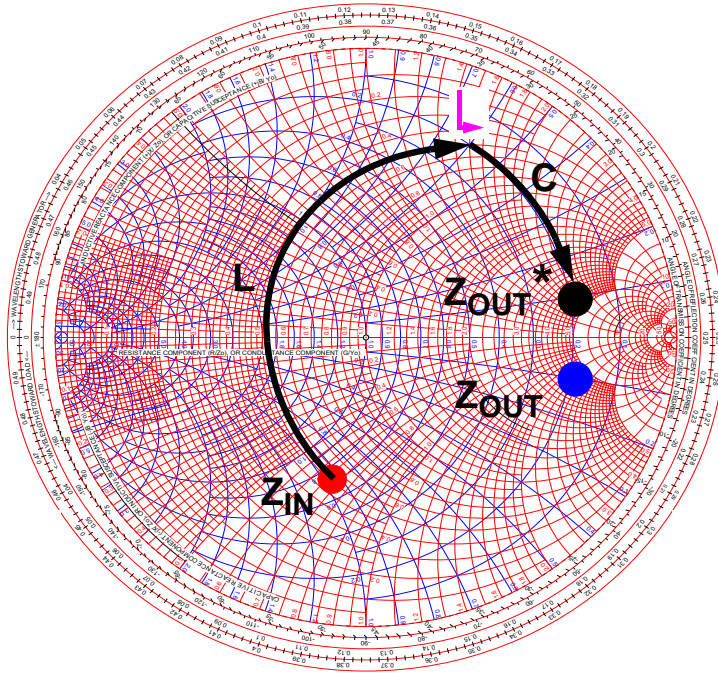
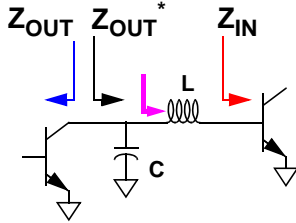


Smith Charts

Graphical Impedance Manipulations



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Smith charts are wonderful -- they are the graphical and intuitive alternative to analytical or CAE-prepackaged design approaches.

By way of introduction, we present a quick single-frequency impedance matching solution. Inductor L sweeps the output transistor's Z_{IN} up and clockwise, following a red Smith chart contour. The capacitor C then sweeps the impedance down and clockwise, following a blue contour to the target -- the conjugate of Z_{OUT} (a conjugate is just the mirror image across the Smith chart horizontal center line.) Maximum transfer of small signal power gain (a precious commodity at microwave frequencies) is accomplished, just that easily

As we'll see, Smith charts easily handle both lumped and distributed circuits.

Smith charts were developed in 1939 by Phillip Smith at Bell Telephone Laboratories.