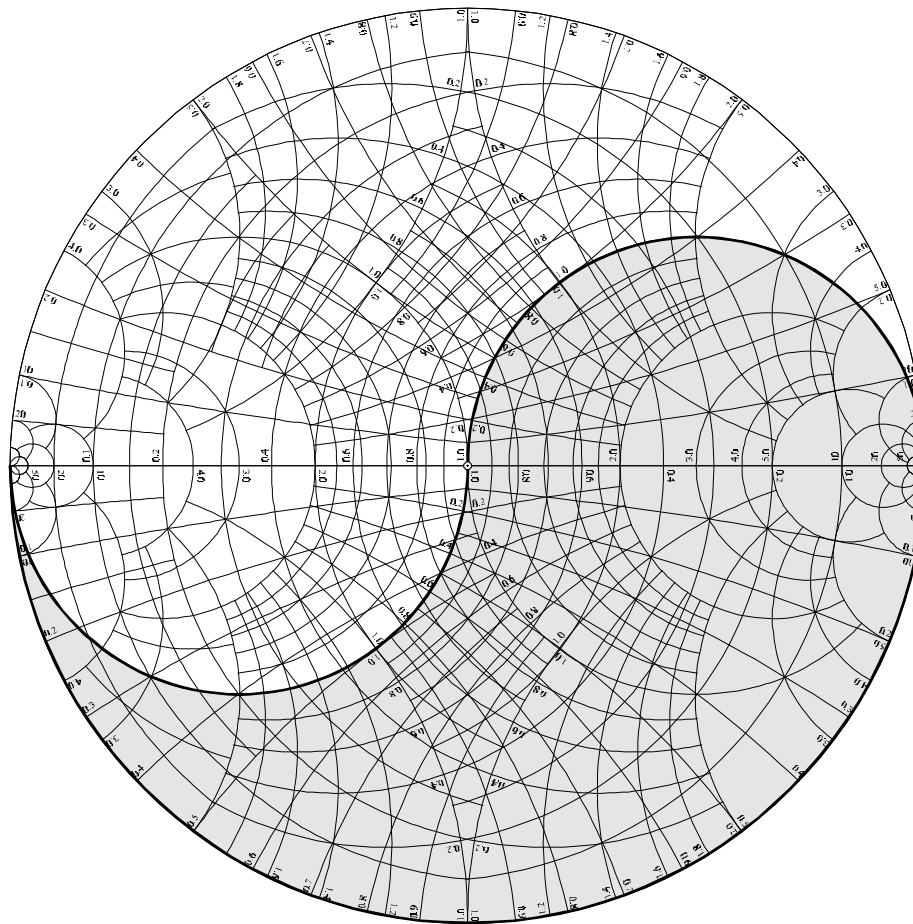
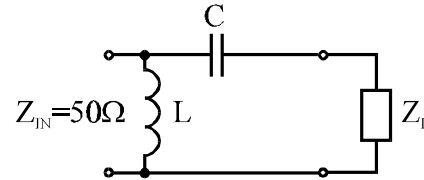
MN strategy

- Pick an appropriate two-element MN for which matching is possible (based on a given load impedance or S-parameter)
- find the L, C values from the ZY Smith Chart
- convert discrete values into equivalent microstriplines

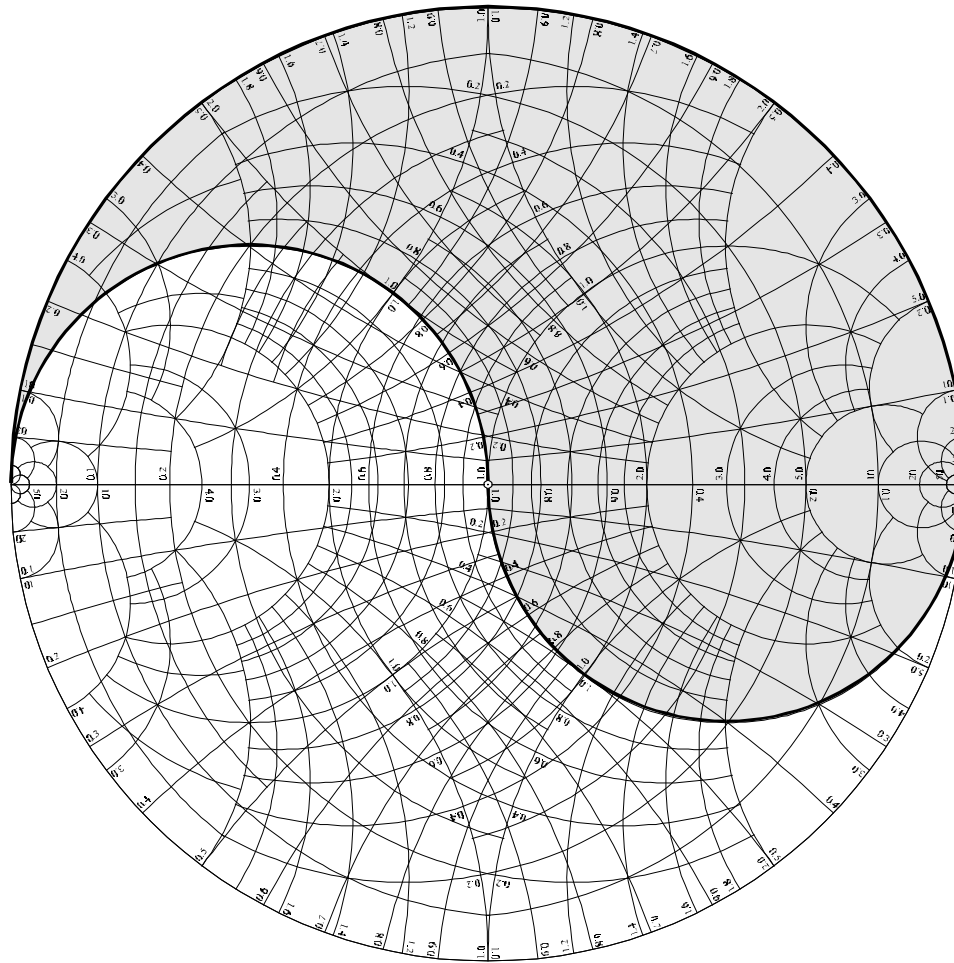
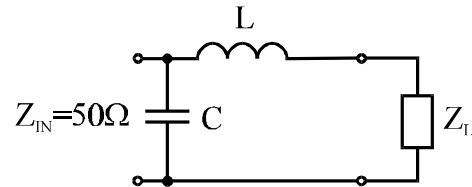
Region of matching for shunt L, series C matching network



Region of matching for series C shunt L matching network



Region of matching for series L shunt C matching network



Region of matching for shunt C and series L matching network

