
Subject: Re: Announcements

Posted by [Chris R.](#) on Thu, 06 Nov 2003 17:51:01 GMT

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Without further adieu...The math is pretty easy with a calculator if you don't have perl available to you. If you are stuck on Windows, check with www.activestate.com. If you are on linux or other Unix, perl should already be there. There's a version in BASIC from Wayne at the bottom. Here's how it runs: Usage: ./mech_res.pl Zmax Fs Qms./mech_res.pl 100 32 10.4! mechanical reactance (32 Hz, Qms: 10.4) C5: 9 0 517.4uF L5: 9 0 47.8mH R5: 9 0 104.0 And here's all the code and comments:#!/usr/bin/perl -w# Copyright (c) 2003 Chris E. Richmond All rights reserved# This program is free software; you can readily redistribute it# and/or modify it under the terms of the GNU General Public License# as published by the Free Software Foundation; either version 1, or# at your option) any later version. You can receive a copy of this# license by writing Free Software Foundation, Inc., 675 Mass Ave.,# Cambridge, MA 02139,

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USA#=====
##### Create mechanical parameters for Spice model for woofers.#
Input: Zmax and Fs, output equivalent L, C, and R, where their# values are defined thusly:##
About making a virtual circuit that models mechanical resonance, the idea is to find# parallel L,C
and R that acts as the mechanical resonator does. R will be set by Zmax,# so that one is easy.
Then, the values of C and L will be the same at resonance, and# since Q is the ratio of reactive
impedance to resistive impedance, you will find a the# value of inductor and capacitor with
reactances equal to Zmax / Qms at Fr. Wayne Parham## C5# ----||-----# |
R5 |# -----VW-----# | |# ----(((((((-----#
L5#=====
#####if ( @ARGV != 3 ) { die "\n Usage: $0 Zmax Fs Qms\n\n";
}$Zmax = $ARGV[0]; $Fs = $ARGV[1]; $Qms = $ARGV[2]; $Pi = 3.141; # constant $Q_ratio =
$Zmax/$Qms; $L = ($Q_ratio / (2 * $Pi * $Fs)) * 1000; $C = 1000000 * ( 1 / ( 2 * $Pi * $Q_ratio *
$Fs ));#! mechanical reactance (40Hz, Q=6.56)# C5 9 0 400uF# L5 9 0
40mH# R5 9 0 65.6print "\n! mechanical reactance ($Fs Hz, Qms:
```

```
BASIC:=====10 input
"Zmax"; R20 input "Fs"; F30 input "Qms"; Q40 Pi = 3.141592653550 Z = R/Q60 L = (Z / (2 * Pi *
F)) * 100070 C = (1 / (2 * Pi * Z * F)) * 100000080 print "Reactance = " reactance90 print
"Capacitor is " C " uF."100 print "Inductor is " L " mH."110 print "Resistor is " R "
ohms."=====
```