Collection of Impedance Matching Circuits

useful functions and identities

Units

Constants

Inputs

$Z_L := 50ohm + j \cdot 0ohm$ **Load impedance**

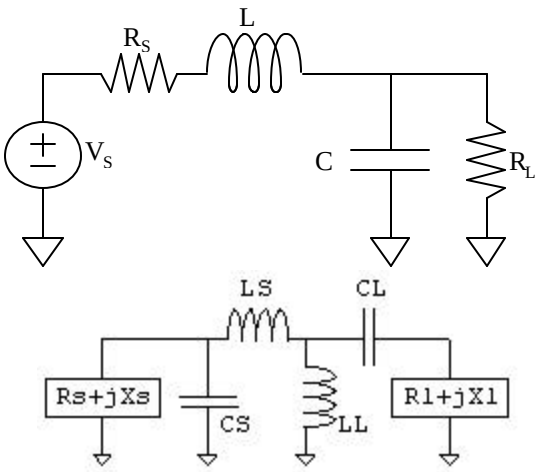
$Z_S := 237ohm - j \cdot 266ohm$ **Source impedance**

$f_{min} := 900MHz$ **Lower edge of band frequency**

$f_{max} := 900MHz$ **Upper edge of band frequency**

$Q := 2$ **Desired Q of matching network**

Calculations



Lowpass L

$x := lowL(Z_L, Z_S, f_{min}, f_{max})$

$L := x_1 \cdot henry$ $L = 27.554\,nH$

$C := x_2 \cdot farad$ $C = 0.658\,pF$

Bandpass L-L # 2

$x := band2LL(f, Z_S, Z_L)$

$C_S := x_1 \cdot F$ $C_S = 0.127\,pF$

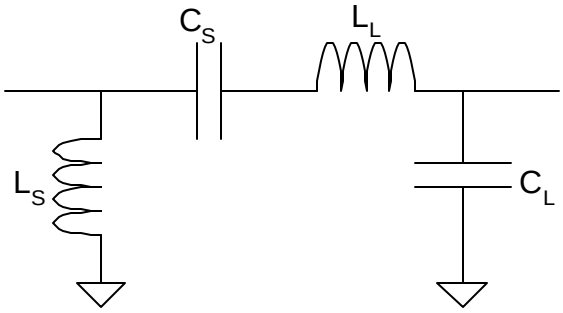
$C_L := x_2 \cdot F$ $C_L = 2.346\,pF$

$L_S := x_3 \cdot H$ $L_S = 43.625\,nH$

$L_L := x_4 \cdot H$ $L_L = 19.195\,nH$

Bandpass L-L(or Pi)

$x := bandpi(f, Z_S, Z_L, Q)$



$C_S := x_1 \cdot F$ $C_S = 2.439\,pF$

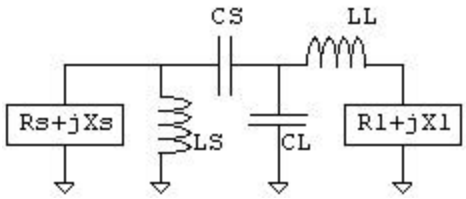
$L_S := x_2 \cdot H$ $L_S = 11.312\,nH$

$C_L := x_3 \cdot F$ $C_L = 7.073\,pF$

$L_L := x_4 \cdot H$ $L_L = 3.537\,nH$

Bandpass L-L #1

$x := band1LL(f, Z_S, Z_L)$



$C_S := x_1 \cdot F$ $C_S = 0.717\,pF$

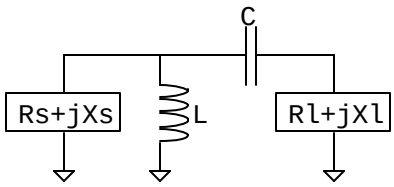
$C_L := x_2 \cdot F$ $C_L = 1.629\,pF$

$L_S := x_3 \cdot H$ $L_S = 36.011\,nH$

$L_L := x_4 \cdot H$ $L_L = 13.33\,nH$

Highpass L

$x := highL(Z_S, Z_L, f)$

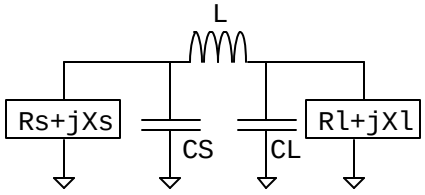


$L := x_1 \cdot H$ $L = 22.344\,nH$

$C := x_2 \cdot F$ $C = 1.135\,pF$

Lowpass Pi

$x := lowpi(f, Z_S, Z_L, Q)$



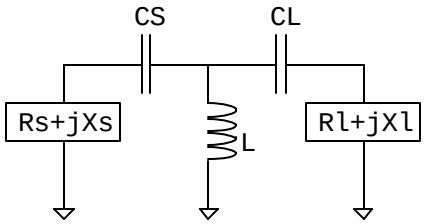
$C_L := x_1 \cdot farad$ $C_L = 2.583i\,pF$

$C_S := x_2 \cdot farad$ $C_S = 0.29\,pF$

$L := x_3 \cdot henry$ $L = 37.882 + 13.831i\,nH$

High Pass T

$x := hight(f_{min}, f_{max}, Z_S, Z_L, Q)$



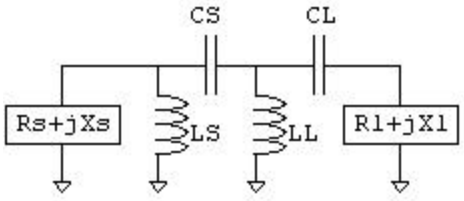
$C_L := x_1 \cdot farad$ $C_L = 1.768\,pF$

$C_S := x_2 \cdot farad$ $C_S = -0.84\,pF$

$L := x_3 \cdot henry$ $L = 19.788\,nH$

Highpass L-L

$x := highLL(f, Z_S, Z_L)$



$C_S := x_1 \cdot F$ $C_S = 0.717\,pF$

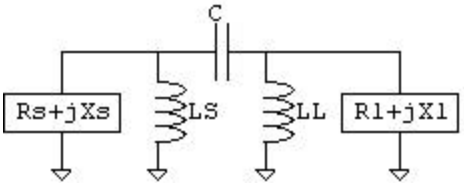
$L_S := x_2 \cdot H$ $L_S = 36.011\,nH$

$C_L := x_3 \cdot F$ $C_L = 2.346\,pF$

$L_L := x_4 \cdot H$ $L_L = 19.195\,nH$

Highpass Pi

$x := highpi(Z_S, Z_L, Q, f_{min}, f_{max})$



$L_L := x_1 \cdot H$ $L_L = -12.109i\,nH$

$L_S := x_2 \cdot H$ $L_S = 30.331\,nH$

$C := x_3 \cdot F$ $C = 0.728 - 0.266i\,pF$

Copyright Notice