

APPENDIX A
Matlab File for Calculating Resistor Values

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% plate.m Last edited 4/2/99
%
% Wnd: open circuit frequency;
% Wne:short circuit frequency;
% We:electric resonant frequency
% Kij=iKij=sqrnput('What is Kij=');

Wnd=272.5
Wne=272
Kij=sqrt((Wnd^2-Wne^2)/Wne^2)
% (Generalized Electromechanical Coupling Constant)

disp('*** In resonant tuning case ***');

% K3t=3800;
epi=8.85E-12;
Area=0.07239*0.07239;
t=2.67E-4;
% Cpt=K3t*epi*Area/t
k31=0.44;
% Cps=Cpt*(1-k31^2)
Cps=(410E-9)/2

deltaopt=sqrt(1+Kij^2)
ropt=sqrt(2)*(Kij/(1+Kij^2))
We=deltaopt*Wnd

inductor=1/(2*pi*We)^2/Cps

Res=ropt/(Cps*Wne*2*pi)
Opres=sqrt(inductor/(4*Cps))

freq=1/sqrt(inductor*Cps);
Hz=freq/(2*pi)

disp('*** In resistor tuning case ***');
r=sqrt(1-k31^2);
Resl=r/(Cps*Wne*2*pi)

disp('*** Find the value of inductor resistance ***');

% R135=input('What is R135=');
R135=10E3
capacitor=10E-9;
Rstar=inductor/capacitor;
R2=R135^3/Rstar % Inductor Resistor Value

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